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(71) Applicant: **VOYAGER THERAPEUTICS, INC.** [US/US]; 75 Sidney Street, Cambridge, MA 02139 (US).

(72) Inventors: **PAUL, Steven;** 75 Sidney Street, Cambridge, MA 02139 (US). **WARD, Donna, T.;** 142A Main Street, Groton, MA 01450 (US).

(74) Agent: **WARD, Donna,** T. et al; DT WARD, PC, 142A Main Street, Groton, MA 01450 (US).

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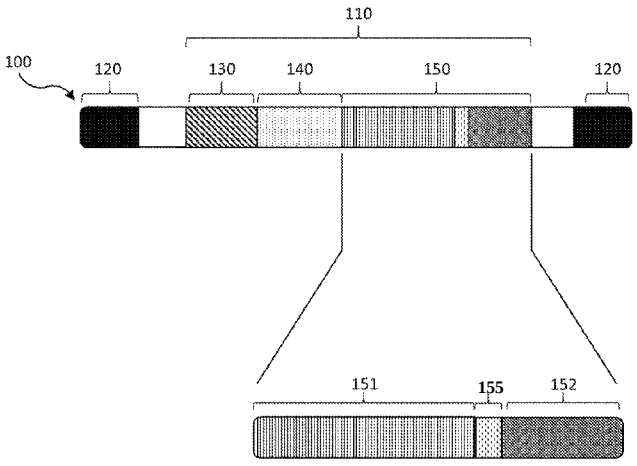
FIG. 2



(57) Abstract: The invention provides compositions and methods for the preparation, manufacture and therapeutic use of viral vectors, such as adeno-associated virus (AAV) particles having viral genomes encoding one or more antibodies or antibody fragments or antibody-like polypeptides, for the prevention and/or treatment of diseases and/or disorders.

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[Continued on next page]

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COMPOSITIONS FOR THE TREATMENT OF DISEASE

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to US Provisional Patent Application No. 62/329,442, filed on April 29, 2016, entitled Compositions for the Treatment of Disease, US Provisional Patent Application No. 62/367,317, filed on July 27, 2016, entitled Compositions for the Treatment of Disease, the contents of each of which are herein incorporated by reference in their entireties.

REFERENCE TO THE SEQUENCE LISTING

[0002] The present application is being filed along with a Sequence Listing in electronic format. The Sequence Listing file, entitled 20571300PCTSL.txt, was created on April 28, 2017 and is 28,681,600 bytes in size. The information in electronic format of the Sequence Listing is incorporated herein by reference in its entirety.

FIELD OF THE **INVENTION**

[0003] The invention relates to compositions and methods for vectored antibody delivery (VAD).

BACKGROUND **OF** THE INVENTION

[0004] Antibody-based therapies have been developed for a wide variety of diseases, disorders and conditions, including infectious and non-infectious diseases. The U.S. Food and Drug Administration (FDA) has approved antibodies for treatment of cancers, autoimmune and immune system disorders, ocular diseases, nervous system diseases, inflammations, and infections, amongst many others. Naturally, antibodies are components of the adaptive immune response and they function by recognizing specific foreign antigens and stimulating humoral immunity responses. As a consequence, antibodies may be applied to the treatment, prevention, management, diagnosis and research of diseases, disorders and/or conditions.

[0005] Antibodies have relatively short half-lives and this presents an ongoing and long-felt challenge for antibody-based therapies. In order to achieve a sufficiently high concentration of an antibody for long lasting therapeutic effects, antibody therapies are traditionally delivered by repeated administration, e.g. by multiple injections. This dosing regimen results in an inconsistent level of antibody throughout the treatment period, limited efficiency per administration, high cost of administration and consumption of the antibody. Hence, there remains a need in the art for delivery of antibodies and antibody-based therapeutics through alternative routes or modalities of administration.

[0006] One such alternative route of administration is by expression vector (e.g. plasmid or viral vector), including but not limited to, adeno-associated viral vectors (AAVs). Adeno-associated viral vectors are widely used in gene therapy approaches due to a number of advantageous features. As dependoparvoviruses, AAV are non-replicating in infected cells and therefore not associated with any known disease. Further, AAVs may be introduced to a wide variety of host cells, do not integrate into the genome of the host cell, and are capable of infecting both quiescent and dividing cells. AAVs transduce non-replicating and long-lived cells *in vivo*, resulting in long term expression of the protein of interest. Further, AAVs can be manipulated with cellular and molecular biology techniques to produce non-toxic particles carrying a payload encoded in the AAV viral genome that can be delivered to a target tissue or set of ceils with limited or no side-effects. Given the foregoing, the use of AAVs for vectored antibody delivery (VAD) would allow for longer lasting efficacy, fewer dose treatments, and more consistent levels of the antibody throughout the treatment period.

[0007] In vectored antibody deliver}' (VAD) an AAV is used as the delivery modality for a nucleic acid sequence encoding the antibody, which results in *in vivo* expression of the encoded payload, e.g., functional antibody.

[0008] The mechanism underlying VAD is thought to proceed through the following steps. First the AAV vector enters the ceil via endocytosis, then escapes from the endosomal compartment and is transported to the nucleus wherein the viral genome is released and converted into a double-stranded episomal molecule of DNA by the host. The transcriptionally active episome results in the expression of encoded antibodies that may then be secreted from the cell into the circulation. VAD may therefore enable continuous, sustained and long-term delivery of antibodies administered by a single injection of an AAV particle.

[0009] Previous studies of an AAV-mediated antibody technique known as vectored immunoprophylaxis (VIP) have focused on neutralization of human immunodeficiency virus (HIV) (see, e.g. Johnson et al, 2009, Nature Med., 15, 901 - 906, Saunders et al., 2015, J. Virol., 89(16), 8334-8345, Balasz et al., 2012, Nature 481, 81-84, the contents of which are incorporated herein by reference in their entirety). Balasz *et al.* reported a long-term, even lifelong, expression of monoclonal antibody at high concentration from a single intramuscular administration in mice that resulted in full protection against HIV infection. AAV-mediated VIP has also been demonstrated against influenza strains (see, e.g. Balasz, et al. Nat. Biotechnol., 2013, 31(7):647-52) and *Plasmodium Falciparum*, a sporozoite causing malaria infection (see, e.g. Deal at al., 2014, PNAS, 111 (34), 12528-12532), as well as cancer, RSV and drug addiction (see, e.g. review- by Schnepp and Johnson, Microbiol. Spectrum 2(4), 2014). Though promising,

these studies emphasize efforts to merely prevent disease. There still remains a need for improved methods of prevention, and new antibody-mediated therapies for research, diagnosis, and treatment of disease.

[00010] The present invention addresses this need by providing novel AAV particles having viral genomes engineered to encode antibodies and antibody-based compositions and methods of using these constructs (e.g., VAD) for the treatment, prevention, diagnosis and research of diseases, disorders and/or conditions. The present invention further embraces optimized AAV particles for delivery of nucleic acids (e.g., viral genomes) encoding antibodies and antibody-based compositions to a subject in need thereof.

SUMMARY OF THE INVENTION

[0010] The invention provides AAV particles comprising a capsid and a viral genome, said viral genome comprising at least one inverted terminal repeat (ITR) region and a payload region, said payload region comprising a regulatory sequence operably linked to at least a first nucleic acid segment, said first nucleic acid segment encoding one or more polypeptides given in Table 3-12, variants and fragments thereof. The capsid of the AAV particle may be any of the serotypes described herein and/or described in Table 1.

[0011] In one aspect the first nucleic acid segment may encode one or more polypeptides such as, but not limited to, an antibody heavy chain, an antibody light chain, a linker, and combinations thereof. The first nucleic acid segment may encode one or more polypeptides which is humanized. As a non-limiting example, the first nucleic acid segment encodes from 5' to 3', an antibody heavy chain, a linker, and an antibody light chain. As another non-limiting example, the first nucleic acid segment encodes from 5' to 3', an antibody light chain, a linker, and an antibody heavy chain. As yet another non-limiting example, the first nucleic acid segment encodes one or more antibody heavy chains. As yet another non-limiting example, the first nucleic acid segment encodes one or more antibody light chains.

[0012] In one aspect, the first nucleic acid segment encodes an antibody, having at least 95% identity to any of the sequences of Table 3-12, including, SEQ ID NO: 2948-17938

[0013] In one aspect, the regulatory sequence may comprise a promoter such as but not limited to, human elongation factor 1a-subunit (EF1α), cytomegalovirus (CMV) immediate-early enhancer and/or promoter, chicken β-actin (CBA) and its derivative CAG, β glucuronidase (GUSB), or ubiquitin C (UBC). Tissue-specific expression elements can be used to restrict expression to certain cell types such as, but not limited to, muscle specific promoters, B cell promoters, monocyte promoters, leukocyte promoters, macrophage promoters, pancreatic acinar cell promoters, endothelial cell promoters, lung tissue promoters, astrocyte promoters, or nervous

system promoters which can be used to restrict expression to neurons, astrocytes, or oligodendrocytes.

[0014] In one aspect, the linker in the viral genome is selected from one or more of the linkers given in Table 2.

[0015] In one aspect, the AAV particles described herein may comprise a viral genome which is single stranded.

[0016] In one aspect, the AAV particles described herein may comprise a viral genome which is self-complementary.

[0017] In one aspect, the AAV particles described herein may comprise a viral genome comprising at least one intron sequence.

[0018] In one aspect, the AAV particles described herein may comprise a viral genome comprising at least one staffer sequence to adjust the length of the viral genome to increase efficacy and/or efficiency.

[0019] In one aspect, the AAV particles described herein may comprise at least one region which has been codon optimized. As a non-limiting example, the viral genome may be codon optimized. As another non-limiting example, the first nucleic acid segment is codon-optimized.

[0020] In one aspect, the AAV particles described herein may comprise a viral genome with 2 ITR regions. At least one of the ITR regions may be derived from the same or different parental serotype of the capsid. As anon-limiting example, at least one ITR region is derived from AAV2.

[0021] In one aspect, the AAV particles comprise a viral genome which comprises a second nucleic acid segment. The second nucleic acid segment may encode an aptamer, siRNA, saRNA, ribozyme, microRNA, raRNA or combination thereof.

[0022] In one aspect, the AAV particles comprise a viral genome which comprises a second nucleic acid segment encoding an siRNA designed to target the mRNA that encodes the target of the antibody encoded by the first nucleic acid segment.

[0023] In one aspect, the AAV particles comprise a viral genome which comprises a second nucleic acid segment encoding a microRNA, the microRNA is selected to target the mRNA that encodes the target of the antibody encoded by the first nucleic acid segment.

[0024] In one aspect, the AAV particles comprise a viral genome which comprises a second nucleic acid segment encoding an mRNA, the mRNA encodes one or more peptides inhibitors of the same target of the antibody encoded by the first nucleic acid segment.

[0025] In one aspect, the AAV panicles comprise a viral genome which comprises a third nucleic acid segment. The third nucleic acid segment may encode a nuclear export signal, a

polynucleotide or polypeptide which acts as a regulator of expression of the viral genome in which it is encoded, a polynucleotide or polypeptide which acts as a regulator of expression of the payload region of the viral genome in which it is encoded and/or a polynucleotide or polypeptide which acts as a regulator of expression of the first nucleic acid segment of the payload region of the viral genome in which it is encoded.

[0026] The invention provides AAV particles comprising a capsid and a viral genome, said viral genome comprising at least one inverted terminal repeat (ITR) region and a payload region comprising a regulatory sequence operably linked to at least a first nucleic acid segment, the first nucleic acid segment encoding a bispecific antibody derived from any of the sequences listed in Table 3-12 or portions or fragments thereof.

[0027] The invention provides methods of producing a functional antibody in a subject in need thereof, comprising administering to a subject the AAV particles described herein. The level or amount of the functional antibody in the target cell or tissue after administration to the subject may be from about .001 iig/mL to 100 mg/mL. The functional antibody may be encoded by a single first nucleic acid segment of a viral genome within the AAV particle. The functional antibody may be encoded by two different viral genomes, the two different viral genomes may be packaged in separate capsids.

[0028] The invention provides a pharmaceutical composition comprising an AAV particle described herein in a pharmaceutically acceptable excipient. As a non-limiting example, the pharmaceutically acceptable excipient is saline. As a non-limiting example, the pharmaceutically acceptable excipient is 0.001% pluronic in saline.

[0029] The invention provides methods of producing a functional antibody in a subject in need thereof, comprising administering to a subject the AAV particles described herein by a delivery route such as, but not limited to, enteral (into the intestine), gastroenteral, epidural (into the dura mater), oral (by way of the mouth), transdermal, intracerebral (into the cerebrum), mtracerebroventricular (into the cerebral ventricles), epicutaneous (application onto the skin), intradermal, (into the skin itself), subcutaneous (under the skin), nasal administration (through the nose), intravenous (into a vein), intravenous bolus, intravenous drip, intra-arterial (into an artery), intramuscular (into a muscle), intracardiac (into the heart), intraosseous infusion (into the bone marrow), intrathecal (into the spinal canal), intraparenchymal (into brain tissue), intraperitoneal, (infusion or injection into the peritoneum), intravesical infusion, intravitreaL (through the eye), intracavemous injection (into a pathologic cavity) intracavitary (into the base of the penis), intravaginal administration, intrauterine, extra-amniotic administration, transdermal (diffusion through the intact skin for systemic distribut on), transmucosal (diffusion

through a mucous membrane), transvaginal, insufflation (snorting), sublingual, sublabial, enema, eye drops (onto the conjunctiva), or in ear drops, auricular (in or by way of the ear), buccal (directed toward the cheek), conjunctival, cutaneous, dental (to a tooth or teeth), electro-osmosis, endoeervicai, endosinusial, endotracheal, extracorporeal, hemodialysis, infiltration, interstitial, intra-abdominal, intra-amniotic, intra-ariieular, intrabiiiary, mtrabronchiai, mtrabursai, intracartilaginous (within a cartilage), intracaudal (within the cauda equine), intracisternal (withm the cisterna magna cerebeliomedularis), mtracorneal (within the cornea), dental itttracoronal, intracoronary (within the coronary atleries), intracorporus cavernosum (within the dilatable spaces of the corporus cavernosa of the penis), intradiscal (within a disc), intraductal (within a duct of a gland), intraduodenal (within the duodenum), intradural (within or beneath the dura), intraepidernial (to the epidermis), intraesophageal (to the esophagus), intragastric (within the stomach), imragingival (within the gingivae), intraileal (withm the distal portion of the small intestine), intralesionai (within or introduced directly to a localized lesion), intraluminal (withm a lumen of a tube), intralyniphatic (withm the lymph), intramedullary (within the marrow cavity of a bone), mtrameningeai (withm the meninges), intramyocardial (within the myocardium), intraocular (within the eye), intraovarian (within the ovary), intraperi cardial (within the peri cardium), intrapleural (within the pleura), intraprostatic (within the prostate gland), intrapulmonary (within the lungs or its bronchi), intrasinai (within the nasal or periorbital sinuses), intraspinal (within the vertebral column), intrasynoviai (withm the synovial cavity of a joint), intratendinous (within a tendon), intratesticular (within the testicle), intrathecal (within the cerebrospinal fluid at any level of the cerebrospinal axis), intrathoracic (within the thorax), intratubular (within the tubules of an organ), intratumor (within a tumor), intratympanic (within the aurus media), intravascular (within a vessel or vessels), intraventricular (within a ventricle), iontophoresis (by means of electric current where ions of soluble salts migrate into the tissues of the body), irrigation (to bathe or flush open wounds or body cavities), laryngeal (directly upon the larynx), nasogastric (through the nose and into the stomach), occlusive dressing technique (topical route administration which is then covered by a dressing which occludes the area), ophthalmic (to the external eye), oropharyngeal (directly to the mouth and pharynx), parenteral, percutaneous, periarticular, peridural, perineural, periodontal, rectal, respiratory (within the respiratory tract by inhaling orally or nasally for local or systemic effect), retrobulbar (behind the pons or behind the eyeball), soft tissue, subarachnoid, subconjunctival, submucosal, topical, transplacental (through or across the placenta), transtracheal (through the wall of the trachea), transtympanic (across or through the tympanic cavity), ureteral (to the

ureter), urethral (to the urethra), vaginal caudal block, diagnostic, nerve block, biliary perfusion, cardiac perfusion, photopheresis and spinal

[0030] The invention provides methods of treating and/or preventing a disease or disorder in a subject comprising administering to the subject an AAV particle described herein. The administration may be at a prophyiacticaliy effective dose such as, but not limited to, from about 1 ug/mL to about 500 ug/mL of expressed polypeptide or 1x10e4 to 1x10eI6 VG/mL from the pharmaceutical composition. The pharmaceutical composition may be administered at least once. The pharmaceutical composition may be administered daily, weekly, monthly or yearly. The pharmaceutical composition may be co-administered as part of a combination therapy.

[0031] The invention provides methods of producing an antibody in a subject by administering the AAV particles described herein, where the antibody is not a virus neutralizing antibody.

[0032] The invention provides methods of producing an antibody in a subject by administering the AAV particles described herein, where the antibody is not an HIV or HCV virus neutralizing antibody.

BRIEF DESCRIPTION OF THE DRAWINGS

[0033] The foregoing and other objects, features and advantages will be apparent from the following description of particular embodiments of the invention, as illustrated in the accompanying drawings. The drawings are not necessarily to scale, emphasis instead being placed upon illustrating the principles of various embodiments of the invention.

[0034] FIG. 1 is a schematic of vectored antibody delivery.

[0035] FIG. 2 is a schematic of a viral genome of the invention.

[0036] FIG. 3 is a schematic of payload regions. Figure 3 discloses "5xG4S" as SEQ ID NO: 17939)

DETAILED DESCRIPTION OF THE INVENTION

I. COMPOSITIONS OF THE INVENTION

[0037] According to the present invention, compositions for delivering functional antibodies and/or antibody-based compositions by adeno-associated viruses (AAVs) are provided. AAV particles of the invention may be provided via any of several routes of administration, to a cell, tissue, organ, or organism, *in vivo, ex vivo* or *in vitro.*

[0038] As used herein, an "AAV particle" is a virus which comprises a viral genome with at least one payload region and at least one inverted terminal repeat (ITR) region.

[0039] As used herein, "viral genome" or "vector genome" refers to the nucleic acid sequence(s) encapsulated in an AAV particle. Viral genomes comprise at least one payload

region encoding polypeptides of the invention, e.g., antibodies, antibody-based compositions or fragments thereof.

[0040] As used herein, a "payload" or "payload region" is any nucleic acid molecule which encodes one or more polypeptides of the invention. At a minimum, a payload region comprises nucleic acid sequences that encode an antibody, an antibody-based composition, or a fragment thereof, but may also optionally comprise one or more functional or regulatory elements to facilitate transcriptional expression and/or polypeptide translation.

[0041] The nucleic acid sequences and polypeptides disclosed herein may be engineered to contain modular elements and/or sequence motifs assembled to enable expression of the antibodies or antibody-based compositions of the invention. In some embodiments, the nucleic acid sequence comprising the payload region may comprise one or more of a promoter region, an intron, a Kozak sequence, an enhancer or a polyadenylation sequence. Payload regions of the invention typically encode antibodies or antibody based compositions, which may include an antibody heavy chain domain, an antibody light chain domain, both antibody heavy and light chain domains, or fragments of the foregoing in combination with each other or in combination with other polypeptide moieties. In some cases, payload regions may also encode one or more linkers or joining regions between antibody heavy and light chain domains or fragments. The order of expression, structural position, or concatemer count (heavy chain, light chain, or linker) may be different within or among different payload regions. The identity, position and number of linkers expressed by payload regions may also vary.

[0042] The payload regions of the invention may be delivered to one or more target cells, tissues, organs or organisms within the viral genome of an AAV particle.

Adeno-associated viruses (AAVs) and AAV particles

[0043] Viruses of the Parvoviridae family are small non-enveloped icosahedral capsid viruses characterized by a single stranded DNA genome. Parvoviridae family viruses consist of two subfamilies: Parvovirinae, which infect vertebrates, and Densovirinae, which infect invertebrates. Due to its relatively simple structure, easily manipulated using standard molecular biology techniques, this virus family is useful as a biological tool. The genome of the virus may be modified to contain a minimum of components for the assembly of afunctional recombinant virus, or viral particle, which is loaded with or engineered to express or deliver a desired payload, which may be delivered to a target cell, tissue, organ, or organism.

[0044] The parvoviruses aid other members of the Parvoviridae family are generally described in Kenneth I. Berns, "Parvoviridae: The Viruses and Their Replication," Chapter 69 in

FIELDS VIROLOGY (3d Ed. 1996), the contents of which are incorporated by reference in their entirety.

[0045] The Parvoviridae family comprises the Dependovirus genus which includes adeno-associated viruses (AAV) capable of replication in vertebrate hosts including, but not limited to, human, primate, bovine, canine, equine, and ovine species.

[0046] The AAV vector genome is a linear, single-stranded DNA (ssDNA) molecule approximately 5,000 nucleotides (nt) in length. The AAV viral genome can comprise a payload region and at least one inverted terminal repeat (ITR) or ITR region. ITRs traditionally flank the coding nucleotide sequences for the non-structural proteins (encoded by Rep genes) and the structural proteins (encoded by capsid genes or Cap genes). While not wishing to be hound by theory, an AAV viral genome typically comprises two ITR sequences. The AAV vector genome comprises a characteristic T-shaped hairpin structure defined by the self-complementary terminal 145 nt of the 5' and 3" ends of the ssDNA which form an energetically stable double stranded region. The double stranded hairpin structures comprise multiple functions including, but not limited to, acting as an origin for DNA replication by functioning as primers for the endogenous DNA polymerase complex of the host viral replication cell.

[0047] In addition to the encoded heterologous payload, AAV vectors may comprise the viral genome, in whole or in part, of any naturally occurring and/or recombinant AAV serotype nucleotide sequence or variant. AAV variants may have sequences of significant homology at the nucleic acid (genome or capsid) and amino acid levels (capsids), to produce constructs which are generally physical and functional equivalents, replicate by similar mechanisms, and assemble by similar mechanisms. Chiorini et al., J. Vir. 71: 6823-33(1997); Srivastava et al., 3. Vir. 45:555-64 (1983), Chionni et al., J. Vir. 73:1309-1319 (1999): Rutledge et al, J. Vir. 72:309-319 (1998); and Wu et al, J. Vir. 74: 8635-47 (2000), the contents of each of which are incorporated herein by reference in their entirety.

[0048] In one embodiment, AAV particles of the present invention are recombinant AAV viral vectors which are replication defective, lacking sequences encoding functional Rep and Cap proteins within their viral genome. These defective AAV vectors may lack most or all parental coding sequences and essentially carry only one or two AAV ITR sequences and the nucleic acid of interest for delivery to a cell, a tissue, an organ or an organism.

[0049] in one embodiment, the viral genome of the AAV particles of the present invention comprise at least one control element which provides for the replication, transcription and translation of a coding sequence encoded therein. Not all of the control elements need always be present as long as the coding sequence is capable of being replicated, transcribed and/or

translated in an appropriate host cell. Non-limiting examples of expression control elements include sequences for transcription initiation and/or termination, promoter and/or enhancer sequences, efficient RNA processing signals such as splicing and polyadenylation signals, sequences that stabilize cytoplasmic mRNA, sequences that enhance translation efficacy (e.g., Kozak consensus sequence), sequences that enhance protein stability, and/or sequences that enhance protein processing and/or secretion.

[0050] According to the present invention, AAV particles for use in therapeutics and/or diagnostics comprise a virus that has been distilled or reduced to the minimum components necessary for transduction of a nucleic acid payload or cargo of interest. In this manner, AAV particles are engineered as vehicles for specific delivery while lacking the deleterious replication and/or integration features found in wild-type viruses.

[0051] AAV vectors of the present invention may be produced recombinantly and may be based on adeno-associated virus (AAV) parent or reference sequences. As used herein, a "vector" is any molecule or moiety which transports, transduces or otherwise acts as a carrier of a heterologous molecule such as the nucleic acids described herein.

[0052] In addition to single stranded AAV viral genomes (e.g., ssAAVs), the present invention also provides for self-complementary AAV (scAAVs) viral genomes. scAAV vector genomes contain DNA strands which anneal together to form double stranded DNA. By skipping second strand synthesis, scAAVs allow for rapid expression in the cell.

[0053] In one embodiment, the AAV particle of the present invention is an scAAV.

[0054] In one embodiment, the AAV particle of the present invention is an ssAAV.

[0055] Methods for producing and/or modifying AAV particles are disclosed in the art such as pseudotyped AAV vectors (PCX Patent Publication Nos. WO200028004; WO200123001; WO2004112727; WO 2005005610 and WO 2005072364, the content of each of which is incorporated herein by reference in its entirety).

[0056] AAV particles may be modified to enhance the efficiency of delivery. Such modified AAV particles can be packaged efficiently and be used to successfully infect the target cells at high frequency and with minimal toxicity. In some embodiments, the capsids of the AAV particles are engineered according to the methods described in US Publication Number US 20130195801, the contents of which are incorporated herein by reference in their entirety.

[0057] In one embodiment, the AAV particles comprising a payload region encoding the polypeptides of the invention may be introduced into mammalian ceils.

AAV serotypes

[0058] AAV particles of the present invention may comprise or be derived from any natural or recombinant AAV serotype. According to the present invention, the AAV particles may utilize or be based on a serotype selected from any of the following AAV1, AAV2, AAV2G9, **AAV3,** AAV3a, AAV3b, **AAV3-3,** AAV4, AAV4-4, AAV5, AAV6, AAV6.1, AAV6.2, AAV6.1.2, AAV7, AAV7.2, AAV8, AAV9, AAV9.11, AAV9.13, AAV9.16, AAV9.24, AAV9.45, AAV9.47, AAV9.61, AAV9.68, AAV9.84, AAV9.9, AAV10, AAVll, AAV12, AAV16.3, AAV24.1, AAV2.7.3, AAV42.12, **AAV42-lb,** AAV42-2, AAV42-3a, **AAV42-3b,** AAV42-4, AAV42-5a, AAV42-5b, **AAV42-6b,** AAV42-8, AAV42-10, AAV42-11, AAV42-12, AAV42-13, AAV42-15, AAV42-aa, **AAV43-1,** AAV43-12, AAV43-20, AAV43-21, AAV43-23, AAV43-25, AAV43-5, AAV44.1, AAV44.2, AAV44.5, AAV223.1, AAV223.2, AAV223.4, AAV223.5, AAV223.6, AAV223.7, AAVl-7/rh.48, AAVi-S/rh.49, AAV2-15/rh.62, AAV2-3/rh.61, AAV2-4/rh.50, AAV2-5/rh.5I, AAV3.l/hu.6, AAV3.l/hu.9, AAV3-9/rh.52, AAV3-1l/rh.53, AAV4-8/rll.64, AAV4-9/rh.54, AAV4-19Ah.55, AAV5-3/rh.57, AAV5-22/srh.58, AAV7.3/hu.7, AAV16.8/hu.lO, AAV16.12/hu.ll, AAV29.3/bb.L, AAV29.5/bb.2, AAV106.1/lm.37, AAVl 14.3/hu.40, AAV127.2/hu.41, AAV127.5/hu.42, AAV128.3/hu.44, AAV130.4/hu.48, AAV145.1/hu.53, AAVI45.5/hu.54, AAV145.6/hu.55, AAV161.lO/hu.60, AAV161.6/hu.6L, AAV33.12/liu.l7, AAV33.4/hu.l5, AAV33.8/hu46, AAV52/hu.l9, AAV52.1./hu.20, AAV58.2/hu.25, AAVA3.3, AAVA3.4, AAVA3.5, AAVA3.7, AAVC1, AAVC2, AAVC5, **AAV-DJ, AAV**-DJ8, AAVF3, AAVF5, AAVH2, AAVrh.72, AAVhu.8, AAVrh.68, AAVrh.70, AAVpU. AAVpi.3, AAVpi.2, AAVrh.60, AAVrh.44, AAVrh65, AAVrh.55, AAVrh.47, AAVrh.69, AAVrh.45, AAVm.59, AAVhu.12, AAVH6, AAVLK03, AAVH-l/hu.1, AAVH-5/hu.3, AAVLG-10/rh.40, AAVLG-4/rh.38, AAVLG-9/hu.39, AAVN721-8/rh.43, AAVCh.5, **AAVCh.5Rl,** AAVcy.2. AAVcy.3, AAVcy.4, AAVcy.5. AAVCy.SRL AAVCy.5R2, AAVCy.5R3, AAVCy.5R4, AAVcy.6, AAVin-i, AAVhu.2, AAVhu.3, AAVhu.4, AAVhu.5, AAVhuA, AAVhu.7, AAVhu.9, AAVhn.lO, AAVhu.ll, AAVhu.13, AAVhu.15, AAVhu.16, AAVhu.17, AAVhu.18. **AAVhu.20,** AAVhu.21, AAVhu.22, AAVhu.23.2, AAVhu.24, AAVhu.25, AAVhu.27, AAVhu.28, AAVhu.29, AAVhu.29R, AAVhu.31, AAVhu.32, AAVhu.34, AAVhu.35, AAVhu.37, AAVhu.39, AAVhu.40, AAVhu.41, AAVhu.42, AAVhu.43, AAVhu.44, AAVhu.44Rl, AAVhu.44R2, AAVhu.44R3, AAVhu.45, AAVhu.46, AAVhu.47, AAVhu.48, AAVhu.48RI, **AAVbu48R2,** AAVbu.48R3, AAVhu.49, AAVhu.51, AAVhu.52, AAVhu.54, AAVhu.55, AAVhu.56, AAVhu.57, AAVhu.58, AAVhu.60, AAVhu.61, AAVhu.63, AAVhu.64, AAVhu.66, AAVhu.67, AAVhu.14/9, AAVhu.t19, AAVrh.2, AAVrh.2R, AAVrh.8, AAVrh.8R, AAVrh.lO, AAVrh.l2, AAVrh.13, AAVrh.13R, AAVrbJ4, AAVrh.17, AAVrb.l8, AAVrh.19, AAVrh.20,

AAVrh.21, AAVrh.22, AAVrh.23, AAVfh.24, AAVfh.25, AAVrh.31, AAVrh.32, AAVrh.33, AAVrh.34, AAVrh.35, AAVrh.36, AAVrh.37, **AA.Vih.37R2,** AAVrh.38, AAVrh.39, AAVrh.40, AAVrh.46, AAVrh.48, AAVrh.48.1, AAVrh.48.1.2, AAVrh.48.2, AAVrh.49, AAVrh.51, AAVrh.52, AAVrh.53, AAVrh.54, AAVrh.56, AAVrh.57, AAVrh.58, AAVrh.61, AAVrh.64, AAVrh.64R1, AAVrh.64R2, AAVrh.67, AAVrh.73, AAVrh.74, AAVrhSR, AAVrhSR A586R mutant, AAVrh8R R533A mutant, AAAV, BAAV, caprine AAV, bovine AAV, AAVhEl.l, AAVhErl.5, AAVhER1.14, AAViiErl.8, AAVhErl.16, AAVhErl.18, AAVhErl.35, AAVhErl .7, **AAVhErl.36,** AAVhEr2.29, **AAVhEr2.4,** AAVhEr2.16, AAVhEr2.30, AAVbEr2.31, AAVhEi2.36, A.AVhERl.23, AAVhEr3. 1, AAV2.5T , AAV-PAEC, AAV-LKOl, AAV-LK02, AAV-LK03, AAV-LK04, AAV-LK05, AAV-LK06, AAV-LK07, AAV-LK08, AAV-LK09, AAV-LK10, AAV-LK11, AAV-LK12, AAV-LK13, AAV-LK14, AAV-LK15, AAV-LK16, AAV-LK17, AAV-LK18, AAV-LK19, AAV-PAEC2, AAV-PAEC4, AAV-PAEC6, AAV-PAEC7, AAV-PAEC8, **AAV-PAEC11,** AAV-PAEC12, AAV-2-pre-miRNA-101 , AAV-8h, AAV-8b, AAV-h, AAV-b, AAV SM 10-2 , AAV Shuffle 100-1 , AAV Shuffle 100-3, AAV Shuffle 100-7, AAV Shuffle 10-2, AAV Shuffle 10-6, AAV Shuffle 10-8, AAV Shuffle 100-2, AAV SM 10-1, AAV SM 10-8 , AAV SM 100-3, AAV SM 100-10, BNP61 AAV, BNP62 AAV, BNP63 AAV, AAVrh.50, AAVrh.43, AAVrh.62, AAVrh.48, AAVhu.!9, AAVhu.lL , AAVhu.53, AAV4-8/rh.64, AAVLG-9/hu.39, AAV54.5/hu.23, AAV54.2/hu.22, AAV54.7/hu.24, AAV54.1/hu.21, AAV54.4R/hu.27, AAV46.2/hu.28, AAV46.6/hu.29, AAV128.1/hu.43, true type AAV (ttAAV), UPENN AAV 10, Japanese AAV 10 serotypes, AAV CBr-7.1, AAV CBr-7.10, AAV CBr-7.2, AAV CBr-7.3, AAV CBr-7.4, AAV CBr-7.5, AAV CBr-7.7, AAV CBr-7.8, AAV CBr-B7.3, AAV CBf-B7.4, AAV CBr-El, AAV CBr-E2, AAV CBr-E3, AAV CBr-E4, AAV CBr-E5, AAV CBr-e5, AAV CBr-E6, AAV CBr-E7, AAV CBr-E8, AAV CHt-1, AAV CHt-2, AAV CHt-3, AAV CHt-6.1, AAV CHt-6.10, AAV CHt-6.5, AAV CHt-6.6, AAV CHt-6.7, AAV CHi-6.8, AAV CHt-Pl, AAV CHt-P2, AAV CHt-P5, AAV CHt-P6, AAV CHt-P8, AAV CHt-P9, AAV CKd-1, AAV CKd-10, AAV Ckc!-2, AAV CKd-3, AAV CKd-4, AAV CKd-6, AAV CKd-7, AAV CKd-8, AAV CKd-B1, AAV CKd-B2, AAV CKd-B3, AAV CKd-B4, AAV CKd-B5, AAV CKd-B6, AAV CKd-B7, AAV CKd-B8, AAV CKd-H1, AAV CKd-H2, AAV CKd-H3, AAV CKd-H4, AAV CKd-H5, AAV CKd-H6, AAV CKd-N3, AAV CKd-N4, AAV CKd-N9, AAV CLg-Fl, AAV CLg-F2, AAV CLg-F3, AAV CLg-F4, AAV CLg-F5, AAV CLg-F6, AAV **CLg-F7,** AAV CLg-F8, AAV CLv-l, AAV CLvl-1, AAV Clvl-10, AAV CLvl-2, AAV CLv-12, AAV **CLvl-3,** AAV CLv-13, AAV CLvl-4, AAV Civ 1-7, AAV Civl-8, AAV Civ 1-9, AAV CLv-2, AAV CLv-3, AAV CLv-4, AAV CLv-6, AAV CLv-8, AAV CLv-DL, AAV CLv-D2, AAV CLv-D3, AAV CLv-D4, AAV CLv~D5, AAV

CLv-D6, AAV CLV-D7, AAV CLv-D8, AAV CLv-El, AAV **CLv-Kl,** AAV **CLv-K3,** AAV €Lv~K6, AAV CLv-E4, AAV CLvX5, AAV CLv-L6, AAV CXv-Ml, AAV CLv-Ml 1, AAV (Clv-M2, AAV CLv-MS, AAV CLv~M6, AAV CEv~M7, AAV CLv-M8, AAV CLv-M9, AAV CLv-Rl, AAV **CLv-R2,** AAV CLv-R3, AAV CLv-R4, AAV CLv-R5, AAV CLv-R6, AAV CLv-R7, AAV CLv-R8, AAV CLv-R9, AAV CSp-1, AAV **CSp-10,** AAV CSp-1 1, AAV CSp-2, AAV CSp-3, AAV CSp-4, AAV CSp-6, AAV CSp-7, AAV CSp-8, AAV CSp-8.10, AAV CSp-8.2, AAV CSp-8.4, AAV CSp-8.5, AAV CSp-8.6, AAV CSp-8.7, AAV CSp-8.8, AAV CSp-8.9, AAV CSp-9, AAV.tiu.48R3, AAV.VR-355, AAV3B. AAV4, AAV5, AAVFl/HSCl, AAVF11/HSC11, AAVFI2/HSCI2, AAVF13/HSC13, AAVF14/FISC14, **AAVF15/HSC15,** AAVF16/HSC16, AAVF 17/HSC17, AAVF2/HSC2, AAVF3/HSC3, AAVF4/HSC4, AAVF5/HSC5, AAVF6/HSC6, **AAVF7/HSC7,** AAVF8/HSC8, AAVF9/HSC9, PHP.B, PHP.A, G2B-26, G2B-13, TH1.1-32 and/or TH 1.1-3.5 and variants thereof.

[0059] In some embodiments, the AAV serotype may be, or have, a sequence as described in United States Publication **No.** US200301 38772, the contents of which are herein incorporated by reference in their entirety, such as, but not limited to, AAV1 (SEQ ID NO: 6 and 64 of US20030138772), AAV2 (SEQ ID **NO:** 7 and 70 of US20030138772), AAV3 (SEQ ID **NO:** 8 and 71 ofUS20030138772), AAV4 (SEQ ID **NO:** 63 of US20030138772) AAV5 (SEQ ID **NO:** 114 of US20030138772), AAV 6 (SEQ ID NO: 65 of US20030138772), AAV7 (SEQ ID NO: 1-3 of US20030! 38772), AAV 8 (SEQ ID **NO:** 4 and 95 of US200301 38772), AAV9 (SEQ ID **NO:** 5 and 100 of US20030I38772), AAV 10 (SEQ ID **NO:** 117 of US200301 38772), AAVl 1 (SEQ ID **NO:** 118 of US20030138772), AAV12 (SEQ ID **NO:** 119 of US20030138772), AAVrhlO (amino acids 1 to 738 of SEQ ID **NO:** 81 of US200301 38772), AAV 16.3 (US20030138772 SEQ TD **NO:** 10), AAV29.3/bb. i (US20030138772 SEQ ID **NO:** 11), AAV29.4 (US20030138772 SEQ ID NO: 12), AAV29.5/bb.2 (IJS200301 38772 SEQ ID NO: 13), AAVl. 3 (US20030138772 SEQ ID NO: 14), AAV13.3 (US20030138772 SEQ ID NO: 15), AAV24.1 (US20030138772 SEQ ID NO: 16), AAV27.3 (IJS20030138772 SEQ ID NO: 17), AAV7.2 (US200301 38772 SEQ ID NO: 18), AAVC1 (US20030138772 SEQ ID NO: 19), AAVC3 (US20030138772 SEQ ID NO: 20), AAVC5 (US200301 38772 SEQ ID NO: 21), AAVFi (US20030138772 SEQ ID NO: 22), AAVF3 (US200301 38772 SEQ ID **NO:** 23), AAVF5 (IJS20030138772 SEQ ID **NO:** 24), AAVH6 (US20030138772 SEQ ID NO: 25), AAVH2 (US20030138772 SEQ ID NO: 26), AAV42-8 (US200301 38772 SEQ ID NO: 27), AAV42-15 (US200301 38772 SEQ ID NO: 28), AAV42-5b (US200301 38772 SEQ ID **NO:** 29), AAV42-lb (US20030138772 SEQ ID **NO:** 30), AAV42-13 (US20030138772 SEQ ID NO: 31), AAV42-3a (US20030138772 SEQ ID NO: 32), AAV42-4 (US20030138772 SEQ ID NO: 33), AAV42-5a (US200301 38772 SEQ ID NO: 34),

AAV42-10 (US20030138772 SEQ ID NO: 35), **AAV42-3b (US20030138772** SEQ ID NO: 36), AAV42-11 (US20030138772 SEQ ID NO: 37), AAV42-6b **(US20030138772** SEQ ID NO: 38), **AAV43-1** (US20030138772 SEQ ID NO: 39), AAV43-5 (US20030138772 SEQ ID NO: 40), **AAV43-12** (US20030138772 SEQ ID NO: 41), AAV43-20 (US20030138772 SEQ ID NO: 42), AAV43-21 (US20030138772 SEQ ID NO: 43), AAV43-23 (US20030138772 SEQ ID NO: 44). AAV43-25 (US20030138772 SEQ ID NO: 45), AAV444 (US20030138772 SEQ ID NO: 46), AAV44.5 (US20030138772 SEQ ID NO: 47), AAV223.1 (US20030138772 SEQ ID NO: 48), AAV223.2 (US20030138772 SEQ ID NO: 49), AAY223.4 (US20030138772 SEQ ID NO: 50), AAV223.5 (US20030138772 SEQ ID NO: 51), AAV223.6 (US20030138772 SEQ ID NO: 52), **AAV223.7** (US20030138772 SEQ ID NO: 53), AAV A3.4 (US20030138772 SEQ ID NO: 54), AAV A3.5 (US20030138772 SEQ ID NO: 55), AAV A3.7 (US20030138772 SEQ ID NO: 56), AAV A3.3 (US20030138772 SEQ ID NO: 57), AAV42.12 (US20030138772 SEQ ID NO: 58), AAV44.2 (US20030138772 SEQ ID NO: 59), AAV42-2 (US20030138772 SEQ ID NO: 9), or variants thereof.

[0060] In some embodiments, the AAV serotype may be, or have, a sequence as described in United States Publication No. US20150159173, the contents of which are herein incorporated by reference in their entirety, such as, but not limited to, AAV2 (SEQ ID NO: 7 and 23 of US20150159173), rh20 (SEQ ID NO: 1 of US20150159173), rh32/33 (SEQ ID NO: 2 of 0820150159173), rh39 (SEQ ID NO: 3, 20 and 36 of US20150159173), rh46 (SEQ ID NO: 4 and 22 of US20150159173), rh73 (SEQ ID NO: 5 of US20150159173), rh74 (SEQ ID NO: 6 of US20150159173), AAV6.1 (SEQ ID NO: 29 of US20150159173), rh.8 (SEQ ID NO: 41 of US20150159173), rh.48.1 (SEQ ID NO: 44 of US20150159173), hu.44 (SEQ ID NO: 45 of US20150159173). hu.29 (SEQ ID NO: 42 of US20150159173). hu.48 (SEQ ID NO: 38 of US20150159173). rh54 (SEQ ID NO: 49 of US20150159173), AAV2 (SEQ ID NO: 7 of US20150159173), cy.5 (SEQ ID NO: 8 and 24 of IJS20150159173), rh.lO (SEQ ID NO: 9 and 25 of US20150159173), rh.13 (SEQ ID NO: 10 and 26 of 0820150159173), AAV1 (SEQ ID NO: 11 and 27 of US20150159173). AAV3 (SEQ ID NO: 12 and 28 of US20150159173), AAV6 (SEQ ID NO: 13 and 29 of US20150159173), **AAV7** (SEQ ID NO: 14 and 30 of US20150159173), AAV8 (SEQ ID NO: 15 and 31 of US20150159173), hu.13 (SEQ ID NO: 16 and 32 of US20150159173), hu.26 (SEQ ID NO: 17 and 33 of US20150159173), hu.37 (SEQ ID NO: 18 and 34 of US20150159173), hu.53 (SEQ ID NO: 19 and 35 of US20150159173), rh.43 (SEQ ID NO: 21 and 37 of US20150159173), rh2 (SEQ ID NO: 39 of US20150159173), rh.37 (SEQ ID NO: 40 of US20150159173), rh.64 (SEQ ID NO: 43 of US20150159173), rh.48 (SEQ ID NO: 44 of US20150159173), ch.5 (SEQ ID NO 46 of US20150159173), rh.67 (SEQ ID NO:

47 of US20150159173), fh.58 (SEQ ID NO: 48 of US20150159173), or variants thereof including, but not limited to Cy5Ri, Cy5R2, Cy5R3, Cy5R4, rh.13R, rh.37R2, rh.2R, rh.8R, rh.48.1, rh.48.2, rh.48.1.2, hu.44R1, hu.44R2, hu.44R3, hu.29R, ch.5RI, rh64Ri, rh64R2, AAV6.2, AAV6.1, AAV6.12, hu.48Rl, hu.48R2, and hu.48R3.

[0061] In some embodiments, the AAV serotype may be, or have, a sequence as described in United States Patent No. US 7198951, the contents of which are herein incorporated by reference in their entirety, such as, but not limited to, AAV9 (SEQ ID NO: 1-3 of US 7198951), AAV2 (SEQ ID NO: 4 of US 7198951), AAV1 (SEQ ID NO: 5 of US 7198951), AAV3 (SEQ ID NO: 6 of US 7198951), and AAV8 (SEQ ID NO: 7 of US7198951).

[0062] In some embodiments, the AAV serotype may be, or have, a mutation in the AAV9 sequence as described by N Pulicherla et al. (Molecular Therapy 19(6): 1070-1078 (2011), herein incorporated by reference in its entirety), such as but not limited to, AAV9.9, AAV9.11, AAV9.13, AAV9.16, AAV9.24, AAV9.45, AAV9.47, AAV9.61, AAV9.68, AAV9.84.

[0063] In some embodiments, the AAV serotype may be, or have, a sequence as described in United States Patent No. US 6156303, the contents of which are herein incorporated by reference in their entirety, such as, but not limited to. AAV3B (SEQ ID NO: I and 10 of US 6156303), AAV6 (SEQ ID NO: 2, 7 and 11 of US 6156303), AAV2 (SEQ ID NO: 3 and 8 of US 6156303), **AAV3A** (SEQ ID NO: 4 and 9, of US 6156303), or derivatives thereof.

[0064] In some embodiments, the AAV serotype may be, or have, a sequence as described in United States Publication No. US20140359799, the contents of which are herein incorporated by-reference in their entirety, such as, but not limited to, AAV8 (SEQ ID NO: 1 of US20140359799), AAVDJ (SEQ ID NO: 2 and 3 of US20140359799), or variants thereof.

[0065] In some embodiments, the serotype may be AAVDJ or a variant thereof, such as AAVDJ8 (or AAV-DJ8), as described by Grimm et al. (Journal of Virology 82(12): 5887-5911 (2008), herein incorporated by reference in its entirety). The amino acid sequence of AAVDJ8 may comprise two or more imitations in order to remove the heparin binding domain (HBD). As anon-limiting example, the AAV-DJ sequence described as SEQ ID NO: I in US Patent No. 7,588,772, the contents of which are herein incorporated by reference in their entirety, may comprise two imitations: (1) R587Q where arginine (R; Arg) at amino acid 587 is changed to glutamine (Q, Gln) and (2) R590T where arginine (R; Arg) at. amino acid 590 is changed to threonine (T; Tbr). As another non-limiting example, may comprise three mutations: (1) K406R where lysine (K: Lys) at amino acid 406 is changed to arginine (R; Arg), (2) R587Q where arginine (R, Arg) at amino acid 587 is changed to giutamine (Q; Gin) and (3) R590T where arginine (R; Arg) at amino acid 590 is changed to threonine (T; Tbr).

[0066] In some embodiments, the AAV serotype may be, or have, a sequence of AAV4 as described in International Publication No. WO199801 l244, the contents of which are herein incorporated by reference in their entirety, such as, but not limited to AAV4 (SEQ ID NO: 1-20 of WO19980l l244).

[0067] In some embodiments, the AAV serotype may be, or have, a mutation in the AAV2 sequence to generate AAV2G9 as described in International Publication No. WO20l4144229 and herein incorporated by reference in its entirety.

[0068] In some embodiments, the AAV serotype may be, or have, a sequence as described in international Publication No. WO2005033321, the contents of which are herein incorporated by reference in their entirety, such as, but not limited to AAV3-3 (SEQ ID NO: 217 of WO2005033321), AAV1 (SEQ ID NO: 219 and 202 of WO2005033321), AAV106.1/hu.37 (SEQ ID No: 10 of WO2005033321), AAV114.3/hu.40 (SEQ ID No: 11 of WO2005033321), AAVl27.2/hu.41 (SEQ ID NO:6 and 8 of WO2005033321), AAVl28.3/hu.44 (SEQ ID No: 81 of WO2005033321), AAV130.4/hu.48 (SEQ ID NO: 78 of WO2005033321), AAV145.1/hu.53 (SEQ ID No: 176 and 177 of WO2005033321), AAVl45.6/hu.56 (SEQ ID NO: 168 and 192 of WO2005033321), AAVl6.i2/hu.ll (SEQ ID NO: 153 and 57 of WO2005033321), AAV\6.8/hu.iO (SEQ ID NO: 156 and 56 of WO2005033321), AAV161.10/hu.60 (SEQ ID No: 170 of WO2005033321), AAVl6l.6/hu.6l (SEQ ID No: 174 of WO2005033321), AAV1-7/rh.48 (SEQ ID NO: 32 of WO2005033321), AAVl-8/rh.49 (SEQ ID NOs: l03 and 25 of WO2005033321), AAV2 (SEQ ID NO: 211 and 221 of WO2005033321), AAV2-15/rh.62 (SEQ ID No: 33 and 114 of WO2005033321), AAV2-3/rh.61 (SEQ ID NO: 21 of WO2005033321), AAV2-4/rh.50 (SEQ ID No: 23 and 108 of WO2005033321), AAV2-5/rh.51 (SEQ ID NO: l04 and 22 of WO2005033321), AAV3. 1/hu.6 (SEQ ID NO: 5 and 84 of WO200503332I), AAV3. 1/hu.9 (SEQ ID NO: l55 and 58 of WO2005033321), AAV3-1 l/rh.53 (SEQ ID NO: 186 and 176 of WO2005033321), AAV3-3 (SEQ ID NO: 200 of WO2005033321), AAV33.12/hu.l7 (SEQ ID NO:4 of WO2005033321), AAV33.4/hu.l5 (SEQ ID No: 50 of WO2005033321), AAV33.8/hu.1 6 (SEQ ID No: 51 of WO2005033321), AAV3-9/rh.52 (SEQ ID NO: 96 and 18 of WO2005033321), AAV4-19/rh.55 (SEQ ID NO: 117 of WO2005033321), AAV4-4 (SEQ ID NO: 201 and 218 of WO2005033321), AAV4-9/rh.54 (SEQ ID NO: 116 of WO2005033321), AAV5 (SEQ ID NO: 199 and 216 of WO2005033321), AAV52. i/hu.20 (SEQ ID NO: 63 of WO200503332l), AAV52/liu.l9 (SEQ ID NO: 133 of WO2005033321), AAV5-22/rh.58 (SEQ ID No: 27 of WO2005033321), AAV5-3/rh.57 (SEQ ID NO: 105 of WO2005033321), **AAV5-**3/rh.57 (SEQ ID No: 26 of WO2005033321), AAV58.2/hu.25 (SEQ **ID** No: 49 of WO2005033321), AAV6 (SEQ ID NO: 203 and 220 of WO2005033321), AAV7 (SEQ ID NO:

222 and 213 of WO2005033321), AAV7.3/hu.7 (SEQ ID No: 55 of WO2005033321), AAV8 (SEQ ID NO: 223 and 214 of WO2005033321), AAVH-1/hu.l (SEQ ID No: 46 of WO2005033321), AAVH-5/hu.3 (SEQ ID No: 44 of WO2G0503332I), AAVhu. 1 (SEQ ID NO: 144 of WO2005033321), AAVhu. 10 (SEQ ID NO: 156 of W0200503 3321), AAVhu. 11 (SEQ ID NO: 153 of WO2005033321), AAVhu. 12 (WO2005033321 SEQ ID NO: 59), AAVhu. 13 (SEQ ID NO: 129 of WO2005033321), AAVhu. 14/AAV9 (SEQ ID NO: 123 and 3 of WO2005033321), AAVhu. 15 (SEQ ID NO: 147 of WO2005033321), AAVhu.l6 (SEQ ID NO: 148 of WO2005033321), AAVhu. 17 (SEQ ID NO: 83 of WO2005033321), AAVhu. 18 (SEQ ID NO: 149 ofWO2005033321), AAVhu. 19 (SEQ ID NO: 133 of WO2005033321), AAVhu.2 (SEQ ID NO: 143 of WO2005033321), AAVhu.20 (SEQ ID NO: 134 of WO2005033321), AAVhu.21 (SEQ ID NO: 135 of WO2005033321), AAVhu.22 (SEQ ID NO: 138 of WO2005033321), AAVhu.23.2 (SEQ ID NO: 137 of WO200503332 l), AAVhu.24 (SEQ ID NO: 136 of WO2005G33321), AAVhu.25 (SEQ ID NO: 146 of WO2005033321), AAVhu.27 (SEQ ID NO: 140 of WO2005033321), AAVhu.29 (SEQ ID NO: 132 of WO2005033321), AAVhu.3 (SEQ ID NO: 145 of WO2005033321), AAVhu.31 (SEQ ID NO: 121 of WO200503332I), AAVhu.32 (SEQ ID NO: 122 of WO200503332 l), AAVhu.34 (SEQ ID NO: 125 of WO2005033321), AAVhu.35 (SEQ ID NO: 164 of WO2005033321), AAVhu.37 (SEQ ID NO: 88 of WO2005033321), AAVhu.39 (SEQ ID NO: 102 of WO2005033321), AAVhu.4 (SEQ ID NO: 141 of WO2005033321), AAVhu.40 (SEQ ID NO: 87 of WO2005033321), AAVhu.41 (SEQ ID NO: 91 of WO2005033321), AAVhu.42 (SEQ ID NO: 85 of WO2005033321), AAVhu.43 (SEQ ID NO: 160 of WO2005033321), AAVhu.44 (SEQ ID NO: 144 ofWO2005033321), AAVhu.45 (SEQ ID NO: 127 of WO2005033321), AAVhu.46 (SEQ ID NO: 159 of WO2005033321), AAVhu.47 (SEQ ID NO: 128 of WO2005033321), AAVhu.48 (SEQ ID NO: 157 of WO2005033321), AAVhu.49 (SEQ ID NO: 189 of WO2005033321), AAVhu.51 (SEQ ID NO: 190 of WO2005033321), AAVhu.52 (SEQ ID NO: 191 of WO2005033321), AAVhu.53 (SEQ ID NO: 186 of WO2005033321), AAVhu.54 (SEQ ID NO: 188 of WO2005033321), AAVhu.5.5 (SEQ ID NO: 187 of WO2005033321), AAVhu.56 (SEQ ID NO: 192 of WO2005033321), AAVhu.57 (SEQ ID NO: 193 of WO2005033321), AAVhu.58 (SEQ ID NO: 194 of WO2005033321), AAVhu.6 (SEQ ID NO: 84 of WO2005033321), AAVhu.60 (SEQ ID NO: 184 of WO2005033321), AAVhu.61 (SEQ ID NO: 185 of WO2005033321), AAVhu.63 (SEQ ID NO: 195 of WO2005033321), AAVhu.64 (SEQ ID NO: 196 of WO2005033321), AAVhu.66 (SEQ ID NO: 197 of WO2005033321), AAVhu.67 (SEQ ID NO: 198 of WO2005033321), AAVhu.7 (SEQ ID NO: 150 of WO2005033321), AAVhu.8 (WO2005033321 SEQ ID NO: 12), AAVhu.9 (SEQ ID NO: 155 of WO2005033321), A.AVLG-

10/fh.40 (SEQ ID No: 14 of WO2005033321), AAVLG-4/rh.38 (SEQ ID NO: 86 of WO2005033321), AAVLG-4/rh.38 (SEQ ID No: 7 of WO2005033321), AAVN721-8/rh.43 (SEQ ID NO: 163 of WO2005033321), AAVN721-8/rh.43 (SEQ ID No: 43 of WO2005033321), AAVpi.l **(WO2005033321** SEQ ID NO: 28), AAVpi.2 (WO2005033321 SEQ ID NO: 30). AAVpi.3 (WO2005033321 SEQ ID NO: 29), AAVrh.38 (SEQ ID NO: 86 of WO2005033321), AAVrh.40 (SEQ ID NO: 92 of WO2005033321), AAVrh.43 (SEQ ID NO: 163 of WO2005033321), AAVrh.44 (WO2005033321 SEQ ID NO: 34), AAVrh.45 (WO2005033321 SEQ ID NO: 41), AAVrh.47 (WO2005033321 SEQ ID NO: 38), AAVrh.48 (SEQ ID NO: 115 of WO2005033321), AAVrh.49 (SEQ ID NO: 103 of WO2005033321), AAVrh.50 (SEQ ID NO: 108 of WG2005033321), AAVrh.51 (SEQ ID NO: 104 of WO2005033321), AAVrh.52 (SEQ ID NO: 96 of WO2005033321), AAVrh.53 (SEQ ID NO: 97 ofWO2005033321), AAVrh.55 (WO2005033321 SEQ ID NO: 37), AAVrh.56 (SEQ ID NO: 152 of WO2005033321), AAVrh.57 (SEQ ID NO: 105 of WO2005033321), AAYrb.58 (SEQ ID NO: 106 of WO2005033321), AAVrh.59 (WO2005033321 SEQ ID NO: 42), AAVrh.60 (WO200503332I SEQ ID NO: 31), AAVrh.61 (SEQ ID NO: 107 of WO2005033321), AAVrb.62 (SEQ ID NO: 114 of WO2005033321), AAYrh.64 (SEQ ID NO: 99 of WO200503332 1), AAVrh.65 (WO2005033321 SEQ ID NO: 35), AAVrh.68 (WO2005033321 SEQ ID NO: 16), AAVrh.69 (WO2005033321 SEQ ID NO: 39), AAVrh.70 (VVO2005033321 SEQ ID NO: 20). AAYrh.72 (WO200503332I SEQ ID NO: 9), or variants thereof including, but not limited to, AAYcy.2. AAVcy.3, AAVcy.4, AAVcy.5, AAVcy.6, AAVrh.12, AAVrh.17, AAVrh.18, AAVrh.19, AAVrh.21, AAVrh.22, AAVrh.23, AAVrh.24, AAVih.25, AAYrh.25/42 15, AAVrh.31, AAVrh.32, AAVrh.33, AAVrh.34, AAVrh.35, AAVrh.36, AAVrh.37, AAYrb 14. Non-limiting examples of variants include SEQ ID NO: 13, 15. 17, 19, 24, 36, 40, 45. 47. 48, 51-54, 60-62, 64-77, 79, 80, 82, 89, 90. 93-95, 98, 100, 101. 109-113, 118-120, 124, 126, 131, 139, 142, 151,154, 158, 161, 162, 165-183, 202, 204-212, 215, 219, 224-236, of WO2005033321, the contents of which are herein incorporated by reference in their entirety.

[0069] In some embodiments, the AAV serotype may be, or have, a sequence as described in International Publication No. WQ201 5168666, the contents of which are herein incorporated by reference in their entirety, such as, but not limited to, AAVrh8R (SEQ ID NO: 9 of WO20151 68666), AAVrhSR A586R mutant (SEQ ID NO: 10 of WO201 5168666). AAVrhSR R533A mutant (SEQ ID NO: 11 of WO201 5168666), or variants thereof.

[0070] In some embodiments, the AAV serotype may be, or have, a sequence as described in United States Patent No. US9233131, the contents of which are herein incorporated by reference in their entirety, such as. but not limited to, AAVbEl. 1 (SEQ ID NO:44 of IJS9233131),

AAVhErl.5 (SEQ ID NO:45 of US9233131). AAYhER1.14 (SEQ ID NO:46 of US9233131). AAVhEr1.8 (SEQ ID NO:47 of US9233131), AAVhEr1.I6 (SEQ ID NO:48 of US9233131), AAVhErl.18 (SEQ ID SO:49 of US9233131), AAVhErl.35 (SEQ ID NO;50 of US9233131), AAVhErl.7 (SEQ ID NO:5: of US9233131), AAVhErl.36 (SEQ ID NO:52 of TJS9233131), AAVhEr2.29 (SEQ ID NO:53 of US9233131), AAVhEr2.4 (SEQ ID NO:54 of US9233131), AAVhEr2.i6 (SEQ ID NO:55 of US9233131), AAVhEr2.30 (SEQ ID NO:56 of US9233131), AAVhEr2.31 (SEQ ID NO:58 of US9233131), AAVhEr2.36 (SEQ ID NQ:57 of US9233131), AAVhER1.23 (SEQ ID NO: 53 of US9233131), AAVhEr3.1 (SEQ ID NO:59 of US9233131), AAV2.5T (SEQ ID NO:42 **of US9233131),** or variants thereof

[0071] In some embodiments, the AAV serotype may be, or have, a sequence as described in United States Patent Publication No. US20150376607, the contents of which are herein incorporated by reference in their entirety, such as, but not limited to, AAV-PAEC (SEQ ID NO:I of US201503766G7), AAV-LK01 (SEQ ID NO:2 of US20150376607), AAV-LK02 (SEQ ID NO:3 of US20150376607), AAV-LK03 (SEQ ID NO:4 of US201 50376607), **AAV-LK04** (SEQ ID NO:5 of US201 50376607), AAV-LK.05 (SEQ ID NO:6 of US20150376607), AAV-LK06 (SEQ ID NO: 7 of US20150376607), AAV-LK07 (SEQ ID NO:8 of US201 50376607), AAV-LK08 (SEQ ID NG:9 of US20t 50376607), AAV-LK09 (SEQ ID NO. i0 of US20150376607), AAV-LK10 (SEQ ID NO: 11 of US201 50376607), AAV-LK11 (SEQ ID NO: 12 of US201 50376607). AAV-LK12 (SEQ ID NO: 13 of US201 50376607), AAV-LK13 (SEQ ID NO. 14 of US20150376607), AAV-LKI4 (SEQ ID NO:15 of US20150376607), AAV-LK15 (SEQ ID NO:16 of US201 50376607), AAV-LK16 (SEQ ID NO: 17 of US20150376607), AAV-LK17 (SEQ ID NO: 18 of US201 50376607), AAV-LK1 8 (SEQ ID NO: 19 of US201 50376607), AAV-LK19 (SEQ ID NO: 20 of US20150376607), AAV-PAEC2 (SEQ ID NO:2i of US201503 76607), AAV-PAEC4 (SEQ ID NO:22 of US201 50376607), AAV-PAEC6 (SEQ ID NO:23 of US20150376607), AAV-PAEC 7 (SEQ ID NO:24 of US20150376607), AAV-PAEC8 (SEQ ID NO:25 of US20 150376607), AAV-PAEC 11 (SEQ ID NO:26 of US20150376607), AAV-PAEC 12 (SEQ ID NO:27, of US201 50376607), or variants thereof

|0072] In some embodiments, the AAV serotype may be, or have, a sequence as described in United States Patent No. US9163261, the contents of which are herein incorporated by reference in their entirety, such as, but not limited to, AAV-2-pre-miRNA-l 01 (SEQ ID NO: 1 US9163261), or variants thereof.

[0073] In some embodiments, the AAV serotype may be, or have, a sequence as described in United States Patent Publication No. US201 503 76240, the contents of which are herein incorporated by reference in their entirety, such as, but not limited to, AAV-8h (SEQ ID NO: 6

of US201 50376240), AAV-8b (SEQ ID NO: 5 of US201 50376240), AAV-h (SEQ ID NO: 2 of US201.50376240), AAV-b (SEQ ID NO: 1 of US20I50376240), or variants thereof.

[0074] In some embodiments, the AAV serotype may be, or have, a sequence as described in United States Patent Publication No. US2G160017295, the contents of which are herem incorporated by reference in their entirety, such as, but not limited to, AAV SM 10-2 (SEQ ID NO: 22 of US20160017295), AAV Shuffle 100-1 (SEQ ID NO: 23 of US201 600I7295), AAV Shuffle 100-3 (SEQ ID NO: 24 of US20160017295), AAV Shuffle 100-7 (SEQ ID NO: 25 of US20160017295), AAV Shuffle 10-2 (SEQ ID NO: 34 of US20160017295), AAV Shuffle 10-6 (SEQ ID NO: 35 of US20160017295), AAV Shuffle 10-8 (SEQ ID NO: 36 of US20160017295), AAV Shuffle 100-2 (SEQ ID NO: 37 of US201600I7295), AAV SM 10-1 (SEQ ID NO: 38 of US20160017295), AAV SM 10-8 (SEQ ID NO: 39 of US20160017295), AAV SM 100-3 (SEQ ID NO: 40 of US20I6001729.5), AAV SM 100-10 (SEQ ID NO: 41 of US201 6001 7295), or variants thereof.

[0075] In some embodiments, the AAV serotype may be, or have, a sequence as described in United States Patent Publication No. US20150238550, the contents of which are herein incorporated by reference in their entirety, such as, but not limited to, BNP61 AAV (SEQ ID NO: 1 of US20I50238550), BNP62 AAV (SEQ ID NO: 3 of US20150238550), BNP63 AAV (SEQ ID NO: 4 of US20150238550), or variants thereof

[0076] In some embodiments, the AAV serotype may be or may have a sequence as described in United States Patent Publication No. US201 503156 12, the contents of which are herein incorporated by reference in their entirety, such as, but not limited to, AAVrh.50 (SEQ ID NO: 108 of US20150315612), AAVrh.43 (SEQ ID NO: 163 of US20150315612), AAVrh.62 (SEQ ID NO: 114 of US201503156I2), AAVrh.48 (SEQ ID NO: 115 of US201503I5612), **AAVhu.19** (SEQ ID NO: 133 of US20I50315612), AAVhu.11 (SEQ ID NO: 153 of US20150315612), AAVhu.53 (SEQ ID NO: 186 of US20150315612), AAV4-8/rh.64 (SEQ ID No: 15 of US20150315612), AAVLG-9/hu.39 (SEQ ID No: 24 of US201503156I2). AAV54.5/hu.23 (SEQ ID No: 60 of US201503156I2), AAV54.2/hu.22 (SEQ ID No: 67 of US201.503156 12), AAY54.7/hu.24 (SEQ ID No: 66 of US20150315612), AAV54.1/hii.2i (SEQ ID No: 65 of US201 503 15612), AAV54.4R/hu.27 (SEQ ID No: 64 of US20150315612), AAV46.21m.28 (SEQ ID No: 68 of US201503156I2), AAV46.6/hu.29 (SEQ ID No: 69 of US20150315612), AAY128.1/hu.43 (SEQ ID No: 80 of US20150315612), or variants teeof

[0077] In some embodiments, the AAV serotype may be, or have, a sequence as described in International Publication No. WO2015 121501, the contents of which are herein incorporated by reference in their entirety, such as, but not limited to, true type AAV (ttAAV) (SEQ ID NO: 2 of

WO2015121501), "UPenn AAV 10" (SEQ ID NO: 8 of WO2015121501), "Japanese AAV10" (SEQ ID NO: 9 of WO201512150I), or variants thereof.

[0078] According to the present invention, AAV capsid serotype selection or use may be from a variety of species. In one embodiment, the AAV may be an avian AAV (AAAV). The AAAV serotype may be, or have, a sequence as described in United States Patent No. US 9238800, the contents of which are herein incorporated by reference in their entirety, such as, but not limited to, AAAV (SEQ ID NO: 1, 2, 4, 6, 8, 10, 12, and 14 of US 9,238,800), or variants thereof.

[0079] In one embodiment, the AAV may be a bovine AAV (BAAV). The BAAV serotype may be, or have, a sequence as described in United States Patent No. US 9,193,769, the contents of which are herein incorporated by reference in their entirety, such as, but not limited to, BAAV (SEQ ID NO: 1 and 6 of US 9193769), or variants thereof. The BAAV serotype may be or have a sequence as described in United States Patent No. **US7427396,** the contents of which are herein incorporated by reference in their entirety, such as, but not limited to, BAAV (SEQ ID NO: 5 and 6 of US7427396), or variants thereof.

[0080] In one embodiment, the AAV may be a caprine AAV. The caprine AAV serotype may be, or have, a sequence as described in United States Patent No. US7427396, the contents of which are herein incorporated by reference in their entirety, such as, but not limited to, caprine AAV (SEQ ID NO: 3 of US7427396), or variants thereof.

[0081] In other embodiments, the AAV may be engineered as a hybrid AAV from two or more parental serotypes. In one embodiment, the AAV may be AAV2G9 which comprises sequences from AAV2 and AAV9. The AAV2G9 AAV serotype may be, or have, a sequence as described in United States Patent Publication No. US20160017005, the contents of which are herein incorporated by reference in its entirety.

[0082] In one embodiment, the AAV may be a serotype generated by the AAV9 capsid library with mutations in amino acids 390-627 (VP1 numbering) as described by Pulicherla et al. (Molecular Therapy 19(6):1070-1078 (2011), the contents of which are herein incorporated by reference in their entirety. The serotype and corresponding nucleotide and amino acid substitutions may be, but is not limited to, AAV9.1 (G1594C; D532H). AAV6.2 (T1418A and T1436X; V473D and I479K), AAV9.3 (T1238A; F4I3Y), AAV9.4 (T1250C and A1617T; F417S), AAV9.5 (A1235G, A1314T, A1642G, C1760T; Q412R, T548A, A587V), AAV9.6 (T1231A; F411I), AAV9.9 **(G1203A,** G1785T; W595C), AAV9.10 (A1500G, T1676C; M559T), AAV9.11 (A1425T. A1702C, A1769T; T568P, Q590L), AAV9.13 (A1369C. A1720T; N457H, T574S), AAV9.14 (T1340A, T1362C, T1560C, G17I3A; L447H), AAV9.16 (A1775T:

Q592L), AAV9.24 (T15G7C, T1521G; W503R), AAV9.26 (A1337G, A1769C; Y446C, **Q590P),** AAV9.33 (A1667C; D556A), AAV9.34 (A1534G, C1794T; N512D), AAV9.35 (A1289T, T1450A, **C1494T, A1515T,** C1794A, G1816A; Q430L, Y484N, N98K, V606I), AAV9.40 (A1694T, E565V), AAV9.41 (A1348T, T1362C; T450S), AAY9.44 (A1684C, A1701T, A1737G; N562H, K567N), AAV9.45 (A1492T, C1804T; N498Y, L602F), AAV9.46 **(G1441C,** T1525C, T1549G; G481R, W509R, L517V), 9.47 (G1241A, G1358A, A1669G, C1745T; S414N, G453D, K557E, T582I), AAV9.48 (C1445T, A1736T; P482L, Q579L), AAV9.50 (AI638T, C1683T, T1805A; Q546H, L602H), AAV9.53 (G1301A, A1405C, C1664T, G1811T; R134Q, S469R, A555V, G604V), AAV9.54 (C1531A, T1609A; L51II, L537M), AAV9.5.5 (T1605A; F535L), AAV9.58 (C1475T, CI579A; T492I, H527N), AAV.59 (T1336C; Y446H), AAV9.61 (A1493T; N498I), AAV9.64 (C1531A, A1617T; L5111), AAV9.65 (C1335T, TI530C, C1568A; A523D), AAV9.68 (C1510A; P504TS, AAV9.80 (G1441A„G481R), AAV9.83 (C1402A, A1500T; P468T, E500D), AAV9.87 (T1464C, T1468C; S490P), AAV9.90 (A1196T; Y399F), AAV9.91 (T1316G, A1583T, C1782G, T1806C; L439R, K528I), AAV9.93 (A1273G, A1421G, A1638C, C1712T, G1732A, A1744T, A1832T; S425G, Q474R. Q546H, P571L, G578R, T582S, D611V), AAV9.94 (AI675T; M559L) and AAV9.95 (T1605A; F535L).

[0083] In some **embodiments, the** AAV serotype may be, or have, a sequence as described in international Publication No. WO20 16049230, the contents of which are herein incorporated by reference **in** their entirety, such as, but not **limited to** AAVF1/HSC1 (SEQ **ID** NO: 2 and 20 of WO20 16049230), AAVF2/HSC2 (SEQ ID NO: 3 and 21 of WO2016049230), AAVF3/HSC3 (SEQ ID NO: 5 and 22 of WO201 6049230), AAVF4/HSC4 (SEQ ID NO: 6 and 23 of WO20 16049230), AAVF5/HSC5 (SEQ ID NO: 11 and 25 **of** WO201 6049230), AAVF6/HSC6 (SEQ ID NO: 7 and 24 of WO2016049230), AAVF7/HSC7 (SEQ ID NO: 8 and 27 of WO2016049230), AAVF8/HSC8 (SEQ ID NO: 9 **and** 28 of WO201 6049230), AAVF9/HSC9 (SEQ ID NO: 10 and 29 of WO2016049230), AAVF1 1/HSCl 1 (SEQ ID NO: 4 and 26 of WO20 16049230), AAVF12/HSC12 (SEQ ID NO: 12 and 30 of WO20 16049230), AAVF13/HSC13 (SEQ ID NO: 14 and 31 of WO20 16049230), AAVF14/HSC 14 (SEQ ID NO: 15 and 32 of WO2016049230), AAVF15/HSC15 (SEQ ID NO: 16 and 33 of WO2016049230), AAVF16/HSC16 (SEQ ID NO: 17 and 34 of WO2016049230). AAVF17/HSC17 (SEQ ID NO: 13 and 35 of WO201 6049230), or variants or derivatives thereof

[0084] In some embodiments, the AAV serotype may be, or have, a sequence as described in United States Patent No. LIS 8734809, the contents of which are herein incorporated by reference **in** their entirety, such as, but not limited to, AAV CBr-E1 (SEQ ID NO: 13 and 87 of LTS8734809), AAV CBr-E2 (SEQ ID NO: 14 **and** 88 **of** US8734809), AAV CBr-E3 (SEQ ID

NO: 15 and 89 of US8734809), AAV CBr-E4 (SEQ ID NO: 16 and 90 of US8734809), AAV CBr-E5 (SEQ ID NO: 17 and 91 of US8734809), AAV CBr-e5 (SEQ ID NO: 18 and 92 of **US8734809),** AAV CBr-E6 (SEQ ID NO; 19 and 93 of US8734809), AAV CBr-E7 (SEQ ID NO: 20 and 94 of US8734809), AAV CBr-E8 (SEQ ID NO: 21 and 95 of US8734809), AAV CLv-Dl (SEQ ID NO: 22 and 96 of US8734809), AAV **CLv-D2** (SEQ ID NO: 23 and 97 of **US8734809),** AAV **CLv-D3** (SEQ ID NO: 24 and 98 of US8734809), AAV **CLv-D4** (SEQ ID NO: 25 and 99 of US8734809), AAV CLv-D5 (SEQ ID NO: 26 and 100 of US8734809), AAV **CLv-D6** (SEQ ID NO: 27 and 101 of US8734809), AAV **CLv-D7** (SEQ ID NO: 28 and 102 of US8734809), AAV CLv-D8 (SEQ ID NO: 29 and 103 of US8734809), AAV CLv-El (SEQ ID NO: 13 and 87 of US8734809), AAV CLv-Rl (SEQ ID NO: 30 and 104 of US8734809), AAV CLv~R2 (SEQ ID NO: 31 and 105 of US8734809), AAV CLv-R3 (SEQ ID NO: 32 and 106 of US8734809), AAV **CLv-R4** (SEQ ID NO: 33 and 107 of US8734809), AAV CLv-R5 (SEQ ID NO: 34 and 108 of US8734809), AAV CLv-R6 (SEQ ID NO: 35 and 109 of US8734809), AAV **CLv-R7** (SEQ ID NO: 36 and 110 of US8734809), AAV CLv-R8 (SEQ ID NO: 37 and 111 of US8734809), AAV CLv-R9 (SEQ ID NO: 38 and 112 of US8734809), AAV **CLg-Fl** (SEQ ID NO: 39 and 113 of US8734809), AAV CLg-F2 (SEQ ID NO: 40 and 114 of US8734809), AAV CLg-F3 (SEQ ID NO: 41 and 115 of US8734809), AAV CLg-F4 (SEQ ID NO: 42 and 116 of **US8734809),** AAV CLg-F5 (SEQ ID NO: 43 and 117 of US8734809), AAV CLg-F6 (SEQ ID NO: 43 and 117 of US8734809). AAV CLg-F7 (SEQ ID NO: 44 and 118 of US8734809). AAV CLg-F8 (SEQ ID NO: 43 and 117 of US8734809), AAV CSp-1 (SEQ ID NO: 45 and 119 of US8734809), AAV CSpAO (SEQ ID NO: 46 and 120 of US8734809), AAV CSp-11 (SEQ ID NO: 47 and 121 of US8734809), AAV CSp-2 (SEQ ID NO: 48 and 122 of US8734809), AAV CSp-3 (SEQ ID NO: 49 and 123 of US8734809), AAV CSp-4 (SEQ ID NO: 50 and 124 of **US8734809),** AAV CSp-6 (SEQ ID NO: 51 and 125 of **US8734809),** AAV CSp-7 (SEQ ID NO: 52 and 126 **of US8734809),** AAV CSp-8 (SEQ ID NO: 53 and 127 of US8734809), AAV CSp-9 (SEQ ID NO: 54 and 128 of US8734809), AAV CHi-2 (SEQ ID NO: 55 and 129 of US8734809), AAV CHt-3 (SEQ ID NO: 56 and 130 of US8734809), AAV CKd-l (SEQ ID NO: 57 and 131 of US8734809), AAV CKd-10 (SEQ ID NO: 58 and 132 of US8734809), AAV CKd-2 (SEQ ID NO: 59 and 133 of US8734809), AAV CKd-3 (SEQ ID NO: 60 and 134 of US8734809), AAV CKd-4 (SEQ ID NO: 61 and 135 of US8734809), AAV CKd-6 (SEQ ID NO: 62 and 136 of US8734809), AAV CKd-7 (SEQ ID NO: 63 and .137 of US8734809), AAV CKd-8 (SEQ ID NO: 64 and 138 of US8734809), AAV CLv-1 (SEQ ID NO: 35 and 139 of US8734809), AAV CLv-l2 (SEQ **ID** NO: 66 and 140 of US8734809), AAV CLv-13 (SEQ ID NO: 67 and 141 of US8734809), AAV CLv-2 (SEQ ID NO: 68 and 142 of US8734809), AAV

CLv-3 (SEQ ID NO: 69 and 143 of US8734809), AAV CLv-4 (SEQ ID NO: 70 and 144 of US8734809), AAV CLv-6 (SEQ ID NO: 71 and 145 of US8734809), AAV CLv-8 (SEQ ID NO: 72 and 146 of US8734809), AAV CKd-Bl (SEQ ID NO: 73 and 147 of US8734809), AAV CKd-B2 (SEQ ID NO: 74 and 148 of US8734809), AAV CKd-B3 (SEQ ID NO: 75 and 149 of **US8734809),** AAV CKd-B4 (SEQ ID NO: 76 and 150 of US8734809), AAV CKd-B5 (SEQ **ID** NO: 77 and 151 of US8734809), AAV CKd-B6 (SEQ ID NO: 78 and 152 of US8734809), AAV CKd-B7 (SEQ ID NO: 79 and 153 of US8734809), AAV CKd-B8 (SEQ ID NO: 80 and 154 of US8734809), AAV CKd-H1 (SEQ ID NO: 81 and 155 of IJS8734809), AAV CKd-H2 (SEQ ID NO: 82 and 156 of US8734809), AAV CKd-H3 (SEQ ID NO: 83 and 157 of US8734809), AAV CKd-H4 (SEQ ID NO: 84 and 158 of US8734809), AAV CKd-H5 (SEQ ID NO: 85 and 159 of **US8734809),** AAV CKd-H6 (SEQ ID NO: 77 and 151 of US8734809), AAV CHt-1 (SEQ ID NO: 86 and 160 of US8734809), AAV CLvl-1 (SEQ ID NO: 171 of US8734809), AAV **CLvl-2** (SEQ ID NO: 172 **of US8734809),** AAV CLvl-3 (SEQ ID NO: 173 of US8734809), AAV **CLvl-4** (SEQ ID NO: 174 of US8734809), AAV Clvl-7 (SEQ ID NO: 175 of US8734809), AAV Civl-8 (SEQ ID NO: 176 of US8734809), AAV Civ1-9 (SEQ **ID** NO: 177 of US8734809), AAV Civl-10 (SEQ ID NO: 178 of US8734809), AAV.VR-355 (SEQ ID NO: 181 of US8734809), AAV.hu.48R3 (SEQ ID NO: 183 of US8734809), or variants or derivatives thereof

[0085] In some embodiments, the AAV serotype may be, or have, a sequence as described in International Publication No. WO20 16065001, the contents of which are herein incorporated by reference in their entirety, such as, but not limited to AAV CHt-P2 (SEQ ID NO: 1 and 51 of WO2016065001), AAV C1K-P5 (SEQ ID NO: 2 and 52 of WO2016065001), AAV CHt-P9 (SEQ ID NO: 3 and 53 of WO2016065001), AAV CBr-7.1 (SEQ ID NO: 4 and 54 of WO2016065QQ1), AAV CBr-7.2 (SEQ ID NO: 5 and 55 of WO2016065001 AAV CBr-7.3 (SEQ ID NO: 6 and 56 of WO2016065001), AAV CBr-7.4 (SEQ ID NO: 7 and 57 of WO2016065001), AAV CBr-7.5 (SEQ ID NO: 8 and 58 of WO2016065001), AAV CBr-7.7 (SEQ ID NO: 9 and 59 of WO2016065001), AAV CBr-7.8 (SEQ ID NO: 10 and 60 of WO2016065001), AAV CBr-7.10 (SEQ ID NO: 11 and 61 of WO2016065001), AAV CKd-N3 (SEQ ID NO: 12 and 62 of WO2016065001), AAV CKd-N4 (SEQ ID NO: 13 and 63 of WO2016065001), AAV CKd-N9 (SEQ ID NO: 14 and 64 of WO2016065001). AAV CLv-L4 (SEQ ID NO: 15 and 65 of WO2016065001), AAV CLv~L5 (SEQ ID NO: 16 and 66 of WO2016065001), AAV CLv-L6 (SEQ ID NO: 17 and 67 of WO2016065001), AAV CLv-Kl (SEQ ID NO: 18 and 68 of WO2016065001), AAV CLv-K3 (SEQ ID NO: 19 and 69 of WO2016065001), AAV CLv-K6 (SEQ ID NO: 20 and 70 of WO2016065001). AAV CLv-M1

(SEQ ID NO: 21 and 71 of WO20160650001), AAV CLv-M11 (SEQ ID NO: 22 and 72 of WO20160650001), AAV CLv-M2 (SEQ ID NO: 23 and 73 of WO20I6065001), AAV CLv-M5 (SEQ ID NO: 24 and 74 of WO2016065001), AAV CLv-M6 (SEQ ID NO: 25 and 75 of WO2016065001), AAV **CLv-M7** (SEQ ID NO: 26 and 76 of WO2016065001), AAV **CLv-M8** (SEQ ID NO: 27 and 77 of WO2016065001), AAV CLv-M9 (SEQ ID NO: 28 and 78 of WO20 16065001), AAV CHt-Pl (SEQ ID NO: 29 and 79 of WO20I6065001), AAV CHt-F6 (SEQ ID NO: 30 and 80 of WO20 16065001), AAV CHt-P8 (SEQ ID NO: 31 and 81 of WO2016065001), AAV CHt-6.1 (SEQ ID NO: 32 and 82 of WO20 16065001), AAV CHt-6.10 (SEQ ID NO: 33 and 83 of WO2016065001), AAV CHt-6.5 (SEQ ID NO: 34 and 84 of WO20160650001), AAV CHt-6.6 (SEQ ID NO: 35 and 85 of WO20I6065001). AAV CHt-6.7 (SEQ ID NO: 36 and 86 of WO20160650001), AAV CHt-6.8 (SEQ ID NO: 37 and 87 of WO20I6065001), AAV CSp-8.10 (SEQ ID NO: 38 and 88 of WO20I6065001), AAV CSp-8.2 (SEQ ID NO: 39 and 89 of WO2016065001), AAV CSp-8.4 (SEQ ID NO: 40 and 90 of WO2016065001), AAV CSp-8.5 (SEQ ID NO: 41 and 91 of WO2016065001), AAV CSp-8.6 (SEQ ID NO: 42 and 92 of WO2016065001), AAV CSp-8.7 (SEQ ID NO: 43 and 93 of WO20 16065001), AAV CSp-8.8 (SEQ ID NO: 44 and 94 of WO20 16065001), AAV CSp-8.9 (SEQ ID NO: 45 and 95 of WO20160650001), AAV CBr-B7.3 (SEQ ID NO: 46 and 96 of WO2016065001), AAV CBr-B7.4 (SEQ ID NO: 47 and 97 of WO2016065001), AAV3B (SEQ ID NO: 48 and 98 of WO20 16065001), AAV4 (SEQ ID NO: 49 and 99 of WO20I6065001), AAV5 (SEQ ID NO: 50 and 100 of WO20I6065001), or variants or derivatives thereof.

[0086] In one embodiment, the AAV may be a serotype selected from any of those found in Table 1.

[0087] In one embodiment, the AAV may comprise a sequence, fragment or variant thereof, of the sequences in Table 1.

[0088] In one embodiment, the AAV may be encoded by a sequence, fragment or variant as described in Table 1.

Table 1„AAV Serotypes

Serotype	SEQ ID NO	Reference Information
AAV1	1	US20150159173 SEQ ID NO: 11, US20150315612 SEQ ID NO: 202
AAV1	2	US20160017295 SEQ ID NO: 1US20030138772 SEQ ID NO: 64, US20150159173 SEQ ID NO: 27, US20150315612 SEQ ID NO: 219, US7198951 SEQ ID NO: 5
AAV1	3	US20030138772 SEQ ID NO: 6
AAV1.3	4	US20030138772 SEQ ID NO: 14
AAV10	5	US20030138772 SEQ ID NO: 117
AAV10	6	WO2015121501 SEQ ID NO: 9
AAV10	7	WO2015121501 SEQ ID NO: 8

AAV 11	8	US20030 138772 SEQ ID NO: 118
AAV 12	9	US20030138772 SEQ ID NO: 119
AAV2	10	US20 150159173 SEQ ID NO: 7, US20 1503 156 12 SEQ ID NO: 2 11
AAV2	11	US20030 138772 SEQ ID NO: 70, US20 I 50159173 SEQ ID NO: 23, US20 1503 15612 SEQ ID NO: 221, US20I60017295 SEQ ID NO: 2, US6156303 SEQ ID NO: 4, US719895 1 SEQ ID NO: 4, WO2015121501 SEQ ID NO: 1
AAV2	12	US6156303 SEQ ID NO: 8
AAV2	13	US20030138772 SEQ ID NO: 7
AAV2	14	US6 156303 SEQ ID NO: 3
AAV2.5T	15	US9233 I31 SEQ ID NO: 42
AAV223. 10	16	US20030 138772 SEQ ID NO: 75
AAV223.2	17	US20030138772 SEQ ID NO: 49
AAV223.2	18	US20030138772 SEQ ID NO: 76
AAV223.4	19	US20030 138772 SEQ ID NO: 50
AAV223.4	20	US20030138772 SEQ ID NO: 73
AAV223.5	21	US20030 138772 SEQ ID NO: 51
AAV223.5	22	US20030138772 SEQ ID NO: 74
AAV223.6	23	US20030138772 SEQ ID NO: 52
AAV223.6	24	US20030 138772 SEQ ID NO: 78
AAV223.7	25	US20030138772 SEQ ID NO: 53
AAV223.7	26	US20030 138772 SEQ ID NO: 77
AAV29.3	27	US20030138772 SEQ ID NO: 82
AAV29.4	28	US20030138772 SEQ ID NO: 12
AAV29.5	29	US20030 138772 SEQ ID NO: 83
AAV29.5 (AAVbb.2)	30	US20030138772 SEQ ID NO: 13
AAV3	31	US20 150 159173 SEQ ID NO: 12
AAV3	32	US20030138772 SEQ ID NO: 71, US20150159 173 SEQ ID NO: 28, US20160017295 SEQ ID NO: 3, US7198951 SEQ ID NO: 6
AAV3	33	US20030 138772 SEQ ID NO: 8
AAV3.3b	34	US20030138772 SEQ ID NO: 72
AAV3-3	35	US201503 15612 SEQ ID NO: 200
AAV3-3	36	US201503 15612 SEQ ID NO: 217
AAV3a	37	US6156303 SEQ ID NO: 5
AAV3a	38	US6 156303 SEQ ID NO: 9
AAV3b	39	US6156303 SEQ ID NO: 6
AAV3b	40	US6156303 SEQ ID NO: 10
AAV3b	41	US6 156303 SEQ ID NO: 1
AAV4	42	US20 140348794 SEQ ID NO: 17
AAV4	43	US20 140348794 SEQ ID NO: 5
AAV4	44	US20 140348794 SEQ ID NO: 3
AAV4	45	US20 140348794 SEQ ID NO: 14
AAV4	46	US20 140348794 SEQ ID NO: 15
AAV4	47	US20 140348794 SEQ ID NO: 19
AAV4	48	US20 140348794 SEQ ID NO: 12
AAV4	49	US20 140348794 SEQ ID NO: 13

AAV4	50	US20140348794 SEQ ID NO: 7
AAV4	51	US20140348794 SEQ ID NO: 8
AAV4	52	US20140348794 SEQ ID NO: 9
AAV4	53	US20140348794 SEQ ID NO: 2
AAV4	54	US20140348794 SEQ ID NO: 10
AAV4	55	US20140348794 SEQ ID NO: 11
AAV4	56	US20140348794 SEQ ID NO: 18
AAV4	57	US20030138772 SEQ ID NO: 63, US20160017295 SEQ ID NO: 4, US20140348794 SEQ ID NO: 4
AAV4	58	US20140348794 SEQ ID NO: 16
AAV4	59	US20140348794 SEQ ID NO: 20
AAV4	60	US20140348794 SEQ ID NO: 6
AAV4	61	US20140348794 SEQ ID NO: 1
AAV42.2	62	US20030138772 SEQ ID NO: 9
AAV42.2	63	US20030138772 SEQ ID NO: 102
AAV42.31)	64	US20030138772 SEQ ID NO: 36
AAV42.3B	65	US20030138772 SEQ ID NO: 107
AAV42.4	66	US20030138772 SEQ ID NO: 33
AAV42.4	67	US20030138772 SEQ ID NO: 88
AAV42.8	68	US20030138772 SEQ ID NO: 27
AAV42.8	69	US20030138772 SEQ ID NO: 85
AAV43.1	70	US20030138772 SEQ ID NO: 39
AAV43.1	71	US20030138772 SEQ ID NO: 92
AAV43.12	72	US20030138772 SEQ ID NO: 41
AAV43.12	73	US20030138772 SEQ ID NO: 93
AAV43.20	74	US20030138772 SEQ ID NO: 42
AAV43.20	75	US20030138772 SEQ ID NO: 99
AAV43.21	76	US20030138772 SEQ ID NO: 43
AAV43.21	77	US20030138772 SEQ ID NO: 96
AAV43.23	78	US20030138772 SEQ ID NO: 44
AAV43.23	79	US20030138772 SEQ ID NO: 98
AAV43.25	80	US20030138772 SEQ ID NO: 45
AAV43.25	81	US20030138772 SEQ ID NO: 97
AAV43.5	82	US20030138772 SEQ ID NO: 40
AAV43.5	83	US20030138772 SEQ ID NO: 94
AAV4-4	84	US20150315612 SEQ ID NO: 201
AAV4-4	85	US201503 15612 SEQ ID NO: 218
AAV44.1	86	US20030138772 SEQ ID NO: 46
AAV44.1	87	US20030138772 SEQ ID NO: 79
AAV44.5	88	US20030138772 SEQ ID NO: 47
AAV44.5	89	US20030138772 SEQ ID NO: 80
AAV4407	90	US201503 15612 SEQ ID NO: 90
AAV5	91	US7427396 SEQ ID NO: 1
AAV5	92	US20030138772 SEQ ID NO: 114
AAV5	93	US20160017295 SEQ ID NO: 5, US7427396 SEQ ID NO: 2, US201503 15612 SEQ ID NO: 216

AAV5	94	US201503 15612 SEQ ID NO: 199
AAV6	95	US20150159173 SEQ ID NO: 13
AAV6	96	US20030138772 SEQ ID NO: 65, US20150159173 SEQ ID NO: 29, US20160017295 SEQ ID NO: 6, US6156303 SEQ ID NO: 7
AAV6	97	US6 156303 SEQ ID NO: 11
AAV6	98	US6156303 SEQ ID NO: 2
AAV6	99	US201503 15612 SEQ ID NO: 203
AAV6	100	US20 1503 15612 SEQ ID NO: 220
AAV6.1	101	US20150159173
AAV6. 12	102	US20150 159173
AAV6.2	103	US20 150159173
AAV7	104	US20150 159173 SEQ ID NO: 14
AAV7	105	US20 1503 15612 SEQ ID NO: 183
AAV7	106	US20030138772 SEQ ID NO: 2, US20150159173 SEQ ID NO: 30, US201503 15612 SEQ ID NO: 181, US20 160017295 SEQ ID NO: 7
AAV7	107	US20030138772 SEQ ID NO: 3
AAV7	108	US20030138772 SEQ ID NO: 1, US20 1503 156 12 SEQ ID NO: 180
AAV7	109	US201503 15612 SEQ ID NO: 213
AAV7	110	US20 1503 15612 SEQ ID NO: 222
AAV8	111	US20150 159173 SEQ ID NO: 15
AAV8	112	US20150376240 SEQ ID NO: 7
AAV8	113	US20030138772 SEQ ID NO: 4, US201503 15612 SEQ ID NO: 182
AAV8	114	US20030 138772 SEQ ID NO: 95, US20140359799 SEQ ID NO: 1, US20 150159173 SEQ ID NO: 31, US201600 17295 SEQ ID NO: 8, US7 198951 SEQ ID NO: 7, US201503 15612 SEQ ID NO: 223
AAV8	115	US20150376240 SEQ ID NO: 8
AAV8	116	US20 1503 15612 SEQ ID NO: 214
AAV-8b	117	US20150376240 SEQ ID NO: 5
AAV-8b	118	US20150376240 SEQ ID NO: 3
AAV-8h	119	US20 150376240 SEQ ID NO: 6
AAV-8J1	120	US20150376240 SEQ ID NO: 4
AAV9	121	US20030138772 SEQ ID NO: 5
AAV9	122	US7198951 SEQ ID NO: 1
AAV9	123	US20160017295 SEQ ID NO: 9
AAV9	124	US20030138772 SEQ ID NO: 100, US7198951 SEQ ID NO: 2
AAV9	125	US7 198951 SEQ ID NO: 3
AAV9 (AAVhu. 14)	126	US7906111 SEQ ID NO: 3; WO2015038958 SEQ ID NO: 11
AAV9 (AAVhu. 14)	127	US79061 11 SEQ ID NO: 123; WO2015038958 SEQ ID NO: 2
AAVA3.1	128	US20030138772 SEQ ID NO: 120
AAVA3.3	129	US20030138772 SEQ ID NO: 57
AAVA3.3	130	US20030 138772 SEQ ID NO: 66
AAVA3.4	131	US20030138772 SEQ ID NO: 54
AAVA3.4	132	US20030 138772 SEQ ID NO: 68
AAVA3.5	133	US20030138772 SEQ ID NO: 55
AAVA3.5	134	US20030 138772 SEQ ID NO: 69

AAVA3.7	135	US20030138772 SEQ ID NO: 56
AAVA3.7	136	US20030138772 SEQ ID NO: 67
AAV29.3 (AAVbb.1)	137	US20030138772 SEQ ID NO: 11
AAVC2	138	US20030138772 SEQ ID NO: 61
AAVCh.5	139	US20150159173 SEQ ID NO: 46, US20150315612 SEQ ID NO: 234
AAVcy.2 (AAV13.3)	140	US20030138772 SEQ ID NO: 15
AAV24.1	141	US20030138772 SEQ ID NO: 101
AAVcy.3 (AAV24.1)	142	US20030138772 SEQ ID NO: 16
AAV27.3	143	US20030138772 SEQ ID NO: 104
AAVcy.4 (AAV27.3)	144	US20030138772 SEQ ID NO: 17
AAVcy.5	145	US20150315612 SEQ ID NO: 227
AAV7.2	146	US20030138772 SEQ ID NO: 103
AAVcy.5 (AAV7.2)	147	US20030138772 SEQ ID NO: 18
AAV16.3	148	US20030138772 SEQ ID NO: 105
AAVcy.6 (AAV16.3)	149	US20030138772 SEQ ID NO: 10
AAVcy.5	150	US20150159173 SEQ ID NO: 8
AAVcy.5	151	US20150159173 SEQ ID NO: 24
AAVCy.5R1	152	US20150159173
AAVCy.5R2	153	US20150159173
AAVCy.5R3	154	US20150159173
AAVCy.5R4	155	US20150159173
AAVDJ	156	US20140359799 SEQ ID NO: 3, US7588772 SEQ ID NO: 2
AAVDJ	157	US20140359799 SEQ ID NO: 2, US7588772 SEQ ID NO: 1
AAVDJ-8	158	US7588772; Grimm et al 2008
AAVDJ-8	159	US7588772; Grimm et al 2008
AAVF5	160	US20030138772 SEQ ID NO: 110
AAVH2	161	US20030138772 SEQ ID NO: 26
AAVH6	162	US20030138772 SEQ ID NO: 25
AAVhE1.1	163	US9233131 SEQ ID NO: 44
AAVhEr1.14	164	US9233131 SEQ ID NO: 46
AAVhEr1.16	165	US9233131 SEQ ID NO: 48
AAVhEr1.18	166	US9233131 SEQ ID NO: 49
AAVhEr1.23 (AAVhEr2.29)	167	US9233131 SEQ ID NO: 53
AAVhEr1.35	168	US9233131 SEQ ID NO: 50
AAVhEr1.36	169	US9233131 SEQ ID NO: 52
AAVhEr1.5	170	US9233131 SEQ ID NO: 45
AAVhEr1.7	171	US9233131 SEQ ID NO: 51
AAVhEr1.8	172	US9233131 SEQ ID NO: 47
AAVhEr2.16	173	US9233131 SEQ ID NO: 55
AAVhEr2.30	174	US9233131 SEQ ID NO: 56
AAVhEr2.31	175	US9233131 SEQ ID NO: 58

AAVhEr2.36	176	US9233131 SEQ ID NO: 57
AAVhEr2.4	177	US9233131 SEQ ID NO: 54
AAVhEr3.1	178	US9233131 SEQ ID NO: 59
AAVhu.1	179	US20150315612 SEQ ID NO: 46
AAVhu.1	180	US20150315612 SEQ ID NO: 144
AAVhu.10 (AAV16.8)	181	US20150315612 SEQ ID NO: 56
AAVhu.10 (AAV16.8)	182	US20150315612 SEQ ID NO: 156
AAVhu.11 (AAV16.12)	183	US20150315612 SEQ ID NO: 57
AAVhu.11 (AAV16.12)	184	US20150315612 SEQ ID NO: 153
AAVhu.12	185	US20150315612 SEQ ID NO: 59
AAVhu.12	186	US20150315612 SEQ ID NO: 154
AAVhu.13	187	US20150159173 SEQ ID NO: 16, US20150315612 SEQ ID NO: 71
AAVhu.13	188	US20150159173 SEQ ID NO: 32, US20150315612 SEQ ID NO: 129
AAVhu.136.1	189	US20150315612 SEQ ID NO: 165
AAVhu.140.1	190	US20150315612 SEQ ID NO: 166
AAVhu.140.2	191	US20150315612 SEQ ID NO: 167
AAVhu.145.6	192	US20150315612 SEQ ID No: 178
AAVhu.15	193	US20150315612 SEQ ID NO: 147
AAVhu.15 (AAV33.4)	194	US20150315612 SEQ ID NO: 50
AAVhu.156.1	195	US20150315612 SEQ ID No: 179
AAVhu.16	196	US20150315612 SEQ ID NO: 148
AAVhu.16 (AAV33.8)	197	US20150315612 SEQ ID NO: 51
AAVhu.17	198	US20150315612 SEQ ID NO: 83
AAVhu.17 (AAV33.12)	199	US20150315612 SEQ ID NO: 4
AAVhu.172.1	200	US20150315612 SEQ ID NO: 171
AAVhu.172.2	201	US20150315612 SEQ ID NO: 172
AAVhu.173.4	202	US20150315612 SEQ ID NO: 173
AAVhu.173.8	203	US20150315612 SEQ ID NO: 175
AAVhu.18	204	US20150315612 SEQ ID NO: 52
AAVhu.18	205	US20150315612 SEQ ID NO: 149
AAVhu.19	206	US20150315612 SEQ ID NO: 62
AAVhu.19	207	US20150315612 SEQ ID NO: 133
AAVhu.2	208	US20150315612 SEQ ID NO: 48
AAVhu.2	209	US20150315612 SEQ ID NO: 143
AAVhu.20	210	US20150315612 SEQ ID NO: 63
AAVhu.20	211	US20150315612 SEQ ID NO: 134
AAVhu.21	212	US20150315612 SEQ ID NO: 65
AAVhu.21	213	US20150315612 SEQ ID NO: 135
AAVhu.22	214	US20150315612 SEQ ID NO: 67
AAVhu.22	215	US20150315612 SEQ ID NO: 138
AAVhu.23	216	US20150315612 SEQ ID NO: 60

AAVhu.23.2	217	US20150315612 SEQ ID NO: 137
AAVhu.24	218	US20150315612 SEQ ID NO: 66
AAVhu.24	219	US20150315612 SEQ ID NO: 136
AAVhu.25	220	US20150315612 SEQ ID NO: 49
AAVhu.25	221	US20150315612 SEQ ID NO: 146
AAVhu.26	222	US20150159173 SEQ ID NO: 17, US20150315612 SEQ ID NO: 61
AAVhu.26	223	US20150159173 SEQ ID NO: 33, US20150315612 SEQ ID NO: 139
AAVhu.27	224	US20150315612 SEQ ID NO: 64
AAVhu.27	225	US20150315612 SEQ ID NO: 140
AAVhu.28	226	US20150315612 SEQ ID NO: 68
AAVhu.28	227	US20150315612 SEQ ID NO: 130
AAVhu.29	228	US20150315612 SEQ ID NO: 69
AAVhu.29	229	US20150159173 SEQ ID NO: 42, US20150315612 SEQ ID NO: 132
AAVhu.29	230	US20150315612 SEQ ID NO: 225
AAVhu.29R	231	US20150159173
AAVhu.3	232	US20150315612 SEQ ID NO: 44
AAVhu.3	233	US20150315612 SEQ ID NO: 145
AAVhu.30	234	US20150315612 SEQ ID NO: 70
AAVhu.30	235	US20150315612 SEQ ID NO: 131
AAVhu.31	236	US20150315612 SEQ ID NO: 1
AAVhu.31	237	US20150315612 SEQ ID NO: 121
AAVhu.32	238	US20150315612 SEQ ID NO: 2
AAVhu.32	239	US20150315612 SEQ ID NO: 122
AAVhu.33	240	US20150315612 SEQ ID NO: 75
AAVhu.33	241	US20150315612 SEQ ID NO: 124
AAVhu.34	242	US20150315612 SEQ ID NO: 72
AAVhu.34	243	US20150315612 SEQ ID NO: 125
AAVhu.35	244	US20150315612 SEQ ID NO: 73
AAVhu.35	245	US20150315612 SEQ ID NO: 164
AAVhu.36	246	US20150315612 SEQ ID NO: 74
AAVhu.36	247	US20150315612 SEQ ID NO: 126
AAVhu.37	248	US20150159173 SEQ ID NO: 34, US20150315612 SEQ ID NO: 88
AAVhu.37 (AAV106.1)	249	US20150315612 SEQ ID NO: 10, US20150159173 SEQ ID NO: 18
AAVhu.38	250	US20150315612 SEQ ID NO: 161
AAVhu.39	251	US20150315612 SEQ ID NO: 102
AAVhu.39 (AAVLG-9)	252	US20150315612 SEQ ID NO: 24
AAVhu.4	253	US20150315612 SEQ ID NO: 47
AAVhu.4	254	US20150315612 SEQ ID NO: 141
AAVhu.40	255	US20150315612 SEQ ID NO: 87
AAVhu.40 (AAV114.3)	256	US20150315612 SEQ ID No: 11
AAVhu.41	257	US20150315612 SEQ ID NO: 91
AAVhu.41 (AAV127.2)	258	US20150315612 SEQ ID NO: 6
AAVhu.42	259	US20150315612 SEQ ID NO: 85

AAVhu.42 (AAV127.5)	260	US20150315612 SEQ ID NO: 8
AAVhu.43	261	US20150315612 SEQ ID NO: 160
AAVhu.43	262	US20150315612 SEQ ID NO: 236
AAVhu.43 (AAV128.1)	263	US20150315612 SEQ ID NO: 80
AAVhu.44	264	US20150159173 SEQ ID NO: 45, US20150315612 SEQ ID NO: 158
AAVhu.44 (AAV128.3)	265	US20150315612 SEQ ID NO: 81
AAVhu.44R1	266	US20150159173
AAVhu.44R2	267	US20150159173
AAVhu.44R3	268	US20150159173
AAVhu.45	269	US20150315612 SEQ ID NO: 76
AAVhu.45	270	US20150315612 SEQ ID NO: 127
AAVhu.46	271	US20150315612 SEQ ID NO: 82
AAVhu.46	272	US20150315612 SEQ ID NO: 159
AAVhu.46	273	US20150315612 SEQ ID NO: 224
AAVhu.47	274	US20150315612 SEQ ID NO: 77
AAVhu.47	275	US20150315612 SEQ ID NO: 128
AAVhu.48	276	US20150159173 SEQ ID NO: 38
AAVhu.48	277	US20150315612 SEQ ID NO: 157
AAVhu.48 (AAV130.4)	278	US20150315612 SEQ ID NO: 78
AAVhu.48R1	279	US20150159173
AAVhu.48R2	280	US20150159173
AAVhu.48R3	281	US20150159173
AAVhu.49	282	US20150315612 SEQ ID NO: 209
AAVhu.49	283	US20150315612 SEQ ID NO: 189
AAVhu.5	284	US20150315612 SEQ ID NO: 45
AAVhu.5	285	US20150315612 SEQ ID NO: 142
AAVhu.51	286	US20150315612 SEQ ID NO: 208
AAVhu.51	287	US20150315612 SEQ ID NO: 190
AAVhu.52	288	US20150315612 SEQ ID NO: 210
AAVhu.52	289	US20150315612 SEQ ID NO: 191
AAVhu.53	290	US20150159173 SEQ ID NO: 19
AAVhu.53	291	US20150159173 SEQ ID NO: 35
AAVhu.53 (AAV145.1)	292	US20150315612 SEQ ID NO: 176
AAVhu.54	293	US20150315612 SEQ ID NO: 188
AAVhu.54 (AAV145.5)	294	US20150315612 SEQ ID No: 177
AAVhu.55	295	US20150315612 SEQ ID NO: 187
AAVhu.56	296	US20150315612 SEQ ID NO: 205
AAVhu.56 (AAV145.6)	297	US20150315612 SEQ ID NO: 168
AAVhu.56 (AAV145.6)	298	US20150315612 SEQ ID NO: 192
AAVhu.57	299	US20150315612 SEQ ID NO: 206
AAVhu.57	300	US20150315612 SEQ ID NO: 169

AAVhu.57	301	US20150315612 SEQ ID NO: 193
AAVhu.58	302	US20150315612 SEQ ID NO: 207
AAVhu.58	303	US20150315612 SEQ ID NO: 194
AAVhu.6 (AAV3.1)	304	US20150315612 SEQ ID NO: 5
AAVhu.6 (AAV3.1)	305	US20150315612 SEQ ID NO: 84
AAVhu.60	306	US20150315612 SEQ ID NO: 184
AAVhu.60 (AAV161.10)	307	US20150315612 SEQ ID NO: 170
AAVhu.61	308	US20150315612 SEQ ID NO: 185
AAVhu.61 (AAV161.6)	309	US20150315612 SEQ ID NO: 174
AAVhu.63	310	US20150315612 SEQ ID NO: 204
AAVhu.63	311	US20150315612 SEQ ID NO: 195
AAVhu.64	312	US20150315612 SEQ ID NO: 212
AAVhu.64	313	US20150315612 SEQ ID NO: 196
AAVhu.66	314	US20150315612 SEQ ID NO: 197
AAVhu.67	315	US20150315612 SEQ ID NO: 215
AAVhu.67	316	US20150315612 SEQ ID NO: 198
AAVhu.7	317	US20150315612 SEQ ID NO: 226
AAVhu.7	318	US20150315612 SEQ ID NO: 150
AAVhu.7 (AAV7.3)	319	US20150315612 SEQ ID NO: 55
AAVhu.71	320	US20150315612 SEQ ID NO: 79
AAVhu.8	321	US20150315612 SEQ ID NO: 53
AAVhu.8	322	US20150315612 SEQ ID NO: 12
AAVhu.8	323	US20150315612 SEQ ID NO: 151
AAVhu.9 (AAV3.1)	324	US20150315612 SEQ ID NO: 58
AAVhu.9 (AAV3.1)	325	US20150315612 SEQ ID NO: 155
AAV-LK01	326	US20150376607 SEQ ID NO: 2
AAV-LK01	327	US20150376607 SEQ ID NO: 29
AAV-LK02	328	US20150376607 SEQ ID NO: 3
AAV-LK02	329	US20150376607 SEQ ID NO: 30
AAV-LK03	330	US20150376607 SEQ ID NO: 4
AAV-LK03	331	WO2015121501 SEQ ID NO: 12, US20150376607 SEQ ID NO: 31
AAV-LK04	332	US20150376607 SEQ ID NO: 5
AAV-LK04	333	US20150376607 SEQ ID NO: 32
AAV-LK05	334	US20150376607 SEQ ID NO: 6
AAV-LK05	335	US20150376607 SEQ ID NO: 33
AAV-LK06	336	US20150376607 SEQ ID NO: 7
AAV-LK06	337	US20150376607 SEQ ID NO: 34
AAV-LK07	338	US20150376607 SEQ ID NO: 8
AAV-LK07	339	US20150376607 SEQ ID NO: 35
AAV-LK08	340	US20150376607 SEQ ID NO: 9
AAV-LK08	341	US20150376607 SEQ ID NO: 36

AAV-LK09	342	US20150376607 SEQ ID NO: 10
AAV-LK09	343	US20 150376607 SEQ ID NO: 37
AAV-LK10	344	US20 150376607 SEQ ID NO: 11
AAV-LK10	345	IJS20 150376607 SEQ ID NO: 38
AAV-LK11	346	US20 150376607 SEQ ID NO: 12
AAV-LK11	347	US20150376607 SEQ ID NO: 39
AAV-LK12	348	US20 150376607 SEQ ID NO: 13
AAV-LK12	349	US20 150376607 SEQ ID NO: 40
AAV-LK13	350	US20 150376607 SEQ ID NO: 14
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AAV-LK15	354	US20 150376607 SEQ ID NO: 16
AAV-LK15	355	US20 150376607 SEQ ID NO: 43
AAV-LK16	356	US20 150376607 SEQ ID NO: 17
AAV-LK16	357	US20150376607 SEQ ID NO: 44
AAV-LK17	358	US20 150376607 SEQ ID NO: 18
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AAV-PAEC 11	366	US20 150376607 SEQ ID NO: 26
AAV-PAEC 11	367	IJS20 150376607 SEQ ID NO: 54
AAV-PAEC 12	368	US20 150376607 SEQ ID NO: 27
AAV-PAEC 12	369	US20 150376607 SEQ ID NO: 51
AAV-PAEC 13	370	US20 150376607 SEQ ID NO: 28
AAV-PAEC 13	371	US20 150376607 SEQ ID NO: 49
AAV-PAEC2	372	IJS20 150376607 SEQ ID NO: 21
AAV-PAEC2	373	US20 150376607 SEQ ID NO: 56
AAV-PAEC4	374	US20 150376607 SEQ ID NO: 22
AAV-PAEC4	375	US20 150376607 SEQ ID NO: 55
AAV-PAEC6	376	US20 150376607 SEQ ID NO: 23
AAV-PAEC6	377	IJS20 150376607 SEQ ID NO: 52
AAV-PAEC7	378	US20 150376607 SEQ ID NO: 24
AAV-PAEC7	379	US20150376607 SEQ ID NO: 53
AAV-PAEC8	380	US20 150376607 SEQ ID NO: 25
AAV-PAEC8	381	US20 150376607 SEQ ID NO: 50
AAVpi.l	382	US201503 15612 SEQ ID NO: 28
AAVpi.l	383	US20 1503 15612 SEQ ID NO: 93
AAVpi.2	384	US201503 15612 SEQ ID NO: 30
AAVpi.2	385	US201503 15612 SEQ ID NO: 95
AAVpi.3	386	US20 1503 15612 SEQ ID NO: 29

AAVpi.3	387	US20150315612 SEQ ID NO: 94
AAVrh.10	388	US20150159173 SEQ ID NO: 9
AAVrh.10	389	US20150159173 SEQ ID NO: 25
AAV44.2	390	US20030138772 SEQ ID NO: 59
AAVrh.10 (AAV44.2)	391	US20030138772 SEQ ID NO: 81
AAV42.1B	392	US20030138772 SEQ ID NO: 90
AAVrh.12 (AAV42.1b)	393	US20030138772 SEQ ID NO: 30
AAVrh.13	394	US20150159173 SEQ ID NO: 10
AAVrh.13	395	US20150159173 SEQ ID NO: 26
AAVrh.13	396	US20150315612 SEQ ID NO: 228
AAVrh.13R	397	US20150159173
AAV42.3A	398	US20030138772 SEQ ID NO: 87
AAVrh.14 (AAV42.3a)	399	US20030138772 SEQ ID NO: 32
AAV42.5A	400	US20030138772 SEQ ID NO: 89
AAVrh.17 (AAV42.5a)	401	US20030138772 SEQ ID NO: 34
AAV42.5B	402	US20030138772 SEQ ID NO: 91
AAVrh.18 (AAV42.5b)	403	US20030138772 SEQ ID NO: 29
AAV42.6B	404	US20030138772 SEQ ID NO: 112
AAVrh.19 (AAV42.6b)	405	US20030138772 SEQ ID NO: 38
AAVrh.2	406	US20150159173 SEQ ID NO: 39
AAVrh.2	407	US20150315612 SEQ ID NO: 231
AAVrh.20	408	US20150159173 SEQ ID NO: 1
AAV42.10	409	US20030138772 SEQ ID NO: 106
AAVrh.21 (AAV42.10)	410	US20030138772 SEQ ID NO: 35
AAV42.11	411	US20030138772 SEQ ID NO: 108
AAVrh.22 (AAV42.11)	412	US20030138772 SEQ ID NO: 37
AAV42.12	413	US20030138772 SEQ ID NO: 113
AAVrh.23 (AAV42.12)	414	US20030138772 SEQ ID NO: 58
AAV42.13	415	US20030138772 SEQ ID NO: 86
AAVrh.24 (AAV42.13)	416	US20030138772 SEQ ID NO: 31
AAV42.15	417	US20030138772 SEQ ID NO: 84
AAVrh.25 (AAV42.15)	418	US20030138772 SEQ ID NO: 28
AAVrh.2R	419	US20150159173
AAVrh.31 (AAV223.1)	420	US20030138772 SEQ ID NO: 48
AAVC1	421	US20030138772 SEQ ID NO: 60
AAVrh.32 (AAVC1)	422	US20030138772 SEQ ID NO: 19
AAVrh.32/33	423	US20150159173 SEQ ID NO: 2

AAVrh.33 (AAVC3)	424	US20030138772 SEQ ID NO: 20
AAVC5	425	US20030138772 SEQ ID NO: 62
AAVrh.34 (AAVC5)	426	US20030138772 SEQ ID NO: 21
AAVF1	427	US20030138772 SEQ ID NO: 109
AAVrh.35 (AAVF1)	428	US20030138772 SEQ ID NO: 22
AAVF3	429	US20030138772 SEQ ID NO: 111
AAVrh.36 (AAVF3)	430	US20030138772 SEQ ID NO: 23
AAVrh.37	431	US20030138772 SEQ ID NO: 24
AAVrh.37	432	US20150159173 SEQ ID NO: 40
AAVrh.37	433	US20150315612 SEQ ID NO: 229
AAVrh.37R2	434	US20150159173
AAVrh.38 (AAVLG-4)	435	US20150315612 SEQ ID NO: 7
AAVrh.38 (AAVLG-4)	436	US20150315612 SEQ ID NO: 86
AAVrh.39	437	US20150159173 SEQ ID NO: 20, US20150315612 SEQ ID NO: 13
AAVrh.39	438	US20150159173 SEQ ID NO: 3, US20150159173 SEQ ID NO: 36, US20150315612 SEQ ID NO: 89
AAVrh.40	439	US20150315612 SEQ ID NO: 92
AAVrh.40 (AAVLG-10)	440	US20150315612 SEQ ID No: 14
AAVrh.43 (AAVN721-8)	441	US20150315612 SEQ ID NO: 43, US20150159173 SEQ ID NO: 21
AAVrh.43 (AAVN721-8)	442	US20150315612 SEQ ID NO: 163, US20150159173 SEQ ID NO: 37
AAVrh.44	443	US20150315612 SEQ ID NO: 34
AAVrh.44	444	US20150315612 SEQ ID NO: 111
AAVrh.45	445	US20150315612 SEQ ID NO: 41
AAVrh.45	446	US20150315612 SEQ ID NO: 109
AAVrh.46	447	US20150159173 SEQ ID NO: 22, US20150315612 SEQ ID NO: 19
AAVrh.46	448	US20150159173 SEQ ID NO: 4, US20150315612 SEQ ID NO: 101
AAVrh.47	449	US20150315612 SEQ ID NO: 38
AAVrh.47	450	US20150315612 SEQ ID NO: 118
AAVrh.48	451	US20150159173 SEQ ID NO: 44, US20150315612 SEQ ID NO: 115
AAVrh.48.1	452	US20150159173
AAVrh.48.1.2	453	US20150159173
AAVrh.48.2	454	US20150159173
AAVrh.48 (AAV1-7)	455	US20150315612 SEQ ID NO: 32
AAVrh.49 (AAV1-8)	456	US20150315612 SEQ ID NO: 25
AAVrh.49 (AAV1-8)	457	US20150315612 SEQ ID NO: 103
AAVrh.50 (AAV2-4)	458	US20150315612 SEQ ID NO: 23
AAVrh.50 (AAV2-4)	459	US20150315612 SEQ ID NO: 108

AAVrh.51 (AAV2-5)	460	US20150315612 SEQ ID No: 22
AAVrh.51 (AAV2-5)	461	US20150315612 SEQ ID NO: 104
AAVrh.52 (AAV3-9)	462	US20150315612 SEQ ID NO: 18
AAVrh.52 (AAV3-9)	463	US20150315612 SEQ ID NO: 96
AAVrh.53	464	US20150315612 SEQ ID NO: 97
AAVrh.53 (AAV3-11)	465	US20150315612 SEQ ID NO: 17
AAVrh.53 (AAV3-11)	466	US20150315612 SEQ ID NO: 186
AAVrh.54	467	US20150315612 SEQ ID NO: 40
AAVrh.54	468	US20150159173 SEQ ID NO: 49, US20150315612 SEQ ID NO: 116
AAVrh.55	469	US20150315612 SEQ ID NO: 37
AAVrh.55 (AAV4-19)	470	US20150315612 SEQ ID NO: 117
AAVrh.56	471	US20150315612 SEQ ID NO: 54
AAVrh.56	472	US20150315612 SEQ ID NO: 152
AAVrh.57	473	US20150315612 SEQ ID NO: 26
AAVrh.57	474	US20150315612 SEQ ID NO: 105
AAVrh.58	475	US20150315612 SEQ ID NO: 27
AAVrh.58	476	US20150159173 SEQ ID NO: 48, US20150315612 SEQ ID NO: 106
AAVrh.58	477	US20150315612 SEQ ID NO: 232
AAVrh.59	478	US20150315612 SEQ ID NO: 42
AAVrh.59	479	US20150315612 SEQ ID NO: 110
AAVrh.60	480	US20150315612 SEQ ID NO: 31
AAVrh.60	481	US20150315612 SEQ ID NO: 120
AAVrh.61	482	US20150315612 SEQ ID NO: 107
AAVrh.61 (AAV2-3)	483	US20150315612 SEQ ID NO: 21
AAVrh.62 (AAV2-15)	484	US20150315612 SEQ ID No: 33
AAVrh.62 (AAV2-15)	485	US20150315612 SEQ ID NO: 114
AAVrh.64	486	US20150315612 SEQ ID No: 15
AAVrh.64	487	US20150159173 SEQ ID NO: 43, US20150315612 SEQ ID NO: 99
AAVrh.64	488	US20150315612 SEQ ID NO: 233
AAVRh.64R1	489	US20150159173
AAVRh.64R2	490	US20150159173
AAVrh.65	491	US20150315612 SEQ ID NO: 35
AAVrh.65	492	US20150315612 SEQ ID NO: 112
AAVrh.67	493	US20150315612 SEQ ID NO: 36
AAVrh.67	494	US20150315612 SEQ ID NO: 230
AAVrh.67	495	US20150159173 SEQ ID NO: 47, US20150315612 SEQ ID NO: 113
AAVrh.68	496	US20150315612 SEQ ID NO: 16
AAVrh.68	497	US20150315612 SEQ ID NO: 100
AAVrh.69	498	US20150315612 SEQ ID NO: 39

AAVrh.69	499	US20150315612 SEQ ID NO: 119
AAVrh.70	500	US20150315612 SEQ ID NO: 20
AAVrh.70	501	US20150315612 SEQ ID NO: 98
AAVrh.71	502	US20150315612 SEQ ID NO: 162
AAVrh.72	503	US20150315612 SEQ ID NO: 9
AAVrh.73	504	US20150159173 SEQ ID NO: 5
AAVrh.74	505	US20150159173 SEQ ID NO: 6
AAVrh.8	506	US20150159173 SEQ ID NO: 41
AAVrh.8	507	US20150315612 SEQ ID NO: 235
AAVrh.8R	508	US20150159173, WO2015168666 SEQ ID NO: 9
AAVrh.8R A586R mutant	509	WO2015168666 SEQ ID NO: 10
AAVrh.8R R533A mutant	510	WO2015168666 SEQ ID NO: 11
BAAV (bovine AAV)	511	US9193769 SEQ ID NO: 8
BAAV (bovine AAV)	512	US9193769 SEQ ID NO: 10
BAAV (bovine AAV)	513	US9193769 SEQ ID NO: 4
BAAV (bovine AAV)	514	US9193769 SEQ ID NO: 2
BAAV (bovine AAV)	515	US9193769 SEQ ID NO: 6
BAAV (bovine AAV)	516	US9193769 SEQ ID NO: 1
BAAV (bovine AAV)	517	US9193769 SEQ ID NO: 5
BAAV (bovine AAV)	518	US9193769 SEQ ID NO: 3
BAAV (bovine AAV)	519	US9193769 SEQ ID NO: 11
BAAV (bovine AAV)	520	US7427396 SEQ ID NO: 5
BAAV (bovine AAV)	521	US7427396 SEQ ID NO: 6
BAAV (bovine AAV)	522	US9193769 SEQ ID NO: 7
BAAV (bovine AAV)	523	US9193769 SEQ ID NO: 9
BNP61 AAV	524	US20150238550 SEQ ID NO: 1
BNP61 AAV	525	US20150238550 SEQ ID NO: 2
BNP62 AAV	526	US20150238550 SEQ ID NO: 3
BNP63 AAV	527	US20150238550 SEQ ID NO: 4
caprine AAV	528	US7427396 SEQ ID NO: 3
caprine AAV	529	US7427396 SEQ ID NO: 4
true type AAV (ttAAV)	530	WO2015121501 SEQ ID NO: 2
AAAV (Avian AAV)	531	US9238800 SEQ ID NO: 12
AAAV (Avian AAV)	532	US9238800 SEQ ID NO: 2
AAAV (Avian AAV)	533	US9238800 SEQ ID NO: 6

AAAV (Avian AAV)	534	US9238800 SEQ ID NO: 4
AAAV (Avian AAV)	535	US9238800 SEQ ID NO: 8
AAAV (Avian AAV)	536	US9238800 SEQ ID NO: 14
AAAV (Avian AAV)	537	US9238800 SEQ ID NO: 10
AAAV (Avian AAV)	538	US9238800 SEQ ID NO: 15
AAAV (Avian AAV)	539	US9238800 SEQ ID NO: 5
AAAV (Avian AAV)	540	US9238800 SEQ ID NO: 9
AAAV (Avian AAV)	541	US9238800 SEQ ID NO: 3
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AAAV (Avian AAV)	544	US9238800 SEQ ID NO: 13
AAAV (Avian AAV)	545	US9238800 SEQ ID NO: 1
AAV Shuffle 100-1	546	US20160017295 SEQ ID NO: 23
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AAV CLv-8	664	US8734809 SEQ ID NO: 72
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AAV CLv l-3	682	US8734809 SEQ ID NO: 173
AAV CLvl-4	683	US8734809 SEQ ID NO: 174
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AAV Clv 1-8	685	US8734809 SEQ ID NO: 176
AAV Civ I-9	686	US8734809 SEQ ID NO: 177
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AAV CLv-D4	702	US8734809 SEQ ID NO: 99

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AAV CLv-DS	706	US8734809 SEQ ID NO: 103
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AAV CKd-8	744	US8734809 SEQ ID NO: 138
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AAV CSp-8.9	812	WO20 l606500 ! SEQ ID NO: 45
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AAV CBr-B7.4	814	WO20 l6065001 SEQ ID NO: 47
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AAV4	816	WO2016065001 SEQ ID NO: 49
AAV5	817	WO20 l606500 ! SEQ ID NO: 50
AAV CHt-P2	818	WO2016065001 SEQ ID NO: 51
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AAV CHt-P9	820	WO2016065001 SEQ ID NO: 53
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AAV CKd.-N4	830	WO2016065001 SEQ ID NO: 63
AAV CKd-N9	831	WO2016065001 SEQ ID NO: 64
AAV CLv-L4	832	WO20 16065001 SEQ ID NO: 65
AAV CLv-L5	833	WO2016065001 SEQ ID NO: 66
AAV CL.V-L6	834	WO20 l606500 l SEQ ID NO: 67
AAV CLv-Kl	835	WO2016065001 SEQ ID NO: 68
AAV CLv-K3	836	WO2016065001 SEQ ID NO: 69
AAV CLv-K6	837	WO20 16065001 SEQ ID NO: 70

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AAV CLv-Ml l	839	**WO2016065001** SEQ ID **NO**: 72
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AAV CLv-MS	**841**	**WO2016065001** SEQ **ID** NO: 74
AAV **CLv-M6**	842	**WO20 l 606500 l** SEQ **ID** NO: 75
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AAV CHt-Pl	846	**WO2016065001** SEQ ID NO: 79
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AAV **CHI-P8**	848	**WO2016065001** SEQ **ID** NO: 81
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AAV **CHt-6.7**	853	**WO2016065001** SEQ **ID** NO: 86
AAV **CHt-6.8**	854	**WO20 l 6065001** SEQ ID NO: 87
AAV CSp-8. 10	855	**WO2016065001** SEQ ID NO: 88
AAV CSp-8.2	856	**WO2016065001** SEQ ID NO: 89
AAV **CSp-8.4**	857	**WO20 l 606500 l** SEQ ID NO: 90
AAV **CSp-8.5**	858	**WO2016065001** SEQ **ID** NO: 91
AAV **CSp-8.6**	859	**WO20 l 6065001** SEQ ID NO: 92
AAV CSp-8.7	860	**WO2016065001** SEQ ID NO: 93
AAV CSp-8.8	861	**WO2016065001** SEQ ID NO: 94
AAV **CSp-8.9**	862	**WO20 l 606500 l** SEQ ID NO: 95
AAV CBr-B7.3	863	**WO2016065001** SEQ ID NO: 96
AAV **CBr-B7.4**	864	**WO20 l 6065001** SEQ ID NO: 97
AAV3B	865	**WO2016065001** SEQ ID NO: 98
AAV4	866	**WO2016065001** SEQ ID NO: 99
AAV5	867	**WO20 16065001** SEQ ID NO: 100
AAVPHP .B or **G2B-26**	868	**WO20 l 5038958** SEQ ID NO: **8 and** 13; **GenBaiikALU85 156. 1**
AAVPHP.B	869	**WO2015038958** SEQ ID NO: 9
AAVG2B-13	870	**WO2015038958** SEQ ID NO: 12
AAVTHl .1-32	**871**	WO20 l 5038958 SEQ ID NO: 14
AAVTH 1. 1-35	872	**WO2015038958** SEQ ID NO: 15

[0089] Each of the patents, applications and/of publications listed in Table 1 are hereby incorporated by reference in their entirety.

[0090] **In** one embodiment, the AAV serotype may be, or may have a sequence as described in international Patent Publication WO2015038958, the contents of which are herein incorporated by reference **in** their entirety, **such** as, but not limited to, AAY9 (SEQ ID NO: 2 and 11 of WO20 l 5038958 or SEQ ID NO: 127 and 126 respectively herein), PHP.B (SEQ ID NO: 8 and 9 of WO2.015038958, herein SEQ iD NO: 868 and 869), G2B-13 (SEQ ID NO: 12 of

WO2015038958, herein SEQ ID NO: 870), G2B-26 (SEQ ID NO: 13 of WO2015038958, herein SEQ ID NO: 868 and 869), TH1.1-32 (SEQ ID NO: 14 of WO2015038958, herein SEQ ID NO: 871), THl. 1-35 (SEQ ID NO: 15 of WO2015038958, herein SEQ ID NO: 872) or variants thereof. Further, any of the targeting peptides or amino acid inserts described in WO20I5038958, may be inserted into any parent AAV serotype, such as, but not limited to, AAV9 (SEQ ID NO: 126 for the DNA sequence and SEQ ID NO: 127 for the amino acid sequence). In one embodiment, the amino acid insert is inserted between amino acids 586-592 of the parent AAV (e.g., AAV9). in another embodiment, the amino acid insert is inserted between amino acids 588-589 of the parent AAV sequence. The amino acid insert may he, but is not limited to, any of the following amino acid sequences, TLAVPFK (SEQ ID NO: I of WO2015038958; herein SEQ ID NO: 873), KFPVALT (SEQ ID NO: 3 of WO2015038958; herein SEQ ID NO: 874), LAVPFK (SEQ ID NO: 31 of WO2015038958; herein SEQ ID NO: 875), AVPFK (SEQ ID NO: 32 of WO2015038958; herem SEQ ID NO: 876), VPFK (SEQ ID NO: 33 of WO2015038958; herein SEQ ID NO: 877), TLAVPF (SEQ ID NO: 34 of WO2015038958, herein SEQ ID NO: 878). TLAVP (SEQ ID NO: 35 of WO2015038958, herein SEQ ID NO: 879), TLAV (SEQ ID NO: 36 of WO20I5038958; herem SEQ ID NO: 880), SVSKPFL (SEQ ID NO: 28 of WO2015038958; herem SEQ ID NO: 881), FTLTTPK (SEQ ID NO: 29 of WO2015038958; herein SEQ ID NO: 882), MNATKNV (SEQ ID NO: 30 of WO2015038958; herein SEQ ID NO: 883), QSSQTPR (SEQ ID NO: 54 of WO2015038958; herein SEQ ID NO: 884), ILGTGTS (SEQ ID NO: 55 of WO20I 5038958; herein SEQ ID NO: 885), TRTNPEA (SEQ ID NO: 56 of WO2015038958; herein SEQ ID NO: 886), NGGTSSS (SEQ ID NO: 58 of WO20I5038958; herein SEQ ID NO: 887), or YTLSQGW (SEQ ID NO: 60 of WO2015038958; herein SEQ ID NO: 888). Non-limitirsg examples of nucleotide sequences that may encode the amino acid inserts include the following, AAG'ITTCCTGTGGCGTTGACT (for SEQ ID NO: 3 of WO2015038958; herein SEQ ID NO: 889), ACTTTGGCGGTGCCTTTTAAG (SEQ ID NO: 24 and 49 of WO20I5038958; herein SEQ ID NO: 890), AGTGTGAGTAAGCCTTTTTTG (SEQ ID NO: 25 of WO2015038958; herein SEQ ID NO: 891), TTTACGTTGACGACGCCTAAG (SEQ ID NO: 26 of WO2015038958; herein SEQ ID NO: 892), ATGAATGCTACGAAGAATGTG (SEQ ID NO: 27 of WO2015038958; herein SEQ ID NO: 893), CAGTCGTCGCAGACGCCTAGG (SEQ ID NO: 48 of WO20I5038958; herein SEQ ID NO: 894), ATTCTGGGGACTGGTACTTCG (SEQ ID NO: 50 and 52 of WO2015038958; herein SEQ ID NO: 895), ACGCGGACTAATCCTGAGGCT (SEQ ID NO: 51 of WO2015038958; herein SEQ ID NO: 896), AATGGGGGGACTAGTAGTTCT (SEQ ID NO: 53 of WO20I5038958; herem SEQ ID NO: 897), or

TATACTTTGTCGCAGGGTTGG (SEQ ID NO: 59 of WO2015038958, herein SEQ ID NO: 898).

Viral Genome Component: Inverted Terminal Repeats (ITRs)

[0091] The AAV particles of the present invention comprise a viral genome with at least one ITR region and a payload region. In one embodiment, the viral genome has two ITRs. These two ITRs flank the payload. region at the 5' and 3' ends. The ITRs function as origins of replication comprising recognition sites for replication. ITRs comprise sequence regions which can be complementary and symmetrically arranged. ITRs incorporated into viral genomes of the invention may be comprised of naturally occurring polynucleotide sequences or reeomhinantly derived polynucleotide sequences.

[0092] The ITRs may be derived from the same serotype as the capsid, selected from any of the serotypes listed in Table 1, or a derivative thereof The ITR may be of a different serotype than the capsid. In one embodiment, the AAV particle has more than one ITR. In a non-limiting example, the AAV particle has a viral genome comprising two ITRs. In one embodiment, the ITRs are of the same serotype as one another. In another embodiment, the ITRs are of different serotypes. Non-limiting examples include zero, one or both of the ITRs having the same serotype as the capsid. In one embodiment both ITRs of the viral genome of the AAV particle are AAV2 ITRs.

[0093] Independently, each ITR may be about 100 to about 150 nucleotides in length. An ITR may be about 1.00-105 nucleotides in length, 106-110 nucleotides in length, 11.1.-115 nucleotides in length, 116-120 nucleotides in length, 121-125 nucleotides in length, 126-130 nucleotides in length, 131-135 nucleotides in length, 136-140 nucleotides in length, 141-145 nucleotides in length or 146-150 nucleotides in length. In one embodiment, the ITRs are 140-142 nucleotides in length. Non-limiting examples of ITR length are 102, 140, 141, 142, 145 nucleotides in length, and those having at least 95% identity thereto.

Viral Genome Component: Promoters

[0094] In one embodiment, the payload region of the viral genome comprises at least one element to enhance the transgene target specificity and expression (See e.g., Powell et al. Viral Expression Cassette Elements to Enhance Transgene Target Specificity and Expression in Gene Therapy, 201.5; the contents of which are herein incorporated by reference in its entirety). Non-limiting examples of elements to enhance the transgene target specificity and expression include promoters, endogenous rniRNAs, post-transcriptional regulatory elements (PREs), poiyadenviation (Poly A) signal sequences and upstream enhancers (IJSEs), CMV enhancers and introns.

[0095] A person skilled in the art may recognize that expression of the polypeptides of the invention in a target cell may require a specific promoter, including but not limited to, a promoter that is species specific, inducible, tissue-specific, or cell cycle-specific (Parr et al., Nat. *Med.* 3:1 145-9 (1997); the contents of which are herein incorporated by reference in their entirety).

[0096] In one embodiment, the promoter is deemed to he efficient when it drives expression of the polypeptide(s) encoded in the payload region of the viral genome of the AAV particle.

[0097] In one embodiment, the promoter is a promoter deemed to be efficient when it drives expression in the cell being targeted.

[0098] In one embodiment, the promoter drives expression of the polypeptides of the invention (e.g., a functional antibody) for a period of time in targeted tissues. Expression driven by a promoter may be for a period of I hour, 2, hours. 3 hours, 4 hours, 5 hours, 6 hours, 7 hours. 8 hours, 9 hours, 10 hours, I I hours, 12 hours, 13 hours, 14 hours, 15 hours, 16 hours, 17 hours, 18 hours, 19 hours, 20 hours, 21 hours, 22 hours, 23 hours, 1 day, 2 days, 3 days, 4 days, 5 days, 6 days, I week, 8 days. 9 days, 10 days, 11 days, 12 days, 13 days, 2 weeks, 15 days, 16 days, 17 days. 18 days, 19 days, 20 days, 3 weeks, 22 days, 23 days, 24 days, 25 days, 26 days, 27 days, 28 days, 29 days, 30 days, 31 days, 1 month, 2 months, 3 months, 4 months, 5 months, 6 months, 7 months, 8 months, 9 months, 10 months, 11 months, 1 year, 13 months, 14 months, 15 months, 16 months. 17 months, 18 months, 19 months, 20 months, 21 months, 22 months, 23 months, 2 years. 3 years, 4 years, 5 years, 6 years. 7 years, 8 years, 9 years, 10 years or more than 10 years. Expression may be for 1-5 hours, 1-12 hours, 1-2 days, 1-5 days, 1-2 weeks, 1-3 weeks, 1-4 weeks, 1-2 months, 1-4 months, 1-6 months, 2-6 months, 3-6 months, 3-9 months. 4-8 months, 6-12 months, 1-2 years, 1-5 years, 2-5 years, 3-6 years, 3-8 years, 4-8 years or 5-10 years.

[0099] In one embodiment, the promoter drives expression of the polypeptides of the invention (e.g., afunctional antibody) for at least 1 month, 2 months, 3 months, 4 months, 5 months, 6 months, 7 months, 8 months, 9 months, 10 months. 11 months, 1 year, 2 years, 3 years 4 years, 5 years, 6 years, 7 years, 8 years, 9 years, 10 years, 11 years, 12 years, 13 years, 14 years, 15 years, 16 years, 17 years, 18 years, 19 years, 20 years, 21 years, 22 years, 23 years, 24 years, 25 years. 26 years, 27 years, 28 years, 29 years, 30 years, 31 years, 32 years. 33 years, 34 years, 35 years, 36 years, 37 years, 38 years, 39 years, 40 years, 41 years, 42 years, 43 years, 44 years, 45 years, 46 years, 47 years, 48 years, 49 years, 50 years, 55 years, 60 years. 65 years, or more than 65 years.

[00100] Promoters may be naturally occurring or non-naturally occurring. Non-limiting examples of promoters include viral promoters, plant promoters and mammalian promoters. In

some embodiments, the promoters may be human promoters. In some embodiments, the promoter may be truncated.

[00101] Promoters which drive or promote expression in most tissues include, but are not limited to, human elongation factor 1α-subunit (EFla), cytomegalovirus (CMV) immediate-early enhancer and/or promoter, chicken β-actin (CBA) and its derivative CAG, β glucuronidase (GUSB), or ubiquitin C (UBC). Tissue-specific expression elements can be used to restrict expression to certain cell types such as, but not limited to, muscle specific promoters, B cell promoters, monocyte promoters, leukocyte proinoters, macrophage promoters, pancreatic acinar cell promoters, endothelial cell promoters, lung tissue promoters, astrocyte promoters, or nervous system promoters which can be used to restrict expression to neurons, astrocytes, or oligodendrocytes.

[00102] Non-limiting examples of muscle-specific promoters include mammalian muscle creatine kinase (MCK) promoter, mammalian desmin (DES) promoter, mammalian troponin I (TNN12) promoter, and mammalian skeletal aipha-actin (ASKA) promoter (see, e.g. U.S. Patent Publication US 201 10212529, the contents of which are herein incorporated by reierence in their entirety)

[00103] Non-limiting examples of tissue-specific expression elements for neurons include neuron-specific enoiase (NSE), platelet-derived growth factor (PDGF), platelet-derived growth factor B-chain (PDGF-β), synapsin (Syn), methyl-CpG binding protein 2 (MeCP2), €a²Vcalmoduim-dependent protein kinase II (CaMKTI), metabotropic glutamate receptor 2 (mGluR2), neurofilament light (NFL) or heavy (NFH), β-globin minigene ηβ2, preproenkephalin (PPE), enkephalin (Enk) and excitatory amino acid transporter 2 (EAAT2) promoters. Non-limiting examples of tissue-specific expression elements for astrocytes include glial fibrillary acidic protein (GFAP) and EAAT2 promoters. Anon-limiting example of a tissue-specific expression element for oligodendrocytes includes the myelin basic protein (MBP) promoter.

[00104] In one embodiment, the promoter may be less than 1 kb. The promoter may have a length of 200, 210, 220, 230, 240, 250, 260, 270, 280, 290, 300, 310, 320, 330, 340, 350, 360, 370, 380, 390, 400, 410, 420, 430, 440, 450, 460, 470, 480, 490, 500, 510, 520, 530, 540, 550, 560, 570, 580, 590, 600, 610, 620, 630, 640, 650, 660, 670, 680, 690, 700, 710, 720, 730, 740, 750, 760, 770, 780, 790, 800 or more than 800 nucleotides. The promoter may have a length between 200-300, 200-400, 200-500, 200-600, 200-700, 200-800, 300-400, 300-500, 300-600, 300-700, 300-800, 400-500, 400-600, 400-700, 400-800, 500-600, 500-700, 500-800, 600-700, 600-800 or 700-800.

[00105] In one embodiment, the promoter may be a combination of two or more components of the same or different starting or parental promoters such as, but not limited to, CMV and CBA. Each component may have a length of 200, 210, 220, 230, 240, 250, 260, 270, 280, 290. 300, 310, 320, 330, 340, 350, 360, 370, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 400, 410. 420, 430, 440, 450. 460, 470, 480, 490, 500, 510, 520, 530, 540, 550, 560, 570, 580, 590, 600, 610. 620, 630, 640, 650. 660, 670, 680, 690, 700, 710, 720, 730, 740, 750, 760, 770, 780, 790, 800 or more than 800. Each component may have a length between 200-300, 200-400, 200-500, 200-600, 200-700, 200-800, 300-400, 300-500, 300-600, 300-700, 300-800, 400-500, 400-600, 400-700, 400-800, 500-600, 500-700, 500-800, 600-700. 600-800 or 700-800. In one embodiment, the promoter is a combination of a 382 nucleotide CMV-enhancer sequence and a 260 nucleotide CBA-promoter sequence.

[00106] In one embodiment, the viral genome comprises a ubiquitous promoter. Non-limiting examples of ubiquitous promoters include CMV, CBA (including derivatives CAG, CBh, etc.), EF-1α, PGK, UBC, GUSB (liGBp), and UCOE (promoter of HNRPA2B1-CBX3).

Yu et al. (Molecular Pain 2011, 7:63, the contents of which are herein incorporated by reference in their entirety) evaluated the expression of eGFP under the CAG, EFTa, PGK and UBC promoters in rat DRG cells and primary DRG cells using lentiviral vectors and found that UBC showed weaker expression than the other 3 promoters and only 10-12% glial expression was seen for all promoters. Soderblom et al. (E. Neuro 2015; the contents of which are herein incorporated by reference in its entirety) evaluated the expression of eGFP in AAV8 with CMV and UBC promoters and AAV2 with the CMV promoter after injection in the motor cortex. Intranasal administration of a plasmid containing a UBC or EF1α promoter showed a sustained airway expression greater than the expression with the CMV promoter (See e.g., Gill et al., Gene Therapy 2001. Vol. 8, 1539-1546; the contents of which are herein incorporated by reference in their entirety). Husain et al. (Gene Therapy 2009; the contents of which are herein incorporated by reference in its entirety) evaluated an HβH construct with ahGUSB promoter, a HSV-1LAT promoter and an NSE promoter and found that the HβH construct showed weaker expression than NSE in mouse brain. Passim and Wolfe (J. Virol. 2001, 12382-12392, the contents of which are herein incorporated by reference in its entirety) evaluated the long-term effects of the HβH vector following an intraventricular injection in neonatal mice and found that there was sustained expression for at least 1 year. Low expression in all brain regions was found by Xu et al. (Gene Therapy 2001, 8, 1323-1332; the contents of which are herein incorporated by reference in their entirety) when NFL and NFH promoters were used as compared to the CMV-lacZ. CMV-luc, EF, GFAP, hENK, nAChR, PPE, PPE + wpre, NSE (0.3 kb), NSE (1.8 kb) and

NSE (1.8 kb + wpre). Xu et ai. found thai the promoter activity in descending order was NSE (1.8 kb), EF, NSE (0.3 kb), GFAP, CMV, hENK, PPE, NFL and NFH. NFL is a 650-nudeotide promoter and NFH is a 920-nucleotide promoter which are both absent in the liver but NFH is abundant in the sensor;/ proprioceptive neurons, brain and spinal cord and NFH is present in the heart. Scn8a is a 470 nucleotide promoter which expresses throughout the DRG, spinal cord and brain with particularly high expression seen in the bippocampal neurons and cerebellar Purkinje cells, cortex, thalamus and hypothalamus (See e.g., Drews et ai. *Identification of evolutionary conserved, functional noncoding elements in (lie promoter region of the sodium channel gene SCN8A,* Mamm Genome (2007) 18:723-731 ; and Raymond et al. *Expression of Alternatively Spliced Sodium Channel a-subunit genes.* Journal of Biological Chemistry (2004) 279(44) 46234-46241; the contents of each of which are herein incorporated by reference in their entireties).

[00107] Any of promoters taught by the aforementioned Yu, Soderblom, Gill, Husain, Passim, Xu, Drews or Raymond may be used in the present inventions.

[00108] In one embodiment, the promoter is not ceil specific.

[00109] In one embodiment, the promoter is an ubiquitin c (URC) promoter. The UBC promoter may have a size of 300-350 nucleotides. As anon-limiting example, the UBC promoter is 332 nucleotides.

[00110] In one embodiment, the promoter is a β-g!ucuromdase (GIJSB) promoter. The GIJSB promoter may have a size of 350-400 nucleotides. As anon-limiting example, the GUSB promoter is 378 nucleotides.

[00111] In one embodiment, the promoter is a neurofilament light (NFL) promoter. The NFL promoter may have a size of 600-700 nucleotides. As a non-limiting example, the NFL promoter is 650 nucleotides.

[00112] In one embodiment, the promoter is a neurofilament heavy (NFH) promoter. The NFH promoter may have a size of 900-950 nucleotides. As a non-limiting example, the NFH promoter is 920 nucleotides.

[00113] In one embodiment, the promoter is a scn8a promoter. The scn8a promoter may have a size of 450-500 nucleotides. As a non-iimiting example, the scn8a promoter is 470 nucleotides.

[001 14] In one embodiment, the promoter is a phosphoglycerate kinase 1 (PGK) promoter.

[00115] In one embodiment, the promoter is a chicken β-actin (CBA) promoter.

[00116] In one embodiment, the promoter is a cytomegalovirus (CMV) promoter.

[00117] In one embodiment, the promoter is a liver or a skeletal muscle promoter. Non-limiting examples of liver promoters include human a~l-antitrypsin (hAAT) and thyroxine

binding globulin (TBG). Non-limiting examples of skeletal muscle promoters include Desrnin, MCK or synthetic C5-12.

[00118] In one embodiment, the promoter is a RNA pol HI promoter. As anon-limiting example, the RNA pol iII promoter is U6. As a non-limiting example, the RNA poi lii promoter is HI.

[00119] In one embodiment, the viral genome comprises two promoters. As anon-limiting example, the promoters are an EF1α promoter and a CMV promoter.

[00120] In one embodiment, the viral genome composes an enhancer element, a promoter and/or a 5'UTR intron. The enhancer element, also referred to herein as an "enhancer," may be, but is not limited to, a CMV enhancer, the promoter may be, but is not limited to, a CMV, CBA, UBC, GUSB, NSE, Synapsin, MeCP2, and GFAP promoter and the 5'UTR/intron may be, but is not limited to, SV40, and CBA-MVM. As anon-limiting example, the enhancer, promoter and/or intron used in combination may be: (1) CMV enhancer, CMV promoter, SV40 5'UTR intron; (2) CMV enhancer, CBA promoter, SV 40 5'UTR intron; (3) CMV enhancer, CBA promoter, CBA-MVM 5'UTR intron; (4) UBC promoter; (5) GUSB promoter; (6) NSE promoter; (7) Synapsin promoter; (8) MeCP2 promoter and (9) GFAP promoter.

[00121] In one embodiment, the viral genome comprises an engineered promoter.

[00122] In another embodiment, the viral genome comprises a promoter from a naturally expressed protein.

Viral Genome Component: Untranslated Regions (UTRs)

[00011] By definition, wild type untranslated regions (UTRs) of a gene are transcribed but not translated. Generally, the 5' UTR starts at the transcription start site and ends at the start codon and the 3' UTR starts immediately following the stop codon and continues until the termination signal for transcription.

[00012] Features typically found in abundantly expressed genes of specific target organs may be engineered into UTRs to enhance the stability and protein production. As a non-limiting example, a 5' UTR from mRNA normally expressed in the liver (e.g., albumin, serum amyloid A, Apolipoprotem A-'B/E, transferrin, alpha fetoprotein, erythropoietin, or Factor VIII) may be used in the viral genomes of the AAV particles of the invention to enhance expression in hepatic cell lines or liver.

[00013] While not wishing to be bound by theory, wild-type 5' untranslated regions (UTRs) include features which play roles in translation initiation. Kozak sequences, which are commonly known to be involved in the process by which the ribosome initiates translation of many genes, are usually included in 5' UTRs. Kozak sequences have the consensus

CCR(A"G)CCAUGG, where R is a purine (adenine or guanine) three bases upstream of the start codon (ATG), which is followed by another 'G'.

[00014] In one embodiment, the 5'UTR in the viral genome includes a Kozak sequence.

[00015] In one embodiment, the 5'UTR in the viral genome does not include a Kozak sequence.

[00016] While not wishing to be bound by theory, wild-type 3' UTRs are known to have stretches of Adenosines and Uridines embedded therein. These AU rich signatures are particularly prevalent in genes with high rates of turnover. Based on their sequence features and functional properties, the AU rich elements (AREs) can be separated into three classes (Chen et al, 1995, the contents of which are herein incorporated by reference in its entirety): Class I AREs, such as, but not limited to, c-Myc and MyoD, contain several dispersed copies of an AUUUA motif within U-rich regions. Class II AREs, such as, but not limited to, GM-CSF and TNF-a, possess two or more overlapping UUAUUUA(U/A)(U/A) nonamers. Class HI ARES, such as, but not limited to, c-Jun and Myogenm, are less well defined. These U rich regions do not contain an AUUUA motif. Most proteins binding to the AREs are known to destabilize the messenger, whereas members of the ELAV family, most notably HuR, have been documented to increase the stability of mRNA. HuR binds to AREs of all the three classes. Engineering the HuR specific binding sites into the 3' UTR of nucleic acid molecules will lead to HuR binding and thus, stabilization of the message *in vivo.*

[00017] Introduction, removal or modification of 3' UTR AU rich elements (AREs) can be used to modulate the stability of polynucleotides. When engineering specific polynucleotides, e.g., payload regions of viral genomes, one or more copies of an ARE. can be introduced to make polynucleotides less stable and thereby curtail translation and decrease production of the resultant protein. Likewise, AREs can be identified and removed or mutated to increase the intracellular stability and thus increase translation and production of the resultant protein.

[00018] In one embodiment, the 3' UTR of the viral genome may include an oligo(dT) sequence for tempiated addition of a poly-A tail.

[00019] In one embodiment, the viral genome may include at least one miRNA seed, binding site or full sequence. microRNAs (or miRNA or miR) are 19-25 nucleotide noncoding RNAs that bind to the sites of nucleic acid targets and down-regulate gene expression either by reducing nucleic acid molecule stability or by inhibiting translation. A microRNA sequence comprises a "seed" region, i.e., a sequence in the region of positions 2-8 of the mature microRNA, which sequence has perfect Watson-Crick complementarity to the miRNA target sequence of the nucleic acid.

[00020] In one embodiment, the viral genome may be engineered to include, alter or remove at least one miRNA binding site, sequence or seed region.

[00021] Any UTR from any gene known in the art may be incorporated into the viral genome of the AAV particle. These UTRs, or portions thereof, may be placed in the same orientation as in the gene from which they were selected or they may be altered in orientation or location. In one embodiment, the UTR used in the viral genome of the AAV particle may be inverted, shortened, lengthened, made with one or more other 5' UTRs or 3' UTRs known in the art. As used herein, the term "altered" as it relates to a UTR, means that the UTR has been changed in some way in relation to a reference sequence. For example, a 3' or 5' UTR may be altered relative to a wild type or native UTR by the change in orientation or location as taught above or may be altered by the inclusion of additional nucleotides, deletion of nucleotides, swapping or transposition of nucleotides.

[00022] In one embodiment, the viral genome of the AAV particle comprises at least one artificial UTRs which is not a variant of a wild type UTR.

[00023] In one embodiment, the viral genome of the AAV particle comprises UTRs which have been selected from a family of transcripts whose proteins share a common function, structure, feature or property.

Viral Genome Component: Polyadenylation Sequence

[00123] In one embodiment, the viral genome of the AAV particles of the present invention comprise at least one polyadenylation sequence. The viral genome of the AAV particle may comprise a polyadenylation sequence between the 3' end of the payioad coding sequence and the 5' end of the 3TTR.

[00124] In one embodiment, the polyadenylation sequence or "polyA sequence" may range from absent to about 500 nucleotides in length. The polyadenylation sequence may be, but is not limited to, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29. 30, 31, 32, 33, 34. 35, 36, 37, 38, 39, 40. 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67. 68, 69, 70, 71, 72. 73. 74, 75, 76, 77, 78. 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106. 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122. 123, 124, 125, 126. 127, 128, 129, 130. 131, 132, 133, 134. 135, 136, 137, 138, 139. 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180. 181, 182, 183, 184. 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200. 201, 202, 203, 204. 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216,

217, 218, 219, 220. 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233. 234, 235, 236. 237, 238, 239, 240. 241, 242, 243, 244. 245, 246, 247, 248. 249, 250, 251, 252, 253. 254, 255. 256, 257, 258, 259. 260, 261, 262, 263, 264. 265, 266, 267, 268, 269, 270, 271, 272. 273, 274, 275, 276, 277, 278. 279, 280, 281, 282, 283. 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294. 295. 296, 297. 298. 299, 300, 301, 302. 303, 304, 305, 306, 307, 308, 309, 310, 311. 312, 313, 314. 315. 316, 317, 318. 319. 320. 321, 322, 323, 324, 325. 326. 327. 328, 329, 330. 331, 332, 333, 334. 335, 336, 337, 338, 339. 340, 341, 342, 343, 344, 345. 346. 347, 348, 349, 350, 351, 352, 353. 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366. 367, 368, 369. 370, 371, 372. 373. 374, 375, 376, 377. 378, 379, 380, 381. 382, 383, 384, 385, 386. 387, 388. 389, 390, 391, 392. 393, 394, 395, 396. 397. 398, 399, 400, 401, 402, 403, 404, 405. 406, 407, 408, 409, 410, 411. 412, 413, 414, 415, 416. 417. 418, 419, 420. 421, 422, 423, 424, 425. 426, 427, 428. 429, 430, 431, 432. 433. 434. 435, 436. 437, 438. 439. 440. 441, 442, 443, 444. 445, 446, 447. 448. 449, 450, 451. 452, 453. 454, 455, 456, 457, 458, 459. 460. 461, 462, 463, 464, 465, 466, 467. 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478. 479, 480, 481, 482, 483, 484, 485, 486. 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499. and 500 nucleotides in length.

[00125] In one embodiment, the poiyadenylation sequence is 50-100 nucleotides in length.

[00126] In one embodiment, the poiyadenylation sequence is 50-150 nucleotides in length.

[00127] In one embodiment, the poiyadenylation sequence is 50-160 nucleotides in length.

[00128] In one embodiment, the poiyadenylation sequence is 50-200 nucleotides in length.

[00129] In one embodiment, the poiyadenylation sequence is 60-100 nucleotides in length.

[00130] In one embodiment, the poiyadenylation sequence is 60-150 nucleotides in length.

[00131] In one embodiment, the poiyadenylation sequence is 60-160 nucleotides in length.

[00132] In one embodiment, the poiyadenylation sequence is 60-200 nucleotides in length.

[00133] In one embodiment, the poiyadenylation sequence is 70-100 nucleotides in length.

[00134] In one embodiment, the poiyadenylation sequence is 70-150 nucleotides in length.

[00135] In one embodiment, the poiyadenylation sequence is 70-160 nucleotides in length.

[00136] In one embodiment, the poiyadenylation sequence is 70-2.00 nucleotides in length.

[00137] In one embodiment, the polyadenyiaiion sequence is 80-100 nucleotides in length.

[00138] In one embodiment, the poiyadenylation sequence is 80-150 nucleotides in length.

[00139] In one embodiment, the polyadenyiaiion sequence is 80-160 nucleotides in length.

[00140] In one embodiment, the poiyadenylation sequence is 80-200 nucleotides in length.

[00141] In one embodiment, the poiyadenylation sequence is 90-100 nucleotides in length.

[00142] In one embodiment, the poiyadenylation sequence is 90-150 nucleotides in length.

[00143] In one embodiment, the po!yadenyiation sequence is 90-160 nucleotides in length.

[00144] In one embodiment, the polyadenylation sequence is 90-200 nucleotides in length.

Viral Genome Component: Lirdcers

[00145] Viral genomes of the invention may be engineered with one or more spacer or linker regions to separate coding or non-coding regions.

[00146] In one embodiment, the payload region of the AAV particle may optionally encode one or more linker sequences. In some cases, the hnker may be a peptide linker that may be used to connect the polypeptides encoded by the payload region (i.e., light and heavy antibody chains during expression). Some peptide linkers may be cleaved after expression to separate heavy and light chain domams, allowing assembly of mature antibodies or antibody fragments. Linker cleavage may be enzymatic. In some cases, linkers comprise an enzymatic cleavage site to facilitate intracellular or extracellular cleavage. Some payload regions encode linkers that interrupt polypeptide synthesis during translation of the linker sequence from an mRNA transcript. Such linkers may facilitate the translation of separate protein domains (e.g., heavy and light chain antibody domains) from a single transcript. In some cases, two or more linkers are encoded by a payload region of the viral genome. Non-limiting examples of linkers that may be encoded by the payload region of an AAV particle viral genome are given in Table 2.

Table 2. Linkers

Liiike r No.	Description	SEQ ID NO **or** SEQUENCE
L1	Internal ribosome entry site (IRES)	899
L2	Foot and mouth disease virus 2A (F2A)	900
L3	Porcine teschovinis-1 vims 2A (P2A)	901
L4	Furin cleavage site (F)	902
L5	5xG4S ("5xG4S" disclosed as SEQ ID NO: 17939)	903
L6	1,4-alpha-glucan-branching enzyme	CHP
L7	1,4-alpha-glucan-brancliing enzyme	904
L8	1,4-beta-N-acetylmuramidase	FKK
L9	1,4-beta-N-acetylmuramidase	905
L10	1,4-beta-N-acetylmuraniidase	906
Lit	1,4-beta-N-acetylmuramidase	907
L12	1,4-beta-N-acetylmuramidase	908
LI3	1,4-beta-N-acetylmuramidase	909
L14	1.4-beta-N-acetylmuramidase	910
L15	1,4-beta-N-acetylmuramidase	911
L16	1,4-beta-N-acetylmuramidase	912
L17	1,4-beta-N-acetylmuramidase	913
L!8	1,4-beta-N-acetylmuramidase	914
L19	150aa long hypothetical transcriptional regulator	915

L20	**150aa** long **hypothetical transcriptional regulator**	916
L21	1-deoxy-D-xyMose **5-phosphate reductoisomerase**	**917**
L22	**1-deoxy-D-xylulose** 5-**phosphate** reductoisomerase	918
L23	**1-deoxy-D-xylulose 5-phosphate** reductoisomerase	919
L24	**1-deoxy-D-xylulose 5-phosphate** reductoisomerase	920
L25	**235aa** long hypothetical biotin-jacetyl-CoA-carboxylasej **ligase**	921
L26	**235aa** long hypothetical **biotin-[acetyl-CoA-carboxylase]** ligase	922
L27	235aa long hypothetical **biotin-[acetyl-CoA-carboxylase]** ligase	923
L28	**2-dehydropantoate 2-reductase**	924
L29	2-deh**ydropantoate** 2-reductase	925
L30	**2-dehydropantoate 2-reductase**	926
L31	2-dehydropantoate 2-reductase	927
L32	2-dehydropantoate **2-reductase**	928
L33	2-dehydropantoate 2-reductase	929
L34	2-dehydropantoate **2-reductase,** putative	930
L35	**2-dehydropantoate 2-reductase,** putative	931
L36	**4-alpha-glucanotransferase**	932
L37	**4-alpha-glucanotransferase**	933
L38	4-**alplia-glucanotransferase**	934
L39	**4-diphosphocytidyl-2C-niethyi-D-erythritol** kinase	HAA
L40	4-diphosphocytidyl-2C-methyl-D-erythxitol kinase	935
L41	**4-diplrosphocytidyl-2C-metiiyl-D-erythritol** kinase	936
L42	**4-diphosphocy'tidyl-2C-methyl-D-etythritol kinase**	937
L43	4-diphosphocytidyl-2C-methyi-D-erytliritoi kinase	938
L44	4-**hydro**xy **phe**ny ipy **mvate dio**xy **genase**	939
L45	5-13 amino acids **from** the N **termini of human** Ck and CHI **domains** linker	940
L46	**5-13** amino acids from the N **termini** of human Ck and CH 1 domains linker	ERK
L47	5-13 amino acids from the N termini of human Ck and CHI domains linker	941
L48	5-13 amino acids from the N **termini** of human Ck and CHI domains linker	942
L49	5-13 **amino** acids from the N termini of human Ck and CH 1 domains linker	943
L50	5-13 amino acids **from** the **N** termini **of human** Ck and CHI domains linker	944
L51	**5'-exo** nuclease	945
L52	5-methyItetrahydropteroyItrigluto ate--homocysteinemethyltransferase	APX
L53	5-**methyltetrahydropteroyltriglutamate~homocy steinemethy 1transferase**	946
L54	5-methyitetrahydropteroyitriglutamate--homocysteinemethyltraiisferase	947
L55	5-**methyltetrahydropteroyltriglutamate—homocyste**ine **methyItransfe**rase	948
L56	5-methy**ltetrahydropteroyltriglutamate-homocy steinemethyltransferase**	949
L57	**5'-nucleotidase**	950
L58	5'-nucleotidase	**951**
L59	5'-nucleotidase	952
L60	**5'-nucleotidase**	953
L61	**704aa** long hypothetical **glycosyltransferase**	954
L62	**704aa** long hypothetical glycosyltransferase	955
L63	80 kDa nuclear cap binding protein	956
L64	80 kDa nuclear cap binding protein	957

L65	80 kDa nuclear cap binding protein	958
L66	80 kDa nuclear cap binding protein	959
L67	Acetaldehyde dehydrogenase (acylating)	960
L68	Acetaldehyde dehydrogenase (acylating)	961
L69	Acetoiactate synthase isozyme III small subunit	962
L70	Acetylcholine receptor protein, alpha chain	963
L71	Acetylcholine receptor protein, beta chain	964
L72	Aconitate hydratase 2	965
L73	Aconitate hydratase 2	966
L74	Aconitate hydratase 2	967
L75	Aconitate hydratase 2	968
L76	Aconitate hydratase 2	969
L77	Acriflavine resistance protein B	DWY
L78	Acriflavine resistance protein B	GGS
L79	Acriflavine resistance protein B	IDQ
L80	Acriflavine resistance protein B	NKV
L81	Acriflavine resistance protein B	SEA
L82	Acriflavine resistance protein B	970
L83	Acriflavine resistance protein B	971
L84	Acriflavine resistance protein B	972
L85	Acriflavine resistance protein B	973
L86	Acriflavine resistance protein B	974
L87	Acriflavine resistance protein B	975
L88	Acriflavine resistance protein B	976
L89	Acriflavine resistance protein B	977
L90	Acriflavine resistance protein B	978
L91	Acriflavine resistance protein B	979
L92	Acriflavine resistance protein B	980
L93	Acriflavine resistance protein B	98!
L94	Acriflavine resistance protein B	982
L95	Acriflavine resistance protein B	983
L96	Acriflavine resistance protein B	984
L97	Acriflavine resistance protein B	985
L98	Acriflavine resistance protein B	986
L99	Acriflavine resistance protein B	987
L!oo	Acriflavine resistance protein B	988
L101	Acriflavine resistance protein B	989
L102	Acriflavine resistance protein B	990
L103	Acriflavine resistance protein B	99!
LI04	Acriflavine resistance protein B	992
LI05	Acriflavine resistance protein B	993
LI06	Acyl-CoA thioesterase 11	994
L107	Acyl-CoA thioesterase II	995
L108	Acyl-CoA thioesterase II	996
L109	Acyl-CoA thioesterase II	997

L I 10	Aeyl-CoA thioesterase ⅠI	998
L l l l	Acyl-coenzyme A thioesterase 4	999
L I 12	Acyl-coenzyme A thioesterase 4	1000
L I 13	Acyl-coenzyme A thioesterase 4	1001
L I ⅠI 4	Acyl-coenzyme A thioesterase 4	1002
L I 15	Acyl-coenzyme A thioesterase 4	1003
L 116	Adenine glycosylase	1004
L I 17	Adenylate cyclase	1005
L I ⅠI 18	Aerolysin	1006
L I ⅠI 9	Aerolysin	1007
L ⅠI 20	Agglutinin	DWK
L121	Agglutinin isolectin 1	1008
L122	Agglutinin isolectin 1	1009
L ⅠI 23	Aldehyde ferredoxin oxidoreductase	1010
L124	Aldehy de oxidoreductase	101 1
L ⅠI 25	Aldehyde oxidoreductase	1012
L126	Aldehyde oxido reductase	1013
L127	Aldehyde oxidoreductase	10 14
L ⅠI 28	Aldehyde oxidoreductase	1015
L129	Alky! hydroperoxide reductase subunit F	1016
L I30	Alkyl hydroperoxide reductase subumt F	1017
L13 1	Alkyl hydroperoxide reductase subunit F	1018
L132	Alkyl hydroperoxide reductase subunit F	10 19
L133	Alkyl hydroperoxide reductase subunit F	1020
L134	Alkyl hydroperoxide reductase subunit F	1021
L I35	Alkyl hydroperoxide reductase subunit F	1022
L ⅠI 36	Alkyl hydroperoxide reductase subunit F	1023
L137	Alkyl hydroperoxide reductase subunit F	1024
L138	Alkyl hydroperoxide reductase subunit F	1025
L139	Aliantoicase	1026
L I40	Allantoicase	1027
L141	Alliin lyase I	SAV
L142	Alliin lyase 1	1028
L143	Alliin lyase 1	1029
L I44	Alliin lyase I	1030
L I45	Alliin lyase 1	103 1
L ⅠI 46	Alpha amylase	1032
L I47	Alpha amylase	1033
L148	Alpha-actinin 1	1034
L149	Alpha-actinin 1	1035
L I50	Alpha-adaptin C	1036
L15 1	Alpha-amylase	1037
L I52	Alpha-glucuronidase	LSD
L153	Alpha-glucuronidase	1038
L I54	Alpha-glucuronidase	1039

L155	**Alpha-glucuronidase**	1040
L156	**Alpha-glucuronidase**	**104 1**
L157	**Alpha-glucuronidase**	1042
L158	**Alpha-glucuronidase**	1043
L159	Alpha-glucuronidase	1044
L160	Alpha-glucuronidase	1045
L161	**Alpha-glucuronidase**	1046
L162	Alpha-glucuronidase	1047
L163	Alpha-glucuronidase	1048
L164	Alpha-glucuronidase	1049
L165	Alpha-glucuronidase	1050
L166	**Alpha-glucuronidase**	105 1
L167	Alpha-glucuronidase	1052
L168	Alpha-glucuronidase	1053
L169	Alpha-glucuronidase	1054
L170	Alpha-glucuronidase	1055
L171	**Alpha-glucuronidase**	1056
L172	Alpha-glucuronidase	1057
Li73	Alpha-glucuronidase	1058
L174	Alp ha-**L**-arab**inofuranosi**dase B	1059
L175	**Alpha-niannosidase**	1060
L176	**Alr2269** protein	**1061**
L177	**AMP** nucleosidase	1062
L178	AMP nucleosidase	1063
L179	AMP nucleosidase	1064
LI80	**Angiopoietin-** l receptor	DAG
L181	**Angiopoietin-1** receptor	NSG
L182	Angiopoietin- l receptor	TSA
L183	Angiopoietin- l receptor	VPR
LI84	Angiopoietin-1 **receptor**	1065
LI85	Angiopoietin- l receptor	1066
L186	**Angiopoietin-1** receptor	1067
L187	Angiopoietin-1 receptor	1068
L188	Angiopoietin- 1 receptor	1069
LI89	Angiopoietin-1 **receptor**	1070
LI90	Angiopoietin- l receptor	1071
L191	**Angiopoietin-1** receptor	1072
L192	Angiopoietin- l receptor	1073
L193	Angiopoietin- 1 receptor	1074
LI94	Angiopoietin-1 **receptor**	1075
LI95	Angiopoietin- l receptor	1076
L196	**Angiopoietin-1** receptor	1077
L197	Angiopoietin- l receptor	1078
L198	Angiopoietin- 1 receptor	1079
LI99	Angiopoietin-1 **receptor**	1080

L200	Angiopoietin-1 receptor	1081
L201	Angiopoietin-1 receptor	1082
L202	Angiopoietin-1 receptor	1083
L203	Angiopoietin-1 receptor	1084
L204	Angiopoietin-1 receptor	1085
L205	Annexin A2	QNK
L206	Annexin A2	1086
L207	Annexin A2	1087
L208	Anthranilate phosphoribosyltransferase	1088
L209	AP-2 complex subunit beta-2	1089
L210	Archaeosme tRNA-guanine transgiycosylase	LGI
L211	Arcliaeosine tRNA-guanine transgiycosylase	1090
L212	Arcliaeosine tRNA-guanine transgiycosylase	1091
L213	Archaeosme tRNA-guanine transgiycosylase	1092
L214	Arcliaeosine tRNA-gnaitine transgiycosylase	1093
L215	Archaeosme tRNA-guanine transgiycosylase	1094
L216	Arcliaeosine tRNA-guanine transgiycosylase	1095
L217	Arcliaeosine tRNA-guanine transgiycosylase	1096
L218	Archeal exosome RNA binding protein rrp4	1097
L219	Archeal exosome RNA binding protein rrp4	1098
L220	Archeal exosome RNA binding protein rrp4	1099
L221	Arginyl-tRNA synthetase	IDY
L222	Arginyl-tRNA syntlietase	1100
L223	Arginyl-tRNA synthetase	1101
L224	Arginyl-tRNA synthetase	1102
L225	Arrestin	1103
L226	Aixestin	1104
L227	Arsenite oxidase	1105
L228	Artificial linker	PGS
L229	Artificial linker	ATK
L230	Artificial linker	ASK
L231	Artificial linker	1106
L232	Artificial linker	1107
L233	Artificial linker	1108
L234	Artificial linker	1109
L235	Artificial linker	1110
L236	Artificial linker	1111
L237	ATP phosphoribosyltransferase	ANR
L238	ATP-dependent DNA helicase	YDP
L239	ATP-dependent DNA helicase	1112
L240	ATP-dependent DNA helicase	1113
L241	ATP-dependent DNA helicase	1114
L242	ATP-dependent DNA helicase	1115
L243	ATP-dependent DNA helicase	1116
L244	ATP-dependent DNA helicase	1117

L245	**ATP-dependent** DNA **helicase**	1118
L246	**ATP-dependent** DNA helicase	i 119
L247	**AT-rich** DNA-binding protein	**1120**
L248	AT-ric!i DNA-binding **protein**	**1121**
L249	Axonin-1	DEC
L250	**Axonin-1**	**ECF**
L251	Axonin-1	1122
L252	Axonin-1	l **123**
L253	**Axonin-1**	**1124**
L254	**Axonin-1**	1125
L255	**Axonin-1**	1126
L256	Axonin-1	1127
L257	Axonin-1	l 128
L258	Bacilysin biosynthesis protein BacB	**1129**
L259	**Bacilysin** biosy nthesis protein BacB	l 130
L260	**Baciiy sin biosynthesis** protein BacB	113 1
L261	Bacilysin biosy nthesis protein BacB	1132
L262	Bacilysin biosynthesis protein BacB	**1133**
L263	**Bacteriophage Mu** transposase	1134
L264	Bacteriophage Mu transposase	1135
L265	**Benzoyl-CoA-dihydrodiol** lyase	l 136
L266	Benzoyl-CoA-dihydrodiol lyase	1137
L267	**Benzoyl-CoA-dihydrodiol** lyase	1138
L268	**Benzoyl-CoA-dihydrodiol** lyase	1139
L269	Benzoyl-CoA-dihydrodiol lyase	**1140**
L270	**Benzoylforniate** decarboxylase	1141
L271	**Benzoylforniate** decarboxylase	1142
L272	**Benzoylforniate** decarboxylase	l 143
L273	**Beta-aniylase**	l l **44**
L274	Beta-galacto sidase	**AIS**
L275	**Beta-galactosidase**	1145
L276	**Beta-galacto**siditse	1146
L277	B**eta-galacto**sidase	l 147
L278	B**eta-galacto**sidase	l **148**
L279	Beta-galacto sidase	**1149**
L280	Beta-galactosidase	1150
L281	**Beta-galacto**siditse	1151
L282	**Beta-galactosidase**	1152
L283	Beta-galacto siditse	i 153
L284	Beta-galacto sidase	**1154**
L285	Beta-galactosidase	1155
L286	**Beta-galacto**sidase	1156
L287	**Beta-galactosidase**	1157
L288	Beta-galacto sidase	l **158**
L289	Beta-galacto sidase	**1159**

L290	**Beta-galaciosidase**	1160
L291	B**eta-galacto**sidase	1161
L292	Beta-galacto sidase	**1162**
L293	**Beta-galactosidase**	**1163**
L294	Beta-**galactosidase**	1164
L295	Beta-galaciosidase	1165
L296	B**eta-galacto**sickise	1166
L297	**Beta-N-acetylliexosaminidase**	QRE
L298	Beta-N-acetylhexosaminidase	1167
L299	**Beta-N-acetylhexosaniimdase**	1168
L300	**Beta-N-acelylhexosaminidase**	1169
L301	Bifunctional NMN **adenylyltiansferase/Nudix** hydrolase	1170
L302	Bifunctional purine biosynthesis protein PURH	**1171**
L303	**Biliverdin** reductase A	**EHV**
L304	**Biliverdin** reductase A	LME
L305	Biliverdin reductase **A**	1172
L306	Biliverdin reductase A	1173
L307	Biodegradative arginine decarboxylase	**TVQ**
L308	**Biodegradative** arginine decarboxylase	1174
L309	Biodegradative arginine decarboxylase	1175
L310	Biodegradative arginine decarboxy lase	1176
L311	Biodegradative arginine decarboxylase	1177
L312	Biodegradative arginine decarboxylase	1178
L313	Biodegradative arginine decarboxylase	1179
L314	Biodegradative arginine decarboxylase	**1180**
L315	Biodegradative arginine decarboxylase	1181
L316	Biodegradative arginine decarboxylase	1182
L317	Biodegradative arginine decarboxylase	1183
L318	Biodegradative arginine decarboxylase	**1184**
L319	Biodegradative arginine decarboxylase	**1185**
L320	**Biotin** carboxylase	1186
L321	**Bowinan-Birk trypsin inhibitor**	1187
L322	Bpt4 gene 59 helicase assembly protein	KQI
L323	BRCAl-associated RING domain protein 1	**1188**
L324	BRCAl-associated RING domain protein **1**	**1189**
L325	BRCA1-associated RING **domain** protein 1	1190
L326	Breast cancer 2	1191
L327	Breast cancer 2	1192
L328	Breast cancer 2	**1193**
L329	Breast cancer 2	1194
L330	Breast cancer 2	1195
L331	Breast cancer 2	1196
L332	**Butyrate** response factor 2	1197
L333	**C4b-binding** protein	YKR
L334	**C4b-binding** protein	1198

L335	C5a peptidase	1199
L336	C5a peptidase	1200
L337	C5a peptidase	1201
L338	C5a peptidase	1202
L339	C5a peptidase	1203
L340	C5a peptidase	1204
L341	C5a peptidase	1205
L342	C5a peptidase	1206
L343	C5a peptidase	1207
L344	C5a peptidase	1208
L345	C5a peptidase	1209
L346	C5a peptidase	1210
L347	C5a peptidase	1211
L348	Calcium-binding protein	1212
L349	CarA	1213
L350	CarA	1214
L351	Carbamoyl phosphate synthetase (small chain)	1215
L352	Carbamoyl phosphate synthetase (small chain)	1216
L353	Carbamoyl phosphate synthetase (small chain)	1217
L354	Carbamoyl phosphate synthetase (small chain)	1218
L355	Carbamoyl phosphate synthetase (small chain)	1219
L356	Carbon monoxide dehydrogenase/acetyl-CoA synthase subunitalpha	1220
L357	Carboxypeptidase Gpl80 residues 503-882	HRG
L358	Cataboiite activation-like protein	1221
L359	Catabolite activation-like protein	1222
L360	Catechol 2,3-dioxygenase	1223
L361	Cation-independent mannose 6-phosphate receptor	1224
L362	CD3 epsilon and gamma ectodomain fragment complex	1225
L363	CD3 epsilon and gamma ectodomain fragment complex	1226
L364	Ceil fiiamentation protein	SNP
L365	Cell fiiamentation protein	1227
L366	Cell fiiamentation protein	1228
L367	Cellular coagulation factor XIII zymogen	DIT
L368	Cellular coagulation factor XIII zymogen	NSD
L369	Cellular coagulation factor XIII zymogen	TDT
L370	Cellular coagulation factor XIII zymogen	1229
L371	Cellular coagulation factor XIII zymogen	1230
L372	Cellular coagulation factor XIII zymogen	1231
L373	Cellular coagulation factor XIII zymogen	1232
L374	Cellular coagulation factor XIII zymogen	1233
L375	Cellular coagulation factor XIII zymogen	1234
L376	Cellular coagulation factor XIII zymogen	1235
L377	Cellular coagulation factor XIII zymogen	1236
L378	Cellular coagulation factor XIII zymogen	1237
L379	Cellular coagulation factor XIII zymogen	1238

L380	Cellular coagulation factor XIII zymogen	1239
L381	Cellular coagulation factor XIII zymogen	1240
L382	Cellular coagulation factor XIII zymogen	1241
L383	Cellular coagulation factor XIII zymogen	1242
L384	Cellular coagulation factor XIII zymogen	1243
L385	Cellular coagulation factor XIII zymogen	1244
L386	Cellular coagulation factor XIII zymogen	1245
L387	Cellular coagulation factor XIII zymogen	1246
L388	Cellular coagulation factor XIII zymogen	1247
L389	Cellulase	1248
L390	Cellulase	1249
L391	Cellulase	1250
L392	Cellulase	1251
L393	Cellulase	1252
L394	Cellulase	1253
L395	Cellulase	1254
L396	Cellulase	1255
L397	Cellulase	1256
L398	Cellulase linker	1257
L399	Cellulase linker	1258
L400	Cellulase linker	1259
L401	Cellulase linker	1260
L402	Chaperone protein FimC	KLR
L403	Chaperone protein FimC	QAA
L404	Chaperone protein FimC	1261
L405	Chaperone protein FimC	1262
L406	Chaperone protein HscB	RHP
L407	Chaperone protein HscB	1263
L408	CheB methylesterase	1264
L409	CheB methylesterase	1265
L410	CheB methylesterase	1266
L411	Chelatase, putative	1267
L412	Chemotaxis receptor methyltransferase cheR	1268
L413	Chemotaxis receptor methyltransferase cheR	1269
L414	Chemotaxis receptor methyltransferase cheR	1270
L415	Cholesterol oxidase	1271
L416	Cholesterol oxidase	1272
L417	Cholesterol oxidase	1273
L418	Cholesterol oxidase	1274
L419	Cholesterol oxidase	1275
L420	Cholesterol oxidase	1276
L421	Cholesterol oxidase	1277
L422	Cholesterol oxidase	1278
L423	Cholesterol oxidase	1279
L424	Cholesterol oxidase	1280

L425	Cholesterol oxidase	1281
L426	Cholesterol oxidase	1282
L427	**Chromatin** structure-remodeling complex protein RSC4	KM,
L428	**Chromatin** structure-remodeling complex protein RSC4	1283
L429	Chromatin structure-remodeling complex protein RSC4	1284
L430	Chromatin **structure-remodeling** complex protein RSC4	1285
L43 1	**Chromodomain-helicase-DNA-binding** protein 1	1286
L432	**Chromodomain-helicase-DNA-binding** protein 1	1287
L433	**Cleavable** disulfide	1288
L434	Cleavable disulfide	1289
L435	Cleavable disulfide	1290
L436	Cleavable disulfide	1291
L437	Cleavable **disulfide**	1292
L438	Cleavable disulfide	1293
L439	Cleavable disulfide	1294
L440	Cleavable disulfide	1295
L441	Cleavable disulfide	1296
L442	Cleavable **disulfide**	1297
L443	Cleavable disulfide	1298
L444	Colicin **Ia**	1299
L445	Collagen **adhesin**	1300
L446	Complement C3 beta chain	1301
L447	Complement C3 beta chain	1302
L448	Complement C3 beta **chain**	1303
L449	Complement C3 beta chain	1304
L450	**Complement** decay-accelerating factor	**EIY**
L45 1	Complement factor H	KRP
L452	Complement receptor **type** 2	1305
L453	Conserved hypothetical protein	1306
L454	**Conserved** hypothetical **protein MTH** 1747	**DIR**
L455	Conserved hypothetical protein MTH 1747	1307
L456	Conserved hypothetical **protein** MTH 1747	1308
L457	Conserved hypothetical protein MTH 1747	1309
L458	Conserved hypothetical protein MTH 1747	1310
L459	**Conserved** hypothetical protein MTH 1747	1311
L460	Conserved hypothetical protein MTH 1747	1312
L461	Conserved hypothetical protein MTH 1747	1313
L462	Conserved protein (MTH 177)	1314
L463	Creatine **armdinohydrolase**	1315
L464	**Cruciferin**	1316
L465	**Cruciferin**	1317
L466	Cruciferin	1318
L467	Cruciferin	1319
L468	Cruciferin	1320
L469	Cruciferin	1321

L470	Cniciferin	1322
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L474	CTP synthase	1326
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L476	Ciillin homolog	1327
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L484	Cytidine deaminase	1335
L485	Cytidine deaminase	1336
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L487	Cytochrome c oxidase subunit 2	QAV
L488	Cytochrome c oxidase subunit 2	1338
L489	Cytochrome c oxidase subunit 2	1339
L490	Cytochrome c oxidase subunit 2	1340
L491	Cytochrome c oxidase subunit 2	134 1
L492	Cytochrome c4	GC-K
L493	Cytochrome c4	QGM
L494	D-ami no peptidase	1342
L495	DDMC	1343
L496	DDMC	1344
L497	Deltex protein	1345
L498	Deoxyuridine 5'-triphosphate nucleotidohydrolase	l346
L499	Diaminopimelate epimerase	1347
L500	Diaminopimelate epimerase	1348
L501	Diaminopimelate epimerase	1349
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L503	Di-heme peroxidase	l350
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L506	D ihy dropy rimidine dehydrogenase	1353
L507	Dihy dropyrimidine dehydrogenase	1354
L508	Dihydropyrimidine dehydrogenase	l355
L509	D ihy dropy rimidine dehydrogenase	1356
L510	Dihydropyrimidine dehydrogenase	1357
L511	Dihy dropy rimidine dehydrogenase	1358
L512	Dihy dropyrimidine dehydrogenase	1359
L513	Dihydropyrimidine dehydrogenase	l360
L514	D ihy dropy rimidine dehydrogenase	1361

L515	Dihy dropyrimidine dehydrogenase	1362
L516	Dihydropyrimidiiie dehydrogenase	L363
L517	Dihydropyriniidine dehydrogenase	1364
L518	Dihy dropyrimidine dehydrogenase	1365
L519	Dihydropyrimidine dehydrogenase	1366
L520	Dihy dropyrimidine dehydrogenase	1367
L521	Dihydropyrimidiiie dehydrogenase	1368
L522	Dihydropyriniidine dehydrogenase	1369
L523	Dihydropyrimidiiie dehydrogenase	1370
L524	Dihydropyrimidine dehydrogenase	1371
L525	Dihy dropyrimidine dehydrogenase	1372
L526	Dihydropyrimidiiie dehydrogenase	1373
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L529	Dihydropyrimidine dehydrogenase	1376
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L533	Dihydropyrimidiiie dehydrogenase	1380
L534	Dihydropyrimidine dehydrogenase	1381
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L536	Discoidin-1 subunit A	1383
L537	Discoidin-1 subunit A	1384
L538	Dissimilatory copper-containing nitritereductase	1385
L539	D-lactate dehydrogenase	DTF
L540	D-lactate dehydrogenase	1386
L541	D-lactate dehydrogenase	1387
L542	D-lactate dehydrogenase	1388
L543	D-lactate dehydrogenase	1389
L544	D-lactate dehydrogenase	1390
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L547	DNA damage-binding protein 1	1392
L548	DNA damage-binding protein 1	L393
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L555	DNA damage-binding protein 1	1400
L556	DNA damage-binding protein I	1401
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L558	DNA damage-binding protein 1	1403
L559	DNA damage-binding protein I	1404

L560	DNA **damage-binding** protein 1	1405
L561	DNA damage-binding protein 1	1406
L562	DNA damage-binding protein I	1407
L563	DNA **damage-binding** protein 1	1408
L564	DNA **damage-binding** protein I	1409
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L566	DNA damage-binding protein 1	1411
L567	DNA damage-binding protein I	1412
L568	DNA damage-binding protein 1	1413
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L570	DNA gyrase **B**	1414
L571	DNA gyrase B	1415
L572	DNA gyrase B	1416
L573	DNA gyrase B	1417
L574	DNA gyrase B	1418
L575	DNA gyrase **B**	1419
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L578	DNA gyrase B	1422
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L580	DNA gyrase **B**	1424
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L582	DNA ligase	1426
L583	DNA ligase	1427
L584	DNA ligase	1428
L585	DNA ligase	1429
L586	DNA mismatch repair protein MutS	MDA
L587	DNA mismatch repair protein MutS	SII
L588	DNA mismatch repair protein MutS	1430
L589	DNA mismatch repair protein MutS	1431
L590	DNA **mismatch** repair protein MutS	1432
L591	DNA mismatch repair protein MutS	1433
L592	DNA mismatch repair protein MutS	1434
L593	DNA polymerase	FSP
L594	DNA polymerase	RQF
L595	DNA polymerase	1435
L596	DNA polymerase	1436
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L598	DNA polymerase	1438
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L600	DNA polymerase	1440
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L602	DNA polymerase	1442
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L605	DNA **polymerase alpha** subunit B	1445
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L607	DNA **polymerase** alpha subunit B	1447
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L609	DNA **polymerase** alpha subunit B	1449
L610	DNA **polymerase** alpha **subunit** B	1450
L61 1	DNA **polymerase alpha subunit** B	1451
L6 12	DNA **polymerase** alpha **subunit** B	1452
L613	DNA **polymerase eta**	ALS
L6 14	DNA **polymerase eta**	1453
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L616	DNA **polymerase eta**	1455
L617	DNA **polymerase eta**	1456
L618	DNA **polymerase eta**	1457
L6 19	DNA **polymerase** I	AGV
L620	DNA **polymerase** I	ELE
L62 1	DNA **polymerase** I	1458
L622	DNA primase	DHK
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L624	DNA primase	1460
L625	DNA **primase**	1461
L626	DNA **primase**	1462
L627	DNA **primase**	1463
L628	DNA **primase**	1464
L629	DNA primase	1465
L630	DNA primase/helicase	AGY
L63 1	DNA **primase/helicase**	1466
L632	DNA **primase/helicase**	1467
L633	DNA primase/helicase	1468
L634	DNA **primase/helicase**	1469
L635	DNA **primase/helicase**	1470
L636	DNA **primase/helicase**	1471
L637	DNA **primase/helicase**	1472
L638	DNA **primase/helicase**	1473
L639	DNA **primase/helicase**	1474
L640	DNA **primase/helicase**	1475
L641	DNA topoisomerase 2	EES
L642	DNA **topoisomerase** 2	IPI
L643	DNA **topoisomerase** 2	KEL
L644	DNA **topoisomerase** 2	1476
L645	DNA **topoisomerase** 2	1477
L646	DNA **topoisomerase** 2	1478
L647	DNA **topoisomerase** 2	1479
L648	DNA **topoisomerase** 2	1480
L649	DNA **topoisomerase** 2	1481

L650	DNA **topoisomerase** 2	1482
L65 1	**DNA** topoisomerase 2	1483
L652	DNA topoisomerase 2	1484
L653	DNA topoisomerase I	1485
L654	DNA topoisomerase I	1486
L655	DNA topoisomerase I	1487
L656	DNA topoisomerase II, alpha isozyme	PDL
L657	DNA topoisomerase II, alpha isozyme	1488
L658	DNA topoisomerase II, **alpha** isozyme	1489
L659	DNA topoisomerase II, **alpha** isozyme	1490
L660	DNA topoisomerase II, alpha isozyme	1491
L661	DNA topoisomerase II, alpha isozyme	1492
L662	DNA topoisomerase II, alpha isozyme	1493
L663	DNA topoisomerase II, **alpha** isozyme	1494
L664	DNA topoisomerase II, **alpha** isozyme	1495
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L666	DNA topoisomerase VI **A subunit**	1497
L667	DNA topoisomerase VI **A subunit**	1498
L668	DNA topoisomerase VI A subunit	1499
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L674	DNA-directed RNA polymerase beta chain	1505
L675	DNA-directed RNA polymerase beta **chain**	1506
L676	DNA-directed RNA polymerase beta chain	1507
L677	DNA-directed RNA polymerase beta chain	1508
L678	DNA-directed RNA polymerase beta **chain**	1509
L679	DNA-directed RNA polymerase beta chain	15 10
L680	DNA-directed RNA polymerase beta **chain**	15 11
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L682	DNA-directed RNA polymerase II 14.2 kDa polypeptide	15 13
L683	DNA-directed RNA polymerase, subunit £' **(rpoel)**	1514
L684	DNA-directed RNA polymerase, subunit E' **(rpoe1)**	15 15
L685	DNA-directed RNA polymerases I, П, and III 27 kDa polypeptide	ITP
L686	DNA-directed RNA polymerases 1, IE, and III 27 kDa polypeptide	15 16
L687	DNA-directed RNA polymerases I, П, and ПI 27 kDa polypeptide	15 17
L688	DNA-directed RNA polymerases I, II, and III 27 kDa polypeptide	1518
L689	DNA-directed RNA polymerases I, II, and III 27 kDa polypeptide	15 19
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L693	Dystrophin	1523
L694	**Dystrophin**	1524

L695	**Dystrophin**	1525
L696	Dystrophin	1526
L697	**Dystrophin**	1527
L698	Dystrophin	1528
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L700	E2A DNA-binding protein	1530
L701	E3 **sumo-protein ligase** SIZ1	1531
L702	E3 sumo-protein ligase SIZ1	1532
L703	E3 **sumo-protein ligase** SIZ1	1533
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L706	EGF-like module containing mucin-like hormonereceptor-iike 2 precursor	1536
L707	Elongation factor 1-gamma 1	1537
L708	Elongation factor **1-gamma** 1	1538
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L710	Elongation factor **G**	1540
L711	**Elongation** factor G	**1541**
L712	Elongation factor G	1542
L713	Elongation factor G	1543
L714	**Elongation** factor G	1544
L715	Elongation factor **G**	1545
L716	**Elongation** factor G	1546
L717	Elongation factor G	1547
L718	Elongation factor G	1548
L719	**Elongation** factor P	1549
L720	**Elongation factor Ts**	1550
L721	**Elongation** factor Ts	1551
L722	Elongation factor Ts	1552
L723	Elongation factor Tu **(ef-Tu)**	1553
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L725	**Endonuclease PI-SceI**	1555
L726	**Endonuclease Pl-Scel**	1556
L727	Endonuclease PI-SceI	1557
L728	Endonuclease PI-SceI	L558
L729	Endonuclease PI-SceI	1559
L730	**Endonuclease PI-SceI**	1560
L731	**Endonuclease Pl-Scel**	1561
L732	Endonuclease **PI-SceI**	1562
L733	Endonuclease PI-SceI	L563
L734	Enterobactin synthetase component F	1564
L735	**Enterobactin** synthetase component F	1565
L736	**Enterobactin** synthetase component F	1566
L737	Enterobactin synthetase component F	1567
L738	Enterobactin synthetase component F	[568
L739	Enterobactin synthetase component F	1569

L740	Enterobactin synthetase component F	1570
L741	Enterobactin synthetase component F	1571
L742	Enterobactin synthetase component F	1572
L743	Enterochelin esterase	1573
L744	Epo receptor	EVV
L745	Epo receptor	1574
L746	Erythrocyte binding antigen region II	1575
L747	Erythrocyte binding antigen region II	1576
L748	Erythrocyte binding antigen region II	1577
L749	Erythrocyte binding antigen region II	1578
L750	Erythrocyte binding antigen region II	1579
L75 1	E-selectin	1580
L752	Esterase EstA	SAP
L753	Esterase EstA	1581
L754	Esterase EstA	1582
L755	Eukaryotic peptide chain release factor GTP-binding subunit	1583
L756	Exonuclease I	RQP
L757	Exonucicase I	1584
L758	Fasclclln I	SDP
L759	Fasclclln I	1585
L760	Fibrillin-1	1586
L761	Fibrillin-1	1587
L762	Fibrillin-1	1588
L763	Fibrillin-1	1589
L764	Fibrillin-!	1590
L765	Fibronectin	1591
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L769	Flagellar hook protein FigE	1595
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L771	Flagellar hook protein FigE	1597
L772	Flagellar hook protein FigE	1598
L773	Flagellar hook protein FigE	1599
L774	Flagellar hook protein FigE	1600
L775	Flavohetnoprotein	1601
L776	Flexible G/S rich linker	G
L777	Flexible G/S rich linker	S
L778	Flexible G/S rich linker	C-G
L779	Flexible G/S rich linker	GS
L780	Flexible G/S rich linker	GGS
L781	Flexible G/S rich linker	GGG
L782	Flexible G/S rich linker	1602
L783	Flexible G/S rich linker	1603
L784	Flexible G/S rich linker	1604

L785	Flexible **G/S** rich linker	1605
L786	Flexible G/S rich linker	**1606**
L787	Flexible G/S rich **linker**	1607
L788	Flexible G/S rich linker	1608
L789	Flexible G/S rich **linker**	1609
L790	Flexible G/S rich linker	1610
L791	Flexible G/S rich linker	1611
L792	Flexible G/S rich linker	1612
L793	Flexible G/S rich linker	1613
L794	Flexible G/S rich linker	1614
L795	Flexible G/S rich linker	1615
L796	Focal adhesion kinase 1	1616
L797	FolC **bifunctional** protein	1617
L798	FolC bifunctional protein	1618
L799	FolC bifunctional protein	1619
L800	FolC bifunctional protein	1620
L801	FolC bifunctional protein	1621
L802	FolC **bifunctional** protein	1622
L803	FolC bifunctional protein	1623
L804	FolC bifunctional protein	1624
L805	**FoHislatin**	1625
L806	**Formate** dehydrogenase (large **subunit)**	**YDK**
L807	Formate dehydrogenase (large subunit)	1626
L808	Formate dehydrogenase (large subunit)	1627
L809	Formate dehydrogenase (large subunit)	1628
L810	**Formate** dehydrogenase (large subunit)	1629
L811	**Formate** dehydrogenase (large subunit)	1630
L812	Formate dehydrogenase (large subunit)	1631
L813	Formate dehydrogenase (large subunit)	**1632**
L814	Formate dehydrogenase (large **subunit)**	1633
L815	**Formate** dehydrogenase (large subunit)	1634
L816	**Formate** dehydrogenase (large subunit)	1635
L817	Formate dehydrogenase (large subunit)	1636
L818	Formate dehydrogenase (large subunit)	**1637**
L819	Formate dehydrogenase, **nitrate-inducible** major subunit	1638
L820	**Formate** dehydrogenase, **nirrate-inducible,** major subunit	1639
L821	**Formate** dehydrogenase, nitrate-inducible, major subunit	1640
L822	**Formate** dehydrogenase, nitrate-inducible, major subunit	1641
L823	Formate dehydrogenase, nitrate-inducible, major subunit	**1642**
L824	Formate dehydrogenase, nitrate-inducible, major subunit	1643
L825	**Formate** dehydrogenase, **nirrate-inducible,** major subunit	1644
L826	**Formate** dehydrogenase, nitrate-inducible, major subunit	1645
L827	**Formate** dehydrogenase, nitrate-inducible, major subunit	1646
L828	Formate dehydrogenase, nitrate-inducible, major subunit	**1647**
L829	Formate dehydrogenase, nitrate-inducible, major subunit	1648

L830	Formate dehydrogenase, nitrate-iiiducible, major sublimit	1649
L83 1	Formate dehydrogenase, nitrate -inducible, major subunit	1650
L832	Formate dehydrogenase, nitrate-inducible, major subunit	1651
L833	Fumarylacetoacetate hydrolase	1652
L834	Galactose oxidase	GSV
L835	Galactose oxidase	GWK
L836	Galactose oxidase	IAE
L837	Galactose oxidase	KRQ
L838	Galactose oxidase	QDT
L839	Galactose oxidase	TPN
L840	Galactose oxidase	1653
L841	Galactose oxidase	1654
L842	Galactose oxidase	1655
L843	Galactose oxidase	1656
L844	Galactose oxidase	1657
L845	Galactose oxidase	1658
L846	Galactose oxidase	1659
L847	Galactose oxidase	1660
L848	Galactose oxidase	1661
L849	Galactose oxidase	1662
L850	Galactose oxidase	1663
L85 1	Galactose oxidase	1664
L852	Galactose oxidase	1665
L853	Galactose oxidase	1666
L854	Galactose oxidase	1667
L855	Galactose oxidase	1668
L856	Galactose oxidase	1669
L857	Galactose oxidase	1670
L858	Galactose oxidase	1671
L859	Galactose oxidase	1672
L860	Galactose oxidase	1673
L861	Galactose oxidase	1674
L862	Galactose oxidase	1675
L863	Galactose oxidase	1676
L864	Gamma B-crystallin	1677
L865	Gamma -delta T-cell receptor	1678
L866	Gelation factor	DSS
L867	Gelation factor	1679
L868	Gelation factor	1680
L869	Gelation factor	1681
L870	Gene activator alpha	1682
L871	Gingipain R	1683
L872	Glucodextranase	1684
L873	Glucodextranase	1685
L874	Glucodextranase	1686

L875	**Glucosaimne-fructose-6-phosphate** aminotransferase	YEQ
L876	**Glucosanune-fructose-6-phosphate aminotransferase**	**1687**
L877	**Glucosaniine-fructose-6-phosphate** aminotransferase	1688
L878	**Glucosamme-fmctose-6-phosphate** aminotransferase	{689
L879	**Glucosamine-fructose-6-phospliate aminotransferase**	1690
L880	**Gliicosainine-fructose-6-phospliate** aminotransferase	1691
L881	**Glucosamine-fructose-6-phosphate** aminotransferase	1692
L882	**Glucosamine-fructose-6-phosphate** aminotransferase	1693
L883	**Glucosamine-fructose -6-phosphate aminotransferase**	1694
L884	**Glucosamine-fructose-6-phospliate aminotransferase**	1695
L885	**Gliicosainine-fructose-6-phospliate** aminotransferase	1696
L886	**Glucose- 1-phosphate adenylyltransferase** small **subunit**	1697
L887	Glucose- 1-phosphiiie adenylyltransferase small subunit	1698
L888	**Glucose-6-phosphate** isomerase	KNA
L889	**Gluco se-6 -pho sphate iso me** rase	VGF
L890	**Ghicose-6-phosphate** isomerase	1699
L891	Glucose-6 -phosphate isomerase	1700
L892	**Glucose-6-phosphate** isomerase, conjectural	1701
L893	**Glutamate** dehydrogenase	1702
L894	**Glutamate** dehydrogenase	1703
L895	**Glutamate** receptor interacting protein	1704
L896	**Glutamate** synthase [NADPH] large chain	1705
L897	Glutamate synthase **[NADPH]** large chain	1706
L898	**Glutamate** synthase [NADPH] large **chain**	1707
L899	Glutamate synthase [NADPH] large chain	1708
L900	**Glutamate** synthase [NADPH] **large** chain	1709
L901	**Glutamate** synthase [NADPH] large chain	1710
L902	Glutamate syntlmse [NADPH] large chain	171 1
L903	**Glutamine** synthetase	1712
L904	Glutamine synthetase	**1713**
L905	**Glutamyl-tRNA syntheta** se	1714
L906	**Glutamy1-tRNA** synthetase	1715
L907	Glutamyl-tRNA synthetase	1716
L908	Glutamyl-tRNA **synthetase**	1717
L909	Glutamyl-tRNA synthetase	**1718**
L910	**Glutamyl**-tRNA **syntheta** se	1719
L9 11	**Glutamy1-tRNA** synthetase	1720
L912	**Gliitamyl-IRNA** synthetase	172 1
L913	**Glutaredoxin** 2	1722
L9 14	Glutathione S-transferase	1723
L915	Glutathione S-transferase	1724
L9 16	Glutathione **S-transferase**	1725
L9 17	**Glutathione S-transferase 1-6**	1726
L918	**Glutathione** S-transferase A1	1727
L9 19	Glutathione S-transferase I	**NKP**

L920	**Glutathione S-transferase** i	1728
L921	Glutathione synthetase	1729
L922	**Glutathione** transferase **GST 1-4**	1730
L923	Glutathione transferase **GST1-4**	173 1
L924	Glutathione transferase **sigma** class	1732
L925	Gly**cerol-3**-phosphate dehydrogenase **[NAD(P)+]**	1733
L926	Glycine cleavage system transcnptionalrepressor, putative	1734
L927	Glycoiipid-anchored surface protein 2	1735
L928	Glycoiipid-anchored surface protein 2	1736
L929	**Glycyl-tRNA** synthetase	**KFA**
L930	Glycyl-iRNA synthetase	1737
L93 1	Glycyl-tRNA synthetase	1738
L932	Glycyl-tRNA synthetase	1739
L933	Glycyl-tRNA synthetase	1740
L934	Glycyl-tRNA synthetase	1741
L935	Glycyl-tRNA synthetase	1742
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L937	Glycyl-tRNA synthetase	1744
L938	Glycyl-tRNA synthetase	1745
L939	Growth hormone receptor	1746
L940	Growth **hormone** receptor	1747
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L945	**Hemin transport** protein **HemS**	1752
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L947	Hemoglobin	1754
L948	**Hemolytic** lectin **CEL-iii**	1755
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L95 1	HNH homing **endonuclease**	1758
L952	HNH homing endonuclease	1759
L953	HNH homing endonuclease	1760
L954	**Homoserine dehydrogenase**	1761
L955	**Homoserine** kinase	1762
L956	Homoserine kinase	1763
L957	Homoserine kinase	1764
L958	Homoserine kinase	1765
L959	**HTH-type transcriptional regulator MqsA (Ygit/B302 1)**	1766
L960	**HTH-type** transcriptional repressor **YvoA**	1767
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L962	**Human IgGl** middle hinge linker	1769
L963	Human IgGl upper **hinge** linker	1770
L964	Human IgG3 middle **hinge** linker	1771

L965	Human IgG3ml5 middle hinge linker	1772
L966	Human IgG4 lower hinge linker	1773
L967	Human IgG4 middle hinge linker	1774
L968	Human IgG4 upper hinge linker	1775
L969	Hybrid cluster protein	1776
L970	Hybrid cluster protein	1777
L971	Hybrid cluster protein	1778
L972	Hybrid cluster protein	1779
L973	Hybrid cluster protein	1780
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L975	Hypothetical membrane spanning protein	1782
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L977	Hypothetical methylmalonyl-CoA decarboxylase alpha subunit	1784
L978	Hypothetical methylmalonyl-CoA decarboxylase alpha subunit	1785
L979	Hypothetical methylmalonyl-CoA decarboxylase alpha subunit	1786
L980	Hypothetical methylmalonyl-CoA decarboxylase alpha subunit	1787
L981	Hypothetical methylmalonyl -Co A decarboxylase alpha subunit	1788
L982	Hypothetical methylmalonyl-CoA decarboxylase alpha subunit	1789
L983	Hypothetical protein	AEP
L984	Hypothetical protein	1790
L985	Hypothetical protein APE0525	PTL
L986	Hypothetical protein APE0525	1791
L987	Hypothetical protein LOC449832	1792
L988	Hypothetical protein LOC449832	1793
L989	Hypothetical protein PA4388	1794
L990	Hypothetical protein PA520 i	ASE
L991	Hypothetical protein PA5201	QDP
L992	Hypothetical protein PA5201	VKL
L993	Hypothetical protein PA520 1	1795
L994	Hypothetical protein PA5201	1796
L995	Hypothetical protein PA520 i	1797
L996	Hypothetical protein PA5201	1798
L997	Hypothetical protein PA5201	1799
L998	Hypothetical protein PA5201	1800
L999	Hypothetical protein PA5201	1801
L !ooo	Hypothetical protein PA520 i	1802
LI001	Hypothetical protein PA5201	1803
L1002	Hypotheiical protein PA520 i	1804
L1003	Hypothetical protein PA5201	1805
LI004	Hypothetical protein PA5201	1806
LI005	Hypothetical protein PA520 i	1807
LI006	Hypothetical protein PA5201	1808
L1007	Hypotheiical protein PA520 i	1809
L1008	Hypothetical protein PA5201	1810
LI009	Hypothetical protein PA5201	181 1

L10 10	Hypothetical protein PA520 i	1812
L101 1	Hypothetical protein PA5201	1813
L1012	Hypothetical protein PA5201	1814
L 10 13	Hypothetical protein PH0495	ASN
L1014	Hypothetical protein PH0495	1815
L10 15	Hypoiheiical protein PH0495	1816
L1016	Hypothetical protein PH0495	1817
L1017	Hypothetical protein PH0495	1818
L10 18	Hypothetical protein PH05 10	1819
L1019	Hypothetical protein PH05 10	1820
L1020	Hypo the iicai protein PH 13 13	182 1
L1021	Hypothetical protein PH 13 13	1822
L1022	Hypothetical protein SLR0953	1823
L1023	Hypothetical protein SLR0953	1824
L1024	Hypothetical protein SLR0953	1825
L1025	Hypothetical protein SLR0953	1826
L1026	Hypothetical protein SLR0953	1827
L1027	Hypothetical protein YIGZ	1828
L1028	Hypothetical protein YIGZ	1829
L1029	Hypothetical protein YJIA	1830
L1030	Hypothetical protein YJIA	183 1
L103 1	Hypothetical protein YJIA	1832
L1032	Hypothetical protein YJLA	1833
L1033	Hypothetical protein YJLA	1834
L1034	Hypothetical tRNA/rRNA methyltransf erase YIFH	1835
L I035	Hypothetical tRNA/rRNA methyltransferase YJFH	1836
L1036	IclR transcriptional regulator	1837
L1037	IclR transcriptional regulator	1838
L1038	IclR transcriptional regulator	1839
L1039	IclR transcriptional regulator	1840
L I040	Integrase	1841
L1041	Interferon, alpha-inducible protein (clone IFI-15k)	1842
L1042	Interleukin-1 receptor, type I	AIF
L1043	Interleukin-1 receptor, type I	1843
L I044	Interleukin-1 receptor, type I	1844
L I045	Interleukin-1 receptor, type I	1845
L1046	Interleukin-12 subunit p40	FFI
L1047	Interleukin-12 subunit p40	1846
L1048	Interleukin-12 subunit p40	1847
L1049	Interleukin-12 subunit p40	1848
L I050	Interleukin-12 subunit p40	1849
L105 1	Interleukin-12 subunit p40	1850
L1052	Interleukin-12 subunit p40	1851
L1053	Interleukin-12 subunit p40	1852
L1054	Interleukin-2 receptor alpha chain	1853

L1055	Interleukin-2 receptor alpha chain	1854
L1056	Internalin B	VTQ
L1057	Iniernalin B	1855
L I058	Internalin B	1856
L1059	Internalin B	1857
L1060	Internalin B	1858
L1061	Internalin B	1859
L I062	Internalin B	1860
L I063	Internalin B	1861
L I064	Internalin B	1862
L1065	Internalin B	1863
L I066	Internalin B	1864
L I067	Internalin B	1865
L I068	Internalin B	1866
L I069	Intimin	SLV
L1070	intimin	1867
L I07 1	Intimin	1868
L I072	Intimin	1869
L i073	Intron-encoded DNA endonuclease I-anil	1870
L I074	Intron-encoded DNA endonuclease I-anil	1871
L I075	Invasin	KST
L I076	Invasin	1872
L I077	Invasin	1873
L i078	Invasin	1874
L1079	Invasin	1875
L I080	Invasin	1876
L108 1	Invasin	1877
L1082	Invasin	1878
L i083	Invasin	1879
L1084	Invasin	1880
L I085	Invasin	1881
L1086	Invasin	1882
L1087	Invasin	1883
L1088	Iron hydrogenase 1	CAE
L1089	Iron hydrogenase 1	1884
L I090	Iron hydrogenase I	1885
L109 1	Iron hydrogenase 1	1886
L I092	iron hydrogenase I	1887
L1093	Iron hydrogenase 1	1888
L1094	Iron hydrogenase 1	1889
L I095	Iron hydrogenase I	1890
L1096	Iron hydrogenase 1	1891
L I097	iron hydrogenase I	1892
L1098	Iron hydrogenase 1	1893
L1099	Iron hydrogenase 1	1894

LI 100	Iron hydrogenase 1	1895
LI 101	iron hydrogenase 1	1896
LI 102	Iron transport protein	1897
LI 103	Isoflavanone 4'-0-niethyltransferase	1898
LI 104	Isoflavanone 4'-0-methyltransferase	1899
LI 105	Junctional adhesion molecule 1	1900
LI 106	Junctional adhesion molecule 1	1901
LI 107	Junctional adhesion molecule 1	1902
LI 108	Kanamycin nucleotidyltransferase	1903
LI 109	Kanatnycin nucleotidyltransferase	1904
LI 110	Kanamycin nucleotidyltransferase	1905
LI 111	Kanamycin nucleotidyltransferase	1906
LI 112	Kelch-like protein 11	1907
LI 113	Kexin	ISE
LI 114	Kexin	1908
LI 115	Kexin	1909
LI 116	Kexin	1910
LI 117	Kexin	1911
LI 118	Kexin	1912
LI 119	Kexin	1913
LI 120	Kexin	1914
LI 121	Ku70	1915
LI 122	Ku70	1916
LI 123	Ku70	1917
LI 124	Ku70	1918
LI 125	Ku80	1919
LI 126	Laccase-1	1920
LI 127	Laccase-1	1921
LI 128	Laccase- 1	1922
LI 129	Laccase-1	1923
LI 130	Laminin	DKC
LI 131	L-aspartate dehydrogenase	SAS
LI 132	L-aspartate dehydrogenase	1924
LI 133	L-aspartate dehydrogenase	1925
LI 134	Leucine dehydrogenase	1926
LI 135	Leucine dehydrogenase	1927
LI 136	Light chain of Hybrid 10 antibody fragment (fab)	1928
LI 137	Lin21 11 protein	1929
LI 138	Lin21 11 protein	1930
LI 139	Lipopolysaccharide-responsive and beige-like anchor protein	1931
LI 140	Lipopolysaccharide-responsive and beige-like anchor protein	1932
LI 141	Lipovitellin (LV-1N, LV-1C)	1933
LI 142	Lipovitellin (LV-1N, LV-1C)	1934
LI 143	Lipovitellin (LV-1N, LV-1C)	1935
LI 144	Lipovitellin (LV-1N, LV-1C)	1936

LI 145	Lipovitelim **(LV-1N, LV-1C)**	1937
LI 146	**Lipoxygenase-1**	1938
LI 147	**Lipoxygenase- 1**	1939
LI 148	Low affinity **immunoglobulin gamma Fc** region receptor II-**A**	1940
LI 149	**Luciferase**	1941
LI 150	**LysR-type regulatory** protein	1942
L 1151	**Macrolide-specific** efflux protein Mac A	ATE
LI 152	Macrolide-specific efflux protein MacA	1943
LI 153	Macrolide-specific efflux protein MacA	1944
LI 154	**Magnesium** transporter, putative	1945
LI 155	Main **hemagglutinin** component	1946
LI 156	Major centromere **autoantigen** B	1947
L 1157	**Major** surface antigen **p30**	1948
LI 158	Major surface antigen **p30**	1949
LI 159	**Major vault protein**	1950
LI 160	Major **vault** protein	1951
LI 16 1	Maltose phosphorylase	1952
LI 162	Maltose phosphorylase	1953
LI 163	Maltose phosphorylase	1954
LI 164	Maltose **phosphorylase**	1955
LI 165	Maltose phosphorylase	1956
LI 166	**Manganese-dependent** inorganic pyrophosphatase	1957
LI 167	Manganese-dependent inorganic **pyrophosphatase**	1958
LI 168	**Mannan-binding** lectin	1959
LI 169	**Mannan-binding lectin**	1960
LI 170	**Mannan-binding** lectin	1961
LI 171	**Mannitol** dehydrogenase	HNA
LI 172	**Mannitol** dehydrogenase	1962
LI 173	Membrane cofactor protein	**RET**
LI 174	Membrane cofactor protein	1963
LI 175	Membrane-associated prostaglandin **E** synthase **-2**	1964
LI 176	Membrane -associated prostaglandin **E** synthase **-2**	1965
LI 177	Membrane-associated prostaglandin E sy **nthase-2**	1966
L 1178	Membrane -associated prostaglandin E syntliase **-2**	1967
LI 179	Membrane-associated prostaglandin E synthase **-2**	1968
LI 180	Membrane-bound lytic murein transglycosylase A	1969
LI 181	**Methionyl-tRNA** synthetase	1970
LI 182	Methyl-accepting chemotaxis protein	**VRP**
L 1183	Methyl-accepting chemotaxis protein	1971
LI 184	Methyl-accepting chemotaxis protein	1972
LI 185	Methyl-accepting **chemotaxis** protein	1973
LI 186	Methyl -coenzyme **M** reductase	1974
LI 187	**Methyl-coenzyme** M reductase	1975
L 1188	Methyl-coenzyme M reductase	1976
LI 189	Methyl-coenzyme M reductase	1977

L I 190	Methy iene tetrahy dromethanopterin dehydrogenase	1978
L 1191	Methylene tetrahydromethanopterin dehydrogenase	1979
L I 192	Mg2+ transporter MgtE	1980
L I 193	Mg2+ transporter MgtE	198 I
L I I 94	Mg2+ transporter MgtE	1982
L I 195	Mitochondrial aconitase	1983
L I 196	Mitochondrial aconitase	1984
L I 197	Modification methylase Taql	EGK
L I 198	Modification methylase TaqI	PAT
L I I 99	Modification methylase TaqI	1985
L i 200	Modification methylase TaqI	1986
L1201	Modification methylase Taql	1987
L I202	Modification methylase TaqI	1988
L i 203	Modification methylase TaqI	1989
L1204	Modification methylase TaqI	1990
L i 205	Modification methylase TaqI	1991
L1206	Modification methylase Taql	1992
L I207	Multidrag-efflux transporter 1 regulator	1993
L i 208	Muramoyl-pentapeptide carboxypeptidase	1994
L1209	MutL	1995
L12 10	MutL	1996
L12 1I	MistL	1997
L1212	MutL	1998
L12 13	MutL	1999
L 12 14	MutL	2000
L 12 15	MutL	2001
L12 16	MutL	2002
L1217	MutL	2003
L12 18	MutM (Fpg) protein	2004
L12 19	MufM (Fpg) protein	2005
L I220	MutM (Fpg) protein	2006
L122 I	MutM (Fpg) protein	2007
L I222	Myotubularin-related protein 2	THW
L1223	Myotubularin-related protein 2	2008
L1224	Myotubularin-related protein 2	2009
L I225	Myotubularin-related protein 2	2010
L1226	Myotubularin-related protein 2	201 1
L I227	Myotubularin-related protein 2	2012
L1228	N utilization substance protein A	EГP
L1229	N utilization substance protein A	2013
L I230	N utilization substance protein A	2014
L123 I	N utilization substance protein A	2015
L1232	N-acetylglucosaniine kinase	CAY
L1233	N-acetv'lglucosamine kinase	ISP
L1234	N-acetylglucosamine kinase	2016

L1235	**N-acyl-D-glutamate** deacylase	2017
L1236	**N-acyl-D-glutamate** deacylase	2018
L1237	**N-acyl-D-glutamate** deacylase	2019
L1238	**N-acyl-D-glutainate** deacylase	2020
L1239	**N-acyl-D-glutamate** deacylase	2021
L1240	**N-acyl-D-glutamate** deacylase	2022
L1241	**N-acyl-D-glutamate** deacylase	2023
L1242	**NAD-dependent malic** enzyme	2024
L1243	NAD-dependent malic **enzyme**	2025
L1244	**NADH** peroxidase	ADT
L1245	NADH peroxidase	AVG
L1246	NADH peroxidase	TLI
L1247	NADH peroxidase	2026
L1248	NADH peroxidase	2027
L1249	NADH peroxidase	2028
L1250	NADH peroxidase	2029
L1251	NADH peroxidase	2030
L1252	NADH peroxidase	2031
L1253	NADH **pyrophosphatase**	2032
L1254	Naphthalene **1,2-dioxygenase** alpha **subunit**	2033
L1255	Naphthalene **1,2-dioxygenase** alpha subunit	2034
L1256	NEDD8-aetivatmg enzyme El catalytic subunit	2035
L1257	NEDD8-activating enzyme El regulatory **subunit**	2036
L1258	**NEDD8-activating** enzyme El regulatoiy subunit	2037
L1259	**NEDD8-activating enzyme** El regulatosy subunit	2038
L1260	**Nei endonuclease VIII-Like 1**	2039
L1261	Nei **endonuclease** VIII-**Like 1**	2040
L1262	**Nei** endonuclease **VIII**-Like 1	2041
L1263	Nei endonuclease VIII-**Like** 1	2042
L1264	Neural cell adhesion molecule 2	2043
L1265	Neural ceil adhesion molecule 2	2044
L1266	Neural cell adhesion molecule 2	2045
L1267	Neural cell adhesion molecule 2	2046
L1268	Neural cell adhesion molecule 2	2047
L1269	**Neuroplastin**	2048
L1270	Neuroplasms	2049
L1271	Neuroplastin	2050
L1272	Neutrophil **cytosol** factor I	2051
L1273	Nickel responsive regulator	2052
L1274	NifU-like protein 2, **chloroplast**	2053
L1275	Nitric oxide reductase	**ILM**
L1276	Nitric oxide reductase	2054
L1277	Nitric oxide reductase	2055
L1278	Nitric oxide reductase	2056
L1279	Nitric oxide reductase	2057

L I280	Nitric oxide reductase	2058
L1281	NK receptor	2059
L1282	Nuclear factor of activated **t-cells, cytoplasmic2**	2060
L I**283**	Nucleolus **RBD** I 2	206I
L1284	**O-GlcNAcase NagJ**	2062
LI285	Orange **carotenoid** protein	EGV
L1286	Orange carotenoid protein	2063
L1287	Orange carotenoid protein	2064
L I288	**Orn/Lys/Arg decarboxylase** family protein	LEL
L1289	**Orn/Lys/Arg** decarboxylase family protein	2065
L i290	Orn/Lys/Arg decarboxylase family protein	2066
L1291	**Orn/Lys/Arg** decarboxylase family protein	2067
L1292	**Orn/Lys/Arg** decarboxylase **family** protein	2068
L i293	**Orn/Lys/Arg** decarboxylase family protein	2069
L1294	Orn/Lys/Arg decarboxylase family proteirs	2070
L i295	Orn/Lys/Arg decarboxylase **family** protein	2071
L1296	**Osteoclast-stimulating** factor 1	2072
L1297	Oxygen-independent coproporphyrinogen **III** oxidase	2073
L i298	**Oxygen-independent** coproporphyrinogen **III** oxidase	2074
L1299	**Oxygen-independent coproporphyrinogen III** oxidase	2075
L i300	Oxygen-independent coproporphyrinogen **III** oxidase	2076
L I**30 1**	Oxygen-independent **coproporphyrinogen III** oxidase	2077
L1302	Oxygen-independent coproporphyrinogen **III** oxidase	2078
L1303	Oxygen-independent coproporphyrinogen **III** oxidase	2079
LI304	**Oxygen-independent coproporphyrinogen III** oxidase	2080
L I305	Oxygen-independent coproporphyrinogen **III** oxidase	2081
L I306	Oxygen-independent **coproporphyrinogen III** oxidase	2082
L1307	Paraneoplastic encephalomyelitis antigen **HuD**	2083
L1308	Paraneoplastic **encephalomyelitis** antigen HuD	2084
L1309	Penicillin binding **protein** 4	2085
L 13 10	**Penicillin binding** protein 4	2086
L13 1I	Penicillin binding protein 4	2087
L13 12	Penicillin binding protein 4	2088
L13 I3	Penicillin binding protein 4	2089
L13 14	Penicillin binding **protein** 4	2090
L 13 15	**Penicillin binding** protein 4	2091
L13 16	**Peptide-N(4)-(N-acety 1-beta-D-glucosaminy l)asparagine** amidase **F**	DGV
L I3I7	Peptide-N(4)-(N-acetyl-beia-D-glucosaminyl)asparag!iie amidase F	2092
L13 I8	Peptide-N(4)-(N-aceiyl-beta-D-glucosaminyl)asparagine amidase F	2093
L13 19	**Peptide-N(4)-(N-acetyl-beta-D-g]ucosaminyl)asparagine** asnidase F	2094
L I320	**Peroxisomal primary amine** oxidase	2095
L132 I	Peroxisomal **primary** amine oxidase	2096
L1322	Peroxisome biogenesis factor 1	2097
L1323	Pesticidial crystal protein **Cry2Aa**	2098
L1324	Pesticidial crystal protein Cry2Aa	2099

L1325	**Pesticidial crystal** protein **Cry2Aa**	2100
L1326	Phase 1 fiagellin	**DLT**
L1327	Phase 1 fiagellin	**2101**
L I328	Phase 1 fiagellin	2102
L1329	**Phase 1 flagelli** rs	2103
L1330	**Phase 1 fiagellin**	2104
L133 1	Phase 1 **fiagellin**	2105
L1332	Phase 1 fiagellin	2106
L1333	Phase 1 fiagellin	2107
L1334	**Phase** 1 flagelli rs	2108
L1335	**Phase 1 fiagellin**	2109
L1336	Phase 1 **fiagellin**	2110
L1337	**Phase** 1 fiagellin	**2111**
L1338	Phase 1 fiagellin	**2112**
L1339	**Phenylalanyl-tRNA** synthetase beta chairs	**LGL**
L I340	**Phenylalanyl-IRNA** synthetase beta chain	2113
L134 1	**Phenylalanyl-tRNA** synthetase beta chain	2114
L1342	Phenylalanyl-tRNA synthetase beta chain	**2115**
L1343	**Phenylalanyl-tRNA** synthetase beta **chain**	**2116**
L1344	**Phenylalanyl-tRNA** synthetase beta chairs	2117
L1345	**Phenylalanyl-IRNA** synthetase beta chain	2118
L1346	Phenylalanyl-tRNA synthetase beta chain	2119
L1347	Phenylalanyl-tRNA synthetase beta chain	2120
L i348	**Phenylalanyl-tRNA** synthetase beta **chain**	**2121**
L1349	**Phenylalanyl-tRNA** synthetase beta chairs	2122
L I350	Phenylalanyl-tRNA synthetase beta chain	2123
L135 1	**Phenylalanyl-tRNA** synthetase beta chain	2124
L1352	Phenylalanyl-tRNA synthetase beta chain	2125
Li353	Phosphatase	2126
L1354	Phosphatase	2127
L I355	Phosphatase	2128
L1356	**Phosphalidylinositol** transfer protein Sec14p	**YGT**
L1357	**Phosphatidylinositol** transfer protein Secl4p	2129
L1358	**Phosphatidylinositol** transfer protein Secl4p	2130
L1359	**Phosphatidylserine synthase**	**213 1**
L I360	**Phosphatidylserine** sy nthase	2132
L136 1	**Phosphatidy Iserine** synthase	2133
L i362	**Phosphoglycolate** phosphatase	2134
L1363	**Phosphoglycolate** phosphatase	2135
L i364	Phosphoglycolate phosphatase	2136
L1365	Phosphoglycolate phosphatase	2137
L1366	Phospholipase **D**	2138
L i367	**Phospho lipase D**	2139
L i368	Phospholipase D	2140
L i369	**Phosphoribosylamine**—glycine ligase	2141

L1370	**Phosplroribosylainine--glycine ligase**	2142
L1371	Phosphotransferase system, enzyme I	2143
L1372	Photosystem II dl protease	2144
L1373	**Photosystem** II **dl** protease	2145
L1374	Photosystem II dl protease	2146
L1375	Photosystem II dl protease	2147
L1376	Photosystem II dl protease	2148
L1377	Phtlialate dioxygenase reductase	2149
L1378	P-hydroxybenzoate **hydroxylase**	DGL
L1379	**P-hydroxybenzoate** hydroxylase	IDL
L1380	P-hydroxybenzoate hydroxylase	RLK
L1381	P-hydroxybenzoate hydroxylase	2150
L1382	P-hydroxybenzoate hydro**xylase**	2151
L1383	P-hydroxybenzoate hydroxylase	2152
L1384	**P-hydroxybenzoate** hydroxylase	2153
L1385	P-hydroxybenzoate hydroxylase	2154
L1386	**P-hydroxybeiizoate** hydroxylase	2155
L1387	P-hydroxybenzoate **hydroxylase**	2156
L1388	P-hydroxybenzoate hydroxylase	2157
L1389	**P-hydroxybenzoate** hydroxylase	2158
L1390	P-hydroxybenzoate hydroxylase	2159
L1391	**P-hydroxybenzoate** hydroxylase	2160
L1392	P-hydroxybenzoate **hydroxylase**	2161
L1393	P-hydroxybenzoate hydroxylase	2162
L1394	**P-hydroxybenzoate** hydroxylase	2163
L1395	**P-hydroxybenzoate** hydroxylase	2164
L1396	**P-hydroxybenzoate** hydroxylase	2165
L1397	P-hydroxybenzoate **hydroxylase**	2166
L1398	**Phytase**	LNF
L1399	Phytase	**QSN**
L1400	Phytase	2167
L1401	Phytase	2168
L1402	Phytase	2169
L1403	Phytase	2170
L1404	Phytase	2171
L1405	Phytase	2172
L1406	Phytase	2173
L1407	Phytase	2174
L1408	Pirin	LKS
L1409	Firm	SGE
L1410	Pisin	2175
L1411	**Pirin**	2176
L1412	Pirin	2177
L1413	Pirin	2178
L1414	Pirin	2179

L14 15	Pirin	2180
L1416	Poly (A) polymerase	218 !
L1417	Poly(A) polymerase	2182
L 14 18	Poly(A) **polymerase**	2183
L1419	Poly (A) polymerase	2184
L1420	**Poly (A)** polymerase	2185
L1421	Poly (A) polymerase	2186
L1422	Poly(A) polymerase	2187
L1423	Poly(A) polymerase	2188
L1424	Poly (A) polymerase	2189
L1425	Poly(A) polymerase	2190
L1426	Poly (A) polymerase	2191
L1427	**Poly (A)** polymerase	2192
L1428	Poly(rC)-binding protein 2	2193
L1429	Polymerase x	2194
L1430	Polymerase x	2195
L143 1	Polypeptide **N-acetylgalactosaminyltransferase** 2	2196
L1432	Polypeptide **N-acetylgalactosaminyltrarisferase** 2	2197
LI433	Polyphosphate kinase	2198
L1434	**Polyphospliate** kinase	2199
L1435	Polyphosphate kinase	2200
L1436	**Polypyrimidine** tract-binding protein	2201
L1437	Porcine pancreatic spasmolytic polypeptide	2202
L1438	Possible **3-mercaptopyruvate** sulfurtransferase	LFR
L1439	Possible **3-mercaptopynivate** sulfurtransf erase	YGM
L I440	Possible 3-**niercapto** pyruvate sulfurtransferase	2203
L1441	Possible **3-mercaptopyruvate** sulfurtransferase	2204
L1442	Possible 3-mercaptopyruvate sulfurtransferase	2205
L1443	Postsynaptic density protein 95	2206
L1444	Postsynaptic density protein 95	2207
L I445	Predicted sugar phosphatases of the HAD superfamily	IAI
L1**446**	Predicted sugar phosphatases of the HAD **superfamily**	2208
L1447	Predicted sugar phosphatases of the HAD **superfamily**	2209
L1448	Predicied sugar phospiiatases of the HAD superfamily	22 10
L1449	Predicted sugar phosphatases of the HAD superfamily	221 1
L I450	Predicted sugar phosphatases of the HAD **superfamily**	2212
L145 1	Predicted sugar phosphatases of the HAD **superfamily**	22 13
L1452	Predicted sugar phosphatases of the HAD **superfamily**	2214
L1453	Predicted sugar phospiiatases of the HAD superfamily	22 15
L1454	**Preprotein** translocase SecA	IL F
L I455	**Preprotein** translocase SecA	LID
L1456	Preprotein translocase SecA	2216
L1457	Preproiem translocase SecA	2217
L1458	Preprotein translocase SecA	22 18
L1459	Preprotein translocase SecA	2219

L1460	Preprotein **translocase** SecA	2220
L1461	Preproteiii translocase SecA	222 1
LI462	**Preprotein** translocase SecA	2222
LI463	Preproteiis **translocase** SecA	2223
LI464	Preprotein translocase SecA	2224
L1465	**Preprotein** translocase SecA	2225
LI466	Preprotein translocase SecA	2226
LI467	Preprotein translocase SecA	222*1*
LI468	Preprotein translocase SecA	2228
LI469	Preprotein translocase SecA	2229
L1470	Preprotein translocase SecA	2230
L1471	Preprotein translocase SecA	2231
LI472	Preprotein translocase SecA	2232
Li473	PrfA	ING
LI474	Probable 16s **rRNA-processing** protein **RimM**	2233
L1475	Probable biphenyl-2,3-diol **1,2-clioxygenase BphC**	2234
LI476	Probable chorismate **inutase**	LLA
LI477	Probable **chorismate mutase**	2235
Li478	Probable chorismate mutase	2236
L1479	Probable ferredoxin-dependent nitrite reductase NirA	VPL
L1480	Probable **ferredoxin-dependent nitrite** reductase NirA	WGi
L148 1	Probable ferredoxin-dependent nitrite reductase NirA	22^7
L1482	Probable **ferredoxin-dependent** nitrite reductase NirA	2238
Li483	Probable ferredoxin-dependent **nitrite** reductase NirA	2239
L1484	Probable ferredoxin-dependent nitrite reductase NirA	2240
LI485	Probable ferredoxin-dependent nitrite reductase NirA	2241
L1486	Probable ferredoxin-dependent nitrite reductase NirA	2242
L1487	Probable ferredoxin-dependent nitrite reductase NirA	2243
Li488	Probable ferredoxin-dependent nitrite reductase NirA	2244
L1489	Probable ferredoxin-dependent nitrite reductase NirA	2245
LI490	Probable ferredoxin-dependent nitrite reductase NirA	2246
L149 1	Probable ferredoxin-dependent nitrite reductase NirA	2247
L1492	Probable ferredoxin-dependent nitrite reductase NirA	2248
L1493	Probable galactokinase	2249
L1494	Probable **galactokinase**	2250
LI495	Probable galactokinase	2251
L1496	Probable galactokinase	2252
L1497	Probable galactokinase	2253
L1498	Probable galactokinase	2254
L1499	Probable galactokinase	2255
LI500	Probable galactokinase	2256
Li50 1	Probable galactokinase	2257
Li502	Probable galactokinase	2258
L1503	Probable galactokinase	2259
Li504	Probable galactokinase	2260

L1505	Probable **glutathione S-transferase**	2261
L1506	Probable GST-related protein	2262
L1507	Probable HPr(Ser) **kinase/phosphatase**	2263
L1508	Probable **thiosulfate sulfur** transferase	2264
L1509	Probable thiosulfate sulfur transferase	2265
L1510	Probable thiosulfate **sulfur transferase**	2266
L1511	Probable **thiosulfate** sulfur transferase	2267
L1512	Probable thiosulfate sulfur transferase	2268
L1513	Probable **thiosulfate** sulfur transferase	2269
L1514	Probable thiosulfate sulfur transferase	2270
L1515	Probable thiosulfate **sulfur transferase**	2271
L1516	Probable iRNA **pseudouridine** synthase D	2272
L1517	Probable tRNA pseudouridine **synthase** D	2273
L1518	Probable tRNA pseudouridine synthase D	2274
L1519	Probable tRNA pseudouridine **synthase** D	2275
L1520	Probable tRNA **pseudouridine synthase** D	2276
L1521	Probable tRNA pseudouridine synthase D	2277
L1522	Programed cell death protein 8	SKE
L1523	Programed cell death protein 8	TLQ
L1524	Programed cell death protein 8	2278
L1525	Programed **cell** death protein 8	2279
L1526	Programed cell death protein 8	2280
L1527	Programed cell death protein 8	2281
L1528	Programed cell death protein 8	2282
L1529	Programed cell death protein 8	2283
L1530	Programed cell death protein 8	2284
L1531	Programed cell death protein 8	2285
L1532	Programed cell death protein 8	2286
L1533	Programed cell death protein 8	2287
L1534	Programed cell death protein 8	2288
L1535	Programed cell death protein 8	2289
L1536	Programed cell death protein 8	2290
L1537	Programed cell death protein 8	2291
L1538	Programed cell death pro tein 8	2292
L1539	Programed cell death protein 8	2293
L1540	Programed cell death protein 8	2294
L1541	Programed cell death protein 8	2295
L1542	Proline oxidase	2296
L1543	Prolyl-tRNA synthetase	2297
L1544	Prostaglandin G/H synthase **I**	PEi
L1545	Prostaglandin G/H synthase 1	2298
L1546	Protease	2299
L1547	Protease	2300
L1548	Protease	2301
L1549	Protease DegS	2302

LI550	Protease DegS	2303
L1551	Protease DegS	2304
L1552	Protease DegS	2305
LI553	Protease ттт	NAR
LI554	Protease III	RNP
Li555	Protease тїт	2306
L1556	Protease III	2307
L1557	Protease III	2308
L1558	Protease III	2309
L1559	Protease III	2310
LI560	Protease тїт	2311
L1561	Protease III	2312
Li562	Protease III	2313
Li563	Protease III	2314
Li564	Protease III	2315
Li565	Protease тїт	2316
Li566	Protease III	2317
Li567	Protease III	2318
Li568	Protease III	2319
Li569	Protease III	2320
Li570	Protease тїт	2321
LI571	Protease III	2322
Li572	Protease III	2323
L1573	Protease III	2324
LI574	Protease III	2325
L1575	Protection of telomeres 1	2326
Li576	Protection of telomeres I	2327
Li577	Protein (CD58)	2328
L1578	Protein (CRPT)	2329
Li579	Protein (DNA polymerase)	2330
Li580	Protein (DNA polymerase)	2331
L1581	Protein (DNA polymerase)	2332
L1582	Protein (electron transfer flavoprotein)	2333
L1583	Protein (electron transfer flavoprotein)	2334
Li584	Protein (Ffh)	2335
Li585	Protein (Ffh)	2336
Li586	Protein (Ffh)	2337
Li587	Protein (Ffh)	2338
L1588	Protein (Fill)	2339
L1589	Protein (Fokl restriction endoniiclease)	2340
Li590	Protein (FokI restriction endonucicase)	2341
Li591	Protein (Fokl restriction endonucicase)	2342
Li592	Protein (FokI restriction endonucicase)	2343
L1593	Protein (Fokl restriction endonucicase)	2344
Li594	Protein (Fokl restriction endonucicase)	2345

L1595	Protem **(Fokl** restriction **endonucicase)**	2346
L1596	Protein **(Fokl** restriction endonucicase)	2347
L1597	Protein **(Fokl** restriction endonucicase)	2348
L I598	Protein (neural cell adhesion molecule)	2349
L1599	Protein (neural cell adisesion **molecule)**	2350
L1600	Protem (neural cell adhesion molecule)	2351
L1601	Protein **(nine-haem** cytochrome c)	FTH
L I602	Protein (nine-haem **cytochrome** c)	2352
L1603	Protein **(nine-haem** cytochrome c)	2353
L1604	Protein (nine-haem **cytochrome** c)	2354
L1605	Protem **(nine-haem** cytochrome c)	2355
L1606	Protein (nine-haem cytochrome c)	2356
L1607	Protein (nine-haem cytochrome c)	2357
L1608	Protein **(nine-haem** cytochrome c)	2358
L1609	Protein (nine-haem **cytochrome** c)	2359
L16 10	Protem (protease/helicase **NS3)**	2360
L161 1	Protein **(protease/helicase NS3)**	2361
L1612	Protein (protease/helicase NS3)	2362
L16 13	Protein (protease/helicase **NS3)**	2363
L1614	Protein disulfide **oxidoreductase**	2364
L16 15	Protem disulfide oxidoreductase	2365
L1616	Protein **disulfide-isomerase** A4	2366
L1617	Protein kinase PKR	2367
L16 18	Protein kinase PKR	2368
L1619	Protein **TolB**	**VNK**
L I620	Protein **TolB**	2369
L162 1	Protein TolB	2370
L1622	Protein TolB	2371
L1623	Protein TolB	2372
L1624	Protein TolB	2373
L I625	Protein TolB	2374
L1626	Protein **translation elongation factor 1A**	2375
L1627	Protein transport protein Sec24	DRN
L1628	Protein transport protein Sec24	2376
L1629	Protein transport protein **Sec24**	2377
L I630	Protein transport protein Sec24	2378
L163 1	Protein transport protein **Sec24**	2379
L1632	Protem transport protein Sec24	2380
L1633	Protein transport protein Sec24	238!
L1634	Protein transport protein **Sec24**	2382
L I635	Protein transport protein Sec24	2383
L1636	**Pseudouridine** synthase **CBF5**	AIQ
L1637	**Pseudouridine** synthase CBF5	2384
L1638	Pseudouridine **synthase** CBF5	2385
L1639	Putative acetylglutamate **synthase**	2386

L1640	Putative acetylglutamate synthase	2387
L1641	Putative acetylglutamate synthase	2388
LI642	Putative family 31 giucosidase Yicl	2389
LI643	Putative family 31 giucosidase Yicl	2390
L1644	Putative family 31 giucosidase Yicl	2391
L1645	Putative glutathione transferase	2392
LI646	Putative glutathione transferase	2393
LI647	Putative glutathione transferase	2394
LI648	Putative GNTR-family transcriptional regulator	2395
L1649	Putative GNTR-family transcriptional regulator	2396
L1650	Putative GNTR-family transcriptional regulator	2397
L1651	Putative HTH-type transcriptional regulator PH0061	2398
L1652	Putative HTH-type transcriptional regulator PH1519	2399
LI653	Putative HTH-type transcriptional regulator PH 15 19	2400
L1654	Putative tnetallopeptidase	2401
L1655	Putative N-acetylmannosarnine kinase	2402
L1656	Putative N-acetylniatmosamine kinase	2403
L1657	Putative N-acerylmannosamine kinase	2404
Li658	Putative NADP oxidoreductase BF3 122	2405
L1659	Putative NADP oxidoreductase BF3 122	2406
L1660	Putative NADP oxidoreductase BF3 122	2407
LI661	Putative NADP oxidoreductase BF3 122	2408
LI662	Putative oxidoreductase	2409
LI663	Putative secreted alpha-galactosidase	PLP
LI664	Putative secreted alpha-galactosidase	TNG
LI665	Putative secreted alpha-galactosidase	2410
LI666	Putative secreted alpha-galactosidase	241 1
LI667	Putative secreted alpha-galactosidase	2412
LI668	Putative tagatose-6-phosphate ketose/aldose isomerase	DKA
LI669	Putative tagatose-6-phosphate ketose/aldose isomerase	2413
LI670	Putative tagatose-6-phosphate ketose/aldose isomerase	2414
LI67 1	Putative tagaiose-6-phosphaie ketose/aldose isomerase	2415
LI672	Putative transcriptional regulator GntR	2416
LI673	Putative transcriptional repressor (TetR/AcrR family)	KFR
LI674	Putative transcriptional repressor (TetR/AcrR family)	2417
LI675	Putative uncharacterized protein	2418
LI676	Putative uncharacterized protein	2419
L1677	Putative uncharacterized protein	2420
LI678	Putative uncharacterized protein	242 1
LI679	Putative uncharacterized protein	2422
LI680	Putative uncharacterized protein	2423
L168 1	Putative uncharacterized protein	2424
L1682	Putative uncharacterized protein	2425
L1683	Putative uncharacterized protein	2426
L1684	Pyruvate decarboxylase	CAA

L1685	Pyruvate decarboxylase	2427
L1686	Pyruvate decarboxylase	2428
L1687	Pyruvate decarboxylase	2429
L I688	Pyruvate decarboxylase	2430
L1689	Pyravate decarboxylase	243 1
L1690	Pyruvate dehydrogenase [lipoamide] kinase isozyme 2, mitochondrial	YVP
L1691	Pyruvate dehydrogenase [lipoamide] kinase isozyme 2, mitochondrial	2432
L1692	Pyruvate dehydrogenase [lipoamide] kinase isozyme 2, mitochondrial	2433
L1693	Pyruvate dehydrogenase E1 component subumt beta, mitochondrial	2434
L1694	Pyravate dehydrogenase E1 component subunit beta, mitochondrial	2435
L1695	Pyruvate dehydrogenase E1 component subumt beta, mitochondrial	2436
L1696	Pyruvate phosphate dikinase	FNP
L1697	Pymvate phosphate dikinase	SAL
L1698	Pyruvate phosphate dikinase	2437
L1699	Pyravate phosphate dikinase	2438
L1700	Pyruvate phosphate dikinase	2439
L1701	Pyravate phosphate dikinase	2440
L1702	Pymvate phosphate dikinase	2441
L1703	Pyruvate phosphate dikinase	2442
L1704	Pyravate phosphate dikinase	2443
L1705	Pyruvate phosphate dikinase	2444
L1706	Pyravate phosphate dikinase	2445
L1707	Pymvate phosphate dikinase	2446
L1708	Pyruvate-ferredoxin oxidoreductase	VRL
L1709	Pymvate-ferredoxin oxidoreductase	2447
L 17 10	Pymvate-ferredoxin oxidoreductase	2448
L171 1	Pymvate-ferredoxin oxidoreductase	2449
L1712	Pymvate-ferredoxin oxidoreductase	2450
L1713	Pyruvate-ferredoxin oxidoreductase	2451
L1714	Pymvate-ferredoxin oxidoreductase	2452
L 17 15	Pymvate-ferredoxin oxidoreductase	2453
L 17 16	Pymvate-ferredoxin oxidoreductase	2454
L1717	Pymvate-ferredoxin oxidoreductase	2455
L1718	Pyruvate-ferredoxin oxidoreductase	2456
L1719	Pymvate-ferredoxin oxidoreductase	2457
L I720	Pymvate-ferredoxin oxidoreductase	2458
L1721	Pymvate-ferredoxin oxidoreductase	2459
L1722	Pyruvate-ferredoxin oxidoreductase	2460
L1723	Pyruvate-ferredoxin oxidoreductase	2461
L I724	Pymvate-ferredoxin oxidoreductase	2462
L I725	Pymvate-ferredoxin oxidoreductase	2463
L1726	Pyruvate-ferredoxin oxidoreductase	2464
L1727	Pyruvate-ferredoxin oxidoreductase	2465
L1728	Quinohemoprotein amine dehydrogenase 60 kDa subunit	2466
L1729	Quinohemoprotein amine dehydrogenase 60 kDa subunit	2467

L1730	Quinoheinoprotein amine dehydrogenase 60 kDa subunit	2468
L173 1	Quinohemoprotein amine dehydrogenase 60 kDa subunit	2469
L1732	Quinohemoprotein amine dehydrogenase 60 kDa sublimit	2470
L I733	Quinohemoprotein amine dehydrogenase 60 kDa subunit	2471
L1734	Quinohemoprotein amine dehydrogenase 60 kDa subunit	2472
L1735	Quinohemoprotein amine dehydrogenase 60 kDa subunit	2473
L1736	Quinohemoprotein amine dehydrogenase 60 kDa subunit	2474
L1737	Quinohemoprotein amine dehydrogenase 60 kDa subunit	2475
L1738	Ragl	2476
L1739	Rag l	2477
L1740	Receptor-type tyrosine-protein phosphatase Mu	2478
L1741	Receptor-type tyrosine-protein phosphatase Mu	2479
L1742	RecG	2480
L1743	RecG	2481
L1744	RecG	2482
L1745	RecG	2483
L1746	RecG	2484
L1747	RecG	2485
L1748	RecG	2486
L1749	RecG	2487
L1750	RecG	2488
L1751	RecG	2489
L1752	RecG	2490
L1753	RecG	2491
L1754	Recombination endonuclease VII	2492
L 1755	Recombining bindi ng protein suppressor of hairless	2493
L1756	Restriction endonuclease	ERV
L1757	Restriction endonuclease	2494
L1758	Restriction endonuclease	2495
L1759	Restriction endonuclease	2496
L I760	Retinaldehy de-binding protein 1	QYP
L1761	Retinaldehyde-binding protein 1	2497
L1762	Retinaldehy de-binding protein 1	2498
L1763	Retinoblastoma pocket	2499
L I764	RfcS	LTD
L I765	RfcS	LTE
L1766	RfcS	2500
L1767	RfcS	2501
L1768	RfcS	2502
L I769	RfcS	2503
L I770	RfcS	2504
L I77 1	Riiamnogalacturonase B	2505
L1772	Rhamnogalacturonase B	2506
L1773	Riiamnogalacturonase B	2507
L I774	Rhamnogalacturonase B	2508

L1775	Rhanmogalaciuronase B	2509
L1776	Rhodniin	2510
L1777	Rhodniin	2511
L1778	Riboflavin synthase	2512
L1779	Ribonuclease D	2513
L1780	Ribonuclease D	2514
L1781	Ribonuclease D	2515
L1782	Ribonuclease TTH A0252	2516
L1783	Ribonuclease TTH A0252	2517
L1784	Ribonuclease TTHA0252	2518
L1785	Ribonuclease Tffl A0252	2519
L1786	Ribonuclease TTHA0252	2520
L1787	Ribonuclease TTH A0252	2521
L1788	Ribonucleotide reductase rl protein	2522
L1789	Ribonucleotide reductase rl protein	2523
L1790	Ribonucleotide reductase rl protein	2524
L1791	Ribonucleotide reductase rl protein	2525
L1792	Ribonucleotide reductase rl protein	2526
L1793	Ribonucleotide reductase rl protein	2527
L1794	Ribosome maturation factor RimM	2528
L1795	Ribulose-1,5 bisphospiiate carboxylase/oxygenase large subunit N-methyltransf erase	RHA
L1796	Ribulose- 1,5 bisphosphaie carboxylase/oxygenase large subunit N-methyltransferase	2529
L1797	Rigid extended P-rich	2530
L1798	Rigid extended P-rich	2531
L1799	Rigid extended P-rich	2532
L1800	Rigid extended P-rich	2533
L1801	Rigid extended P-rich	2534
L1802	Rigid extended P-rich	2535
L1803	Rigid extended P-rich	2536
L1804	Rigid extended P-rich	2537
L1805	Rigid extended P-rich	2538
L1806	Rigid extended P-rich	2539
L1807	Rigid extended P-rich	2540
L1808	Rigid extended P-rich	2541
L1809	Rigid extended P-rich	2542
L1810	Rigid extended P-rich	2543
L1811	Rigid extended P-rich	2544
L1812	Rigid helical	2545
L1813	Rigid helical	2546
L1814	Rigid helical	2547
L1815	Rigid helical	2548
L1S16	Rigid helical	2549
L1817	Rigid helical	2550
L1818	Rigid helical	2551
L1819	Rigid helical	2552

LI820	RNA binding domain of rho **transcription** termination factor	2553
L1821	RNA binding protein **ZFa**	2554
LI822	Rob transcription factor	2555
LI**823**	Rob **transcription** factor	2556
LI824	**RP2** lipase	2557
Li825	**Rubrerythrin**	2558
Li826	**S-adenosylmethionine** synthetase	2559
Li827	Sarcoplasmic/endoplasmic **reticulum** calciuni ATPase **1**	QFD
Li828	Sarcoplasmic/endoplasmic reticulum calcium ATPase **1**	2560
Li829	**Sarcoplasmic/endoplasmic reticulum calcium** ATPase 1	2561
Li830	**Sarcoplasmic/endoplasmic reticulum** calciuni ATPase i	2562
L183 1	Sarcoplasmic/endoplasmic reticulum calciuni ATPase 1	2563
Li832	**Sarcoplasmic/endoplasmic reticulum calcium** ATPase 1	2564
L1833	Sarcoplasmic/endoplasmic reticulum calcium ATPase 1	2565
Li834	**Sarcoplasmic/endoplasmic** reticulum calcium ATPase 1	2566
Li835	**Sarcoplasmic/endoplasmic reticulum** calciuni ATPase i	2567
Li836	Sarcoplasmic/endoplasmic reticulum calcium ATPase 1	2568
Li837	Sarcoplasmic/endoplasmic reticulum **calcium** ATPase 1	2569
L1838	Sarcoplasmic/endoplasmic reticulum calcium ATPase 1	2570
L1839	**Sarcoplasmic/endoplasmic** reticulum calcium ATPase 1	2571
Li840	**Sarcoplasmic/endoplasmic** reticulum calciuni ATPase 1	2572
Li841	Sarcoplasmic/endoplasmic reticulum calcium ATPase 1	2573
Li842	Sarcoplasmic/endoplasmic reticulum **calcium** ATPase 1	2574
Li843	Sarcoplasmic/endoplasmic reticulum calcium ATPase 1	2575
Li844	**Sarcoplasmic/endoplasmic** reticulum calcium ATPase 1	2576
LI**845**	Sarcoplasmic/endoplasmic **reticulum** calcium ATPase 1	2577
Li846	Sarcoplasmic/endoplasmic reticulum calcium ATPase 1	2578
Li847	Sarcoplasmic/endoplasmic reticulum **calcium** ATPase 1	2579
Li848	Sarcoplasmic/endoplasmic reticulum calcium ATPase 1	2580
Li849	Sarcoplasmic/endoplasmic **reticulum** calcium ATPase 1	2581
LI**850**	Sarcoplasmic/endoplasmic **reticulum** calcium ATPase 1	2582
Li851	Sarcoplasmic/endoplasmic reticulum calcium ATPase 1	2583
L1852	Sarcoplasmic/endoplasmic reticulum **calcium** ATPase 1	2584
L1853	Scavenger **mRNA-decapping** enzyme DcpS	**ETG**
Li854	Scavenger mRNA-decapping enzyme DcpS	NIT
LI**855**	Scavenger **mRNA-decapping** enzyme DcpS	2585
Li856	Scavenger mRNA-decapping enzyme DcpS	2586
Li857	**SeclSp (residues 22 - 210)**	2587
L1858	Secl8p (residues 22 - 210)	2588
Li859	Sensor protein	2589
LI**860**	Sensor protein	2590
Li861	Septum site-determining protein MinC	2591
Li862	**Serine acetyltransferase**	2592
Li863	Serine protease/NTPase/helicase NS3	2593
Li864	Serine protease/NTPase/helicase **NS3**	2594

LI865	**Serine protease/NTPase/helicase NS3**	2595
LI866	Serine rich **linker**	2596
LI867	Serine rich linker	2597
LI868	Serine rich linker	2598
LI869	Serine rich linker	2599
LI870	Serine rich linker	2600
L1871	Serine rich **linker**	2601
LI872	Serine rich linker	2602
LI873	**Seryl-tPvNA** synthetase	2603
LI874	**Sialidase**	2604
Li875	**Sialidase** B	SLT
LI876	Siaiidase **B**	VRE
LI877	Sialidase **B**	2605
Li878	Sialidase **B**	2606
LI879	Siaiidase **B**	2607
Li880	Sialidase **B**	2608
Li881	Siaiidase B	2609
LI882	Sialidase **B**	2610
Li883	Signal peptidase **I**	SRR
LI884	Signal peptidase **I**	2611
Li885	Signal peptidase 1	2612
LI886	Signal peptidase **I**	2613
Li887	Signal peptidase **I**	2614
Li888	Signal peptidase **I**	2615
LI889	Signal peptidase **I**	2616
LI890	Signal peptidase I	2617
Li891	Signal peptidase **I**	2618
Li892	Signal peptidase **I**	2619
Li893	Signal peptidase **I**	2620
Li894	Signal recognition particle protein	2621
LI895	Signal transducer and activator **of transcription** 1-**alpha/beta**	NDE
LI896	**Signal** transducer and activator **of transcriptionl-alplia/beta**	SSF
LI897	Signal transducer and activator of transcriptionl-alpha/beta	2622
Li898	Signal transducer and activator **of transcriptionl-alpha/beta**	2623
Li899	Signal transducer and activator of **transcriptionl-alpha/beta**	2624
LI900	Signal transducer and activator **of** transcription 1-**alpha/beta**	2625
LI901	**Signal** transduction protein CBL	2626
Li902	Signal transduction protein CBL	2627
Li903	Similar to RAD54-like	AKP
Li904	**Similar to RAD54-like**	EYF
LI905	Similar to **RAD54-like**	RFE
LI906	**Similar** to **RAD54-like**	2628
Li907	Similar to **RAD54-like**	2629
Li908	Simiiar to RAD54-like	2630
Li909	**Similar to RAD54-like**	2631

L19 10	Similar to **RAD54-like**	2632
L191 1	Similar to RAD54-like	2633
L1912	Similar to RAD54-3ike	2634
L19 13	Similar to **RAD54-like**	2635
L1914	Similar to **RAD54-like**	2636
L19 15	Similar to **RAD54-like**	2637
L1916	SKD1 protein	LMQ
L1917	SKDI protein	2638
L19 18	SKD1 protein	2639
L1919	SKD1 protein	2640
LI920	SKD1 **protein**	2641
L1921	SKDI protein	2642
L1922	Sil1358 protein	2643
L1923	Sl!1358 protein	2644
L1924	Sll1358 protein	2645
Li925	**Sil1358** protein	2646
L1926	Soluble iFN **alpha/beta** receptor	2647
Li927	Soluble IFN alpha/beta receptor	2648
Li928	Sporozoite-specific SAG protein	2649
L1929	**Staphylococcal accessory** regulator a **homologue**	2650
Li930	**Staphylococcal** nuclease domain-containing protein 1	2651
Li931	Staphylococcal nuclease domain-containing protein 1	2652
Li932	Staphylococcal nuclease **domain-containing** protein 1	2653
Li933	Staphylococcal nuclease domain-containing protein **1**	2654
L1934	Staphylococcal nuclease **domain-containing** protein 1	2655
LI935	Staphylococcal nuclease **domain-containing** protein !	2656
L1936	Stat protein	2657
Li937	Stat protein	2658
Li938	Stat protein	2659
L1939	Stat protein	2660
LI940	Stat protein	2661
L1941	Stat protein	2662
Li942	Stat protein	2663
Li943	Stat protein	2664
Li944	Stat protein	2665
LI945	Stat protein	2666
L1946	Stat protein	2667
Li947	Stat protein	2668
Li948	Stat protein	2669
Li949	Stat protein	2670
LI950	Stat protein	2671
L1951	Subtiiisin-like protease	2672
Li952	**Succinyl-CoA** ligase **[GDP-forming] alpha-chain, mitochondrial**	2673
L1953	**Succinyl-CoA** ligase [GDP-forming] alpha-chain, mitochondrial	2674
Li954	**Succinyl-CoA** ligase [GDP-fonningj alpha-chain, mitochondrial	2675

L1955	**Succinyl-CoA** ligase **[GDP-fonning] alpha-chain, mitochondrial**	2676
L1956	**Succinyl-CoA** ligase [GDP-forming] alpha-chain, mitochondrial	2677
L1957	**Succinyl-CoA** ligase **[GDP-forming]** alpha-chain, mitochondrial	2678
LI958	**Succinyl-CoA** synthetase beta chain	ADC
L1959	Succinyl-CoA synthetase beta chain	RQP
L1960	**Succinyl-CoA** synthetase beta chain	2679
L1961	Succinyl-CoA synthetase beta **chain**	2680
L1962	Succinyl-CoA synthetase beta chain	2681
L1963	Succinyl-CoA synthetase beta chain	2682
L1964	Succinyl-CoA synthetase beta chain	2683
L1965	**Succinyl-CoA** synthetase beta chain	2684
L1966	Succinyl-CoA:3-ketoacid-coenzyme A transferase	2685
L1967	Sulfurtransferase	2686
L1968	Superantigen **SMEZ-2**	2687
L1969	**Superoxide distnutase** 1 **copper chaperone**	2688
L1970	Surface layer protein	2689
LI971	Surface layer protein	2690
L1972	Surface layer protein	2691
L1973	Surface layer protein	2692
LI974	Surface layer protein	2693
L1975	Surface layer protein	2694
L1976	Surface layer protein	2695
L1977	Surface layer protein	2696
L1978	T lymphocyte activation antigen	2697
L1979	T lymphocyte activation antigen	2698
L1980	T-ceii receptor **alpha chain** C region	2699
L1981	**Terminal** oxygenase component of carbazole	2700
L1982	Tetanus neurotoxin	2701
L1983	Tetracycline repressor protein class D	2702
L1984	The **GTP-binding** protein Obg	2703
L1985	The GTP-binding protein Obg	2704
L1986	The GTP-binding protein Obg	2705
L1987	The GTP-binding protein Obg	2706
L1988	Thioredoxin domain-containing protein 4	2707
L1989	**Thioredoxin domain-containing** protein 4	2708
L1990	**Thio**sulfa**te sulfurtransferase**	IDP
L1991	**Thiosulfate** snlfurtransferase	2709
L1992	**Thiosulfate sulfurtransferase**	2710
L1993	**Thiosulfate** sulfurtransferase	2711
L1994	Thiosulfate sulfurtransferase	2712
LI995	**Threony1-tRNA** sy **nthetase**	2713
L1996	**Threonyl-IRNA** synthetase	2714
L1997	Threony**1-tRNA** synthetase	2715
L1998	**Threonyl-tRNA** synthetase	2716
L1999	**Threonyl-tRNA** synthetase	2717

L2000	Thxeony1-tRNA synthetase	2718
L2001	Threony1-iRNA synthetase	2719
L2002	Threonyl-tRNA synthetase	2720
L2003	Threony1-tRNA sy nthetase	2721
L2004	Threonyl-tRNA synthetase 1	2722
L2005	Thxeony1-tRNA synthetase 1	2723
L2006	Threonyl-tRNA synthetase 1	2724
L2007	Threonyl-tRNA synthetase 1	2725
L2008	Threonyl-tRNA synthetase 1	2726
L2009	Threonyl-tRNA synthetase 1	2727
L20 10	Threonyl-tRNA synthetase 1	2728
L201 1	Threonyl-tRNA synthetase 1	2729
L2012	Thronibospondin 1	2730
L20 13	Tick-bome encephalitis vims glycoprotein	2731
L2014	Titin	2732
L20 15	Titin	2733
L2016	TLR1789 protein	2734
L2017	TLR1789 protein	2735
L20 18	Topoisomerase I	2736
L2019	Topoisomerase I	2737
L2020	Toxic shock syndrome toxin-1	2738
L202 1	Toxic shock syndrome toxin-1	2739
L2022	Toxic shock syndrome toxin-1	2740
L2023	Toxic shock syndrome toxin- 1	2741
L2024	T-plasminogen activator F1-G	VPV
L2025	T-plasminogen activator Fl-G	2742
L2026	TpsB transporter FhaC	2743
L2027	TpsB transporter FhaC	2744
L2028	TpsB transporter FhaC	2745
L2029	Transcarbamylase	2746
L2030	Transcarbamylase	2747
L2031	Transcription antitermxnator LicT	2748
L2032	Transcription elongation factor GreB	2749
L2033	Transcription initiation factor Ila gamma chain	2750
L2034	Transcription initiation factor IIb	2751
L2035	Transcription initiation factor IIb	2752
L2036	Transcriptional regulator (NtrC family)	2753
L2037	Transcriptional regulator AefR	2754
L2038	Transcriptional regulator AefR	2755
L2039	Transcriptional regulator AefR	2756
L2040	Transcriptional regulator AefR	2757
L2041	Transcriptional regulator AefR	2758
L2042	Transcriptional regulator. AsnC family	2759
L2043	Transcriptional regulator, AsnC family	2760
L2044	Transcriptional regulator, AsnC family	2761

L2045	Transcriptional regulator, biotin repressor family	2762
L2046	Transcriptional regulator, Crp/Fnr family	2763
L2047	Transcriptional regulator, GntR family	2764
L2048	Transcriptional regulator, HTH_3 family	2765
L2049	Transcriptional regulator, HTH_3 family	2766
L2050	Transcriptional regulator, HTH_3 family	2767
L2051	Transcriptional regulator, HTH_3 family	2768
L2052	Transcriptional regulator, HTH_3 family	2769
L2053	Transcriptional regulator, laci family	2770
L2054	Transcriptional regulatory protein ZraR	2771
L2055	Transcriptional regulatory protein ZraR	277^
L2056	Transcriptional regulatory protein ZraR	2773
L2057	Transcriptional regulatory protein ZraR	2774
L2058	Transcriptional regulatory protein ZraR	2775
L2059	Transcriptional regulator}' protein ZraR	2776
L2060	Transcriptional regulatory protein ZraR	2777
L2061	Transferrin receptor protein	VSN
L2062	Transferrin receptor protein	2778
L2063	Transferrin receptor protein	2779
L2064	Transferrin receptor protein	2780
L2065	Transferrin receptor protein	2781
L2066	Translation initiation factor 5A	2782
L2067	Translation initiation factor 5A	2783
L2068	Translation initiation factor 5A	2784
L2069	Translation initiation factor IF2/elF5b	2785
L2070	Translation initiation factor IF2/eIF5b	2786
L2071	Transposable element mariner, complete CDS	2787
L2072	Tricorn protease	2788
L2073	Tricorn protease	2789
L2074	Tricorn protease	2790
L2075	Trigger factor	2791
L2076	Trigger factor	2792
L2077	Trigger factor	2793
L2078	TRNA CCA-adding enzyme	RRI
L2079	TRNA CCA-adding enzyme	2794
L2080	TRNA CCA-adding enzyme	2795
L2081	TRNA CCA-adding enzyme	2796
L2082	TRNA CCA-adding enzyme	2797
L2083	TRNA nucleotidyltransferase	2798
L2084	TRNA-splicing endonuclease	2799
L2085	Tt1467 protein	LEA
L2086	Tt1467 protein	2800
L2087	Tumor suppressor p53-binding protein 1	2801
L2088	Tuinor suppressor p53-binding protein 1	2802
L2089	Tumor suppressor p53-binding protein 1	2803

L2090	**Tumor suppressor p53-bimding protein** 1	2804
L2091	Type A **flavoprotein** FprA	2805
L2092	Type A flavoprotein FprA	2806
L2093	Type A flavoprotein FprA	2807
L2094	Type **A** flavoprotein FprA	2808
L2095	Type A flavoprotein FprA	2809
L2096	Type I restriction enzyme **specificity protein MG438**	**QMH**
L2097	Type I restriction enzyme specificity protein MG438	2810
L2098	Type I restriction enzyme specificity protein **MG438**	2811
L2099	Type I restriction-modification **enzyme,** S **subunit**	2812
L2100	Type I restriction-modification **enzyme,** S subunit	2813
L2101	Type I site-specific restriction-modification system, R (restriction) subunit	**2814**
L2102	Type I site-specific restriction-modification system, R (restriction) **subunit**	2815
L2103	Type I site-specific restriction-modification system, R (restriction) subunit	2816
L2104	Type II **DNA topoisomerase** VI **subunit** B	2817
L2105	Type II DNA topoisomerase VI subunit B	2818
L2106	Type II DNA topoisomerase VI Sisbisnit B	2819
L2107	Type II DNA topoisomerase **VI** subunit B	2820
L2108	Type II DNA topoisomerase VI subunit B	2821
L2109	Type II DNA topoisomerase VI subunit B	2822
L2110	Type II DNA topoisomerase VI subunit B	2823
L2111	Type **II** DNA topoisomerase VI **subunit** B	2824
L2112	Type II DNA topoisomerase VI subunit B	2825
L2113	Type II DNA topoisomerase VI subunit B	2826
L2114	Type II DNA topoisomerase VI subunit B	2827
L2115	Type vi secretion system component	2828
L2116	Type VI secretion system component	2829
L2117	Type VI secretion system component	2830
L2118	**Tyrosine-protein** kinase receptor UFO	2831
L2119	**Tyrosine-protein** kinase receptor UFO	2832
L2120	Tyrosine-protein kinase **ZAP-70**	2833
L2121	Tyrosine-protein kinase **ZAP-70**	2834
L2122	**Tyrosyl-DNA phosphodiesterase**	2835
L2123	**Tyrosyl-DNA** phosphodiesterase	2836
L2124	**Ubiquitin** earboxyl-terminal hydrolase 7	2837
L2125	**UDP-galactopyranose mutase**	2838
L2126	**UDP-galactopyranose** mutase	2839
L2127	**UDP-galactopyranose** mutase	2840
L2128	UDP-galactopyranose mutase	2841
L2129	UDP-galactopyranose mutase	2842
L2130	**UDP-glucose** dehydrogenase	2843
L2131	**UDP-N-acetylmurainate-L-alanine** ligase	2844
L2132	**UDP-N-acetylmuramate-L**-alanine ligase	2845
L2133	**UDP-N-acetylmuramoylalanine--D-glutamate** ligase	2846
L2134	UDP-N-acetylmuramoylalanine-D-giutamate ligase	2847

L2 135	**UDP-N-acetyimuramoylalanine-D-glutai^ -lysine-D-alanyl-D-alanine ligase, MurF** protein	2848
L2 136	UDP-N-acetylinHrainoylalaiiyl4)-g]Hiaraate- -2,6-diaminopifnelate ligase	2849
L2137	UDP-N-acetyimuramoylalany3-D-glutaniate--2,6-dianiinopinieIate ligase	2850
L2 138	**UDP-N-acetylmiiramoylalanyl-D-glutaniate--2,6-cUairiinopimelate** ligase	285 l
L2 139	**UDP-N-acetylmuramoylalanyl-D-glutamate--2,6-diaminopiinelate** ligase	2852
L2 140	UDP-N-ace!ylffiuramoylala!iyl-D-glutasnate--2,6-diansi rsopiraeiate ligase	2853
L2 14 1	UDP-N-aeetylinHrainoylalaiiyl4)-glHiaraate- -2,6-diaminopifnelate ligase	2854
L2142	UDP-N-acetylmuramoyla3anyl-D-glHtaniate--2,6-dianiinopinielate ligase	2855
L2 143	**Uncharacterized** conserved protein	2856
L2 144	**Uncharacterized** conserved protein	2857
L2 145	**Uncliaracterized** GST-like protein **yfcF**	2858
L2 146	Uncharacterized GST-like **proteiiiprotein**	2859
L2147	Uncharacterized GST-like proteinprotein	2860
L2 148	Uncliaracterized GST-like proteinprotein	286 l
L2 149	Uncharacterized protein	2862
L2 150	Uncliaracterized protein	2863
L2 15 1	Uncharacterized protein BT_1490	2864
L2152	Uncharacterized protein ypfl	TLR
L2153	Uncliaracterized protein **ypf**l	VHP
L2 154	Uncharacterized protein ypfl	2865
L2 155	Uncliaracterized protein ypfl	2866
L2 156	Uncharacterized protein ypfl	2867
L2 157	Uncharacterized protein ypfl	2868
L2158	Uncliaracterized protein ypfl	2869
L2 159	Uncharacterized protein ypfl	2870
L2 160	Uncliaracterized protein ypfl	2871
L2 16 I	Uncharacterized protein ypfl	2872
L2 162	Uncharacterized protein ypfl	2873
L2163	Uncliaracterized protein ypfl	2874
L2 164	Uncharacterized protein ypfl	2875
L2 165	Uncliaracterized protein **ypfl**	2876
L2 166	Uncharacterized protein ypfl	2877
L2 167	Uncharacterized protein ypfl	2878
L2168	Uncliaracterized protein ypfl	2879
L2 169	Unknown protein	2880
L2 170	Unknown protein	288 l
L2 17 I	**UPF013** l **protein ykqA**	2882
L2 172	UPFO13 **1** protein ykqA	2883
L2173	**UPF013** l protein ykqA	2884
L2174	**UPF0348 protein MJ0951**	2885
L2175	**UPF0348** protein M.T0951	2886
L2 176	**UPF0348** protein **MJ0951**	2887
L2 177	UPF0348 protein **MJ0951**	2888
L2 178	**UPF0348 protein MJ0951**	2889

L2 179	**UPF0348** protein **MJ0951**	2890
L2180	**UPF0348** protein **MJ0951**	289 1
L2 18 1	UPF0348 **protein MJ0951**	2892
L2 182	IJRE2 protein	2893
L2 183	**Uridine diphospho-N-acetylenolpymvylglucosaminereductase**	TAK
L2 184	Uridine **diphospho-N-acetyleno]pyru\7lglucosaininereductase**	2894
L2185	Uridine dipliospho-N-acetylenoipyravyiglucosaminereductase	2895
L2 186	Uridine **diphospho-N-acetylenolpyru^lglucosaminereductase**	2896
L2187	Uridine **diphospho-N-acetyleno]pyruvylglucosaminereductase**	2897
L2 188	Urokinase **plasminogen** activator surface receptor	2898
L2 189	Urokinase plasminogen activator **surface** receptor	2899
L2190	Vascular cell adhesion molecule-1	2900
L2191	VCP-like **ATPase**	2901
L2192	VCP-like ATPase	2902
L2 193	Viral **CASP8** and **FADD-like apoptosis** regulator	2903
L2 194	Vitamin **K-dependent** protein Z	2904
L2 195	**VP1** protein	2905
L2196	**V-type** ATP **synthase** alpha chain	2906
L2197	Xaa-Pro aminopeptidase	2907
L2 198	Xaa-Pro aminopeptidase	2908
L2 199	Xaa-Pro **aminopeptidase**	2909
L2200	Xaa-Pro aminopeptidase	2910
L2201	Xanthine dehydrogenase	2911
L2202	Xanthine dehydrogenase	2912
L2203	Xanthine dehydrogenase	2913
L2204	Xanthine dehydrogenase	2914
L2205	X-prolyl dipeptidyl **aminopeptidase**	KSY
L2206	**X-prolyl** dipeptidyl aminopeptidase	LDG
L2207	X-prolyl dipeptidyl aminopeptidase	LLE
L2208	X-prolyl dipeptidyl aminopeptidase	TYS
L2209	X-prolyl dipeptidyl aminopeptidase	2915
L22 10	X-prolyl dipeptidyl **aminopeptidase**	2916
L2211	X-prolyl dipeptidyl aminopeptidase	2917
L2212	X-prolyl dipeptidyl aminopeptidase	2918
L2213	X-prolyl dipeptidyl aminopeptidase	2919
L22 14	**X-prolyl** dipeptidyl aminopeptidase	2920
L22 15	X-prolyl dipeptidyl aminopeptidase	2921
L22 16	X-prolyl dipeptidyl aminopeptidase	2922
L2217	X-prolyl dipeptidyl aminopeptidase	2923
L22 18	X-prolyl dipeptidyl aminopeptidase	2924
L22 19	**X-prolyl** dipeptidyl aminopeptidase	2925
L2220	X-prolyl dipeptidyl aminopeptidase	2926
L2221	**X-prolyl** dipeptidyl aminopeptidase	2927
L2222	X-prolyl dipeptidyl aminopeptidase	2928
L2223	X-prolyl dipeptidyl aminopeptidase	2929

L2224	**X-prolyl dipeptidyl aminopeptidase**	**2930**
L2225	**X-prolyl** dipeptidyl aminopeptidase	**293 !**
L2226	**X-prolyl** dipeptidyl **aminopeptidase**	**2932**
L2227	**X-prolyl** dipeptidyl aminopeptidase	**2933**
L2228	X-prolyl dipeptidyl aminopeptidase	**2934**
L2229	**X-prolyl** dipeptidyl aminopeptidase	**2935**
L2230	X-prolyl dipeptidyl aminopeptidase	**2936**
L2231	X-prolyl dipeptidyl aminopeptidase	**2937**
L2232	X-prolyl dipeptidyl aminopeptidase	**2938**
L2233	**Xylosidase/arabinosidase**	**2939**
L2234	**Xylosidase/arabiiiosidase**	**2940**
L2235	Xylosidase/arabinosidase	**294 !**
L2236	Xylosidase/arabinosidase	**2942**
L2237	Xylosidase/arabinosidase	**2943**
L2238	Xylosidase/arabinosidase	**2944**
L2239	**Xylosidase/arabiiiosidase**	**2945**
L2240	YkoF	**2946**
L2241	**Ykul** protein	**2947**

[00147] Internal nbosomal entry site (IRES) is a nucleotide sequence (>500 nucleotides) that allows for initiation of translation in the middle of an mRNA sequence (Kirn, J.H. et al., 2011. PI-.oS One 6(4): e18556; the contents of which are herein incorporated by reference in its entirety). Use of an IRES sequence ensures co-expression of genes before and after the IRES, though the sequence following the IRES may be transcribed and translated at lower levels than the sequence preceding the IRES sequence.

[ΘΘ148] 2A peptides are small "self-cleaving " peptides (18-2.2. amino acids) derived from viruses such as foot-and-mouth disease virus (F2A), porcine teschovirus-1 (P2A), *Thoseaasigna* virus (OA), or equine rhinitis A virus (E2A). The 2A designation refers specifically to a region of picoma virus poiyproteins that lead to a ribosomal skip at the giycyl-prolyl bond in the C-ternnnnus of the 2A peptide (Kim, J.H. et ai., 2011. PLoS One 6(4): el8556; the contents of which are herein incorporated by reference in its entirety). This skip results in a cleavage between the 2A peptide and its immediate downstream peptide. As opposed to IRES linkers, 2A peptides generate stoichiometric expression of proteins flanking the 2A peptide and their shorter length can be advantageous in generating viral expression vectors.

[00149] Some payload regions encode linkers comprising furin cleavage sites. Furin is a calcium dependent serine endoprotease that cleaves proteins just downstream of a basic amino acid target sequence **(Arg-X-(Arg/Lys)-Aig)** (Thomas, G., 2002. Nature Reviews Molecular Cell Biology 3(10): 753-66; the contents of which are herein incorporated by reference in its entirety).

Furin is enriched in the trans-golgi network where it is involved in processing cellular precursor proteins. Furin also plays a role in activating a number of pathogens. This activity can be taken advantage of for expression of polypeptides of the invention.

[00150] In some embodiments, the payload region may encode one or more linkers comprising cathepsin, matrix metalloproteinases or legumam cleavage sites. Such linkers are described e.g. by Cizeau and Macdonaid in international Publication No. WO2008052322, the contents of which are herein incorporated in their entirety. Cathepsins are a family of proteases with unique mechanisms to cleave specific proteins. Cathepsin B is a cysteine protease and cathepsin D is an aspartyl protease. Matrix metalloproteinases are a family of calcium-dependent and zinc-containing endopeptidases. Legumain is an enzyme catalyzing the hydrolysis of (-Asn-Xaa-) bonds of proteins and small molecule substrates.

[00151] In some embodiments, payload regions may encode linkers that are not cleaved. Such linkers may include a simple amino acid sequence, such as a glycine rich sequence. In some cases, linkers may comprise flexible peptide linkers comprising glycine and serine residues. The linker may comprise flexible peptide linkers of different lengths, e.g. nxG4S, where n=1-10 and the length of the encoded linker varies between 5 and 50 ammo acids (SEQ ID NO: 17940). In a non-limiting example, the linker may be 5xG4S (SEQ ID NO; 17939 encoded by SEQ ID NO: 903). These flexible linkers are small and without side chains so they tend not to influence secondary protein structure while providing a flexible linker between antibody segments (George, R.A., et al., 2002. Protein Engineering 15(11): 871-9; Huston, IS. et al, 1988. PNAS 85:5879-83; and Shan, D. et al, 1999. Journal of Immunology. 162(11):6589-95; the contents of each of which are herein incorporated by reference in their entirety). Furthermore, the polarity of the serine residues improves solubility and prevents aggregation problems.

[00152] In some embodiments, payload regions of the invention may encode small and unbranched serine-rieh peptide linkers, such as those described by Huston et al. in US Patent No. IJS5525491, the contents of which are herein incorporated in their entirety. Polypeptides encoded by the payload region of the invention, linked by serine-rich linkers, have increased solubility.

[00153] In some embodiments, payload regions of the invention may encode artificial linkers, such as those described by Whitlow and Filpula in US Patent No. US5856456 and Ladner et al. in US Patent No. US 4946778, the contents of each of which are herein incorporated by their entirety.

Viral Genome Component: Inlrons

[00154] In one embodiment, the payload region comprises at least one element to enhance the expression such as one or more introns or portions thereof. Non-limiting examples of introns include, MVM (67-97 bps), FIX truncated intron I (300 bps), β-globin SD/immunogiobulin heavy chain splice acceptor (250 bps), adenovirus splice donor/imniunoglobin splice acceptor (500 bps), SV40 late splice donor/splice acceptor (19S/1 6S) (180 bps) and hybrid adenovirus splice donor/igG spiice acceptor (230 bps).

[00155] In one embodiment, the intron or intron portion may be 100-500 nucleotides in length. The intron may have a length of 80, 90, 100, 110, 120, 130, 140, 150, 160, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 190, 200, 210, 220, 230, 240, 250, 260, 270, 280, 290, 300, 310, 320, 330, 340, 350, 360, 370, 380, 390, 400, 410, 420, 430, 440, 450, 460, 470, 480, 490 or 500. The intron may have a length between 80-100, 80-120, 80-140, 80-160, 80-180, 80-200, 80-250, 80-300, 80-350, 80-400, 80-450, 80-500, 200-300, 200-400, 200-500, 300-400, 300-500, or 400-500.

Payloads of the Invention

[00156] The AAV particles of the present disclosure comprise at least one payload region. As used herein, "payload" or "payload region" refers to one or more polynucleotides or polynucleotide regions encoded by or within a viral genome or an expression product of such polynucleotide or polynucleotide region, e.g., a transgene, a polynucleotide encoding a polypeptide or muiti-polypeptide or a modulatory nucleic acid or regulatory nucleic acid. Payloads of the present invention typically encode polypeptides (e.g., antibodies or antibody-based compositions) or fragments or variants thereof.

[00157] The payload region may be constructed in such a way as to reflect a region similar to or mirroring the natural organization of an mRNA.

[00158] The payload region may comprise a combination of coding and non-coding nucleic acid sequences.

[00159] In some embodiments, the AAV payload region may encode a coding or non-codmg RNA.

[00160] In one embodiment, the AAV particle comprises a viral genome with a payload region comprising nucleic acid sequences encoding more than one polypeptide of interest (e.g., an antibody). In such an embodiment, a viral genome encoding more than one polypeptide may be replicated and packaged into a viral particle. A target cell transduced with a viral particle comprising more than one polypeptide may express each of the polypeptides in a single ceil.

[00161] In one embodiment, as shown in FIG 1, an AAV particle comprises a viral genome with a payload region comprising a nucleic acid sequence encoding a heavy chain and a light

chain of an antibody. The heavy chain and light chain are expressed and assembled to form the antibody which is secreted.

[00162] In one embodiment, the payload region may comprise the components as shown in FIG. 2. The payload region 110 is located within the viral genome 100. At the 5' and/or the 3' end of the payload region 110 there may be at least one inverted terminal repeat (ITR) 120. Within the payload region, there is a promoter region 130, an intron region 140 and a coding region 150. When the coding region 150 comprises a heavy chain region 151 and light chain region 152 of an antibody, the two chains may be separated by a linker region 155.

[00163] In one embodiment, the coding region may comprise a heavy and light chain sequence and a linker. As shown in FIG. 3, the payload region may comprise a heavy chain and light chain sequence separated by a linker and/or a cleavage site. In one embodiment, the heavy and light chain sequence is sequence separated by an IRES sequence (1 and 2). In one embodiment, the heavy and light chain sequence is separated by a foot and mouth virus sequence (3 and 4). In one embodiment, the heavy and light chain sequence is separated by a foot and mouth virus sequence and a furin cleavage site (5 and 6). In one embodiment, the heavy and light chain sequence is separated by a porcine teschovitus-1 virus sequence (7 and 8). In one embodiment, the heavy and light chain sequence is separated by a porcine teschovirus-1 virus and a furin cleavage site (9 and 10). In one embodiment, the heavy and light chain sequence is separated by a 5xG4S sequence (SEQ ID NO: 17939) (11).

[00164] Where the AAV particle payload region encodes a polypeptide, the polypeptide may be a peptide or protein. A protein encoded by the AAV particle payload region may comprise an antibody, an antibody related composition, a secreted protein, an intracellular protein, an extracellular protein, and/or a membrane protein. The encoded proteins may be structural or functional In addition to the antibodies or antibody-based composition, proteins encoded by the payload region may include, in combination, certain mammalian proteins involved in immune system regulation. The AAV viral genomes encoding polypeptides described herein may be useful in the fields of human disease, viruses, infections veterinary applications and a variety of *in vivo* and *in vitro* settings.

[00165] In some embodiments, the AAV particles are useful in the field of medicine for the treatment, prophylaxis, palliation or amelioration of neurological diseases and/or disorders.

Antibodies and Antibody-based compositions

[ΘΘ166] Payload regions of the AAV particles of the invention may encode polypeptides that form one or more functional antibodies or antibody-based compositions. As used herein, the term "antibody" is referred to in the broadest sense and specifically covers various embodiments

including, but not limited to monoclonal antibodies, polyclonal antibodies, multispecific antibodies (e.g. bispecifie antibodies formed from at least two intact antibodies), and antibody fragments (e.g., diabodies) so long as they exhibit a desired biological activity (e.g., "functional")- Antibodies are primarily amino-acid based molecules but may also comprise one or more modifications (including, but not limited to the addition of sugar moieties, fluorescent moieties, chemical tags, etc.).

|00167] As used herein, "antibody-based" or "antibody-derived' " compositions are monomeric or muhi-menc polypeptides which comprise at least one amino-acid region derived from a known or parental antibody sequence and at least one amino acid region derived from a non-antibody sequence, e.g., mammalian protein.

[00168] Payload regions may encode polypeptides that form or function as any antibody, including antibodies that are known in the art and/or antibodies that are commercially available. The encoded antibodies may be therapeutic, diagnostic, or for research purposes. Further, polypeptides of the invention may include fragments of such antibodies or antibodies that have been developed to comprise one or more of such fragments (e.g., variable domains or complementarity determining regions (CDRs)).

[00169] In one embodiment, the viral genome of the AAV particles may comprise nucleic acids which have been engineered to enable expression of antibodies, antibody fragments, or components of any of those described in US7041807 related to YYX epitope; US20090175884, US201 10305630, IJS20130330275 related to misfoided proteins in cancer; US200401 75775 related to PrP in eye f uid; US20030l 14360 related to copolymers and methods of treating prion-reiated diseases; WO2009121 176 insulin-induced gene peptide compositions, US2003 0022243; WO2003000853 related to protein aggregation assays; WO200078344 related to prion protein peptides and uses thereof. Each of these publications are incorporated by reference in their entireties.

Antibody generation

[00170] In some embodiments, viral genomes of the AAV particles of the invention may encode antibodies or antibody-based compositions produced using methods known in the art. Such methods may include, but are not limited to immunization and display technologies (e.g., phage display, yeast display, and ribosomal display). Antibodies may be developed, for example, using any naturally occurring or synthetic antigen. As used herein, an "antigen" is an entity which induces or evokes an immune response in an organism. An immune response is characterized by the reaction of the cells, tissues and/or organs of an organism to the presence of a foreign entity. Such an immune response typically leads to the production by the organism of

one or more antibodies against the foreign entity, e.g., antigen or a portion of the antigen. As used herein, "antigens" also refer to binding partners for specific antibodies or binding agents in a display library.

[00171] In one embodiment, the sequences of the polypeptides to be encoded in the viral genomes of the invention may be derived from antibodies produced using hybridoma technology. Host animals (e.g. mice, rabbits, goats, and llamas) may be immunized by an injection with an antigenic protein to elicit lymphocytes that specifically bind to the antigen. Lymphocytes may be collected and fused with immortalized cell lines to generate hybridomas which can be cultured in a suitable culture medium to promote growth. The antibodies produced by the cultured hybridomas may be subjected to analysis to determine binding specificity of the antibodies for the target antigen. Once antibodies with desirable characteristics are identified, corresponding hybridomas may be subcloned through limiting dilution procedures and grown by standard methods. The antibodies produced by these ceils may be isolated and purified using standard immunoglobulin purification procedures.

[00172] In one embodiment, the sequences of the polypeptides to be encoded in the viral genomes of the invention may be produced using heavy and light chain variable region cDNA sequences selected from hybridomas or from other sources. Sequences encoding antibody variable domains expressed by hybridomas may be determined by extracting RNA molecules from antibody-producing hybridoma cells and producing cDNA by reverse transcriptase polymerase chain reaction (PCR). PCR may be used to amplify cDNA using primers specific for heavy and light chain sequences. PCR products may then be subcloned into piasmids for sequence analysis. Antibodies may be produced by insertion of resulting variable domain sequences into expression vectors.

[00173] In one embodiment, the sequences of the polypeptides to be encoded in the viral genomes of the invention may be generated using display technologies. Display technologies used to generate polypeptides of the invention may include any of the display techniques (e.g. display library screening techniques) disclosed in International Patent Application No. WO2014074532, the contents of which are herein incorporated by reference in their entirety. In some embodiments, synthetic antibodies may be designed, selected or optimized by screening target antigens using display technologies (e.g. phage display technologies). Phage display-libraries may comprise millions to billions of phage particles, each expressing unique antibody fragments on their viral coats. Such libraries may provide richly diverse resources that may be used to select potentially hundreds of antibody fragments with diverse levels of affinity for one or more antigens of interest (McCafferty, et al., 1990. Nature. 348:552-4; Edwards, B.M. et al.,

2003. JMB. 334: 103-18; Schofield, D. et al, 2007. Genome Biol. 8, R254 and Pershad, K. et al., 2010. Protein Engineering Design and Selection. 23:279-88; the contents of each of which are herein incorporated by reference in their entirety). Often, the antibody fragments present in such libraries comprise scFv antibody fragments, comprising a fusion protein of V_H and V_L antibody domains joined by a flexible linker. In some cases, scFvs may contain the same sequence with the exception of unique sequences encoding variable loops of the CDRs. In some cases, scFvs are expressed as fusion proteins, linked to viral coat proteins (e.g. the N-terminus of the viral pIII coat protein). V_L chains may be expressed separately for assembly with V_H chains in the periplasm prior to complex incorporation into viral coats. Precipitated library members may be sequenced from the bound phage to obtain cDNA encoding desired scFvs. Antibody variable domains or CDRs from such sequences may be directly incorporated into antibody sequences for recombinant antibody production, or mutated and utilized for further optimization through in vitro affinity maturation.

[00174] In one embodiment, the sequences of the polypeptides to be encoded in the viral genomes of the invention may be produced using yeast surface display technology, wherein antibody variable domain sequences may be expressed on the cell surface of *Saccharomyces cerevisiae*. Recombinant antibodies may be developed by displaying the antibody fragment of interest as a fusion to e.g. Aga2p protein on the surface of the yeast, where the protein interacts with proteins and small molecules in a solution. scFvs with affinity towards desired receptors may be isolated from the yeast surface using magnetic separation and flow cytometry. Several cycles of yeast surface display and isolation may be done to attain scFvs with desired properties through directed evolution.

[00175] In one embodiment, the sequence of the polypeptides to be encoded in the viral genomes of the invention (e.g., antibodies) may be designed by **VERS1TOPE™** Antibody Generation and other methods used by BIOATLA ® and described in United States Patent Publication No. US20130281303, the contents of which are herein incorporated by reference in their entirety. In brief, recombinant monoclonal antibodies are derived from B-cells of a host imniuno-challenged with one or more target antigens. These methods of antibody generation do not rely on immortalized cell lines, such as hybridoma, thereby avoiding some of the associated challenges i.e., genetic instability and low production capacity, producing high affinity and high diversity recombinant monoclonal antibodies. In one embodiment, the method is a natural diversity approach. In another embodiment, the method is a high diversity approach.

[00176] In one embodiment, the sequences of the polypeptides to be encoded in the viral genomes of the invention may be generated using BIOATLA® natural diversity approach. In

the natural diversity approach of generating recombinant monoclonal antibodies described in United States Patent Publication No. US20130281303, the original pairings of variable heavy (VH) and variable light (VL) domains are retained from the host, yielding recombinant monoclonal antibodies that are naturally paired. These may be advantageous due to a higher likelihood of functionality as compared to non-natural pairings of VH and VL. TO produce the recombinant monoclonal antibodies, first a non-human host (i.e., rabbit, mouse, hamster, guinea pig, camel or goat) is immimo-ehailenged with an antigen of interest. In some embodiments, the host may he a previously challenged human patient. In other embodiments, the host may not have been imrauno-challenged. B-cells are harvested from the host and screened by fluorescence activated cell sorting (FACS), or other method, to create a library of B-cells enriched in B-cells capable of binding the target antigen. The cDNA obtained from the mRNA of a single B-cell is then amplified to generate an immunoglobulin library of Vn and VL domains. This library of immunoglobulins is then cloned into expression vectors capable of expressing the VH and VL domains, wherein the VH and VL domains remain naturally paired. The library of expression vectors is then used in an expression system to express the VH and VL domains in order to create an antibody library. Screening of the antibody library yields antibodies able to bind the target antigen, and these antibodies can be further characterized. Characterization may include one or more of the following: isoelectric point, thermal stability, sedimentation rate, folding rate, neutralization or antigen activity, antagonist or agonistic activity, expression level, specific and non-specific binding, inhibition of enzymatic activity, rigidity/flexibility, shape, charge, stability across pH, in solvents, under UV radiation, in mechanical stress conditions, or in sonic conditions, half-life and giycosyiation.

[00177] In one embodiment, the sequences of the polypeptides to be encoded in the viral genomes of the invention may be generated using BIOATLA® high diversity approach. In the high diversity approach of generating recombinant monoclonal antibodies described in United States Patent Publication No. IJS20130281303, additional pairings of variable heavy (VH) and variable light (VL) domains are attained. To produce the recombinant monoclonal antibodies, B-cells harvested from the host are screened by fluorescence activated cell sorting (FACS), panning, or other method, to create a library of B-cells enriched in B-cells capable of binding the target antigen. The cDNA obtained from the mRNA of the pooled B-cells is then amplified to generate an immunoglobulin library of VH and VL domains. This library of immunoglobulins is then used in a biological display system (mammalian, yeast or bacterial cell surface display systems) to generate a population of cells displaying antibodies, fragments or derivatives comprising the VH and VL domains wherein, the antibodies, fragments or derivatives comprise

VH and VL domain combinations that were not present in the B-cells in vivo. Screening of the cell population by FACS, with the target antigen, yields a subset of cells capable of binding the target antigen and the antibodies displayed on these cells can be further characterized. In an alternate embodiment of the high diversity approach, the immunoglobulin library comprises only VH domains obtained from the B-cells of the immuno-challenged host, while the VL domain(s) are obtained from another source.

[00178] In one embodiment, the sequences of the polypeptides to be encoded in the viral genomes of the invention may be evolved using BIOATLA® comprehensive approaches. The methods of generating recombinant monoclonal antibodies as described in United States Patent Publication No. US20130281303, further comprises evolving the recombinant antibody by comprehensive positional evolution (CPE™), CPE™ followed by comprehensive protein synthesis (CPS™), PGR shuffling, or other method.

[00179] In one embodiment, the sequence of the polypeptides to be encoded in the viral genomes of the invention (e.g., antibodies) may be derived from any of the BIOATLAS) protein evolution methods described in International Publication WO2012G09026, the contents of which are herein incorporated by reference in their entirety. In this method, mutations are systematically performed throughout the polypeptide or molecule of interest, a map is created providing useful informatics to guide the subsequent evolutionary steps. Not wishing to be bound by theory, these evolutionary methods typically start with a template polypeptide and a mutant is derived therefrom, which has desirable properties or characteristics. Non-limiting examples of evolutionary techniques include polymerase chain reaction (PGR), error prone PCR, oligonucleotide-directed mutagenesis, cassette mutagenesis, shuffling, assembly PCR, sexual PCR mutagenesis, *in vivo* mutagenesis, site-specific mutagenesis, gene reassembly, gene site saturated mutagenesis, *in vitro* mutagenesis, ligase chain reaction, oligonucleotide synthesis or any combination thereof.

[00180] In one embodiment, the BIOATLA® evolution method is Comprehensive Positional Evolution (CPE™). In CPE, naturally occurring amino acid variants are generated for each of the codons of the template polypeptide, wherein 63 different codon options exist for each amino acid variant. A set of polypeptides with single amino acid imitations are generated and the mutations are then confirmed by sequencing or other method known in the art and each amino acid change screened for improved function, neutral mutations, inhibitor)' mutations, expression and compatibility with the host system. An EvoMap™ is created that describes in detail the effects of each amino acid mutation on the properties and characteristics of that polypeptide. The data from the EvoMap™ may be utilized to produce polypeptides with more than one amino

acid mutation, wherein the resultant multi-site mutant polypeptides can be screened for desirable characteristics.

[00181] In one embodiment, the BIOATLA® evolution method is Synergy Evolution, wherein an EvoMap™ is used to identify amino acid positions to introduce 2-20 mutations simultaneously to produce a combinatorial effect. The resulting multi-site mutant polypeptides may be screened on one or more pre-determined characteristics to identify "uprautants" wherein the function of the mutant is improved as compared to the parent polypeptide. In one embodiment, Synergy Evolution is used to enhance binding affinity of an antibody.

[00182] In one embodiment, the BIOATLA® evolution method is Flex Evolution, wherein an EvoMap™ is used to identify fully mutable sites within a polypeptide that may then be targeted for alteration, such as introduction of giycosylation sites or chemical conjugation.

[00183] In one embodiment, the BIOATLA® evolution method is Comprehensive Positional Insertion Evolution **(CPI™),** wherein an amino acid is inserted after each amino acid of a template polypeptide to generate a set of lengthened polypeptides. CPI may be used to insert 1, 2, 3, 4, or 5 amino acids at each new position. The resultant lengthened polypeptides are sequenced and assayed lor one or more pre-detennined properties and evaluated in comparison to its template or parent molecule. In one embodiment, the binding affinity and immunogenicsty of the resultant polypeptides are assayed. In one embodiment, the lengthened polypeptides are further mutated and mapped to identify polypeptides with desirable characteristics.

[00184] In one embodiment, the BIOATLA® evolution approach is Comprehensive Positional Deletion Evolution (CPD™), wherein each amino acid of the template polypeptide is individually and systematically deleted one at a time. The resultant shortened polypeptides are then sequenced and evaluated by assay for at least one pre-determined feature. In one embodiment, the shortened polypeptides are further mutated and mapped to identify polypeptides with desirable characteristics.

[00185] In one embodiment, the BIOATLA® evolution approach is Combinatorial Protein Synthesis (CPS™), wherein mutants identified in CPE, CPI, CPD or other evolutionary technique are combined for polypeptide synthesis. These combined mutant polypeptides are then screened for enhanced properties and characteristics. In one embodiment CPS is combined with any of the aforementioned evolutionary or polypeptide synthesis methods.

[00186] In one embodiment, the sequence of the polypeptides to be encoded in the viral genomes of the invention (e.g., antibodies) may be derived from the BIOATLA® Comprehensive Integrated Antibody Optimization (CIAO!™) described in United States Patent US8859467, the contents of which are herein incorporated by reference in their entirety. The

CIAO!™ method allows for simultaneous evolution of polypeptide performance and expression optimization, within a eukaryotic cell host (i.e., mammalian or yeast cell host). First, an antibody library is generated in a mammalian cell production host by antibody cell surface display, wherem the generated antibody library targets a particular antigen of interest. The antibody library is then screened by any method known in the art, for one or more properties or characteristics. One or more antibodies of the library, with desirable properties or characteristics are chosen for further polypeptide evolution by any of the methods known in the art, to produce a library of mutant antibodies by antibody cell surface display in a mammalian cell production host. The generated mutant antibodies are screened for one or more predetermined properties or characteristics, whereby an upmutant is selected, wherein the upmutant has enhanced or improved characteristics as compared to the parent template polypeptide.

[00187] In one embodiment, the sequences of the polypeptides to be encoded in the viral genomes of the invention may be humanized by the methods of BIOATLA® as described in United States Patent Publication US20130303399, the contents of which are herein incorporated by reference in their entirety. In this method, for generating enhanced full length humanized antibodies in mammalian cells, no back-mutations are required to retain affinity to the antigen and no CDR grafting or phage-dispiay is necessary. The generated humanized antibody has reduced inirnunogemcity and equal or greater affinity for the target antigen as compared to the parent antibody. The variable regions or CDRs of the generated humanized antibody are derived from the parent or template, whereas the framework and constant regions are derived from one or more human antibodies. To start, the parent, or template antibody is selected, cloned and each CDR sequence identified and synthesized into a CDR fragment library. Double stranded DNA fragment libraries for VH and VL are synthesized from the CDR fragment encoding libraries, wherein at least one CDR fragment library is derived from the template antibody and framework (FW) fragment encoding libraries, wherein the FW fragment library is derived from a pool of human frameworks obtained from natively expressed and functional human antibodies. Stepwise liquid phase ligation of FW and CDR encoding fragments is then used to generate both VH and VL fragment libraries. The VH and VL fragment libraries are then cloned into expression vectors to create a humanization library, which is further transfected into cells for expression of full length humanized antibodies, and used to create a humanized antibody library. The humanized antibody library is then screened to determine expression level of the humanized antibodies, affinity or binding ability for the antigen, and additional improved or enhanced characteristics, as compared to the template or parent antibody. Non-limiting examples of characteristics that may be screened include equilibrium dissociation constant (KD), stability,

melting temperature (T_m), pI, solubility, expression level, reduced immunogemcity and improved effector function.

[00188] In one embodiment, the sequences of the polypeptides to be encoded in the viral genomes of the invention may be generated by the BIOATLA® method for preparing conditionally active antibodies as described in International Publications WO2016033331 and WO2016036916, the contents of which are herein incorporated by reference in their entirety. As used herein, the term "conditionally active" refers to a molecule that is active at an aberrant condition. Further, the conditionally active molecule may be virtually inactive at normal physiological conditions. Aberrant conditions may result from changes in pH, temperature, osmotic pressure, osmolality, oxidative stress, electrolyte concentration, and/or chemical or proteolytic resistance, as non-limiting examples.

[00189] The method of preparing a conditionally active antibody is described in International Publications WO2016033331 and WO2016036916 and summarized herewitbin. Briefly, a wild-type polypeptide is selected and the DNA is evolved to create mutant DMAs. Non-iimiting examples of evolutionary techniques that may be used to evolve the DNA include polymerase chain reaction (PCR), error prone PGR, shuffling, oiigonucleotide-directed mutagenesis, assembly PCR, sexual PCR mutagenesis, *in vivo* mutagenesis, site-specific mutagenesis, gene reassembly, gene site saturated mutagenesis, *in vitro* mutagenesis, ligase chain reaction, oligonucleotide synthesis or any combination thereof. Once mutant DMAs are created, they are expressed in a eukaryotic cell production host (i.e., fungal, insect, mammalian, adenoviral, plant), wherein a mutant polypeptide is produced. The mutant polypeptide and the corresponding wild-type polypeptide are then subjected to assays under both normal physiological conditions and aberrant conditions in order to identify mutants that exhibit a decrease in activity in the assay at normal physiological conditions as compared to the wild-type polypeptide and/or an increase in activity in the assay under aberrant conditions, as compared to the corresponding wild-type polypeptide. The desired conditionally active mutant may then be produced in the aforementioned eukaryotic cell production host.

[00190] In one embodiment, the conditionally active antibody is a "mirac protein" as described by BIOATLA® in United States Patent No US8709755, the contents of which are herein incorporated by reference in their entirety. As used herein "mirac protein" refers to a conditionally active antibody that is virtually inactive at body temperature but active at lower temperatures.

[00191] In one embodiment, the sequence of the polypeptides to be encoded in the viral genomes of the invention (e.g., antibodies) may be derived based on any of the BIOATLA™

methods including, but not limited to, VERSITOPE ™ Antibody Generation, natural diversity approaches and high diversity approaches for generating monoclonal antibodies, methods for generation of conditionally active polypeptides, humanized antibodies, rnirac proteins, multi-specific antibodies or cross-species active mutant polypeptides, Comprehensive integrated Antibody Optimization (CIAO!™), Comprehensive Positional Evolution (CPE™), Synergy Evolution, Flex Evolution. Comprehensive Positional Insertion Evolution (CPI™), Comprehensive Positional Deletion Evolution (CPD™), Combinatorial Protein Synthesis (CPS™), or any combination thereof. These methods are described in United States Patent Nos. U58859467 and US8709755 and United States Publication Nos. US20130281303, US20130303399. US20150065690, US20150252119, **US20150086562** and US20100138945, and international Publication Nos. WO2015 105888, WO2012009026, WO2011109726, WO2016036916, and WO2016033331, the contents of each of which are herein incorporated by reference in their entirety.

Antibody'fragments and variants

[00192] In some embodiments, antibody fragments encoded by payloads of the invention comprise antigen binding regions from intact antibodies. Examples of antibody fragments may include, but are not limited to Fab, Fab', F(ah')2, and Fv fragments; diabodies; linear antibodies; single-chain antibody molecules; and multispecific antibodies formed from antibody fragments. Papain digestion of antibodies produces two identical antigen- binding fragments, called "Fab" fragments, each with a single antigen-binding site. Also produced is a residual "Fc" fragment, whose name reflects its ability to ciystallize readily. Pepsin treatment yields an F(ab')2 fragment that has two antigen- binding sites and is still capable of cross-linking antigen. Compounds and/or compositions of the present invention may comprise one or more of these fragments. For the purposes herein, an "antibody" may comprise a heavy and light variable domain as well as an Fc region.

[00193] In one embodiment, the Fc region may be a modified Fc region, as described in US Patent Publication US20 150065690, wherein the Fc region may have a single amino acid substitution as compared to the corresponding sequence for the wild-type Fc region, wherein the single amino acid substitution yields an Fc region with preferred properties to those of the wild-type Fc region. Non-limiting examples of Fc properties that may be altered by the single amino acid substitution include bind properties or response to pH conditions

[00194] As used herein, the term "native antibody" refers to an usually heterotetrameric glycoprotein of about 150,000 Daltons, composed of two identical light (L) chains and two identical heavy (H) chains. Genes encoding antibody heavy and light chains are known and

segments making up each have been well characterized and described (Matsuda, F. et al., 1998. The Journal of Experimental Medicine. 188(11); 2151-62 and Li, A. et al., 2004. Blood. 103(12: 4602-9, the content of each of which are herein incorporated by reference in their entirety). Each light chain is linked to a heavy chain by one covalent disulfide bond, while the number of disulfide linkages varies among the heavy chains of different immunoglobulin isotypes. Each heavy and light chain also has regularly spaced intrachain disulfide bridges. Each heavy chain has at one end a variable domain (V_H) followed by a number of constant domains. Each light chain has a variable domain at one end (V_L) and a constant domain at its other end; the constant domain of the light chain is aligned with the first constant domain of the heavy chain, and the light chain variable domain is aligned with the variable domain of the heavy chain.

[00195] As used herein, the term "variable domain" refers to specific antibody domains found on both the antibody heavy and light chains that differ extensively in sequence among antibodies and are used in the binding and specificity of each particular antibody for its particular antigen. Variable domains comprise hypervariable regions. As used herein, the term "hypervariable region" refers to a region within a variable domain comprising amino acid residues responsible for antigen binding. The amino acids present within the hypervariable regions determine the structure of the complementarity determining regions (CDRs) that become part of the antigen-binding site of the antibody. As used herein, the term "CDR" refers to a region of an antibody comprising a structure that is complimentary to its target antigen or epitope. Other portions of the variable domain, not interacting with the antigen, are referred to as framework (FW) regions. The antigen- binding site (also known as the antigen combining site or paratope) comprises the amino acid residues necessary to interact with a particular antigen. The exact residues making up the antigen-binding site are typically elucidated by co-crystallography with bound antigen, however computational assessments can also be used based on comparisons with other antibodies (Strohl, W.R. Therapeutic Antibody Engineering. Woodhead Publishing, Philadelphia PA. 2012. Ch. 3, p47-54, the contents of which are herein incorporated by reference in their entirety). Determining residues making up CDRs may include the use of numbering schemes including, but not limited to, those taught by Kabat [Wu, T.T. et al., 1970, JEM, 132(2):211-50 and Johnson, G. et al, 2000, Nucleic Acids Res. 28(1): 214-8, the contents of each of which are herein incorporated by reference in their entirety], Chothia [Chothia and Desk, J. Mol. Biol. 196, 901 (1987), Chothia et al, Nature 342, 877 (1989) and Al-Lazikam, B. et al., 1997, J. Mol. Biol. 273(4):927-48, the contents of each of which are herein incorporated by reference in their entirety], Lefranc (Lefranc, MP. et al., 2005, Irnmuno Res. 1:3) and Honegger (Honegger, A.

and Pluckthun, A. 2001. J. Moi. Biol. 309(3):657-70, the contents of which are herein incorporated by reference in their entirety).

[00196] Vn and VL domains have three CDRs each. **VL CDRS** are referred to herein as **CDR-**L1, CDR-L2 and CDR-L3, in order of occurrence when moving from N- to *C*- terminus along the variable domain polypeptide. VH CDRs are referred to herein as CDR-Hl, CDR-H2 and CDR-H3, in order of occurrence when moving from N- to C- terminus along the variable domain polypeptide. Each of CDRs have favored canonical structures with the exception of the CDR-H3, which comprises amino acid sequences that may be highly variable in sequence and length between antibodies resulting in a variety of three-dimensional structures in antigen-binding domains (Nikoloudis, D. et al., 2014. Peer J. 2:e456; the contents of which are herein incorporated by reference in their entirety)- In some cases, CDR-H3s may be analyzed among a panel of related antibodies to assess antibody diversity. Various methods of determining **CDR** sequences are known in the art and may be applied to known antibody sequences (Strohl, W.R. Therapeutic Antibody Engineering. Woodhead Publishing, Philadelphia PA. 2012. Ch. 3, p47-54, the contents of which are herein incorporated by reference in their entirety).

[00197] As used herein, the term "Fv" refers to an antibody fragment comprising the minimum fragment on an antibody needed to form a complete antigen-binding site. These regions consist of a dimer of one heavy chain and one light chain variable domain in tight, non-covalent association. Fv fragments can be generated by proteolytic cleavage, but are largely unstable. Recombinant methods are known in the art for generating stable Fv fragments, typically through insertion of a flexible linker between the light chain vanabie domain and the heavy chain variable domain [to form a single chain Fv (scFv)] or through the introduction of a disulfide bridge between heavy and light chain variable domains (Strohl, W.R. Therapeutic Antibody Engineering. Woodhead Publishing, Philadelphia PA. 2012. Ch. 3, p46-47, the contents of which are herein incorporated by reference in their entirety).

[00198] As used herein, the term "light chain" refers to a component of an antibody from any vertebrate species assigned to one of two clearly distinct types, called kappa and lambda based on amino acid sequences of constant domains. Depending on the amino acid sequence of the constant domain of their heavy chains, antibodies can be assigned to different classes. There are five major classes of intact antibodies: IgA, IgD, IgE, IgG, and IgM, and several of these may be further divided into subclasses (isotypes), e.g., IgG1, IgG2, IgG3, IgG4, IgA, and IgA2.

[00199] As used herein, the term "single chain Fv" or "scFv" refers to a fusion protein of **VH** and **VL** antibody domains, wherein these domains are linked together into a single polypeptide chain by a flexible peptide linker. In some embodiments, the Fv polypeptide Sinker enables the

scFv to form the desired structure for antigen binding. In some embodiments, scFvs are utilized in conjunction with phage display, yeast display or other display methods where they may be expressed in association with a surface member (e.g. phage coat protein) and used in the identification of high affinity peptides for a given antigen.

[00200] As used herein, the term "bispecific antibody" refers to an antibody capable of binding two different antigens. Such antibodies typically comprise regions from at least two different antibodies. Bispecific antibodies may include any of those described in Riethmiiler, G. 2012. Cancer Immunity. 12:12-18, Marvin, J.S. et **al.,** 2005. Acta Pharrnacologica Sinica. 26(6): 649-5 8 and Schaefer, W. at al., 20.1 1. PNAS. 108(27): 1111 87-92, the contents of each of which are herein incorporated by reference in their entirety.

[00201] As used herein, the term "diabody" refers to a small antibody fragment with two antigen-binding sites. Diabodies comprise a heavy chain variable domain VH connected to a light chain variable domain VL in the same polypeptide chain. By using a linker that is too short to allow pairing between the two domains on the same chain, the domains are forced to pair with the complementary domains of another chain and create two antigen-binding sites. Diabodies are described more fully in, for example, EP 404,097; WO 93/1 1161: and Hollinger et al. (Hollinger, P. et al, "Diabodies" Small bivalent and bispecific antibody fragments. PNAS. 1993. 90:6444-8) the contents of each of which are incorporated herein by reference in their entirety.

[00202] The term "intrabody" refers to a form of antibody that is not secreted from a cell in which it is produced, but instead targets one or more intracellular proteins. Intrabodies may be used to affect a multitude of cellular processes including, but not limited to intracellular trafficking, transcription, translation, metabolic processes, proliferative signaling and cell division. In some embodiments, methods of the present invention may include mtrabody-based therapies. In some such embodiments, variable domain sequences and/or CDR sequences disclosed herein may be incorporated into one or more constructs for intrabody-based therapy.

[00203] As used herein, the term "monoclonal antibody" refers to an antibody obtained from a population of substantially homogeneous cells (or clones), i.e., the individual antibodies comprising the population are identical and/or bind the same epitope, except for possible variants that may arise during production of the monoclonal antibodies, such variants generally being present in minor amounts. In contrast to polyclonal antibody preparations that typically include different antibodies directed against different determinants (epitopes), each monoclonal antibody is directed against a single determinant on the antigen

[00204] The modifier "monoclonal" indicates the character of the antibody as being obtained from a substantially homogeneous population of antibodies, and is not to be construed as

requiring production of the antibody by any particular method. The monoclonal antibodies herein include "chimeric" antibodies (immimoglobulins) in which a portion of the heavy and/or light chain is identical with or homologous to corresponding sequences in antibodies derived from a particular species or belonging to a particular antibody class or subclass, while the remainder of the chain(s) is identical with or homologous to corresponding sequences in antibodies derived from another species or belonging to another antibody class or subclass, as well as fragments of such antibodies.

[00205] As used herein, the term "humanized antibody" refers to a chimeric antibody comprising a minimal portion from one or more non-human (e.g., murine) antibody source(s) with the remainder derived from one or more human immunoglobulin sources. For the most part, humanized antibodies are human immunoglobulins (recipient antibody) in which residues from the hypervariable region from an antibody of the recipient are replaced by residues from the hypervariable region from an antibody of a non-human species (donor antibody) such as mouse, rat, rabbit or nonhuman primate having the desired specificity, affinity, and/or capacity.

[00206] In some embodiments, viral genomes of the present invention may encode antibody mimetics. As used herein, the terra "antibody mimetic" refers to any molecule which mimics the function or effect of an antibody and which binds specifically and with high affinity to their molecular targets. In some embodiments, antibody mimetics may be monobodies, designed to incorporate the fibronectm type III domain (Fn3) as a protein scaffold (US 6,673,901; US 6,348,584). In some embodiments, antibody mimetics may be those known in the art including, but are not limited to affibody molecules, affilins, affitins, anticalins, avimers, Ceiityrins, DARPINS ™, Fynomers and Kunitz. and domain peptides. In other embodiments, antibody mimetics may include one or more non-peptide regions.

[00207] As used herein, the term "antibody variant" refers to a modified antibody (in relation to a native or starting antibody) or a biomolecule resembling a native or starting antibody in structure and/or function (e.g., an antibody mimetic). Antibody variants may be altered in their amino acid sequence, composition or structure as compared to a native antibody. Antibody variants may include, but are not limited to, antibodies with altered isotypes (e.g., igA, IgD, IgE, IgGi, igG?., IgG?,, IgG*, or IgM), humanized variants, optimized variants, multispecific antibody variants (e.g., bispecific variants), and antibody fragments.

[00208] The preparation of antibodies, whether monoclonal or polyclonal, is known in the art. Techniques for the production of antibodies are well known in the art and described, e.g. in Harlow and Lane "Antibodies, A Laboratory Manual", Cold Spring Harbor Laboratory Press, 1988; Harlow and Lane "Using Antibodies; A Laboratory Manual" Cold Spring Harbor

Laboratory Press, 1999 and "Therapeutic Antibody Engineering: Current and Future Advances Driving the Strongest Growth Area in the Pharmaceutical Industry" Woodhead Publishing, 2012.

Multispecific antibodies

[00209] In some embodiments, payloads of the invention may encode antibodies that bind more than one epitope. As used herein, the terms "multibody" or "multispecific antibody" refer to an antibody wherein two or more variable regions bind to different epitopes. The epitopes may be on the same or different targets. In certain embodiments, a multi-specific antibody is a "bispecific antibody," which recognizes two different epitopes on the same or different antigens.

[00210] In one embodiment, multi-specific antibodies may be prepared by the methods used by BIOATLA® and described in international Patent publication WO2011009726, the contents of which are herein incorporated by reference in their entirety. First a library of homologous, naturally occurring antibodies is generated by any method known in the art (i.e., mammalian cell surface display), then screened by FACSAria or other screening method, for multi-specific antibodies that specifically bind to two or more target antigens. In one embodiment, the identified multi-specific antibodies are further evolved by any method known in the art, to produce a set of modified multi-specific antibodies. These modified multi-specific antibodies are screened for binding to the target antigens. In one embodiment, the multi-specific antibody may be further optimized by screening the evolved modified multi-specific antibodies for optimized or desired characteristics.

[00211] In one embodiment, multi-specific antibodies may be prepared by the methods used by BIOATLA® and described in Unites States Publication No. US20150252119, the contents of which are herein incorporated by reference in their entirety. In one approach, the variable domains of two parent antibodies, wherein the parent antibodies are monoclonal antibodies are evolved using any method known in the art in a manner that allows a single light chain to functionally complement heavy chains of two different parent antibodies. Another approach requires evolving the heavy chain of a single parent antibody to recognize a second target antigen. A third approach involves evolving the light chain of a parent antibody so as to recognize a second target antigen. Methods for polypeptide evolution are described in International Publication WO2012009026, the contents of which are herein incorporated by reference in their entirety, and include as non-limiting examples, Comprehensive Positional Evolution (CPE), Combinatorial Protein Synthesis (CPS), Comprehensive Positional Insertion (CPI), Comprehensive Positional Deletion (CPD), or any combination thereof. The Fc region of the multi-specific antibodies described in United States Publication No. US20150252119 may be created using a knob-in-hole approach, or any other method that allows the Fc domain to form

heterodimers. The resultant multi-specific antibodies may be further evolved for improved characteristics or properties such as binding affinity for the target antigen.

Bispecific antibodies

[00212] In some embodiments, payioads of the invention may encode bispecific antibodies. Bispecific antibodies are capable of binding two different antigens. Such antibodies typically comprise antigen-binding regions from at least two different antibodies. For example, a bispecific monoclonal antibody (BsMAb, BsAb) is an artificial protein composed of fragments of two different monoclonal antibodies, thus allowing the BsAb to bind to two different types of antigen.

[00213] in some cases, payioads encode bispecific antibodies comprising antigen-binding regions from two different anti-tau antibodies. For example, such bispecific antibodies may comprise binding regions from two different antibodies selected from Table 3.

[00214] Bispecific antibody frameworks may include any of those described in Riethmulier, G., 2012. *Cancer Immunity.* 12:12-18; Marvin, J.S. *etai,* 2005. *Acta Pharmacologica Sinica.* 26(6):649-58, and Schaefer, W. *eta!.,* 2011. *PNAS.* 108(27): 11187-92, the contents of each of which are herein incorporated by reference in their entirety.

[00215] New generations of BsMAb. called "trifunctional bispecific" antibodies, have been developed. These consist of two heavy and two light chains, one each from two different antibodies, where the two Fab regions (the arms) are directed against two antigens, and the Fc region (the foot) comprises the two heavy chains and forms the third binding site.

[00216] Of the two paratopes that form the tops of the variable domains of a bispecific antibody, one can be directed against a target antigen and the other against a T-lymphocyte antigen like CD3. In the case of afunctional antibodies, the Fc region may additionally bind to a cell that expresses Fc receptors, like a macrophage, a natural killer (NK) cell or a dendritic cell. In sum, the targeted cell is connected to one or two cells of the immune system, which subsequently destroy it.

[00217] Other types of bispecific antibodies have been designed to overcome certain problems, such as short half-life, immunogenicity and side-effects caused by cytokine liberation. They include chemically linked Fabs, consisting only of the Fab regions, and various types of bivalent and trivalent single-chain variable fragments (scFvs), fusion proteins mimicking the variable domains of two antibodies. The furthest developed of these newer formats are the bi-specific T-cell engagers (BiTEs) and mAb2's, antibodies engineered to contain an Fcab antigen-binding fragment instead of the Fc constant region.

[00218] Using molecular genetics, two scFvs can be engineered in tandem into a single polypeptide, separated by a linker domain, called a "tandem scFv" (tascFv). TascFvs have been found to be poorly soluble and require refolding when produced in bacteria, or they may be manufactured in mammalian cell culture systems, which avoids refolding requirements but may result in poor yields. Construction of a tascFv with genes for two different scFvs yields a "bispecific single-chain variable fragments" (bis-scFvs). Only two tascFvs have been developed clinically by conmierciai firms; both are bispecific agents in active early phase development by Micfomet for oncologic indications, and are described as "Bispecific T-ceil Engagers (BiTE)." Blinaturaomab is an anti-CD19/anti-CD3 bispecific tascFv that potentiates T-cell responses to B-cell non-Hodgkin lymphoma in Phase 2. MT110 is an anti-EP~CAM/anti~CD3 bispecific tascFv that potentiates T-cell responses to solid tumors in Phase 1. Bispecific, tetravalent 'TandAbs" are also being researched by Affimed (Nelson, A. L., *MAbs. 2010.* Jan-Feb; 2(l):77-83).

[00219] In some embodiments, payloads may encode antibodies comprising a single antigen-binding domain. These molecules are extremely small, with molecular weights approximately one-tenth of those observed for full-sized mAbs. Further antibodies may include "nanobodies" derived from the antigen-binding variable heavy chain regions (Vims) of heavy chain antibodies found in camels and llamas, which lack light chains (Nelson, A. L., *MAbs.2010.* Jan-Feb; 2(i):77--83).

[00220] Disclosed and claimed in PCT Publication WO2014144573 to Memorial Sloan-Kettering Cancer Center are multimerization technologies for making dimeric multispecific binding agents *{e.g.*, fusion proteins comprising antibody components) with improved properties over multispecific binding agents without the capability of dimerization.

[00221] In some cases, payloads of the invention may encode tetravalent bispecific antibodies (TetBiAbs as disclosed and claimed in PCX Publication WO2014144357). TeiBiAbs feature a second pair of Fab fragments with a second antigen specificity attached to the C-terminus of an antibody, thus providing a molecule that is bivalent for each of the two antigen specificities. The tetravalent antibody is produced by genetic engineering methods, by linking an antibody heavy chain covalently to a Fab light chain, which associates with its cognate, co-expressed Fab heavy chain.

[00222] In some aspects, payloads of the invention may encode biosynthetic antibodies as described in U.S. Patent No. 5,091,513. the contents of which are herein incorporated by reference in their entirety. Such antibody may include one or more sequences of amino acids constituting a region which behaves as a biosynthetic antibody binding site (BABS). The sites comprise 1) non-covalently associated or disulfide bonded synthetic V_H and V_L dimers. 2) V_H-

VL or VL-VH single chains wherein the VH and VL are attached by a polypeptide linker, or 3) individuals VH or VL domains. The binding domains comprise linked CDR and FR regions, which may be derived from separate immunoglobulins. The biosynthetic antibodies may also include other polypeptide sequences which function, e.g., as an enzyme, toxin, binding site, or site of attachment to an immobilization media or radioactive atom. Methods are disclosed for producing the biosynthetic antibodies, for designing BABS having any specificity that can be elicited by in vivo generation of antibody, and for producing analogs thereof.

[00223] In some embodiments, payloads may encode antibodies with antibody acceptor frameworks taught in U.S. Patent No. 8,399,625. Such antibody acceptor frameworks may be particularly well suited accepting CDRs from an antibody of interest. In some cases, CDRs from anti-tau antibodies known in the art or developed according to the methods presented herein may be used.

Miniaturized Antibody

100224] In one embodiment, the antibody encoded by the payloads of the invention may be a "miniaturized" antibody. Among the best examples of mAb miniaturization are the small modular imraunopharmaceuticals (SMIPs) from Trubion Pharmaceuticals. These molecules, which can be monovalent or bivalent, are recombinant single-chain molecules containing one VL, one VH antigen-binding domain, and one or two constant "effector" domains, ail connected by linker domains. Presumably, such a molecule might offer the advantages of increased tissue or tumor penetration claimed by fragments while retaining the immune effector functions conferred by constant domains. At least three "miniaturized" SMIPs have entered clinical development. TRU-015, an anti-CD20 SMIP developed in collaboration with Wyeth, is the most advanced project, having progressed to Phase 2 for rheumatoid arthritis (RA). Earlier attempts in systemic lupus erythrematosus (SLE) and B cell lymphomas were ultimately discontinued. Trubion and Facet Biotechnology are collaborating in the development of TRU-016, an anti-CD37 SMIP, for the treatment of CLL and other lymphoid neoplasias, a project that has reached Phase 2. Wyeth has licensed the ami-CD20 SMIP SBI-087 for the treatment of autoimmune diseases, including RA, SLE and possibly multiple sclerosis, although these projects remain in the earliest stages of clinical testing. (Nelson, A. L., *MAbs. 2010.* Jan-Feb; 2{l):77- 83).

Diaboaies

[00225] In some embodiments, payloads of the invention may encode diabodies. Diabodies are functional bispeeific single-chain antibodies (bscAb). These bivalent antigen- binding molecules are composed of non-covalent dimers of scFvs, and can be produced in mammalian cells using recombinant methods. *{See, e.g.*. Mack *ei al. Proc. Natl. Acad. Sci.*. 92; 7021-7025, 1995). Few

diabodies have entered clinical development. An iodine-123-labeled diabody version of the anti-CEA chimeric antibody cT84.66 has been evaluated for pre-surgical imraunoscintigraphic detection of colorectal cancer in a study sponsored by the Beckman Research Institute of the City of Hope (Cimicaltrials.gov NCT00647153) (Nelson, A. *L.,MAbs.2QVX* Jan-Feb; 2(l):77-83).

Unibody

[00226] In some embodiments, payloads may encode a "unibody," in which the hinge region has been removed from IgG4 molecules. While lgG4 molecules are unstable and can exchange light-heavy chain heterodimers with one another, deletion of the hinge region prevents heavy chain-heavy chain pairing entirely, leaving highly specific monovalent light/heavy heterodimers, while retaining the Fc region to ensure stability and half-life in vivo. This configuration may minmnze the risk of immune activation or oncogenic growth, as IgG4 interacts poorly with FcRs and monovalent unibodies fail to promote intracellular signaling complex formation. These contentions are, however, largely supported by laboratory, rather than clinical, evidence. Other antibodies may be "miniaturized" antibodies, which are compacted 100 kDa antibodies (see, e.g., Nelson, A. L., M4¾.2010. Jan-Feb; 2(l):77-83).

Intrabodies

[00227] In some embodiments, payloads of the invention may encode intrabodies. Intrabodies are a form of antibody that is not secreted from a cell in which it is produced, but instead targets one or more intracellular proteins. intrabodies are expressed and function mtracelluiarly, and may be used to affect a multitude of cellular processes including, but not limited to intracellular trafficking, transcription, translation, metabolic processes, proliferative signaling and ceil division. In some embodiments, methods described herein include intrahody-based therapies. In some such embodiments, variable domain sequences and/or CDR sequences disclosed herein are incorporated into one or more constructs for intrabody-based therapy. For example, intrabodies may target one or more glycated intracellular proteins or may modulate the interaction between one or more glycated intracellular proteins and an alternative protein.

[00228] More than two decades ago, intracellular antibodies against intracellular targets were first described (Biocca, Neuberger and Cattaneo *EMBO J.* 9: 101-108, 1990). The intracellular expression of intrabodies in different compartments of mammalian cells allows blocking or modulation of the function of endogenous molecules (Biocca, *et al.., EMBO J.* 9: 101-108, 1990, Colby et al., Proc. Natl. Acad. Sci. U.S.A. 101 : 17616-21, 2004). intrabodies can alter protein folding, protein-protein, protem-DNA, protein-RNA interactions and protein modification. They can induce a phenotypic knockout and work as neutralizing agents by direct binding to the target antigen, by diverting its intracellular trafficking or by inhibiting its association with binding

partners. They have been largely employed as research tools and are emerging as therapeutic molecules for the treatment of human diseases such as viral pathologies, cancer and misfolding diseases. The fast growing bio-raarket of recombinant antibodies provides mtrabodies with enhanced binding specificity, stability and solubility, together with lower immunogenicity, for their use in therapy (Biocca, abstract in Antibody Expression and Production Celi Engineering Volume 7, 2011, pp. 179-195).

100229] In some embodiments, intrabodies have advantages over interfering RNA (iRNA); for example, iRNA has been shown to exert multiple non-specific effects, whereas intrabodies have been shown to have high specificity and affinity to target antigens. Furthermore, as proteins, intrabodies possess a much longer active half-life than iRNA. Thus, when the active half-life of the intracellular target molecule is long, gene silencing through iRNA may be slow to yield an effect whereas the effects of intrabody expression can be almost instantaneous. Lastly, it is possible to design intrabodies to block certain binding interactions of a particular target molecule, while sparing others.

[00230] Intrabodies are often single chain variable fragments (scFvs) expressed from a recombinant nucleic acid molecule and engineered to be retained intracellularly *(e.g.*, retained in the cytoplasm, endoplasmic reticulum, or periplasm). intrabodies may be used, for example, to ablate the function of a protein to which the intrabody binds. The expression of intrabodies may also be regulated through the use of inducible promoters in the nucleic acid expression vector comprising the intrabody. Intrabodies may be produced for use in the viral genomes of the invention using methods known in the art, such as those disclosed and reviewed in: (Marasco *et al*., 1993 *Proa Natl Acad. Set USA,* 90: 7889-7893; *Chen et al.,* 1994. *Hum. Gene Ther.* 5:595-601; Chen *et a!.,* 1994, *Proc. Natl Acad. Sci. USA,* 91: 5932-5936; Maciejewski *et al,* 1995, *Nature Med.,* 1: 667-673; Marasco, 1995, *Immunoiech,* 1: 1-19; Mhashiikar, *et al.,* 1995, *EMBO J.* 14: 1542-51; Chen et *al.,* 1996, *Hum Gene Therap.,* 7: 1515-1525; Marasco, *Gene Ther.* 4:11-15, 1997; Rondon and Marasco, 1997, *Annu. Rev. Microbiol.* 51:257-283; Cohen, *etal,* 1998, *Oncogene* 17:2445-56; Probae *t al.,* 1998, *J. Mol. Biol* 275:245-253; Cohen *etal,* 1998. *Oncogene* 17:2445-2456; Hassanzadeh, *etal, 1998, FEBS Lett.* 437:81-6; Richardson *etal,* 1998, *Gene Ther.* 5:635-44; Ohage and Steipe, 1999. *J. Mol. Biol.* 291:1119-1128; Ohage *et al,* 1999, *J. Mol. Biol* 291:1129-1134; Wirtz and Steipe. 1999, *Protein Sci.* 8:2245-2250; Zhu *et al.,* 1999, *J. Immunol. Methods* 231:207-222; Arafat *etal,* 2000, *Cancer Gene Ther.* 7:1250-6; der *Mam eta!.,* 2002, *J. Biol Chem.* 277:45075-85; Mhashiikar *et al,* 2002, *Gene Ther.* 9:307-19; and Wheeler *el al,* 2003, *FASEBJ.* 17: 1733-5; and references cited therein). In particular, a CCR5 intrabody has been produced by Steinberger *el al,* 2000, *Proc. Natl Acad. Sci. USA*

97:805-810). *See* generally Marasco, WA, 1998, "Intrabodies: Basic Research and Ciinicai Gene Therapy Applications" Springer: New York; and for a review of scFvs, *see* Pluckthun in "The Pharmacology of Monoclonal Antibodies," 1994, vol. 113, Rosenburg and Moore *eds.* Springer-Yerlag, New York, pp. 269-315.

[00231] Sequences from donor antibodies may he used to develop intrabodies. intrabodies are often recombinantly expressed as single domain fragments such as isolated VH and VL, domains or as a single chain variable fragment (scFv) antibody withm the cell. For example, intrabodies are often expressed as a single polypeptide to form a single chain antibody comprising the variable domains of the heavy and light chains joined by a flexible linker polypeptide. intrabodies typically lack disulfide bonds and are capable of modulating the expression or activity of target genes through their specific binding activity. Single chain antibodies can also be expressed as a single chain variable region fragment joined to the light chain constant region.

[00232] As is known in the art, an intrabody can be engineered into recombinant polynucleotide vectors to encode sub-eeliular trafficking signals at its N or C terminus to allow expression at high concentrations in the sub-cellular compartments where a target protein is located. For example, intrabodies targeted to the endoplasmic reticulum (ER) are engineered to incorporate a leader peptide and, optionally, a C-terminal ER retention signal, such as the KDEL ammo acid motif (SEQ ID NO: 17941). intrabodies intended to exert activity in the nucleus are engineered to include a nuclear localization signal. Lipid moieties are joined to intrabodies in order to tether the intrabody to the cytosolic side of the plasma membrane. Intrabodies can also be targeted to exert function in the cytosol. For example, cytosolic intrabodies are used to sequester factors within the cytosol, thereby preventing them from bemg transported to their natural cellular destination.

[ΘΘ233] There are certain technical challenges with intrabody expression. In particular, protein conformational folding and structural stability of the newly-synthesized intrabody within the ceil is affected by reducing conditions of the intracellular environment.

[00234] Intrabodies of the invention may be promising therapeutic agents for the treatment of misfolding diseases, including Alzheimer's, Parkinson's, Huntington's and prion diseases, because of their virtually infinite ability to specifically recognize the different conformations of a protein, including pathological isoforms, and because they can be targeted to the potential sites of aggregation (both intra- and extracellular sites). These molecules can work as neutralizing agents against amyloidogemc proteins by preventing their aggregation, and/or as molecular shunters of intracellular traffic by rerouting the protein from its potential aggregation site (Cardinale, and Biocca, *Curr. Mo]. Med.* 2008, 8:2-11).

Maxibodies

[00235] In one embodiment, the payloads of the invention encode a raaxibody (bivalent scFv fused to the amino terminus of the Fc (CH2-CH3 domains) of IgG.

Chimeric antigen receptors

[00236] In some embodiments, the polypeptides encoded by the viral genomes of the invention (e.g., antibodies) may be used to generate chimeric antigen receptors (CARs) as described by BIOATLA ® in International Publications WO2016033331 and WO201 603691 6, the contents of which are herein incorporated by reference in their entirety. As used herein, a '-chimeric antigen receptor (CAR)" refers to an artificial chimeric protein comprising at least one antigen specific targeting region (ASTR), wherein the antigen specific targeting region comprises a full-length antibody or a fragment thereof that specifically binds to a target antigen. The ASTR may comprise any of the following; a full length heavy or light chain, an Fab fragment, a single chain Fv fragment, a divalent single chain antibody, or a diabody. As a non-limiting example the ASTR of a CAR may be any of the antibodies listed in Tables 3-12, antibody-based compositions or fragments thereof. Any molecule that is capable of binding a target antigen with high affinity can be used in the ASTR of a CAR. In one embodiment, the CAR may have more than one ASTR. These ASTRs may target two or more antigens or two or more epitopes of the same antigen. In one embodiment, the CAR is conditionally active. In one embodiment, the CAR is used to produce a genetically engineered cytotoxic cell carrying the CAR and capable of targeting the antigen bound by the ASTR.

[00237] Chimeric antigen receptors (CARs) are particularly useful in the treatment of cancers, though also therapeutically effective in treatment of a wide variety of other diseases and disorders. Non-limiting examples of disease categories that may be treated with CARs or CAR-based therapeutics include autoimmune disorders, B-celi mediated diseases, inflammatory diseases, neuronal disorders, cardiovascular disease and circulator/ disorders, or infectious diseases. Not wishing to be bound by theory, CARs traditionally work by targeting antigens presented on the surface of or on the inside of cells to be destroyed e.g., cancer tumor cells, by the cytotoxic cell of the CAR.

Senescent Cell Surface Protein Antibodies

[00238] In some embodiments, the AAV particles may comprise nucleic acids which have been engineered to express of antibodies that selectively bind to surface marker proteins of senescent cells. For example, the antibodies may selectively bind to proteins that are in misfolded conformation. The binding antibodies may reduce the number of senescent cells and be used to treat age-related conditions, such as, but not limited to, Alzheimer's disease,

cardiovascular disease, emphysema, sarcopenia, and tumorigenesis as well as conditions more cosmetic in nature such as signs of skin aging including wrinkling, sagging, discoloration, age-related tissue dysfunction, tumor formation, and other age-related conditions.

[00239] In one embodiment, the expressed antibodies binding to epitopes of senescent cell surface proteins may be, but are not limited to, such as prion epitopes presented by SEQ ID NOs: 1-14 of International Publication No. WO2014186878; CD44 epitopes presented by SEQ ID NOs: 47-51 of International Publication No. WO2014186878; TNFR epitopes presented by SEQ ID NOs: 52-56 of International Publication No. WO2014186878, NOTCH! epitope presented by SEQ ID NOs: 57-61 of International Publication No. WO2014186878; FasR epitopes presented by SEQ ID NOs: 62-66 of International Publication No. WO2014186878; epidermal growth factor epitopes presented by SEQ ID NOs: 67-81 of International Publication No. WO2014186878; CDS8 epitopes presented by SEQ ID NOs: 82-86 of International Publication No. WO2014186878, the contents of each of which are herein incorporated by reference in their entirety.

[00240] In one embodiment, the expressed antibodies may comprise peptides binding to senescent cell surface prion proteins, such as, but not limited to, those presented by SEQ ID NOs: 15-36 of International Publication No. WO2014186878, the contents of which are herein incorporated by reference in their entirety.

[00241] In one embodiment, the expressed antibody may be AMF-3a-118 or AMF 3d-119 (SEQ ID NO: 89-92 and 103-106 of International publication WO2014186878, respectively, the contents of which are herein incorporated by reference in their entirety) targeting senescent cell surface protein FasR. In one embodiment, the expressed antibody may be Ab c-120 (SEQ ID NO: 37-40 of International publication WO2014186878, the contents of which are herein incorporated by reference in their entirety) targeting senescent cell surface protein PrP.

Payload antibodies of the invention

[00242] In one embodiment, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding one or more of the payload antibody polypeptides listed in Tables 3-12.

[00243] In one embodiment, the payload region of the AAV particle comprises one or more nucleic acid sequences listed in Table 3-12.

[00244] In some embodiments, the payload region of the AAV particle comprises a nucleic acid sequence encoding a payload antibody with at least 50% identity to one or more payload antibody polypeptides listed in Tables 3-12. The encoded antibody polypeptide may have 50%, 51%, 52%, 53%, 54%, 55%, 56%. 57%, 58%, 59%, 60%, 61%, 62%, 63%. 64%, 65%, 66%,

67%, 68%, 69%, 70%, 71%, 72%, 73%, 74%, 75%, 76%, 77%, 78%, 79%, 80%, 81%, 82%, 83%, 84%, 85%, 86%, 87%, 88%, 89%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% identity to one or more of the payload antibody polypeptides listed in Tables 3-12.

[00245] In one embodiment, the full sequence of the encoded antibody polypeptide may have 50%, 51%, 52%, 53%, 54%, 55%, 56%, 57%, 58%, 59%, 60%, 61%, 62%, 63%, 64%, 65%, 66%, 67%, 68%, 69%, 70%, 71%, 72%, 73%, 74%, 75%, 76%, 77%, 78%, 79%, 80%, 81%, 82%, 83%, 84%, 85%, 86%, 87%, 88%, 89%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% identity to one or more of the payload antibody polypeptides listed in Tables 3-12.

[00246] In one embodiment, the variable region sequence(s) of the encoded antibody polypeptide may have 50%, 51%, 52%, 53%, 54%, 55%, 56%, 57%, 58%, 59%, 60%, 61%, 62%, 63%, 64%, 65%, 66%, 67%, 68%, 69%, 70%, 71%, 72%, 73%, 74%, 75%, 76%, 77%, 78%, 79%, 80%, 81%, 82%, 83%, 84%, 85%, 86%, 87%, 88%, 89%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% identity to one or more of the payload antibody polypeptides listed in Tables 3-12.

[00247] In one embodiment, the heavy chain of the encoded antibody polypeptide may have 50%, 51%, 52%, 53%, 54%, 55%, 56%, 57%, 58%, 59%, 60%, 61%, 62%, 63%, 64%, 65%, 66%, 67%, 68%, 69%, 70%, 71%, 72%, 73%, 74%, 75%, 76%, 77%, 78%, 79%, 80%, 81%, 82%, 83%, 84%, 85%, 86%, 87%, 88%, 89%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% identity to one or more of the payload heavy chain antibody polypeptides listed in Tables 3-12.

[00248] In one embodiment, the light chain of the encoded antibody polypeptide may have 50%, 51%, 52%, 53%, 54%, 55%, 56%, 57%, 58%, 59%, 60%, 61%, 62%, 63%, 64%, 65%, 66%, 67%, 68%, 69%, 70%, 71%, 72%, 73%, 74%, 75%, 76%, 77%, 78%, 79%, 80%, 81%, 82%, 83%, 84%, 85%, 86%, 87%, 88%, 89%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% identity to one or more of the payload light chain antibody polypeptides listed in Tables 3-12.

[00249] In one embodiment, the CDR region of the encoded antibody polypeptide may have 50%, 51%, 52%, 53%, 54%, 55%, 56%, 57%, 58%, 59%, 60%, 61%, 62%, 63%, 64%, 65%, 66%, 67%, 68%, 69%, 70%, 71%, 72%, 73%, 74%, 75%, 76%, 77%, 78%, 79%, 80%, 81%, 82%, 83%, 84%, 85%, 86%, 87%, 88%, 89%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% identity to the CDRs of one or more of the payload antibody polypeptides listed in Tables 3-12.

[00250] In one embodiment, the payload antibody has 90% identity to one or more of the antibody polypeptides listed in Tables 3-12.

[00251] In one embodiment, the payload antibody has 91% identity to one or more of the antibody polypeptides listed in Tables 3-12.

[00252] In one embodiment, the payload antibody has 92% identity to one or more of the antibody polypeptides listed in Tables 3-12.

[00253] In one embodiment, the payload antibody has 93% identity to one or more of the antibody polypeptides listed in Tables 3-12.

[00254] In one embodiment, the payload antibody has 94% identity to one or more of the antibody polypeptides listed in Tables 3-12.

[00255] In one embodiment, the payload antibody has 95% identity to one or more of the antibody polypeptides listed in Tables 3-12.

[00256] In one embodiment, the payload antibody has 96% identity to one or more of the antibody polypeptides listed in Tables 3-12.

[00257] In one embodiment, the payload antibody has 97% identity to one or more of the antibody polypeptides listed in Tables 3-12.

[00258] In one embodiment, the payload antibody has 98% identity to one or more of the antibody polypeptides listed in Tables 3-12.

[00259] In one embodiment, the payload antibody has 99% identity to one or more of the antibody polypeptides listed in Tables 3-12.

[00260] In one embodiment, the payload antibody has 100% identity to one or more of the antibody polypeptides listed in Tables 3-12.

[00261] In some embodiments, the payload region of the AAV particle comprises a nucleic acid sequence with at least 50% identity to one or more nucleic acid sequences listed in Tables 3-12. The payload nucleic acid sequence may have 50%, 51%, 52%, 53%, 54%, 55%, 56%, 57%, 58%, 59%, 60%, 61%, 62%, 63%, 64%, 65%, 66%, 67%, 68%, 69%, 70%, 71%, 72%, 73%, 74%, 75%, 76%, **77%,** 78%, 79%, 80%, 81%, 82%, 83%, 84%, 85%, 86%, 87%, 88%, 89%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% identity to one or more nucleic acid sequences listed in Tables 3-12.

[00262] In one embodiment, the payload nucleic acid sequence has 90% identity to one or more of the nucleic acid sequences listed in Tables 3-12.

[00263] In one embodiment, the payload nucleic acid sequence has 91% identity to one or more of the nucleic acid sequences listed in Tables 3-12.

[00264] In one embodiment, the payload nucleic acid sequence has 92% identity to one or more of the nucleic acid sequences listed in Tables 3-12.

[00265] in one embodiment, the pavioad nucleic acid sequence has 93% identity to one or more of the nucleic acid sequences listed in Tables 3-12.

[00266] In one embodiment, the pavioad nucleic acid sequence has 94% identity to one or more of the nucleic acid sequences listed in Tables 3-12.

[00267] In one embodiment, the payload nucleic acid sequence has 95% identity to one or more of the nucleic acid sequences listed in Tables 3-12.

[00268] In one embodiment, the payload nucleic acid sequence has 96% identity to one or more of the nucleic acid sequences listed in Tables 3-12.

[00269] In one embodiment, the payload nucleic acid sequence has 97% identity to one or more of the nucleic acid sequences listed in Tables 3-12.

[00270] In one embodiment, the payload nucleic acid sequence has 98% identity to one or more of the nucleic acid sequences listed in Tables 3-12.

[00271] In one embodiment, the payload nucleic acid sequence has 99% identity to one or more of the nucleic acid sequences listed in Tables 3-12.

[00272] In one embodiment, the payload nucleic acid sequence has 100% identity to one or more of the nucleic acid sequences listed in Tables 3-12.

Parkinson's Disease and Dementia with Lewy Bodies Antibodies

[00273] In one embodiment, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding one or more of the Parkinson's Disease and dementia with Lewy Bodies payload antibody polypeptides listed in Table 3 (PDLB1-PDLB437; SEQ ID NO: 2948-3384).

Table 3. Parkinson's Disease and Dementia with Lewy Bodies Antibodies

Antibody No.	Target	Description	Antibody Name	Reference Information	SEQ ID NO
PDLB1	amyloid proteins	consensus sequence	M13 g3p, fd g3p, f1 g3p	US20150376239 SEQ ID NO: 4	2948
PDLB2	amyloid proteins	consensus sequence	I2-2 g3p, Ike g3p	US20150376239 SEQ ID NO: 7	2949
PDLB3	118-126 of α-synuclein	constant region	IgG1	US20150259404 SEQ ID NO: 38	2950
PDLB4	amyloid proteins	Fusion protein	M13 g3p	US20150376239 SEQ ID NO: 1	2951
PDLB5	amyloid proteins	Fusion protein	Construct 5	US20150376239 SEQ ID NO: 11	2952
PDLB6	amyloid proteins	Fusion protein	Construct 6	US20150376239 SEQ ID NO: 13	2953
PDLB7	amyloid proteins	Fusion protein	fd N2	US20150376239 SEQ ID NO: 14	2954

PDLB8	amyloid proteins	Fusion protein	f1 N2	US20150376239 SEQ ID NO: 15	2955
PDLB9	amyloid proteins	Fusion protein	M13 N2	US20150376239 SEQ ID NO: 16	2956
PDLB10	amyloid proteins	Fusion protein	Ike N2	US20150376239 SEQ ID NO: 17	2957
PDLB11	amyloid proteins	Fusion protein	12-2 N2	US20150376239 SEQ ID NO: 18	2958
PDLB12	amyloid proteins	Fusion protein	If1 N2	US20150376239 SEQ ID NO: 19	2959
PDLB13	amyloid proteins	Fusion protein	fd g3p	US20150376239 SEQ ID NO: 2	2960
PDLB14	amyloid proteins	Fusion protein	Construct 3	US20150376239 SEQ ID NO: 20	2961
PDLB15	amyloid proteins	Fusion protein	Construct 3m g3p portion	US20150376239 SEQ ID NO: 24	2962
PDLB16	amyloid proteins	Fusion protein	If1 g3p	US20150376239 SEQ ID NO: 29	2963
PDLB17	amyloid proteins	Fusion protein	f1 g3p	US20150376239 SEQ ID NO: 3	2964
PDLB18	amyloid proteins	Fusion protein	fd g3p	US20150376239 SEQ ID NO: 30	2965
PDLB19	amyloid proteins	Fusion protein	Construct 8, rs-g3p (If1-N1N2)-hIgG1-Fc	US20150376239 SEQ ID NO: 31	2966
PDLB20	amyloid proteins	Fusion protein	I2-2 g3p	US20150376239 SEQ ID NO: 5	2967
PDLB21	amyloid proteins	Fusion protein	Ike g3p	US20150376239 SEQ ID NO: 6	2968
PDLB22	amyloid proteins	Fusion protein	If1 g3p	US20150376239 SEQ ID NO: 8	2969
PDLB23	amyloid proteins	Fusion protein	Construct 4	US20150376239 SEQ ID NO: 9	2970
PDLB24	118-126 of α-synuclein	Heavy chain	5ClH1	US20150259404 SEQ ID NO: 14	2971
PDLB25	118-126 of α-synuclein	Heavy chain	5ClH2	US20150259404 SEQ ID NO: 15	2972
PDLB26	118-126 of α-synuclein	Heavy chain	5ClH3	US20150259404 SEQ ID NO: 16	2973
PDLB27	118-126 of α-synuclein	Heavy chain	5ClH4	US20150259404 SEQ ID NO: 17	2974
PDLB28	118-126 of α-synuclein	Heavy chain	5ClH5	US20150259404 SEQ ID NO: 18	2975
PDLB29	118-126 of α-synuclein	Heavy chain	5Cl	US20150259404 SEQ ID NO: 6	2976
PDLB30	ACTH	Heavy chain	Ab7	WO2015127288 SEQ ID NO: 241	2977
PDLB31	ACTH	Heavy chain	Ab9	WO2015127288 SEQ ID NO: 281	2978
PDLB32	ACTH	Heavy chain	Ab10	WO2015127288 SEQ ID NO: 321	2979
PDLB33	ACTH	Heavy chain	Ab11	WO2015127288 SEQ ID NO: 361	2980
PDLB34	ACTH	Heavy chain	Ab12	WO2015127288 SEQ ID NO: 401	2981
PDLB35	ACTH	Heavy chain	Ab2	WO2015127288 SEQ ID NO: 41	2982
PDLB36	ACTH	Heavy chain	Ab1.H	WO2015127288 SEQ ID NO: 441	2983

PDLB37	ACTH	Heavy chain	Ab2.H	WO2015127288 SEQ ID NO: 481	2984
PDLB38	ACTH	Heavy chain	Ab3.H	WO2015127288 SEQ ID NO: 521	2985
PDLB39	ACTH	Heavy chain	Ab4.H	WO2015127288 SEQ ID NO: 561	2986
PDLB40	ACTH	Heavy chain	Ab6.H	WO2015127288 SEQ ID NO: 601	2987
PDLB41	ACTH	Heavy chain	Ab7.H	WO2015127288 SEQ ID NO: 641	2988
PDLB42	ACTH	Heavy chain	Ab7A.H	WO2015127288 SEQ ID NO: 681	2989
PDLB43	ACTH	Heavy chain	Ab10.H	WO2015127288 SEQ ID NO: 721	2990
PDLB44	ACTH	Heavy chain	Ab11.H	WO2015127288 SEQ ID NO: 761	2991
PDLB45	ACTH	Heavy chain	Ab11A.H	WO2015127288 SEQ ID NO: 801	2992
PDLB46	ACTH	Heavy chain	Ab3	WO2015127288 SEQ ID NO: 81	2993
PDLB47	ACTH	Heavy chain	Ab12.H	WO2015127288 SEQ ID NO: 841	2994
PDLB48	ACTH	Heavy chain	Ab4	WO2015127288 SEQ ID NO: 121	2995
PDLB49	ACTH	Heavy chain	Ab5	WO2015127288 SEQ ID NO: 161	2996
PDLB50	ACTH	Heavy chain	Ab6	WO2015127288 SEQ ID NO: 201	2997
PDLB51	ACTH (Cushing's, PD, AD, anxiety disorders)	Heavy chain	Ab1	WO2015127288 SEQ ID NO: 1	2998
PDLB52	alpha synuclein	Heavy chain	Hu1H7VHv1	US8790644 SEQ ID NO: 19	2999
PDLB53	alpha synuclein	Heavy chain	Hu1H7VHv2	US8790644 SEQ ID NO: 21	3000
PDLB54	alpha synuclein	Heavy chain	Hu1H7VHv3	US8790644 SEQ ID NO: 23	3001
PDLB55	alpha synuclein	Heavy chain	Hu1H7VHv4	US8790644 SEQ ID NO: 25	3002
PDLB56	alpha synuclein	Heavy chain	Hu1H7VHv5	US8790644 SEQ ID NO: 27	3003
PDLB57	alpha synuclein	Heavy chain	Hu1H7VH alternative	US8790644 SEQ ID NO: 44	3004
PDLB58	alpha synuclein	Heavy chain	Hu1H7VH alternatives	US8790644 SEQ ID NO: 46	3005
PDLB59	alpha synuclein	Heavy chain	Humanized 5C 1H2	WO2015075635 SEQ ID NO: 59	3006
PDLB60	alpha synuclein	Heavy chain	Humanized 5C 1H5	WO2015075635 SEQ ID NO: 62	3007
PDLB61	alpha synuclein	Heavy chain	Hu1H7VH alternative	WO2015075635 SEQ ID NO: 121	3008
PDLB62	alpha synuclein	Heavy chain	Humanized 1 H7 heavy chain version 3 (variable region + constant region)	WO2015075635 SEQ ID NO: 126	3009
PDLB63	alpha synuclein	Heavy chain	Humanized 1H7 heavy chain version 3 (variable region + constant region G 1 m3 allotype)	WO2015075635 SEQ ID NO: 127	3010

PDLB64	alpha synuclein	Heavy chain	Hu9E4VH alternative	WO2015075635 SEQ ID NO: 29	3011
PDLB65	alpha synuclein	Heavy chain	Humanized 9E4 heavy chain version 3 (variable region + constant region)	WO2015075635 SEQ ID NO: 34	3012
PDLB66	alpha synuclein	Heavy chain	Humanized 9E4 heavy chain version 3 (variable region + constant region)	WO2015075635 SEQ ID NO: 36	3013
PDLB67	alpha synuclein	Heavy chain	Humanized 9E4 heavy chain version 3 (variable region + alternative constant region G1m3 allotype)	WO2015075635 SEQ ID NO: 37	3014
PDLB68	alpha synuclein	Heavy chain	Humanized 5C 1 H1	WO2015075635 SEQ ID NO: 58	3015
PDLB69	alpha synuclein	Heavy chain	Humanized 5C 1H3	WO2015075635 SEQ ID NO: 60	3016
PDLB70	alpha synuclein	Heavy chain	Humanized 5C 1H4	WO2015075635 SEQ ID NO: 61	3017
PDLB71	amyloids	Heavy chain	#118	WO2010012004 SEQ ID NO: 11	3018
PDLB72	amyloids	Heavy chain	#121	WO2010012004 SEQ ID NO: 13	3019
PDLB73	amyloids	Heavy chain	#204	WO2010012004 SEQ ID NO: 16	3020
PDLB74	amyloids	Heavy chain	#205	WO2010012004 SEQ ID NO: 18	3021
PDLB75	EAG1	Heavy chain	chimeric ImAb3	WO2006037604 SEQ ID NO: 12	3022
PDLB76	EAG1	Heavy chain	chimeric ImAb4	WO2006037604 SEQ ID NO: 16	3023
PDLB77	EAG1	Heavy chain	HC-ImAb3-humVH3-72	WO2006037604 SEQ ID NO: 20	3024
PDLB78	EAG1	Heavy chain	HC-ImAb4-humVH4-59	WO2006037604 SEQ ID NO: 24	3025
PDLB79	EAG1	Heavy chain	HC-ImAb3-humVH3 23	WO2006037604 SEQ ID NO: 28	3026
PDLB80	EAG1	Heavy chain	HC-ImAb3-humVH2 26	WO2006037604 SEQ ID NO: 32	3027
PDLB81	EAG1	Heavy chain	HC-ImAb4-humVH1-3	WO2006037604 SEQ ID NO: 36	3028
PDLB82	EAG1	Heavy chain	ImAb4	WO2006037604 SEQ ID NO: 4	3029
PDLB83	EAG1	Heavy chain	ImAb3	WO2006037604 SEQ ID NO: 8	3030
PDLB84	NOGO	Heavy chain	H6L13 FL	US20140147435 SEQ ID NO: 27	3031
PDLB85	NOGO	Heavy chain	H16L16 FL, H16L18 FL	US20140147435 SEQ ID NO: 31	3032
PDLB86	NOGO	Heavy chain	H18L16 FL	US20140147435 SEQ ID NO: 33	3033
PDLB87	NOGO	Heavy chain	H19L13 FL, H19L16 FL, H19L18 FL	US20140147435 SEQ ID NO: 92	3034
PDLB88	NOGO	Heavy chain	H20L13 FL, H20L16 FL, H20L18 FL	US20140147435 SEQ ID NO: 93	3035
PDLB89	NOGO	Heavy chain	H21L13 FL, H21L16 FL, H21L18 FL	US20140147435 SEQ ID NO: 94	3036

PDLB90	NOGO	Heavy chain	H25L13 FL, H25L16 FL, H25L18 FL	US20140147435 SEQ ID NO: 98	3037
PDLB91	Nogo receptor-1	Heavy chain	5B10	US20090215691 SEQ ID NO: 16	3038
PDLB92	Nogo receptor-1	Heavy chain	5B10	US20090215691 SEQ ID NO: 18	3039
PDLB93	trk-C (NT-3 trkC ligand)	Heavy chain	2250	US7615383 SEQ ID NO: 42	3040
PDLB94	trk-C (NT-3 trkC ligand)	Heavy chain	2253	US7615383 SEQ ID NO: 43	3041
PDLB95	trk-C (NT-3 trkC ligand)	Heavy chain	2256	US7615383 SEQ ID NO: 44	3042
PDLB96	trk-C (NT-3 trkC ligand)	Heavy chain	6.1.2	US7615383 SEQ ID NO: 45	3043
PDLB97	trk-C (NT-3 trkC ligand)	Heavy chain	6.4.1	US7615383 SEQ ID NO: 46	3044
PDLB98	trk-C (NT-3 trkC ligand)	Heavy chain	2345	US7615383 SEQ ID NO: 47	3045
PDLB99	trk-C (NT-3 trkC ligand)	Heavy chain	2349	US7615383 SEQ ID NO: 48	3046
PDLB100	alpha synuclein	Heavy chain consensus chain	Hu9E4VH consensus amino acid sequence	US8609820 SEQ ID NO: 27	3047
PDLB101	alpha synuclein	Heavy chain consensus chain	m9E4VH	WO2015075635 SEQ ID NO: 6	3048
PDLB102	alpha synuclein	Heavy chain constant region	Humanized 1H7 heavy chain constant region (IgG2)	WO2015075635 SEQ ID NO: 128	3049
PDLB103	alpha synuclein	Heavy chain constant region	Humanized 1H7 heavy chain constant region (G1m1 allotype)	WO2015075635 SEQ ID NO: 129	3050
PDLB104	alpha synuclein	Heavy chain constant region	Humanized 9E4 heavy chain constant region (G1m3 allotype: BIP version)	WO2015075635 SEQ ID NO: 35	3051
PDLB105	alpha synuclein	Heavy chain constant region (G1m1 allotype)	Hu1H7	US8790644 SEQ ID NO: 58	3052
PDLB106	alpha synuclein	Heavy chain constant region (G1m3 allotype)	Hu1H7	US8790644 SEQ ID NO: 52	3053
PDLB107	alpha synuclein	Heavy chain constant region (IgG1; common for v1-v5)	Hu1H7	US8790644 SEQ ID NO: 50	3054
PDLB108	alpha synuclein	Heavy chain constant region (IgG2)	Hu1H7	US8790644 SEQ ID NO: 57	3055
PDLB109	many - growth factors (to increase transport across BBB)	Heavy chain fusion protein	H19L13, H19L16, H19L18, H19L14, H19L15, H19L17, H19L6, H19L11	US8053569 SEQ ID NO: 25	3056
PDLB110	many - growth factors (to increase transport across BBB)	Heavy chain fusion protein	H20L13, H20L16, H20L18, H20L14, H20L15, H20L17, H20L6, H20L11	US8053569 SEQ ID NO: 28	3057
PDLB111	many - growth factors (to increase transport across BBB)	Heavy chain fusion protein	H22L13, H22L16, H22L18, H22L14, H22L15, H22L17, H22L6, H22LH	US8053569 SEQ ID NO: 34	3058

PDLB112	many - growth factors (to increase transport across BBB)	Heavy chain fusion protein	H5L11, H6L11, H14L11, H15L11, H16L11, H17L11, H18L11, H19L11, H20L11, H21L11, H22L11, H23L11, H24L11, H25L11, H700L11	US8053569 SEQ ID NO: 24	3059
PDLB113	NOGO	Heavy chain humanized construct H1	2A10 construct	WO2007003421 SEQ ID NO: 79	3060
PDLB114	NOGO	Heavy chain humanized construct H14	2A10 construct	WO2007003421 SEQ ID NO: 29	3061
PDLB115	NOGO	Heavy chain humanized construct H15	2A10 construct	WO2007003421 SEQ ID NO: 30	3062
PDLB116	NOGO	Heavy chain humanized construct H16	2A10 construct	WO2007003421 SEQ ID NO: 31	3063
PDLB117	NOGO	Heavy chain humanized construct H17	2A10 construct	WO2007003421 SEQ ID NO: 32	3064
PDLB118	NOGO	Heavy chain humanized construct H18	2A10 construct	WO2007003421 SEQ ID NO: 33	3065
PDLB119	NOGO	Heavy chain humanized construct H19	2A10 construct	WO2007003421 SEQ ID NO: 92	3066
PDLB120	NOGO	Heavy chain humanized construct H20	2A10 construct	WO2007003421 SEQ ID NO: 93	3067
PDLB121	NOGO	Heavy chain humanized construct H21	2A10 construct	WO2007003421 SEQ ID NO: 94	3068
PDLB122	NOGO	Heavy chain humanized construct H22	2A10 construct	WO2007003421 SEQ ID NO: 95	3069
PDLB123	NOGO	Heavy chain humanized construct H23	2A10 construct	WO2007003421 SEQ ID NO: 96	3070
PDLB124	NOGO	Heavy chain humanized construct H24	2A10 construct	WO2007003421 SEQ ID NO: 97	3071
PDLB125	NOGO	Heavy chain humanized construct H25	2A10 construct	WO2007003421 SEQ ID NO: 98	3072
PDLB126	NOGO	Heavy chain humanized construct H5	2A10 construct	WO2007003421 SEQ ID NO: 26	3073
PDLB127	NOGO	Heavy chain humanized construct H6	2A10 construct	WO2007003421 SEQ ID NO: 27	3074
PDLB128	NOGO	Heavy chain humanized construct H700	2A10 construct	WO2007003421 SEQ ID NO: 28	3075
PDLB129	RTN4 (NOGO)	Heavy chain IgG4, immunomodulator	Atinumab	US8163285 SEQ ID NO: 24	3076
PDLB130	alpha synuclein	Heavy chain variable region	NI-202.12F4-VHA1b-GL	US20150232542 SEQ ID NO: 10	3077

PDLB 131	alpha synuclein	Heavy chain variable region	NI-202.3D8-VHE1	US20150232542 SEQ ID NO: 15	3078
PDLB 132	alpha synuclein	Heavy chain variable region	NI-202.3D8-VHE1-GL	US20150232542 SEQ ID NO: 16	3079
PDLB 133	alpha synuclein	Heavy chain variable region	NI-202.3G12-VHB 1	US20150232542 SEQ ID NO: 3	3080
PDLB 134	alpha synuclein	Heavy chain variable region	NI-202.3G12-VHB 1-GL	US20150232542 SEQ ID NO: 4	3081
PDLB 135	alpha synuclein	Heavy chain variable region	NI-202. 12F4-VHAlb	US20150232542 SEQ ID NO: 9	3082
PDLB 136	alpha synuclein	Heavy chain variable region	Hu9E4VHv3 variable region	US8609820 SEQ ID NO: 10	3083
PDLB 137	alpha synuclein	Heavy chain variable region	Hu9E4VHv4 variable region	US8609820 SEQ ID NO: 11	3084
PDLB 138	alpha synuclein	Heavy chain variable region	Hu9E4VLv3 variable region	US8609820 SEQ ID NO: 5	3085
PDLB 139	alpha synuclein	Heavy chain variable region	m9E4VH variable region	US8609820 SEQ ID NO: 6	3086
PDLB 140	alpha synuclein	Heavy chain variable region	1791009Hu9E4VHFr variable region	US8609820 SEQ ID NO: 7	3087
PDLB 141	alpha synuclein	Heavy chain variable region	Hu9E4VHvl variable region	US8609820 SEQ ID NO: 8	3088
PDLB 142	alpha synuclein	Heavy chain variable region	Hu9E4VHv2 variable region	US8609820 SEQ ID NO: 9	3089
PDLB 143	alpha synuclein	Heavy chain variable region	mlH7	US8790644 SEQ ID NO: 5	3090
PDLB 144	alpha synuclein	Heavy chain variable region	mature mlH7	US8790644 SEQ ID NO: 9	3091
PDLB 145	alpha synuclein	Heavy chain variable region	Hu9E4VHv 3	WO2015075635 SEQ ID NO: 10	3092
PDLB 146	alpha synuclein	Heavy chain variable region	HulH7VHv4	WO2015075635 SEQ ID NO: 101	3093
PDLB 147	alpha synuclein	Heavy chain variable region	Hu9E4VHv4 (no back mutation)	WO20 15075635 SEQ ID NO: 1 1	3094
PDLB 148	alpha synuclein	Heavy chain variable region	HulH7VHv5	WO20 15075635 SEQ ID NO: 103	3095
PDLB 149	alpha synuclein	Heavy chain variable region	63 102889Hu9E4VLFr	WO20 15075635 SEQ ID NO: 2	3096
PDLB 150	alpha synuclein	Heavy chain variable region	m5C 1antibody heavy chain variable region amino acid sequence	WO20 150756355 SEQ ID NO: 39	3097
PDLB 151	alpha synuclein	Heavy chain variable region	i 791009Hu9E4VHFr	WO2015075635 SEQ ID NO: 7	3098
PDLB 152	alpha synuclein	Heavy chain variable region	Hu9E4VHv 1	WO2015075635 SEQ ID NO: 8	3099
PDLB 153	alpha synuclein	Heavy chain variable region	mlH7	WO2015075635 SEQ ID NO : 81	3100
PDLB 154	alpha synuclein	Heavy chain variable region	mature mlH7	WO20 15075635 SEQ ID NO: 85	3101
PDLB 155	alpha synuclein	Heavy chain variable region	Hu9E4VHv 2	WO20 15075635 SEQ ID NO: 9	3102

PDLB156	alpha synuclein	Heavy chain variable region	Hu lH7VHv1	WO2015075635 SEQ ID NO: 95	3103
PDLB157	alpha synuclein	Heavy chain variable region	HulH7VHv2	WO2015075635 SEQ ID NO: 97	3104
PDLB158	alpha synuclein	Heavy chain variable region	HulH7VHv3	WO2015075635 SEQ ID NO: 99	3105
PDLB159	alpha synuclein protofibrils	Heavy chain variable region	BA1: 49/G	WO2011104696 SEQ ID NO: 56	3106
PDLB160	alpha synuclein protofibrils	Heavy chain variable region	BA1: 49/G	WO2011104696 SEQ ID NO: 57	3107
PDLB161	alpha synuclein protofibrils	Heavy chain variable region	BA2: 38E2/7	WO2011104696 SEQ ID NO: 58	3108
PDLB162	alpha synuclein protofibrils	Heavy chain variable region	BA2: 38E2/7	WO2011104696 SEQ ID NO: 59	3109
PDLB163	amyloid oligomers	Heavy chain variable region	F11G3	US9125846 SEQ ID NO: 11	3110
PDLB164	DR6 and P75	Heavy chain variable region	M66-B03	WO2010062904 SEQ ID NO: 67	3111
PDLB165	DR6 and P75	Heavy chain variable region	M50-H01	WO2010062904 SEQ ID NO: 7	3112
PDLB166	DR6 and P75	Heavy chain variable region	M67-G02	WO2010062904 SEQ ID NO: 77	3113
PDLB167	DR6 and P75	Heavy chain variable region	M72-F03	WO2010062904 SEQ ID NO: 87	3114
PDLB168	DR6 and P75	Heavy chain variable region	M73-C04	WO2010062904 SEQ ID NO: 97	3115
PDLB169	DR6 and P75	Heavy chain variable region	1P1D6.3	WO2010062904 SEQ ID NO: 107	3116
PDLB170	DR6 and P75	Heavy chain variable region	1P2F2.1	WO2010062904 SEQ ID NO: 117	3117
PDLB171	DR6 and P75	Heavy chain variable region	1P5D10.2	WO2010062904 SEQ ID NO: 127	3118
PDLB172	DR6 and P75	Heavy chain variable region	M51-H09	WO2010062904 SEQ ID NO: 17	3119
PDLB173	DR6 and P75	Heavy chain variable region	M53-E04	WO2010062904 SEQ ID NO: 27	3120
PDLB174	DR6 and P75	Heavy chain variable region	M53-F04	WO2010062904 SEQ ID NO: 37	3121
PDLB175	DR6 and P75	Heavy chain variable region	M62-B02	WO2010062904 SEQ ID NO: 47	3122
PDLB176	DR6 and P75	Heavy chain variable region	M63-E10	WO2010062904 SEQ ID NO: 57	3123
PDLB177	LPG (lysophosphatidyl glucoside)	Heavy chain variable region	#7	US8591902 SEQ ID NO: 18	3124
PDLB178	LPG (lysophosphatidyl glucoside)	Heavy chain variable region	#15	US8591902 SEQ ID NO: 8	3125
PDLB179	MAG	Heavy chain variable region		US8071731 SEQ ID NO: 13	3126
PDLB180	MAG	Heavy chain variable region		US8071731 SEQ ID NO: 14	3127

PDLB181	MAG	Heavy chain variable region		US8071731 SEQ ID NO: 15	3128
PDLB182	MAI (myelin associated inhibitor)	Heavy chain variable region		WO2013158748 SEQ ID NO: 1	3129
PDLB183	MAI (myelin associated inhibitor)	Heavy chain variable region		WO2013158748 SEQ ID NO: 17	3130
PDLB184	NMDA	Heavy chain variable region		EP2805972 SEQ ID NO: 43	3131
PDLB185	NOGO	Heavy chain variable region	H5L13, H5L16, H5L18, H5L14, H5L15, H5L17, H5L6, H5L11	US20140147435 SEQ ID NO: 11	3132
PDLB186	NOGO	Heavy chain variable region	H6L13, H6L16, H6L18, H6L14, H6L15, H6L17, H6L6	US20140147435 SEQ ID NO: 12	3133
PDLB187	NOGO	Heavy chain variable region	H700L13, H700L16, H700L18, H700L14, H700L15, H700L17, H700L6, H700L11	US20140147435 SEQ ID NO: 13	3134
PDLB188	NOGO	Heavy chain variable region	H14L13, H14L16, H14L18, H14L14, H14L15, H14L17, H14L6, H14L11	US20140147435 SEQ ID NO: 14	3135
PDLB189	NOGO	Heavy chain variable region	H15L13, H15L16, H15L18, H15L14, H15L15, H15L17, H15L6, H15L11	US20140147435 SEQ ID NO: 15	3136
PDLB190	NOGO	Heavy chain variable region	H16L13, H16L16, H16L18, H16L14, H16L15, H16L17, H16L6, H16L11	US20140147435 SEQ ID NO: 16	3137
PDLB191	NOGO	Heavy chain variable region	H17L13, H17L16, H17L18, H17L14, H17L15, H17L17, H17L6, H17L11	US20140147435 SEQ ID NO: 17	3138
PDLB192	NOGO	Heavy chain variable region	H18L13, H18L16, H18L18, H18L14, H18L15, H18L17, H18L6, H18L11	US20140147435 SEQ ID NO: 18	3139
PDLB193	NOGO	Heavy chain variable region	H1L13, H1L16, H1L18, H1L14, H1L15, H1L17, H1L6	US20140147435 SEQ ID NO: 77	3140
PDLB194	NOGO	Heavy chain variable region	H19L13, H19L16, H19L18, H19L14, H19L15, H19L17, H19L6, H19L11	US20140147435 SEQ ID NO: 85	3141
PDLB195	NOGO	Heavy chain variable region	H20L13, H20L16, H20L18, H20L14, H20L15, H20L17, H20L6, H20L11	US20140147435 SEQ ID NO: 86	3142
PDLB196	NOGO	Heavy chain variable region	H21L13, H21L16, H21L18, H21L14, H21L15, H21L17, H21L6, H21L11	US20140147435 SEQ ID NO: 87	3143
PDLB197	NOGO	Heavy chain variable region	H22L13, H22L16, H22L18, H22L14, H22L15, H22L17, H22L6, H22L11	US20140147435 SEQ ID NO: 88	3144

PDLB 198	NOCK)	Heavy chain variable region	**H23L13, H23L 16, H23L18,** H23L 14, H23L15, H23L 17, H23L6, **H23L1 1**	**US20140147435** SEQ ID NO: 89	3145
PDLB 199	NOGO	Heavy **chain** variable region	**H24L13, H24L 16, H24L18, H24L 14,** H24L15, H24L 17, H24L6, **H24L1 1**	**US20140147435** SEQ **ID** NO: 90	3146
PDLB200	NOGO	Heavy chain variable **region**	**H25L13, H25L 16,** H25L18, H25L 14, **H25L15, H25L 17, H25L6, H25L1 1**	**US20140147435** SEQ ID NO: 91	3147
PDLB201	Nogo-66	Heavy chain variable region	Antibody clone 50	US20140065155 SEQ **ID NO:** 3	3148
PDLB202	Nogo-66	Heavy chain variable region	Antibody clone 51	**US20140065155** SEQ ID NO: 5	3149
PDLB203	NogoA/NiG	Heavy chain variable region	6A3-Ig4	**WO2009056509** SEQ ID **NO:** 24	3150
PDLB204	NogoA/NiG	Heavy chain variable region	6A3-TgGl	**WO2009056509** SEQ **ID NO:** 4	3151
PDLB205	RGM A	Heavy chain variable region	5F9. 1-GL	**US20150183871 SEQ ID NO:** 35	3152
PDLB206	RGM A	Heavy chairs variable region	**5F9.2-GL**	**US20 150183871** SEQ ID NO: 36	3153
PDLB207	RGM A	Heavy chain variable region	**5F9.3-GL**	**US20150183871** SEQ ID NO: 37	3154
PDLB208	RGM A	Heavy chain variable region	5F9.4-GL	**US20150183871** SEQ ID NO: 38	3155
PDLB209	RGM A	Heavy **chain** variable region	5F9.5-GL	**US20150 183871** SEQ **ID NO:** 39	3156
PDLB210	RGM A	Heavy chain variable region	5F9.6-C-L	**US20150 183871** SEQ **ID** NO: 40	3157
PDLB21 1	RGM A	Heavy chain variable region	5F9.7-GL	**US20150 183871** SEQ ID NO: 41	3158
PDLB212	RGM A	Heavy chain variable region	5F9.8-GL	**US20150183871** SEQ ID **NO:** 42	3159
PDLB213	RGM A	Heavy chain variable region	5F9.9-GL	**US20150183871** SEQ ID **NO:** 43	3160
PDLB214	RGM A	Heavy chain variable region	h5F9.1, 3i5F9. I, li5F9. 1, li5F9. **S**, h5F9.1, h5F9.2, h5F9.3	**US20150183871** SEQ **ID NO:** 47	**3161**
PDLB215	RGM A	Heavy chain variable region	**h5F9**.3, !i5F9.9, h5F9.25	**US20150183871** SEQ ID NO: 53	3162.
PDLB216	RGM A	Heavy chain variable region	**h5F9.4,** h5F9. I0, h5F9.26	**US20150183871** SEQ ID NO: 54	3163
PDLB217	RGMa	Heavy chain variable region	AE12-1	US20 140023659 SEQ ID NO: 1	3164
PDLB218	RGMa	Heavy **chain** variable region	AE 12-20	**US20 140023659** SEQ **ID NO:** 107	3165
PDLB219	RGMa	Heavy chain variable region	**AE 12-21**	**US20140023659** SEQ **ID** NO: 115	3166
PDLB220	RGMa	Heavy chain variable region	AE12-23	**US20 140023659** SEQ ID NO: 123	3167

PDLB221	RGMa	Heavy chain variable region	AE12-24	US20140023659 SEQ ID NO: 131	3168
PDLB222	RGMa	Heavy chain variable region	AE12-3	US20140023659 SEQ ID NO: 17	3169
PDLB223	RGMa	Heavy chain variable region	AE12-4	US20140023659 SEQ ID NO: 25	3170
PDLB224	RGMa	Heavy chain variable region	AE12-5	US20140023659 SEQ ID NO: 33	3171
PDLB225	RGMa	Heavy chain variable region	AE12-6	US20140023659 SEQ ID NO: 41	3172
PDLB226	RGMa	Heavy chain variable region	AE12-7	US20140023659 SEQ ID NO: 49	3173
PDLB227	RGMa	Heavy chain variable region	AE12-8	US20140023659 SEQ ID NO: 57	3174
PDLB228	RGMa	Heavy chain variable region	AE12-2	US20140023659 SEQ ID NO: 9	3175
PDLB229	RGMa	Heavy chain variable region	AE12-13	US20140023659 SEQ ID NO: 91	3176
PDLB230	RGMa	Heavy chain variable region	AE12-15	US20140023659 SEQ ID NO: 99	3177
PDLB231	a-syniiclein aggregates	Heavy chain variable region	Syn-01	WO2014132210 SEQ ID NO: 10	3178
PDLB232	a-synuclein aggregates	Heavy chain variable region	Syn-F!	WO2014132210 SEQ ID NO: 2	3179
PDLB233	a-synuclein aggregates	Heavy chain variable region	Syn-F2	WO2014132210 SEQ ID NO: 6	3180
PDLB234	NOGi)	Heavy chain variable region humanized construct H1	2A10 construct	WO2007003421 SEQ ID NO: 77	3181
PDLB235	NOGO	Heavy chain variable region humanized construct H14	2A10 construct	WO200700342 1 SEQ ID NO: 14	3182
PDLB236	NOCK)	Heavy chain variable region humanized construct H15	2A10 construct	WO2007003421 SEQ ID NO: 15	3183
PDLB237	NOGO	Heavy chain variable region humanized construct H16	2A10 construct	WO2007003421 SEQ ID NO: 16	3184
PDLB238	NOGO	Heavy chain variable region humanized construct H17	2A10 construct	WO2007003421 SEQ ID NO : 17	3185
PDLB239	NOGO	Heavy chain variable region humanized construct H18	2A10 construct	WO200700342 1 SEQ ID NO: 18	3186
PDLB240	NOGO	Heavy chain variable region humanized construct H19	2A10 construct	WO200700342 1 SEQ ID NO: 85	3187

PDLB241	NOGO	Heavy chain variable region humanized construct H20	2A10 construct	WO2007003421 SEQ ID NO: 86	3188
PDLB242	NOGO	Heavy chain variable region humanized construct H21	2A10 construct	WO2007003421 SEQ ID NO: 87	3189
PDLB243	NOGO	Heavy chain variable region humanized construct H22	2A10 construct	WO2007003421 SEQ ID NO: 88	3190
PDLB244	NOGO	Heavy chain variable region humanized construct H23	2A10 construct	WO2007003421 SEQ ID NO: 89	3191
PDLB245	NOGO	Heavy chain variable region humanized construct H24	2A10 construct	WO2007003421 SEQ ID NO: 90	3192
PDLB246	NOGO	Heavy chain variable region humanized construct H25	2A10 construct	WO2007003421 SEQ ID NO: 91	3193
PDLB247	NOGO	Heavy chain variable region humanized construct H5	2A10 construct	WO2007003421 SEQ ID NO: 11	3194
PDLB248	NOGO	Heavy chain variable region humanized construct H6	2A10 construct	WO2007003421 SEQ ID NO: 12	3195
PDLB249	NOGO	Heavy chain variable region humanized construct H700	2A10 construct	WO2007003421 SEQ ID NO: 13	3196
PDLB250	alpha synuclein	Heavy chain version 3 (variable region+constant region)	Hu1H7	US8790644 SEQ ID NO: 55	3197
PDLB251	alpha synuclein	Heavy chain version 3 (variable region+constant region; G1m3 allotype)	Hu1H7	US8790644 SEQ ID NO: 56	3198
PDLB252	118-126 of α-synuclein	Light chain	5CIL1	US20150259404 SEQ ID NO: 29	3199
PDLB253	118-126 of α-synuclein	Light chain	5CIL2	US20150259404 SEQ ID NO: 30	3200
PDLB254	118-126 of α-synuclein	Light chain	5CIL3	US20150259404 SEQ ID NO: 31	3201
PDLB255	118-126 of α-synuclein	Light chain	5CIL4	US20150259404 SEQ ID NO: 32	3202
PDLB256	118-126 of α-synuclein	Light chain	IgG1	US20150259404 SEQ ID NO: 40	3203
PDLB257	118-126 of α-synuclein	Light chain	5CI	US20150259404 SEQ ID NO: 8	3204
PDLB258	ACTH	Light chain	Ab3	WO2015127288 SEQ ID NO: 101	3205

PDLB259	ACTH	Light chain	Ab4	WO2015127288 SEQ ID NO: 141	3206
PDLB260	ACTH	Light chain	Ab5	WO2015127288 SEQ ID NO: 181	3207
PDLB261	ACTH	Light chain	Ab1	WO2015127288 SEQ ID NO: 21	3208
PDLB262	ACTH	Light chain	Ab6	WO2015127288 SEQ ID NO: 221	3209
PDLB263	ACTH	Light chain	Ab7	WO2015127288 SEQ ID NO: 261	3210
PDLB264	ACTH	Light chain	Ab9	WO2015127288 SEQ ID NO: 301	3211
PDLB265	ACTH	Light chain	Ab10	WO2015127288 SEQ ID NO: 341	3212
PDLB266	ACTH	Light chain	Ab11	WO2015127288 SEQ ID NO: 381	3213
PDLB267	ACTH	Light chain	Ab12	WO2015127288 SEQ ID NO: 421	3214
PDLB268	ACTH	Light chain	Ab1.H	WO2015127288 SEQ ID NO: 461	3215
PDLB269	ACTH	Light chain	Ab2.H	WO2015127288 SEQ ID NO: 501	3216
PDLB270	ACTH	Light chain	Ab3.H	WO2015127288 SEQ ID NO: 541	3217
PDLB271	ACTH	Light chain	Ab4.H	WO2015127288 SEQ ID NO: 581	3218
PDLB272	ACTH	Light chain	Ab2	WO2015127288 SEQ ID NO: 61	3219
PDLB273	ACTH	Light chain	Ab6.H	WO2015127288 SEQ ID NO: 621	3220
PDLB274	ACTH	Light chain	Ab7.H	WO2015127288 SEQ ID NO: 661	3221
PDLB275	ACTH	Light chain	Ab7A.H	WO2015127288 SEQ ID NO: 701	3222
PDLB276	ACTH	Light chain	Ab10.H	WO2015127288 SEQ ID NO: 741	3223
PDLB277	ACTH	Light chain	Ab11.H	WO2015127288 SEQ ID NO: 781	3224
PDLB278	ACTH	Light chain	Ab11A.H	WO2015127288 SEQ ID NO: 821	3225
PDLB279	ACTH	Light chain	Ab12.H	WO2015127288 SEQ ID NO: 861	3226
PDLB280	alpha synuclein	Light chain	Hu1H7VLv1	US8790644 SEQ ID NO: 33	3227
PDLB281	alpha synuclein	Light chain	Hu1H7VLv2	US8790644 SEQ ID NO: 35	3228
PDLB282	alpha synuclein	Light chain	Hu1H7VLv3	US8790644 SEQ ID NO: 37	3229
PDLB283	alpha synuclein	Light chain	Hu1H7VLv4	US8790644 SEQ ID NO: 39	3230
PDLB284	alpha synuclein	Light chain	Hu1H7VL alternative	US8790644 SEQ ID NO: 45	3231
PDLB285	alpha synuclein	Light chain	sequence for Hu1H7VL alternatives	US8790644 SEQ ID NO: 47	3232
PDLB286	alpha synuclein	Light chain	humanized 5C 1L1	WO2015075635 SEQ ID NO: 69	3233
PDLB287	alpha synuclein	Light chain	humanized 5C 1L2	WO2015075635 SEQ ID NO: 70	3234

PDLB288	alpha synuclein	Light chain	HuIH7VL alternative	WO2015075635 SEQ ID NO: 122	3235
PDLB289	alpha synuclein	Light chain	humanized 1H7 light chain version 3 (variable region + constant region with Arginine)	WO2015075635 SEQ ID NO: 124	3236
PDLB290	alpha synuclein	Light chain	humanized 1H7 light chain version 3 (variable region + constant region without Arginine)	WO2015075635 SEQ ID NO: 125	3237
PDLB291	alpha synuclein	Light chain	Hu9E4VL alternative	WO2015075635 SEQ ID NO: 28	3238
PDLB292	alpha synuclein	Light chain	humanized 9E4 light chain version 3 (variable region + constant region with Arginine)	WO2015075635 SEQ ID NO: 32	3239
PDLB293	alpha synuclein	Light chain	humanized 9E4 light chain version 3 (variable region + constant region without Arginine)	WO2015075635 SEQ ID NO: 33	3240
PDLB294	alpha synuclein	Light chain	humanized 5C L3	WO2015075635 SEQ ID NO: 71	3241
PDLB295	amyloids	Light chain	#118	WO2010012004 SEQ ID NO: 10	3242
PDLB296	amyloids	Light chain	#121	WO2010012004 SEQ ID NO: 12	3243
PDLB297	amyloids	Light chain	#201	WO2010012004 SEQ ID NO: 14	3244
PDLB298	amyloids	Light chain	#204	WO2010012004 SEQ ID NO: 15	3245
PDLB299	amyloids	Light chain	#205	WO2010012004 SEQ ID NO: 17	3246
PDLB300	EAG1	Light chain	chimeric ImAb3	WO2006037604 SEQ ID NO: 10	3247
PDLB301	EAG1	Light chain	chimeric ImAb4	WO2006037604 SEQ ID NO: 14	3248
PDLB302	EAG1	Light chain	LC-ImAb3-humB3	WO2006037604 SEQ ID NO: 18	3249
PDLB303	EAG1	Light chain	ImAb4	WO2006037604 SEQ ID NO: 2	3250
PDLB304	EAG1	Light chain	LC-ImAb4-humA17	WO2006037604 SEQ ID NO: 22	3251
PDLB305	EAG1	Light chain	LC-ImAb3-humA3	WO2006037604 SEQ ID NO: 26	3252
PDLB306	EAG1	Light chain	LC-ImAb3-humA17	WO2006037604 SEQ ID NO: 30	3253
PDLB307	EAG1	Light chain	LC-ImAb4-humA3-1	WO2006037604 SEQ ID NO: 34	3254
PDLB308	EAG1	Light chain	LC-ImAb4-humO1	WO2006037604 SEQ ID NO: 38	3255
PDLB309	EAG1	Light chain	ImAb3	WO2006037604 SEQ ID NO: 6	3256
PDLB310	NOGO	Light chain	H6L13 FL, H19L13 FL, H20L13 FL, H21L13 FL, H25L13 FL	US20140147435 SEQ ID NO: 35	3257
PDLB311	NOGO	Light chain	H16L16 FL, H19L16 FL, H20L16 FL, H21L16 FL, H25L16 FL, H18L16 FL	US20140147435 SEQ ID NO: 38	3258

PDLB312	NOGO	Light chain	H16L18 FL, H19L18 FL, H20L18 FL, H21L18 FL, H25L18 FL	US20140147435 SEQ ID NO: 40	3259
PDLB313	Nogo receptor-1	Light chain	7E11	US20090215691 SEQ ID NO: 15	3260
PDLB314	Nogo receptor-1	Light chain	7E11	US20090215691 SEQ ID NO: 17	3261
PDLB315	trk-C (NT-3 trkC ligand)	Light chain	2250	US7615383 SEQ ID NO: 49	3262
PDLB316	trk-C (NT-3 trkC ligand)	Light chain	2253	US7615383 SEQ ID NO: 50	3263
PDLB317	trk-C (NT-3 trkC ligand)	Light chain	2256	US7615383 SEQ ID NO: 51	3264
PDLB318	trk-C (NT-3 trkC ligand)	Light chain	6.1.2	US7615383 SEQ ID NO: 52	3265
PDLB319	trk-C (NT-3 trkC ligand)	Light chain	6.4.1	US7615383 SEQ ID NO: 53	3266
PDLB320	trk-C (NT-3 trkC ligand)	Light chain	2345	US7615383 SEQ ID NO: 54	3267
PDLB321	trk-C (NT-3 trkC ligand)	Light chain	2349	US7615383 SEQ ID NO: 55	3268
PDLB322	alpha synuclein	Light chain consensus chain	Hu9E4VL consensus amino acid sequence	US8609820 SEQ ID NO: 26	3269
PDLB323	alpha synuclein	Light chain constant region	humanized 9E4 light chain constant region	US8609820 SEQ ID NO: 13	3270
PDLB324	alpha synuclein	Light chain constant region	humanized 9E4 heavy chain constant region	US8609820 SEQ ID NO: 14	3271
PDLB325	alpha synuclein	Light chain constant region	humanized 9E4	WO2015075635 SEQ ID NO: 13	3272
PDLB326	alpha synuclein	Light chain constant region (with arginine) (common for v1-v4)	Hu1H7	US8790644 SEQ ID NO: 49	3273
PDLB327	alpha synuclein	Light chain constant region (without arginine) (common for v1-v4)	Hu1H7	US8790644 SEQ ID NO: 51	3274
PDLB328	many - growth factors (to increase transport across BBB)	Light chain fusion protein	H21L13, H21L16, H21L18, H21L14, H21L15, H21L17, H21L6, H21L11	US8053569 SEQ ID NO: 31	3275
PDLB329	many - growth factors (to increase transport across BBB)	Light chain fusion protein	H23L13, H23L16, H23L18, H23L14, H23L15, H23L17, H23L6, H23L11	US8053569 SEQ ID NO: 36	3276
PDLB330	NOGO	Light chain humanized construct L11	2A10 construct	WO2007003421 SEQ ID NO: 80	3277
PDLB331	NOGO	Light chain humanized construct L13	2A10 construct	WO2007003421 SEQ ID NO: 35	3278
PDLB332	NOGO	Light chain humanized construct L14	2A10 construct	WO2007003421 SEQ ID NO: 36	3279
PDLB333	NOGO	Light chain humanized construct L15	2A10 construct	WO2007003421 SEQ ID NO: 37	3280

PDLB334	NOCK)	Light chain humanized construct L16	**2A10** construct	**WO2007003421** SEQ ID NO: 38	328l
PDLB335	NOGO	Light **chain humanized** construct **L17**	**2A10** construct	**WO200700342 1** SEQ **ID NO:** 39	3282
PDLB336	NOGO	Light chain humanized **construct** L18	2A 10 **construct**	**WO200700342 1** SEQ **ID** NO: 40	3283
PDLB337	NOGi)	Light chain humanized construct L6	**2A10** construct	**WO2007003421** SEQ ID NO: 34	3284
PDLB338	RTN4	Light chain **IgG4, immunomodulator**	**Atinumab**	**US8163285** SEQ ID NO: 25	3285
PDLB339	**alplia** synuclein	Light chain variable **e gion**	**NI-202. 12F4-VLa l**	**US20150232542** SEQ **ID** NO: 12	3286
PDLB340	alpha sy nuclein	Light chain variable region	**NI-202. l2F4-VLa l-GL**	**US20 150232542 SEQ ID NO:** l3	3287
PDLB34 l	**alpha synuclein**	Light chain variable **region**	**NI-202.3D8-VKal**	**US20150232542** SEQ **ID** NO: l8	3288
PDLB342	alpha **synuclein**	Light chain variable region	**NI-202.3D8-VKal-GL**	**US20 150232542 SEQ ID NO: 19**	3289
PDLB343	**alpha synuclein**	Light chain variable region	**NI-202.3D8-VKcl**	**US20150232542** SEQ ID NO: 21	3290
PDLB344	alpha synuclein	Light chain **variable** region	**NI-202.3D8-VKcl-GL**	**US20150232542** SEQ ID NO: 22	329l
PDLB345	alpha synuclein	Light chain variable region	**Nl-202.3G12 -VLcl**	1JS20 150232542 SEQ ID NO: 6	3292
PDLB346	alpha synuclein	Light chain variable region	**NI-202.3G12-VLcl-GL**	**US20150232542** SEQ ID NO: 7	3293
PDLB347	alpha synuclein	Light chain variable region	m9E4VL variable region	US8609820 SEQ ID NO: 1	3294
PDLB348	alpha synuclein	Light chain variable region	**63102889Hu9E4VLFr** variable region	**US8609820** SEQ ID NO: 2	3295
PDLB349	alpha synuclein	Light chain variable region	**Hu9E4VLvl** variable region	**US8609820** SEQ **ID NO: 3**	3296
PDLB350	**alpha** synuclein	Light **chain** variable region	**Hu9E4VLv2** variable region	US8609820 SEQ **ID** NO: 4	3297
PDLB35 l	alpha synuclein	Light chain variable region	**mature mlH7** light chain variable	US8790644 SEQ **ID NO:** l 1	3298
PDLB352	**alpha** synuclein	Light **chain** variable region	mlH7 light **chain variable**	**US8790644** SEQ **ID NO:** 7	3299
PDLB353	alpha synuclein	Light chain variable region	**ni9E4VL**	**WO20 l5075635** SEQ **ID NO: I**	3300
PDLB354	alplia **synuclein**	Light chain variable region	**HulH7VLv2**	**WO2015075635** SEQ **ID NO:** 1 11	3301
PDLB355	alpha synuclein	Light chain variable region	**HuIH7VLv3**	**WO2015075635** SEQ ID NO: 1 l3	3302
PDLB356	alpha synuclein	Light chain variable region	**HulH7VLv** 1	**WO2015075635** SEQ **ID** NO: l09	3303
PDLB357	**alpha** synuclein	Light chain variable region	**HulH7VLv4**	**WO20 1507563 5** SEQ **ID** NO: 115	3304
PDLB358	alpha synuclein	Light chain variable region	**Hu9E4VLvl**	**WO2015075635** SEQ **ID** NO: 3	3305
PDLB359	**alpha** synuclein	Light chain variable region	**Hu9E4VLv2 (No** back mutation)	**WO20 1507563 5** SEQ **ID** NO: 4	3306

PDLB360	alpha synuclein	Light chain vanable region	**in5C** 1antibody **light** chain variable region amino acid sequence	**WO20 15075635** SEQ ID NO: 43	3307
PDLB36 I	**alplia** synuclein	Light **chain variable region**	**Hu9E4VLv3**	**WO2015075635** SEQ **ID** NO: 5	3308
PDLB362	alpha sy nuclein	Light chain variable region	**inlH7**	**WO20 15075635** SEQ **ID** NO: 83	3309
PDLB363	**alplia synuclein**	Light **chain variable region**	**mature mlH7**	**WO2015075635** SEQ **ID** NO: 87	33 10
PDLB364	alpha synuclein protofibrils	Light chain variable region	BA3: 4KM 1/2_8	**WO20 11 104696** SEQ ID NO: 60	**33 1 1**
PDLB365	alpha synuclein proiofibri!s	Light **chain variable** region	BA3: 38F1 1/2_**8**	**WO201 1104696** SEQ ID NO: 61	**33 12**
PDLB366	alpha synuclein protofibrils	Light chain vanable region	BA4: 48B11/8	**WO20 11 104696** SEQ ID NO: 62	33 13
PDLB367	alpha synuclein proiofibri!s	Light **chain variable** region	BA4 : 48B11/8	**WO201 1104696** SEQ ID NO: 63	**33 14**
PDLB368	amyloid oligomers	Light chain vanable region	**F 11G3**	**US9 125846** SEQ ID NO: 12	33 15
PDLB369	DR6 and P75	Light **chain variable** region	**M73-C04**	**WO20 10062904** SEQ ID NO: 102	**33 16**
PDLB370	DR6 and P7.5	Light chain vanable region	**1P1D6.3**	**WO20 10062904** SEQ ID NO: 112	33 17
PDLB371	DR6 and P75	Light **chain variable** region	\4i50.pL2	**WO20 10062904** SEQ ID NO: 12	**33 18**
PDLB372	DR6 and P7.5	Light chain vanable region	**1P2F2.1**	**WO20 10062904** SEQ ID NO: 122	33 19
PDLB373	DR6 and P75	Light chain variable region	1P5D10.2	**WO20 10062904** SEQ ID NO: 132	3320
PDLB374	DR6 and P75	Light **chain** variable region	**M51-H09**	**WO20 10062904** SEQ ID NO: 22	3321
PDLB375	DR6 and P75	Light chain variable region	**M53-E04**	**WO20 10062904** SEQ ID **NO:** 32	3322
PDLB376	DR6 and P75	Light **chain** variable region	**M53-F04**	**WO20 10062904** SEQ ID NO: 42	3323
PDLB377	DR6 and P75	Light chain variable region	**M62-B02**	**WO20 10062904** SEQ ID **NO:** 52	3324
PDLB378	DR6 and P75	Light **chain** variable region	**M63-E10**	**WO20 10062904** SEQ ID NO: 62	3325
PDLB379	DR6 and P75	Light chain variable region	**M66-B03**	**WO20 10062904** SEQ ID **NO:** 72	3326
PDLB380	DR6 and P75	Light **chain** variable region	**M67-G02**	**WO20 10062904** SEQ ID NO: 82	3327
PDLB381	DR6 and P75	Light chain variable region	**M72-F03**	**WO20 10062904** SEQ **ID** NO: 92	3328
PDLB382	**LPG (lysophosphatidyl glucoside)**	Light **chain variable** region	#7	**US859 1902** SEQ **ID NO:** 17	3329
PDLB383	LPG **(lysophosphatidyl** glucoside)	Light **chain variable** region	#15	**US859 1902** SEQ **ID** NO: 7	3330
PDLB384	MAG	Light **chain variable** region		**US807 173 1** SEQ ID NO: 16	3331
PDLB385	MAG	Light chain vanable region		**US807 1731** SEQ ID NO: **17**	3332
PDLB386	*MAG*	Light **chain variable** region		**US807 173 1** SEQ ID NO: 18	3333
PDLB387	MAG	Light chain vanable region		**US807 1731** SEQ ID NO: 19	3334

PDLB388	MAI (myelin associated inhibitor)	Light chain variable region		WO2013158748 SEQ ID NO: 11	3335
PDLB389	MAI (myelin associated inhibitor)	Light chain variable region		WO2013158748 SEQ ID NO: 27	3336
PDLB390	NMDA	Light chain variable region		EP2805972 SEQ ID NO: 44	3337
PDLB391	NOGO	Light chain variable region	H1L6, H5L6, H6L6, H14L6, H15L6, H16L6, H17L6, H18L6, H19L6, H20L6, H21L6, H22L6, H23L6, H24L6, H25L6, H700L6	US20140147435 SEQ ID NO: 19	3338
PDLB392	NOGO	Light chain variable region	H1L13, H5L13, H6L13, H14L13, H15L13, H16L13, H17L13, H18L13, H19L13, H20L13, H21L13, H22L13, H23L13, H24L13, H25L13, H700L13	US20140147435 SEQ ID NO: 20	3339
PDLB393	NOGO	Light chain variable region	H1L14, H5L14, H6L14, H14L14, H15L14, H16L14, H17L14, H18L14, H19L14, H20L14, H21L14, H22L14, H23L14, H24L14, H25L14, H700L14	US20140147435 SEQ ID NO: 21	3340
PDLB394	NOGO	Light chain variable region	H1L15, H5L15, H6L15, H14L15, H15L15, H16L15, H17L15, H18L15, H19L15, H20L15, H21L15, H22L15, H23L15, H24L15, H25L15, H700L15	US20140147435 SEQ ID NO: 22	3341
PDLB395	NOGO	Light chain variable region	H1L16, H5L16, H6L16, H14L16, H15L16, H16L16, H17L16, H18L16, H19L16, H20L16, H21L16, H22L16, H23L16, H24L16, H25L16, H700L16	US20140147435 SEQ ID NO: 23	3342
PDLB396	NOGO	Light chain variable region	H1L17, H5L17, H6L17, H14L17, H15L17, H16L17, H17L17, H18L17, H19L17, H20L17, H21L17, H22L17, H23L17, H24L17, H25L17, H700L17	US20140147435 SEQ ID NO: 24	3343
PDLB397	NOGO	Light chain variable region	H1L18, H5L18, H6L18, H14L18, H15L18, H16L18, H17L18, H18L18, H19L18, H20L18, H21L18, H22L18, H23L18,	US20140147435 SEQ ID NO: 25	3344

			H24L18, H25L18, H700L18		
PDLB398	NOGO	Light chain variable region	H5L11, H6L11, H14L11, H15L11, H16L11, H17L11, H18L11, H19L11, H20L11, H21L11, H22L11, H23L11, H24L11, H25L11, H700L11	US20140147435 SEQ ID NO: 78	3345
PDLB399	Nogo-66	Light chain variable region	Antibody clone 50	US20140065155 SEQ ID NO: 4	3346
PDLB400	Nogo-66	Light chain variable region	Antibody clone 51	US20140065155 SEQ ID NO: 6	3347
PDLB401	NogoA/NiG	Light chain variable region	6A3-Ig4	WO2009056509 SEQ ID NO: 25	3348
PDLB402	NogoA/NiG	Light chain variable region	6A3-IgG1	WO2009056509 SEQ ID NO: 5	3349
PDLB403	RGM A	Light chain variable region	5F9.1-GL, 5F9.1-GL, 5F9.1-GL, 5F9.1-GL, 5F9.1-GL, 5F9.1-GL, 5F9.1-GL, 5F9.1-GL, 5F9.1-GL, h5F9.4, h5F9.11, h5F9.12	US20150183871 SEQ ID NO: 44	3350
PDLB404	RGM A	Light chain variable region	5F9.2-GL, 5F9.2-GL, 5F9.2-GL, 5F9.2-GL, 5F9.2-GL, 5F9.2-GL, 5F9.2-GL, 5F9.2-GL, 5F9.2-GL, h5F9.5, h5F9.19, h5F9.20	US20150183871 SEQ ID NO: 45	3351
PDLB405	RGM A	Light chain variable region	5F9.3-GL, 5F9.3-GL, 5F9.3-GL, 5F9.3-GL, 5F9.3-GL, 5F9.3-GL, 5F9.3-GL, 5F9.3-GL, 5F9.3-GL, h5F9.6, h5F9.21, h5F9.22	US20150183871 SEQ ID NO: 46	3352
PDLB406	RGM A	Light chain variable region	h5F9.5, h5F9.6, h5F9.7, h5F9.8, h5F9.9, h5F9.10	US20150183871 SEQ ID NO: 48	3353
PDLB407	RGM A	Light chain variable region	h5F9.11, h5F9.19, h5F9.21	US20150183871 SEQ ID NO: 49	3354
PDLB408	RGM A	Light chain variable region	h5F9.12, h5F9.20, h5F9.22, h5F9.23, h5F9.25, h5F9.25, h5F9.26	US20150183871 SEQ ID NO: 50	3355
PDLB409	RGM A	Light chain variable region	h5F9.1, h5F9.7, h5F9.23	US20150183871 SEQ ID NO: 51	3356
PDLB410	RGM A	Light chain variable region	h5F9.2, h5F9.8, h5F9.25	US20150183871 SEQ ID NO: 52	3357
PDLB411	RGMa	Light chain variable region	AE12-15	US20140023659 SEQ ID NO: 103	3358
PDLB412	RGMa	Light chain variable region	AE12-20	US20140023659 SEQ ID NO: 111	3359
PDLB413	RGMa	Light chain variable region	AE12-21	US20140023659 SEQ ID NO: 119	3360
PDLB414	RGMa	Light chain variable region	AE12-23	US20140023659 SEQ ID NO: 127	3361
PDLB415	RGMa	Light chain variable region	AE12-2	US20140023659 SEQ ID NO: 13	3362

PDLB416	RGMa	Light chain vanable region	**AE12-24**	US20140023659 SEQ ID NO: 135	3363
PDLB417	RGMa	Light **chain variable** region	AE12-3	**US20 140023659** SEQ ID NO: 21	3364
PDLB418	RGMa	Light chain vanable region	**AE1 2-4**	US20140023659 SEQ ID NO: 29	3365
PDLB419	RGMa	Light chain variable region	AE12-5	**US20140023659** SEQ ID NO: 37	3366
PDLB420	RGMa	Light **chain** variable region	AE12-6	US20 140023659 SEQ ID NO: 45	3367
PDLB421	RGMa	Light chain variable region	AE12-1	**US20140023659** SEQ ID NO: 5	3368
PDLB422	RGMa	Light **chain** variable region	AE12-7	US20 140023659 SEQ ID NO: 53	3369
PDLB423	RGMa	Light chain variable region	AE12-8	**US20140023659** SEQ ID NO: 61	3370
PDLB424	RGMa	Light **chain** variable region	AE12-13	US20 140023659 SEQ ID NO: 95	3371
PDLB425	**a-synuclein** aggregates	Light chain variable region	**Syn-01**	**WO2014132210** SEQ ID NO: 12	3372
PDLB426	**a-synuclein** aggregates	Light **chain** variable region	**Syn-Fl**	**WO2014132210** SEQ ID NO: 4	3373
PDLB427	a-synuclein aggregates	Light chain variable region	**Syn-F2**	**WO20 14 1322 10** SEQ **ID** NO: 8	**3374**
PDLB428	NOGO	Light **chain variable** region **humanized construct** LI **1**	2A10 construct	**WO200700342 1** SEQ **ID** NO: 78	3375
PDLB429	NOGO	Light **chain variable** region humanized construct L **13**	**2A 10 construct**	**WO200700342 1** SEQ **ID** NO: 20	3376
PDLB430	NOGi)	Light **chain variable** region humanized construct L14	2A10 construct	**WO2007003421** SEQ ID NO: 21	3377
PDLB431	NOGO	Light chain variable region **humanized construct** L **15**	2A10 construct	**WO2007003421** SEQ ID **NO:** 22	3378
PDLB432	NOGO	Light chain variable region **humanized construct** L **16**	2A10 construct	**WO2007003421** SEQ **ID** NO: 23	3379
PDLB433	NOCK)	Light chain vanable region humanized **construct** L **17**	2A10 construct	**WO2007003421** SEQ ID NO: 24	3380
PDLB434	NOGO	Light **chain** variable region humanized construct L i8	**2A10** construct	**WO200700342 1** SEQ ID NO: 25	3381
PDLB435	NOGO	Light **chain variable** region **humanized** construct L6	2A10 construct	**WO200700342 1** SEQ **ID** NO: 19	3382
PDLB436	**alpha syruiclein**	Light **chain version 3** (variable region+constant **region with arginine)**	Hu iM7	**US8790644** SEQ **ID** NO: 53	3383
PDLB437	alpha **synuclein**	Light chain version 3 (variable region+constant region without arginine)	HulH7	US8790644 SEQ **ID** NO: 54	3384

[00274] In one embodiment, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding one or more of the polypeptides that comprise a portion of filamentous bacteriophage gene 3 protein (g3p) sufficient to hind to and/or disaggregate amyloid described in International Publication No. WO2014193935, the contents of which are herein incorporated by reference in their entirety. As a non-limiting example, the pay load region of the AAV particle comprises one or more nucleic acid sequences encoding one or more of the polypeptides described in WO2014193935 may be used to treat, prevent and/or reduce the effects of Parkinson's Disease and/or dementia. As another non-limiting example, the pay load region of the AAV particle comprises one or more nucleic acid sequences encoding one or more of the polypeptides described in WO2014193935 may be used to treat, prevent and/or reduce the effects of Alzheimer's Disease. As another non-limiting example, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding one or more of the polypeptides described in WO2014193935 may be used to treat, prevent and/or reduce the effects of Huntington's Disease. As another non-limiting example, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding one or more of the polypeptides described in WO20I4193935 may be used to treat, prevent and/or reduce the effects of muscle disease such as, but not limited to, Multiple System Atrophy (MSA), Amyotrophic Lateral Sclerosis (ALS) and Duchenne Muscular Dystrophy (DMD).

Alzheimer's Disease Antibodies

[ΘΘ275] In one embodiment, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding one or more of the Alzheimer's Disease payload antibody polypeptides listed in Table 4 **(AD1-AD1178;** SEQ ID NO: 2948-2970, 2977-2998, 3018-3046, 3056-3076, 3110-3177, 3181-3196, 3205-3226, 3242-3268, 3275-3285, 3315-3371, 3375-3382, 3385-4258).

Table 4, Alzheimer's Disease Antibodies

Antibody No.	Target	Description	Antibody Name	Reference Information	SEQ ID NO
AD I	amyloid proteins	consensus sequence	M13 g3p, fd g3p, f1 g3p	US20150376239 SEQ ID NO: 4	2948
AD2	amyloid proteins	consensus sequence	12-2 g3p, Ike g3p	US20150376239 SEQ ID NO: 7	2949
AD3	Aβ amyloid	Consensus sequence for kappa chain		WO2006066049 SEQ ID NO: 14	3385
AD4	Aβ amyloid	Consensus sequence for kappa chain		WO2006066049 SEQ ID NO: 15	3386
AD5	Aβ amyloid	Consensus sequence for kappa chain		WO2006066049 SEQ ID NO: 16	3387

AD6	Aβ amyloid	Consensus sequence for kappa chain		WO2006066049 SEQ ID NO: 17	3388
AD7	Aβ amyloid	Consensus sequence for lambda chain		WO2006066049 SEQ ID NO: 18	3389
AD8	Aβ amyloid	Consensus sequence for lambda chain		WO2006066049 SEQ ID NO: 19	3390
AD9	Aβ amyloid	Consensus sequence for lambda chain		WO2006066049 SEQ ID NO: 20	3391
AD10	118-126 of α-synuclein	constant region	IgG1	US20150259404 SEQ ID NO: 38	2950
AD11	beta A4 peptide/Alpha beta 5	Fc region	Antibody A	WO2007068429 SEQ ID NO: 6	3392
AD12	amyloid proteins	Fusion protein	M13 g3p	US20150376239 SEQ ID NO: 1	2951
AD13	amyloid proteins	Fusion protein	Construct 5	US20150376239 SEQ ID NO: 11	2952
AD14	amyloid proteins	Fusion protein	Construct 6	US20150376239 SEQ ID NO: 13	2953
AD15	amyloid proteins	Fusion protein	fd N2	US20150376239 SEQ ID NO: 14	2954
AD16	amyloid proteins	Fusion protein	f1 N2	US20150376239 SEQ ID NO: 15	2955
AD17	amyloid proteins	Fusion protein	M13 N2	US20150376239 SEQ ID NO: 16	2956
AD18	amyloid proteins	Fusion protein	Ike N2	US20150376239 SEQ ID NO: 17	2957
AD19	amyloid proteins	Fusion protein	12-2 N2	US20150376239 SEQ ID NO: 18	2958
AD20	amyloid proteins	Fusion protein	If1 N2	US20150376239 SEQ ID NO: 19	2959
AD21	amyloid proteins	Fusion protein	fd g3p	US20150376239 SEQ ID NO: 2	2960
AD22	amyloid proteins	Fusion protein	Construct 3	US20150376239 SEQ ID NO: 20	2961
AD23	amyloid proteins	Fusion protein	Construct 3m g3p portion	US20150376239 SEQ ID NO: 24	2962
AD24	amyloid proteins	Fusion protein	If1 g3p	US20150376239 SEQ ID NO: 29	2963
AD25	amyloid proteins	Fusion protein	f1 g3p	US20150376239 SEQ ID NO: 3	2964
AD26	amyloid proteins	Fusion protein	fd g3p	US20150376239 SEQ ID NO: 30	2965
AD27	amyloid proteins	Fusion protein	Construct 8, rs-g3p (If1-N1N2)-hIgG1-Fc	US20150376239 SEQ ID NO: 31	2966
AD28	amyloid proteins	Fusion protein	I2-2 g3p	US20150376239 SEQ ID NO: 5	2967
AD29	amyloid proteins	Fusion protein	Ike g3p	US20150376239 SEQ ID NO: 6	2968
AD30	amyloid proteins	Fusion protein	If1 g3p	US20150376239 SEQ ID NO: 8	2969
AD31	amyloid proteins	Fusion protein	Construct 4	US20150376239 SEQ ID NO: 9	2970
AD32	ACTH	Heavy chain	Ab4	WO2015127288 SEQ ID NO: 121	2995

AD33	ACTH	Heavy chain	Ab5	WO2015127288 SEQ ID NO: 161	2996
AD34	ACTH	Heavy chain	Ab6	WO2015127288 SEQ ID NO: 201	2997
AD35	ACTH	Heavy chain	Ab7	WO2015127288 SEQ ID NO: 241	2977
AD36	ACTH	Heavy chain	Ab9	WO2015127288 SEQ ID NO: 281	2978
AD37	ACTH	Heavy chain	Ab10	WO2015127288 SEQ ID NO: 321	2979
AD38	ACTH	Heavy chain	Ab11	WO2015127288 SEQ ID NO: 361	2980
AD39	ACTH	Heavy chain	Ab12	WO2015127288 SEQ ID NO: 401	2981
AD40	ACTH	Heavy chain	Ab2	WO2015127288 SEQ ID NO: 41	2982
AD41	ACTH	Heavy chain	Ab1.H	WO2015127288 SEQ ID NO: 441	2983
AD42	ACTH	Heavy chain	Ab2.H	WO2015127288 SEQ ID NO: 481	2984
AD43	ACTH	Heavy chain	Ab3.H	WO2015127288 SEQ ID NO: 521	2985
AD44	ACTH	Heavy chain	Ab4.H	WO2015127288 SEQ ID NO: 561	2986
AD45	ACTH	Heavy chain	Ab6.H	WO2015127288 SEQ ID NO: 601	2987
AD46	ACTH	Heavy chain	Ab7.H	WO2015127288 SEQ ID NO: 641	2988
AD47	ACTH	Heavy chain	Ab7A.H	WO2015127288 SEQ ID NO: 681	2989
AD48	ACTH	Heavy chain	Ab10.H	WO2015127288 SEQ ID NO: 721	2990
AD49	ACTH	Heavy chain	Ab11.H	WO2015127288 SEQ ID NO: 761	2991
AD50	ACTH	Heavy chain	Ab11A.H	WO2015127288 SEQ ID NO: 801	2992
AD51	ACTH	Heavy chain	Ab3	WO2015127288 SEQ ID NO: 81	2993
AD52	ACTH	Heavy chain	Ab12.H	WO2015127288 SEQ ID NO: 841	2994
AD53	ACTH	Heavy chain	Ab1	WO2015127288 SEQ ID NO: 1	2998
AD54	Alpha beta fibril	Heavy chain	Gantenerumab	Immunogenetics Information System; CHAIN ID NO: 8894_H.	3393
AD55	amyloid beta peptide Aβ	Heavy chain		US719576 SEQ ID NO: 12	3394
AD56	Amyloid beta/BACE1	Heavy chain	2 Fab of Yw412.8.31	Wang, W. et al. "A Therapeutic Antibody Targeting BACE1 Inhibits Amyloid NO: -{beta}Production in Vivo" Sci Transl Med 3 (84), 84RA43 (2011), NCBI Accession # 3RIG_H (222aa)	3395

AD57	amyloid or amyloid-like proteins	Heavy chain	Humanized C2	WO2008061796 SEQ ID NO: 4	3396
AD58	amyloid protein	Heavy chain	C2	US20100150906 SEQ ID NO: 16	3397
AD59	amyloids	Heavy chain	#118	WO2010012004 SEQ ID NO: 11	3018
AD60	amyloids	Heavy chain	#121	WO2010012004 SEQ ID NO: 13	3019
AD61	amyloids	Heavy chain	#204	WO2010012004 SEQ ID NO: 16	3020
AD62	amyloids	Heavy chain	#205	WO2010012004 SEQ ID NO: 18	3021
AD63	APP	Heavy chain	F5.100	WO2014151747 SEQ ID NO: 2	3398
AD64	APP	Heavy chain	BBSI MAb	WO2014151747 SEQ ID NO: 24	3399
AD65	APP	Heavy chain	F5.87	WO2014151747 SEQ ID NO: 26	3400
AD66	APP	Heavy chain	F5.87	WO2014151747 SEQ ID NO: 52	3401
AD67	Aβ amyloids	Heavy chain	Humanized 12A11, version 3	US8784810 SEQ ID NO: 11	3402
AD68	Aβ amyloids	Heavy chain	Humanized 12A11, version 4.1	US8784810 SEQ ID NO: 12	3403
AD69	Aβ amyloids	Heavy chain	Humanized 12A11, version 4.2	US8784810 SEQ ID NO: 13	3404
AD70	Aβ amyloids	Heavy chain	Humanized 12A11, version 4.3	US8784810 SEQ ID NO: 14	3405
AD71	Aβ amyloids	Heavy chain	Humanized 12A11, version 4.4	US8784810 SEQ ID NO: 15	3406
AD72	Aβ amyloids	Heavy chain	Humanized 12A11, version 5.1	US8784810 SEQ ID NO: 16	3407
AD73	Aβ amyloids	Heavy chain	Humanized 12A11, version 5.2	US8784810 SEQ ID NO: 17	3408
AD74	Aβ amyloids	Heavy chain	Humanized 12A11, version 5.3	US8784810 SEQ ID NO: 18	3409
AD75	Aβ amyloids	Heavy chain	Humanized 12A11, version 5.4	US8784810 SEQ ID NO: 19	3410
AD76	Aβ amyloids	Heavy chain	Humanized 12A11, version 5.5	US8784810 SEQ ID NO: 20	3411
AD77	Aβ amyloids	Heavy chain	Humanized 12A11, version 5.6	US8784810 SEQ ID NO: 21	3412
AD78	Aβ amyloids	Heavy chain	Humanized 12A11, version 6.1	US8784810 SEQ ID NO: 22	3413
AD79	Aβ amyloids	Heavy chain	Humanized 12A11, version 6.2	US8784810 SEQ ID NO: 23	3414
AD80	Aβ amyloids	Heavy chain	Humanized 12A11, version 6.3	US8784810 SEQ ID NO: 24	3415
AD81	Aβ amyloids	Heavy chain	Humanized 12A11, version 6.4	US8784810 SEQ ID NO: 25	3416
AD82	Aβ amyloids	Heavy chain	Humanized 12A11, version 7	US8784810 SEQ ID NO: 26	3417
AD83	Aβ amyloids	Heavy chain	Humanized 12A11, version 8	US8784810 SEQ ID NO: 27	3418
AD84	Aβ amyloids	Heavy chain	Humanized 3D6 (Bapineuzumab), version 3	US8784810 SEQ ID NO: 5	3419

AD85	Aβ amyloids	Heavy chain	Humanized 12A11, version 2	US8784810 SEQ ID NO: 9	3420
AD86	beta amyloid	Heavy chain		US10476265 SEQ ID NO: 20	3421
AD87	beta amyloid	Heavy chain	(13C3)	US13319710 SEQ ID NO: 2	3422
AD88	beta amyloid	Heavy chain		US13319710 SEQ ID NO: 26	3423
AD89	beta amyloid	Heavy chain	C2	US20070166311 SEQ ID NO: 22	3424
AD90	beta amyloid peptide	Heavy chain	Solanezumab	Immunogenetics Information System; CHAIN ID NO: 9097_H.	3425
AD91	beta amyloid peptide	Heavy chain	Mature H1	WO2007113172 SEQ ID NO: 34	3426
AD92	beta amyloid peptide	Heavy chain	Mature H3	WO2007113172 SEQ ID NO: 38	3427
AD93	beta-amyloid	Heavy chain	Aducanumab, BIIB0307		3428
AD94	EAG1	Heavy chain	chimeric ImAb3	WO2006037604 SEQ ID NO: 12	3022
AD95	EAG1	Heavy chain	chimeric ImAb4	WO2006037604 SEQ ID NO: 16	3023
AD96	EAG1	Heavy chain	HC-ImAb3-humVH3-72	WO2006037604 SEQ ID NO: 20	3024
AD97	EAG1	Heavy chain	HC-ImAb4-humVH4-59	WO2006037604 SEQ ID NO: 24	3025
AD98	EAG1	Heavy chain	HC-ImAb3-humVH3 23	WO2006037604 SEQ ID NO: 28	3026
AD99	EAG1	Heavy chain	HC-ImAb3-humVH2 26	WO2006037604 SEQ ID NO: 32	3027
AD100	EAG1	Heavy chain	HC-ImAb4-humVH1-3	WO2006037604 SEQ ID NO: 36	3028
AD101	EAG1	Heavy chain	ImAb4	WO2006037604 SEQ ID NO: 4	3029
AD102	EAG1	Heavy chain	ImAb3	WO2006037604 SEQ ID NO: 8	3030
AD103	human beta-amyloid	Heavy chain	Ponezumab, PF-04360365, RN-1219, clone 9TL	US7807165 SEQ ID NO: 11	3429
AD104	IGG1 Abeta	Heavy chain	Humanized C2	US20090155249 SEQ ID NO: 16	3430
AD105	NOGO	Heavy chain	H6L13 FL	US20140147435 SEQ ID NO: 27	3031
AD106	NOGO	Heavy chain	H16L16 FL, H16L18 FL	US20140147435 SEQ ID NO: 31	3032
AD107	NOGO	Heavy chain	H18L16 FL	US20140147435 SEQ ID NO: 33	3033
AD108	NOGO	Heavy chain	H19L13 FL, H19L16 FL, H19L18 FL	US20140147435 SEQ ID NO: 92	3034
AD109	NOGO	Heavy chain	H20L13 FL, H20L16 FL, H20L18 FL	US20140147435 SEQ ID NO: 93	3035
AD110	NOGO	Heavy chain	H21L13 FL, H21L16 FL, H21L18 FL	US20140147435 SEQ ID NO: 94	3036
AD111	NOGO	Heavy chain	H25L13 FL, H25L16 FL, H25L18 FL	US20140147435 SEQ ID NO: 98	3037
AD112	Nogo receptor-1	Heavy chain	5B10	US20090215691 SEQ ID NO: 16	3038

AD113	Nogo receptor-1	Heavy chain	5B10	US20090215691 SEQ ID NO: 18	3039
AD114	PrPC and/or PrPSc	Heavy chain		US20150166668 SEQ ID NO: 10	3431
AD115	PrPC and/or PrPSc	Heavy chain		US8852587 SEQ ID NO: 4	3432
AD116	tau	Heavy chain	VH antibody	US20150252102 SEQ ID NO: 93	3433
AD117	tau	Heavy chain	hACI-36-3A8 Ab1	WO2013151762 SEQ ID NO: 24	3434
AD118	tau	Heavy chain	hACI-36-3B8 Ab1	WO2013151762 SEQ ID NO: 25	3435
AD119	tau	Heavy chain	hACI-36-3A8 Ab1.v2	WO2013151762 SEQ ID NO: 26	3436
AD120	tau	Heavy chain	hACI-36-3A8 Ab1.v3	WO2013151762 SEQ ID NO: 27	3437
AD121	tau	Heavy chain	hACI-36-3A8 Ab1.v4	WO2013151762 SEQ ID NO: 28	3438
AD122	tau	Heavy chain	hACI-36-3B8 Ab1.v2	WO2013151762 SEQ ID NO: 29	3439
AD123	tau	Heavy chain	hACI-36-3B8 Ab1.v3	WO2013151762 SEQ ID NO: 30	3440
AD124	tau	Heavy chain	hACI-36-3B8 Ab1.v4	WO2013151762 SEQ ID NO: 31	3441
AD125	tau	Heavy chain	IPN001	US8980271 SEQ ID NO: 14	3442
AD126	tau	Heavy chain	IPN002	US8980271 SEQ ID NO: 16	3443
AD127	tau	Heavy chain	ACI-36-3A8-Ab1 and hACI-36-2B6-Ab1	US20150175682 SEQ ID NO: 16	3444
AD128	tau	Heavy chain	hACI-36-3A8-Ab1 and hACI-36-2B6-Ab1	US20150175682 SEQ ID NO: 17	3445
AD129	tau	Heavy chain	hACI-36-2B6-Ab1 (IgG4)	US20150175682 SEQ ID NO: 25	3446
AD130	tau	Heavy chain	hACI-36-3A8-Ab1.v2 (IgG4)	US20150175682 SEQ ID NO: 26	3447
AD131	tau	Heavy chain	hACI-36-3A8-Ab1.v3 (IgG1)	US20150175682 SEQ ID NO: 27	3448
AD132	tau	Heavy chain	hACI-36-3A8-Ab1.v4 (IgG1 N297G)	US20150175682 SEQ ID NO: 28	3449
AD133	tau	Heavy chain	hACI-36-2B6-Ab1.v2 (IgG4)	US20150175682 SEQ ID NO: 29	3450
AD134	tau	Heavy chain	hACI-36-2B6-Ab1.v3 (IgG1)	US20150175682 SEQ ID NO: 30	3451
AD135	tau	Heavy chain	hACI-36-2B6-Ab1.v4 (IgG1 N297G)	US20150175682 SEQ ID NO: 31	3452
AD136	TrkA	Heavy chain	BXhVH1	WO2009098238 SEQ ID NO: 1	3453
AD137	TrkA	Heavy chain	mVHEP	WO2009098238 SEQ ID NO: 15	3454
AD138	TrkA	Heavy chain	BXhVH2	WO2009098238 SEQ ID NO: 2	3455
AD139	TrkA	Heavy chain	BXhVH3	WO2009098238 SEQ ID NO: 3	3456
AD140	TrkA	Heavy chain	BXhVH4	WO2009098238 SEQ ID NO: 4	3457
AD141	TrkA	Heavy chain	BXhVH5	WO2009098238 SEQ ID NO: 5	3458

AD142	TrkA	Heavy chain	HUVHWOV	WO2009098238 SEQ ID NO: 6	3459
AD143	trk-C (NT-3 trkC ligand)	Heavy chain	2250	US7615383 SEQ ID NO: 42	3040
AD144	trk-C (NT-3 trkC ligand)	Heavy chain	2253	US7615383 SEQ ID NO: 43	3041
AD145	trk-C (NT-3 trkC ligand)	Heavy chain	2256	US7615383 SEQ ID NO: 44	3042
AD146	trk-C (NT-3 trkC ligand)	Heavy chain	6.1.2	US7615383 SEQ ID NO: 45	3043
AD147	trk-C (NT-3 trkC ligand)	Heavy chain	6.4.1	US7615383 SEQ ID NO: 46	3044
AD148	trk-C (NT-3 trkC ligand)	Heavy chain	2345	US7615383 SEQ ID NO: 47	3045
AD149	trk-C (NT-3 trkC ligand)	Heavy chain	2349	US7615383 SEQ ID NO: 48	3046
AD150		Heavy chain	Crenezumab heavy CHAIN		3460
AD151		Heavy chain	Gantenerumab heavy chain		3461
AD152		Heavy chain	Ponezumab heavy CHAIN		3462
AD153		Heavy chain	Solanezumab heavy CHAIN		3463
AD154	Aβ amyloid	Heavy chain consensus sequence		WO2006066049 SEQ ID NO: 21	3464
AD155	Aβ amyloid	Heavy chain consensus sequence		WO2006066049 SEQ ID NO: 22	3465
AD156	Aβ amyloid	Heavy chain consensus sequence		WO2006066049 SEQ ID NO: 23	3466
AD157	Aβ amyloid	Heavy chain consensus sequence		WO2006066049 SEQ ID NO: 24	3467
AD158	Aβ amyloid	Heavy chain consensus sequence		WO2006066049 SEQ ID NO: 25	3468
AD159	Aβ amyloid	Heavy chain consensus sequence		WO2006066049 SEQ ID NO: 26	3469
AD160	Aβ amyloid	Heavy chain consensus sequence		WO2006066049 SEQ ID NO: 27	3470
AD161	BACE1	Heavy chain variable (nanobody)	Nanobody B1	WO2009121948 SEQ ID NO: 1	3471
AD162	BACE10	Heavy chain variable (nanobody)	Nanobody B15	WO2009121948 SEQ ID NO: 10	3472
AD163	BACE11	Heavy chain variable (nanobody)	Nanobody B16	WO2009121948 SEQ ID NO: 11	3473
AD164	BACE12	Heavy chain variable (nanobody)	Nanobody B21	WO2009121948 SEQ ID NO: 12	3474

AD165	**BACE13**	**Heavy chain** variable (nanobody)	Nanobody B25	**WO200912 1948** SEQ ID **NO: S3**	3475
AD166	**BACE14**	Heavy chain variable (nanobody)	Nanobody B26	**WO200912 1948** SEQ ID NO: 14	3476
AD 167	BACE 15	**Heavy** chain variable (nanobody)	Nanobody 1B3	**WO2009121948** SEQ ID NO: 15	3477
AD 168	BACE16	Heavy chain variable (nanobody)	Nanobody **10C2**	**WO2009121948** SEQ ID **NO:** 16	3478
AD 169	**BACE17**	Heavy chain variable (nanobody)	Nanobody **12B6**	**WO2009121948** SEQ **ID** NO: 17	3479
AD **170**	**BACE 18**	Heavy chain variable (nanobody)	Nanobody **10B5**	**WO2009121948** SEQ ID NO: 18	3480
AD171	BACE19	**Heavy** chain variable (nanobody)	Nanobody 13A5	**WO2009121948** SEQ ID **NO:** 19	3481
AD 172	**BACE2**	Heavy chain **variable (nanobody)**	Nanobody B2	**WO2009 12 1948** SEQ ID NO: 2	3482
AD173	BACE20	Heavy chain variable (nanobody)	Nanobody 2C6	**WO200912 1948** SEQ ID NO: 20	3483
AD 174	BACE21	**Heavy** chain variable (nanobody)	Nanobody 6A4	**WO2009121948** SEQ ID NO: **2 1**	3484
AD 175	BACE22	Heavy chain variable (nanobody)	Nanobody **10C4**	**WO2009121948** SEQ ID NO: 22	3485
AD 176	**BACE23**	Heavy chain variable (nanobody)	Nanobody 13B6	**WO2009121948** SEQ **ID** NO: 23	3486
AD 177	BACE24	**Heavy** chain variable (nanobody)	Nanobody 1A4	**WO2009121948** SEQ ID NO: 24	3487
AD178	BACE25	Heavy **chain** variable (nanobody)	Nanobody 2B6	**WO200912 1948** SEQ ID **NO:** 25	3488
AD 179	**BACE26**	Heavy chain variable **(nanobody)**	Nanobody 4A2	**WO2009 12 I948** SEQ ID NO: 26	3489
AD180	BACE27	Heavy chain variable (nanobody)	Nanobody **1** D4	**WO200912 1948** SEQ ID NO: 27	3490
AD181	BACE28	**Heavy** chain variable (nanobody)	Nanobody 9D3	**WO2009121948** SEQ ID NO: 28	3491
AD 182	BACE3	Heavy chain variable (nanobody)	Nanobody B3	**WO200912 1948** SEQ **ID** NO: 3	3492
AD 183	**BACE4**	Heavy chain variable (nanobody)	Nanobody **B5**	**WO200912 1948** SEQ ID NO: 4	3493
AD 184	BACE5	**Heavy** chain variable (nanobody)	Nanobody B8	**WO2009121948** SEQ ID NO: 5	3494

AD185	BACE6	Heavy chain variable (nanobody)	Nanobody B9	WO2009121948 SEQ ID NO: 6	3495
AD186	BACE7	Heavy chain variable (nanobody)	Nanobody B10	WO2009121948 SEQ ID NO: 7	3496
AD187	BACE8	Heavy chain variable (nanobody)	Nanobody B11	WO2009121948 SEQ ID NO: 8	3497
AD188	BACE9	Heavy chain variable (nanobody)	Nanobody B12	WO2009121948 SEQ ID NO: 9	3498
AD189	amyloid protein	Heavy chain constant region	IG GAMMA-4 CHAIN C REGION modified	US20100150906 SEQ ID NO: 17	3499
AD190	tau	Heavy chain constant region	hACI-36-3A8-Ab1 and hACI-36-2B6-Ab1	US20150175682 SEQ ID NO: 14	3500
AD191	ApoE	Heavy chain fragment	2e8 Fab	Trakhanov, S. et al. "Structure of a monoclonal 2E8 Fab antibody fragment specific for the low-density lipoprotein-receptor binding region of apolipoprotein E refined at 1.9 A", Acta Crystallogr. D Biol. Crystallogr. 55 (PT 1), 122-128 (1999), NCBI Accession # 12E8_P	3501
AD192	many - growth factors	Heavy chain fusion protein	H19L13, H19L16, H19L18, H19L14, H19L15, H19L17, H19L6, H19L11	US8053569 SEQ ID NO: 25	3056
AD193	many - growth factors	Heavy chain fusion protein	H20L13, H20L16, H20L18, H20L14, H20L15, H20L17, H20L6, H20L11	US8053569 SEQ ID NO: 28	3057
AD194	many - growth factors	Heavy chain fusion protein	H22L13, H22L16, H22L18, H22L14, H22L15, H22L17, H22L6, H22L11	US8053569 SEQ ID NO: 34	3058
AD195	many - growth factors	Heavy chain fusion protein	H5L11, H6L11, H14L11, H15L11, H16L11, H17L11, H18L11, H19L11, H20L11, H21L11, H22L11, H23L11, H24L11, H25L11, H700L11	US8053569 SEQ ID NO: 24	3059
AD196	NOGO	Heavy chain humanized construct H1	2A10 construct	WO2007003421 SEQ ID NO: 79	3060
AD197	NOGO	Heavy chain humanized construct H14	2A10 construct	WO2007003421 SEQ ID NO: 29	3061

AD198	NOGO	Heavy chain humanized construct H15	2A10 construct	WO2007003421 SEQ ID NO: 30	3062
AD199	NOGO	Heavy chain humanized construct H16	2A10 construct	WO2007003421 SEQ ID NO: 31	3063
AD200	NOGO	Heavy chain humanized construct H17	2A10 construct	WO2007003421 SEQ ID NO: 32	3064
AD201	NOGO	Heavy chain humanized construct H18	2A10 construct	WO2007003421 SEQ ID NO: 33	3065
AD202	NOGO	Heavy chain humanized construct H19	2A10 construct	WO2007003421 SEQ ID NO: 92	3066
AD203	NOGO	Heavy chain humanized construct H20	2A10 construct	WO2007003421 SEQ ID NO: 93	3067
AD204	NOGO	Heavy chain humanized construct H21	2A10 construct	WO2007003421 SEQ ID NO: 94	3068
AD205	NOGO	Heavy chain humanized construct H22	2A10 construct	WO2007003421 SEQ ID NO: 95	3069
AD206	NOGO	Heavy chain humanized construct H23	2A10 construct	WO2007003421 SEQ ID NO: 96	3070
AD207	NOGO	Heavy chain humanized construct H24	2A10 construct	WO2007003421 SEQ ID NO: 97	3071
AD208	NOGO	Heavy chain humanized construct H25	2A10 construct	WO2007003421 SEQ ID NO: 98	3072
AD209	NOGO	Heavy chain humanized construct H5	2A10 construct	WO2007003421 SEQ ID NO: 26	3073
AD210	NOGO	Heavy chain humanized construct H6	2A10 construct	WO2007003421 SEQ ID NO: 27	3074
AD211	NOGO	Heavy chain humanized construct H700	2A10 construct	WO2007003421 SEQ ID NO: 28	3075
AD212	RTN4 (NOGO)	Heavy chain IgG4, inmiunomodulator	Atinumab	US8163285 SEQ ID NO: 24	3076
AD213	tau	Heavy chain mature	ch4E4	US20150252102 SEQ ID NO: 20	3502
AD214	tau	Heavy chain mature	ch4E4(N30Q)	US20150252102 SEQ ID NO: 22	3503
AD215	A beta oligomers	Heavy chain variable region	IR-072	US8858949 SEQ ID NO: 1010	3504
AD216	A beta oligomers	Heavy chain variable region	IR-011	US8858949 SEQ ID NO: 114	3505
AD217	A beia oligomers	Heavy chain variable region	IR-030	US8858949 SEQ ID NO: 370	3506
AD218	A beta oligomers	Heavy chain variable region	IR-031	US8858949 SEQ ID NO: 386	3507
AD219	A beta oligomers	Heavy chain variable region	IR-032	US8858949 SEQ ID NO: 402	3508

AD220	A beta oligomers	Heavy chain variable region	IR-033	US8858949 SEQ ID NO: 418	3509
AD221	A beta oligomers	Heavy chain variable region	IR-034	US8858949 SEQ ID NO: 434	3510
AD222	A beta oligomers	Heavy chain variable region	IR-035	US8858949 SEQ ID NO: 450	3511
AD223	A beta oligomers	Heavy chain variable region	IR-036	US8858949 SEQ ID NO: 466	3512
AD224	A beta oligomers	Heavy chain variable region	IR-037	US8858949 SEQ ID NO: 482	3513
AD225	A beta oligomers	Heavy chain variable region	IR-038	US8858949 SEQ ID NO: 498	3514
AD226	A beta oligomers	Heavy chain variable region	IR-005	US8858949 SEQ ID NO: 50	3515
AD227	A beta oligomers	Heavy chain variable region	IR-081	US8858949 SEQ ID NO: 1154	3516
AD228	A beta oligomers	Heavy chain variable region	IR-039	US8858949 SEQ ID NO: 514	3517
AD229	A beta oligomers	Heavy chain variable region	IR-040	US8858949 SEQ ID NO: 530	3518
AD230	A beta oligomers	Heavy chain variable region	IR-041	US8858949 SEQ ID NO: 546	3519
AD231	A beta oligomers	Heavy chain variable region	IR-043	US8858949 SEQ ID NO: 562	3520
AD232	A beta oligomers	Heavy chain variable region	IR-044	US8858949 SEQ ID NO: 578	3521
AD233	A beta oligomers	Heavy chain variable region	IR-045	US8858949 SEQ ID NO: 594	3522
AD234	A beta oligomers	Heavy chain variable region	IR-046	US8858949 SEQ ID NO: 610	3523
AD235	A beta oligomers	Heavy chain variable region	IR-048	US8858949 SEQ ID NO: 626	3524
AD236	A beta oligomers	Heavy chain variable region	IR-049	US8858949 SEQ ID NO: 642	3525
AD237	A beta oligomers	Heavy chain variable region	IR-050	US8858949 SEQ ID NO: 658	3526
AD238	A beta oligomers	Heavy chain variable region	IR-082	US8858949 SEQ ID NO: 1170	3527
AD239	A beta oligomers	Heavy chain variable region	IR-006	US8858949 SEQ ID NO: 66	3528
AD240	A beta oligomers	Heavy chain variable region	IR-051	US8858949 SEQ ID NO: 674	3529
AD241	A beta oligomers	Heavy chain variable region	IR-052	US8858949 SEQ ID NO: 690	3530
AD242	A beta oligomers	Heavy chain variable region	IR-053	US8858949 SEQ ID NO: 706	3531
AD243	A beta oligomers	Heavy chain variable region	IR-054	US8858949 SEQ ID NO: 722	3532
AD244	A beta oligomers	Heavy chain variable region	IR-055	US8858949 SEQ ID NO: 738	3533
AD245	A beta oligomers	Heavy chain variable region	IR-056	US8858949 SEQ ID NO: 754	3534
AD246	A beta oligomers	Heavy chain variable region	IR-057	US8858949 SEQ ID NO: 770	3535
AD247	A beta oligomers	Heavy chain variable region	IR-058	US8858949 SEQ ID NO: 786	3536
AD248	A beta oligomers	Heavy chain variable region	IR-059	US8858949 SEQ ID NO: 802	3537

AD249	**A** beta **oligomers**	**Heavy chain** variable region	IR-083	**US8858949** SEQ ID NO: **1186**	3538
AD250	A beta oligomers	Heavy chain variable region	IR-060	**US8858949** SEQ ID NO: 818	3539
AD251	A beta oligomers	Heavy **chain variable** region	**IR-007**	**US8858949** SEQ **ID** NO: 82	3540
AD252	**A** beta oligomers	Heavy chain variable region	**IR-061**	**US8858949** SEQ ID NO: 834	3541
AD253	A beta oligomers	Heavy **chain** variable region	**IR-062**	**US8858949** SEQ **ID** NO: 850	3542
AD254	**A** beta oligomers	Heavy chain variable region	**IR-063**	**US8858949** SEQ ID NO: 866	3543
AD255	A beta oligomers	Heavy **chain** variable region	**IR-064**	**US8858949** SEQ **ID** NO: 882	3544
AD256	**A** beta oligomers	Heavy chain variable region	**IR-065**	**US8858949** SEQ ID NO: 898	3545
AD257	A beta oligomers	Heavy **chain** variable region	**IR-066**	**US8858949** SEQ ID NO: 914	3546
AD258	**A** beta oligomers	Heavy chain variable region	**IR-067**	**US8858949** SEQ ID NO: 930	3547
AD259	A beta **oligomers**	Heavy **chain** variable region	**IR-068**	**US8858949** SEQ ID NO: 946	3548
AD260	**A** beta oligomers	Heavy chain variable region	**IR-084**	**US8858949** SEQ ID **NO:** 1202	3549
AD261	A beta oligomers	Heavy chain variable region	**IR-069**	US8858949 SEQ ID NO: 962	3550
AD262	**A** beta oligomers	Heavy chain variable region	**IR-070**	**US8858949** SEQ ID **NO:** 978	3551
AD263	A beta oligomers	Heavy chain variable region	**IR-008**	US8858949 SEQ ID NO: 98	3552
AD264	**A** beta oligomers	Heavy chain variable region	**IR-071**	**US8858949** SEQ ID **NO:** 994	3553
AD265	A beta oligomers	Heavy chain variable region	IR-001	US8858949 SEQ ID NO: 2	3554
AD266	**A** beta oligomers	Heavy chain variable region	**IR-161.**	**US8858949** SEQ ID **NO:** 2878	3555
AD267	A beta oligomers	Heavy chain variable region	**IR-085**	US8858949 SEQ ID NO: 1218	3556
AD268	A beta oligomers	**Heavy** chain variable region	IR-086	US8858949 SEQ ID **NO:** 1234	3557
AD269	A beta oligomers	**Heavy** chain variable region	IR-087	US8858949 SEQ ID NO: 1250	3558
AD270	A beta oligomers	**Heavy** chain variable region	IR-088	US8858949 SEQ ID NO: 1266	3559
AD271	A beta oligomers	**Heavy** chain variable region	IR-089	US8858949 SEQ ID NO: 1282	3560
AD272	A beta oligomers	**Heavy** chain variable region	**IR-073**	US8858949 SEQ ID NO: 1026	3561
AD273	A beta oligomers	**Heavy** chain variable region	**IR-090**	US8858949 SEQ ID NO: 1298	3562
AD274	A beta oligomers	**Heavy** chain variable region	**IR-012**	US8858949 SEQ ID NO: 130	3563
AD275	A beta oligomers	**Heavy** chain variable region	IR-092	US8858949 SEQ ID NO: 1314	3564
AD276	A beta oligomers	**Heavy** chain variable region	IR-093	US8858949 SEQ ID NO: 1330	3565
AD277	A beta oligomers	**Heavy** chain variable region	IR-094	US8858949 SEQ ID **NO:** 1346	3566

AD278	A beta oligomers	Heavy chain variable region	IR-095	US8858949 SEQ ID NO: 1362	3567
AD279	A beta oligomers	Heavy chain variable region	IR-097	US8858949 SEQ ID NO: 1378	3568
AD280	A beta oligomers	Heavy chain variable region	IR-098	US8858949 SEQ ID NO: 1394	3569
AD281	A beta oligomers	Heavy chain variable region	IR-100	US8858949 SEQ ID NO: 1410	3570
AD282	A beta oligomers	Heavy chain variable region	IR-101	US8858949 SEQ ID NO: 1426	3571
AD283	A beta oligomers	Heavy chain variable region	IR-074	US8858949 SEQ ID NO: 1042	3572
AD284	A beta oligomers	Heavy chain variable region	IR-102	US8858949 SEQ ID NO: 1442	3573
AD285	A beta oligomers	Heavy chain variable region	IR-104	US8858949 SEQ ID NO: 1458	3574
AD286	A beta oligomers	Heavy chain variable region	IR-013	US8858949 SEQ ID NO: 146	3575
AD287	A beta oligomers	Heavy chain variable region	IR-105	US8858949 SEQ ID NO: 1474	3576
AD288	A beta oligomers	Heavy chain variable region	IR-106	US8858949 SEQ ID NO: 1490	3577
AD289	A beta oligomers	Heavy chain variable region	IR-107	US8858949 SEQ ID NO: 1506	3578
AD290	A beta oligomers	Heavy chain variable region	IR-108	US8858949 SEQ ID NO: 1522	3579
AD291	A beta oligomers	Heavy chain variable region	IR-109	US8858949 SEQ ID NO: 1538	3580
AD292	A beta oligomers	Heavy chain variable region	IR-110	US8858949 SEQ ID NO: 1554	3581
AD293	A beta oligomers	Heavy chain variable region	IR-112	US8858949 SEQ ID NO: 1570	3582
AD294	A beta oligomers	Heavy chain variable region	IR-075	US8858949 SEQ ID NO: 1058	3583
AD295	A beta oligomers	Heavy chain variable region	IR-114	US8858949 SEQ ID NO: 1586	3584
AD296	A beta oligomers	Heavy chain variable region	IR-115	US8858949 SEQ ID NO: 1602	3585
AD297	A beta oligomers	Heavy chain variable region	IR-116	US8858949 SEQ ID NO: 1618	3586
AD298	A beta oligomers	Heavy chain variable region	IR-014	US8858949 SEQ ID NO: 162	3587
AD299	A beta oligomers	Heavy chain variable region	IR-117	US8858949 SEQ ID NO: 1634	3588
AD300	A beta oligomers	Heavy chain variable region	IR-118	US8858949 SEQ ID NO: 1650	3589
AD301	A beta oligomers	Heavy chain variable region	IR-119	US8858949 SEQ ID NO: 1666	3590
AD302	A beta oligomers	Heavy chain variable region	IR-120	US8858949 SEQ ID NO: 1682	3591
AD303	A beta oligomers	Heavy chain variable region	IR-121	US8858949 SEQ ID NO: 1698	3592
AD304	A beta oligomers	Heavy chain variable region	IR-122	US8858949 SEQ ID NO: 1714	3593
AD305	A beta oligomers	Heavy chain variable region	IR-076	US8858949 SEQ ID NO: 1074	3594
AD306	A beta oligomers	Heavy chain variable region	IR-123	US8858949 SEQ ID NO: 1730	3595

AD307	A beta oligomers	Heavy chain variable region	IR-124	US8858949 SEQ ID NO: 1746	3596
AD308	A beta oligomers	Heavy chain variable region	IR-125	US8858949 SEQ ID NO: 1762	3597
AD309	A beta oligomers	Heavy chain variable region	IR-126	US8858949 SEQ ID NO: 1778	3598
AD310	A beta oligomers	Heavy chain variable region	IR-015	US8858949 SEQ ID NO: 178	3599
AD311	A beta oligomers	Heavy chain variable region	IR-127	US8858949 SEQ ID NO: 1794	3600
AD312	A beta oligomers	Heavy chain variable region	IR-002	US8858949 SEQ ID NO: 18	3601
AD313	A beta oligomers	Heavy chain variable region	IR-128	US8858949 SEQ ID NO: 1810	3602
AD314	A beta oligomers	Heavy chain variable region	IR-129	US8858949 SEQ ID NO: 1826	3603
AD315	A beta oligomers	Heavy chain variable region	IR-131	US8858949 SEQ ID NO: 1842	3604
AD316	A beta oligomers	Heavy chain variable region	IR-077	US8858949 SEQ ID NO: 1090	3605
AD317	A beta oligomers	Heavy chain variable region	IR-132	US8858949 SEQ ID NO: 1858	3606
AD318	A beta oligomers	Heavy chain variable region	IR-133	US8858949 SEQ ID NO: 1874	3607
AD319	A beta oligomers	Heavy chain variable region	IR-134	US8858949 SEQ ID NO: 1890	3608
AD320	A beta oligomers	Heavy chain variable region	IR-135	US8858949 SEQ ID NO: 1906	3609
AD321	A beta oligomers	Heavy chain variable region	IR-136	US8858949 SEQ ID NO: 1922	3610
AD322	A beta oligomers	Heavy chain variable region	IR-137	US8858949 SEQ ID NO: 1938	3611
AD323	A beta oligomers	Heavy chain variable region	IR-017	US8858949 SEQ ID NO: 194	3612
AD324	A beta oligomers	Heavy chain variable region	IR-138	US8858949 SEQ ID NO: 1954	3613
AD325	A beta oligomers	Heavy chain variable region	IR-139	US8858949 SEQ ID NO: 1970	3614
AD326	A beta oligomers	Heavy chain variable region	IR-140	US8858949 SEQ ID NO: 1986	3615
AD327	A beta oligomers	Heavy chain variable region	IR-078	US8858949 SEQ ID NO: 1106	3616
AD328	A beta oligomers	Heavy chain variable region	IR-141	US8858949 SEQ ID NO: 2002	3617
AD329	A beta oligomers	Heavy chain variable region	IR-142	US8858949 SEQ ID NO: 2018	3618
AD330	A beta oligomers	Heavy chain variable region	IR-143	US8858949 SEQ ID NO: 2034	3619
AD331	A beta oligomers	Heavy chain variable region	IR-144	US8858949 SEQ ID NO: 2050	3620
AD332	A beta oligomers	Heavy chain variable region	IR-145	US8858949 SEQ ID NO: 2066	3621
AD333	A beta oligomers	Heavy chain variable region	IR-146	US8858949 SEQ ID NO: 2082	3622
AD334	A beta oligomers	Heavy chain variable region	IR-147	US8858949 SEQ ID NO: 2098	3623
AD335	A beta oligomers	Heavy chain variable region	IR-020	US8858949 SEQ ID NO: 210	3624

AD336	A beta oligomers	Heavy chain variable region	IR-149	US8858949 SEQ ID NO: 2114	3625
AD337	A beta oligomers	Heavy chain variable region	IR-150	US8858949 SEQ ID NO: 2130	3626
AD338	A beta oligomers	Heavy chain variable region	IR-079	US8858949 SEQ ID NO: 1122	3627
AD339	A beta oligomers	Heavy chain variable region	IR-151	US8858949 SEQ ID NO: 2146	3628
AD340	A beta oligomers	Heavy chain variable region	IR-152	US8858949 SEQ ID NO: 2162	3629
AD341	A beta oligomers	Heavy chain variable region	IR-153	US8858949 SEQ ID NO: 2178	3630
AD342	A beta oligomers	Heavy chain variable region	IR-154	US8858949 SEQ ID NO: 2194	3631
AD343	A beta oligomers	Heavy chain variable region	IR-155	US8858949 SEQ ID NO: 2210	3632
AD344	A beta oligomers	Heavy chain variable region	IR-156	US8858949 SEQ ID NO: 2226	3633
AD345	A beta oligomers	Heavy chain variable region	IR-157	US8858949 SEQ ID NO: 2242	3634
AD346	A beta oligomers	Heavy chain variable region	IR-158	US8858949 SEQ ID NO: 2258	3635
AD347	A beta oligomers	Heavy chain variable region	IR-021	US8858949 SEQ ID NO: 226	3636
AD348	A beta oligomers	Heavy chain variable region	IR-159	US8858949 SEQ ID NO: 2274	3637
AD349	A beta oligomers	Heavy chain variable region	IR-080	US8858949 SEQ ID NO: 1138	3638
AD350	A beta oligomers	Heavy chain variable region	IR-022	US8858949 SEQ ID NO: 242	3639
AD351	A beta oligomers	Heavy chain variable region	IR-023	US8858949 SEQ ID NO: 258	3640
AD352	A beta oligomers	Heavy chain variable region	IR-024	US8858949 SEQ ID NO: 274	3641
AD353	A beta oligomers	Heavy chain variable region	IR-160	US8858949 SEQ ID NO: 2862	3642
AD354	A beta oligomers	Heavy chain variable region	IR-025	US8858949 SEQ ID NO: 290	3643
AD355	A beta oligomers	Heavy chain variable region	IR-026	US8858949 SEQ ID NO: 306	3644
AD356	A beta oligomers	Heavy chain variable region	IR-027	US8858949 SEQ ID NO: 322	3645
AD357	A beta oligomers	Heavy chain variable region	IR-028	US8858949 SEQ ID NO: 338	3646
AD358	A beta oligomers	Heavy chain variable region	IR-004	US8858949 SEQ ID NO: 34	3647
AD359	A beta oligomers	Heavy chain variable region	IR-029	US8858949 SEQ ID NO: 354	3648
AD360	AB (1-42) Globulomer	Heavy chain variable region	8F5 hum8 VL	US20090232801 SEQ ID NO: 1	3649
AD361	AB (1-42) Globulomer	Heavy chain variable region	Hu8F5VHv1	US20090232801 SEQ ID NO: 101	3650
AD362	AB (1-42) Globulomer	Heavy chain variable region	Hu8F5VHv2	US20090232801 SEQ ID NO: 102	3651
AD363	AB (1-42) Globulomer	Heavy chain variable region	Hu8F5VHv1	US20090232801 SEQ ID NO: 108	3652
AD364	AB (1-42) Globulomer	Heavy chain variable region	Hu8F5VHv2	US20090232801 SEQ ID NO: 110	3653

AD365	AB (20-42) Globulomer	Heavy chain variable region	VH 5F7huni8	US20090175847 SEQ ID NO: 1	3654
AD366	AB (20-42) Globulomer	Heavy chain variable region	VH 7C6hum7	US20090175847 SEQ ID NO: 3	3655
AD367	ADDL	Heavy chain variable region		WO2007050359 SEQ ID NO: 108	3656
AD368	ADDL	Heavy chain variable region		WO2007050359 SEQ ID NO: 138	3657
AD369	amyloid beta peptide AB	Heavy chain variable region		US7 19576 SEQ ID NO: 10	3658
AD370	amyloid beta peptide Aβ	Heavy chain variable region		US7 19576 SEQ ID NO: 8	3659
AD371	amyloid oligomers	Heavy chain variable region	F1 1G3	US9 125846 SEQ ID NO: 11	3110
AD372	amyloid or amylord-like proteins	Heavy chain variable region	Humanized C2 HIV AF 4	WO2008061796 SEQ ID NO: 3	3660
AD373	amyloid protein (IGG1 Abeta)	Heavy chain variable region	C2 HIV AF 4	US20100150906 SEQ ID NO: 15	3661
AD374	amyloid β peptide	Heavy chain variable region	FvlEl	US8222002 SEQ ID NO: 1	3662
AD375	amyloid β peptide	Heavy chain variable region	VLA2	US8222002 SEQ ID NO: 101	3663
AD376	amyloid β peptide	Heavy chain variable region	FvlE4	US8222002 SEQ ID NO: 11	3664
AD377	amyloid β peptide	Heavy chain variable region	Fv lE7	US8222002 SEQ ID NO: 21	3665
AD378	amyloid β peptide	Heavy chain variable region	Fv2A7	US8222002 SEQ ID NO: 31	3666
AD379	amyloid β peptide	Heavy chain variable region	Fv2A8	US8222002 SEQ ID NO: 41	3667
AD380	amyloid β peptide	Heavy chain variable region	Fv2B6	US8222002 SEQ ID NO: 51	3668
AD381	amyloid β peptide	Heavy chain variable region	B7	US8222002 SEQ ID NO: 61	3669
AD382	amyloid β peptide	Heavy chain variable region	B6	US8222002 SEQ ID NO: 71	3670
AD383	amyloid β peptide	Heavy chain variable region	F10	US8222002 SEQ ID NO: 81	3671
AD384	amyloid β peptide	Heavy chain variable region	D1	US8222002 SEQ ID NO: 91	3672
AD385	ApoE-CTD	Heavy chain variable region	807B-M0001-B07	WO200505 1998 SEQ ID NO: 135	3673
AD386	ApoE-CTD	Heavy chain variable region	807B-M0004-A03	WO2005051998 SEQ ID NO: 136	3674
AD387	ApoE-CTD	Heavy chain variable region	807B-M0004-A05	WO200505 1998 SEQ ID NO: 137	3675
AD388	ApoE-CTD	Heavy chain variable region	807B-M0004-C04	WO2005051998 SEQ ID NO: 138	3676
AD389	ApoE-CTD	Heavy chain variable region	807B-M0004-C05	WO200505 1998 SEQ ID NO: 139	3677
AD390	ApoE-CTD	Heavy chain variable region	807B-M0004-F06	WO2005051998 SEQ ID NO: 140	3678
AD391	ApoE-CTD	Heavy chain variable region	807B-M0004-F10	WO200505 1998 SEQ ID NO: 141	3679
AD392	ApoE-CTD	Heavy chain variable region	807B-M0004-H03	WO2005051998 SEQ ID NO: 142	3680
AD393	ApoE-CTD	Heavy chain variable region	807B-M0009-C03	WO200505 I998 SEQ ID NO: 143	3681

AD394	ApoE-CTD	Heavy cliain variable region	807B-M0009-F06	WO200505 I998 SEQ ID NO: 344	3682
AD395	ApoE-CTD	Heavy chain variable region	807B-M0013-A12	WO2005051998 SEQ ID NO: 145	3683
AD396	ApoE-CTD	Heavy cliain variable region	807B-M0079-D I0	WO200505 I998 SEQ ID NO: 146	3684
AD397	ApoE-CTD	Heavy chain variable region	807B-M008 I-F12	WO2005051998 SEQ ID NO: 147	3685
AD398	ApoE-CTD	Heavy cliain variable region	807B-M0081-H03	WO200505 I998 SEQ ID NO: 148	3686
AD399	ApoE-CTD	Heavy chain variable region	807B-M0083-E I1	WO2005051998 SEQ ID NO: 149	3687
AD400	ApoE-CTD	Heavy chain variable region	807A-M0027-E1 I	WO200505 I998 SEQ ID NO: 39	3688
AD401	ApoE-CTD	Heavy chain variable region	807A-M0028-B02	WO2005051998 SEQ ID NO: 40	3689
AD402	ApoE-CTD	Heavy chain variable region	807A-M0026-F05	WO200505 I998 SEQ ID NO: 41	3690
AD403	APP	Heavy chain variable region		WO201415 1747 SEQ NO 35	369 1
AD404	APP	Heavy chain variable region		WO2014 15 1747 SEQ NO 37	3692
AD405	APP	Heavy chain variable region		WO201415 1747 SEQ NO 39	3693
AD406	APP	Heavy chain variable region		WO201415 1747 SEQ NO 41	3694
AD407	APP	Heavy chain variable region		WO201415 1747 SEQ NO 43	3695
AD408	Aβ amyloid	Heavy cliain variable region	15C1 1	WO2006066049 SEQ ID NO: 4	3696
AD409	Aβ amyloid	Heavy chain variable region	9G8	WO2006066049 SEQ ID NO: 5	3697
AD410	Aβ amyloid	Heavy cliain variable region	266	WO2006066049 SEQ ID NO: 6	3698
AD4 I I	Aβ amyloid	Heavy chain variable region	I2A1 I vl	WO2006066089 SEQ ID NO: 10	3699
AD412	Aβ amyloid	Heavy cliain variable region	v2	WO2006066089 SEQ ID NO: 13	3700
AD413	Ap amyloid	Heaw chain variable region	v2. 1	WO2006066089 SEQ ID NO: 14	3701
AD414	Aβ amyloid	Heavy chain variable region	v3	WO2006066089 SEQ ID NO: 15	3702
AD415	Ap amyloid	Heaw chain variable region	v4. 1	WO2006066089 SEQ ID NO: 16	3703
AD416	Aβ amyloid	Heavy chain variable region	v4.2	WO2006066089 SEQ ID NO: 17	3704
AD417	Ap amyloid	Heaw chain variable region	v4.3	WO2006066089 SEQ ID NO: 18	3705
AD418	Aβ amyloid	Heavy chain variable region	v4.4	WO2006066089 SEQ ID NO: 19	3706
AD419	Ap amyloid	Heaw chain variable region	v5. 1	WO2006066089 SEQ ID NO: 20	3707
AD420	Aβ amyloid	Heavy chain variable region	v5.2	WO2006066089 SEQ ID NO: 21	3708
AD421	Ap amyloid	Heaw chain variable region	v5.3	WO2006066089 SEQ ID NO: 22	3709
AD422	Aβ amyloid	Heavy chain variable region	v5.4	WO2006066089 SEQ ID NO: 23	3710

AD423	A β amyloid	**Heavy chain** variable region	**v5.5**	**WO2006066089** SEQ ID **NO:** 24	3711
AD424	A β amyloid	Heavy chain variable region	**v5.5**	**WO2006066089** SEQ ID **NO:** 25	3712
AD425	A β amyloid	Heavy **chain variable** region	**v6.1**	**WO2006066089** SEQ ID NO: 26	3713
AD426	A β amyloid	Heavy chain variable region	**v6.2**	**WO2006066089** SEQ ID **NO:** 27	**3714**
AD427	A β amyloid	Heavy **chain** variable region	**v6.1**	**WO2006066089** SEQ ID NO: 28	3715
AD428	A β amyloid	Heavy chain variable region	**v6.2**	**WO2006066089** SEQ ID **NO:** 29	3716
AD429	A β amyloid	Heavy **chain** variable region	**v7**	**WO2006066089** SEQ ID NO: **30**	3717
AD430	A β amyloid	Heavy chain variable region	**v8**	**WO2006066089** SEQ ID **NO: 31**	3718
AD43 i	A β amyloid	Heavy **chain** variable region	**v3. 1**	**WO2006066089** SEQ ID NO: **36**	3719
AD432	A β amyloid	Heavy chain variable region	**GenBank BAC0 1733**	**WO2006066089** SEQ ID **NO:** 8	3720
AD433	A β amyloid	Heavy **chain** variable region	**A 19**	**WO2006066089** SEQ ID **NO:** 9	3721
AD434	A β amyloids	Heavy chain variable region	**Humanized** 3D6 **(Bapineuzumab)**	**US8784810** SEQ ID **NO:** 2	3722
AD435	A β amyloids	Heavy chain variable region	Humanized **10D5**	**US8784810** SEQ ID **NO:** 29	3723
AD436	A β amyloids	Heavy chain variable region	**Humanized** 3D6 (Bapineuzumab), version 2	**US8784810** SEQ ID **NO:** 4	3724
AD437	A β amyloids	**Heavy** chain variable region	Humanized 12A1 1	**US8784810** SEQ ID NO: 8	3725
AD438	A β peptide	**Heavy** chain variable region		**US8066999** SEQ ID **NO:** 2	3726
AD439	A β peptide	**Heavy** chain variable region		**US8066999** SEQ ID NO: 3	3727
AD44G	A β polypeptide	**Heavy** chain variable region	preferred embodiment 6, **11, 12**	WO2008084402 SEQ ID **NO:** 148	3728
AD441	A β polypeptide	Heavy **chain** variable region		**WO2008084402** SEQ ID **NO:** 57	3729
AD442	A β polypeptide	**Heavy** chain variable region		**WO2008084402** SEQ ID **NO:** 58	3730
AD443	A β polypeptide	Heavy **chain** variable region		**WO2008084402** SEQ ID **NO:** 59	3731
AD444	A β polypeptide	Heavy chain variable region	preferred embodiment **1,** 2, 3, **4, 5,** 9	**WO2008084402** SEQ ID **NO:** 60	3732
AD445	A β polypeptide	Heavy **chain** variable region	preferred embodiment **7, 10,** S3	**WO2008084402** SEQ ID **NO:** 61	3733
AD446	A β polypeptide	Heavy chain variable region	preferred embodiment 8	**WO2008084402** SEQ ID **NO:** 62	3734
AD447	A β polypeptide	Heavy **chain** variable region		**WO2008084402** SEQ ID **NO:** 63	3735
AD448	A β polypeptide	Heavy chain variable region		**WO2008084402** SEQ ID **NO:** 64	3736
AD449	A β polypeptide	Heavy **chain** variable region		**WO2008084402** SEQ ID **NO:** 65	3737
AD450	A β polypeptide	Heavy chain variable region		**WO2008084402** SEQ ID **NO:** 66	3738
AD45 i	A β polypeptide	Heavy **chain** variable region		**WO2008084402** SEQ ID NO: 67	3739

AD452	A β polypeptide	**Heavy chain** variable region		**WO2008084402** SEQ ID **NO:** 68	3740
AD453	A β polypeptide	Heavy chain variable region		**WO2008084402** SEQ ID **NO:** 69	3741
AD454	A β polypeptide	Heavy chain **variable** region		**WO2008084402** SEQ ID NO: 70	3742
AD455	A β polypeptide	Heavy chain variable region		**WO2008084402** SEQ ID NO: 71	3743
AD456	beta **A4 peptide**/Alpha beta 4	Heavy chain variable region	Antibody **A**	**WO2007068429** SEQ ID NO: 2	3744
AD457	beta amyloid	Heavy chain variable region	**Kabat** ID 000333	US7256273 SEQ ID NO: 34	3745
AD458	beta amyloid	Heavy chain variable region	**Gennline VH4-6**	US7256273 SEQ ID **NO:** 36	3746
AD459	beta amyloid	Heavy chain variable region	**Germline** VH4-6	US7256273 SEQ ID NO: 38	3747
AD460	beta amyloid	Heavy chain variable region	**12B4**	**US7256273** SEQ ID **NO:** 4	3748
AD461	beta amyloid	Heavy chain variable region	humanized **12B4**	US7256273 SEQ ID NO: 8	3749
AD462	beta amyloid	**Heavy chain** variable region	ESBA212	**US8323647** SEQ ID NO: 17	3750
AD463	beta amyloid	**Heavy** chain variable region	Framework 2.3	US8323647 SEQ ID NO: 18	3751
AD464	beta amyloid	**Heavy chain** variable region	**22C4**	**US8323647** SEQ ID NO: **19**	3752
AD465	beta amyloid	**Heavy** chain variable region	VH H	US8323647 SEQ ID NO: 20	3753
AD466	beta amyloid	**Heavy chain** variable region	**VH I**	US8323647 SEQ ID NO: 21	3754
AD467	beta amyloid	**Heavy** chain variable region	**VH** J	US8323647 SEQ ID NO: 22	3755
AD468	beta amyloid	**Heavy chain** variable region	**VH K**	US8323647 SEQ ID NO: 23	3756
AD469	beta amyloid	**Heavy** chain variable region		**US10476265** SEQ ID NO: 10	3757
AD470	beta amyloid	Heavy **chain** variable region		**US10476265** SEQ ID NO: **11**	3758
AD471	beta amyloid	**Heavy** chain variable region		**US10476265** SEQ ID NO: 12	3759
AD472	beta amyloid	Heavy **chain** variable region	**ACI-12-Ab-1 1**	**US20 140 199323** SEQ ID **NO:** 10	3760
AD473	beta amyloid	Heavy chain variable region	**ACI-U-Ab-9**	**US201401 99323** SEQ ID **NO:** 8	3761
AD474	beta amyloid	Heavy **chain** variable region	**8C5**	**US20150071915** SEQ ID **NO:** 19	3762
AD475	beta amyloid	Heavy chain variable region	8F5	**US2015007 19 15** SEQ ID **NO: 3**	3763
AD476	beta amyloid	Heavy **chain** variable region	gennline VH3-23	**US7189819** SEQ ID NO: 10	3764
AD477	beta amyloid	Heavy chain variable region		**US7189819** SEQ ID NO: 12	3765
AD478	beta amyloid	Heavy **chain** variable region	10D5	**US7189819** SEQ ID NO: 16	3766
AD479	beta amyloid	Heavy chain variable region	m3D6	**US7189819** SEQ ID NO: 4	3767
AD480	beta amyloid	Heavy chain variable region	**humanized** 3D6	**US7189819** SEQ ID NO: 8	3768

AD481	beta amyloid	Heavy chain variable region	Kabat ID 109230	US7189819 SEQ ID NO: 9	3769
AD482	beta amyloid	Heavy chain variable region	Bapineuzumab, AAB-001	US8613920 SEQ ID NO: 2	3770
AD483	beta amyloid peptide	Heavy chain variable region	M99675	WO2007 113172 SEQ ID NO: 21	3771
AD484	beta amyloid peptide	Heavy chain variable region	Humanized H1	WO20071 13172 SEQ ID NO: 26	3772
AD485	beta amyloid peptide	Heavy chain variable region	Humanized H2	WO2007 113172 SEQ ID NO: 28	3773
AD486	beta amyloid peptide	Heavy chain variable region	Humanized H3	WO2007113172 SEQ ID NO: 30	3774
AD487	BETA-AMYLOID	Heavy chain variable region	NI-101.12	WO200808 1008 SEQ ID NO: 10	3775
AD488	BETA-AMYLOID	Heavy chain variable region	NI-101. 13	WO2008081008 SEQ ID NO: 14	3776
AD489	BETA-AMYLOID	Heavy chain variable region	NI-10 1. 12F6A	WO200808 1008 SEQ ID NO: 39	3777
AD490	BETA-AMYLQID	Heavy chain variable region	N1-101.10	WO2008081008 SEQ ID NO: 4	3778
AD49 l	BETA-AMYLOID	Heavy chain variable region	Ni-101.13A	WO200808 1008 SEQ ID NO: 42	3779
AD492	BETA-AMYLOID	Heavy chain variable region	N1-101. 13A	WO2008081008 SEQ ID NO: 44	3780
AD493	BETA-AMYLOID	Heavy chain variable region	NI-101. 11	WO200808 1008 SEQ ID NO: 6	3781
AD494	OR6 and P75	Heavy chain variable region	1P1D6.3	WO20 10062904 SEQ ID NO: 107	3116
AD495	DR6 and P75	Heavy chain variable reason	1P2F2. 1	WO2010062904 SEQ ID NO: 117	3117
AD496	DR6 and P75	Heavy chain variable region	IPSD 10.2	WO20 10062904 SEQ ID NO: 127	3118
AD497	DR6 and P75	Heavy chain variable region	M51-H09	WO20 10062904 SEQ ID NO: 17	3119
AD498	DR6 and P75	Heavy chain variable region	M53-E04	WO20 10062904 SEQ ID NO: 27	3120
AD499	DR6 and P75	Heavy chain variable region	M53-F04	WO20 10062904 SEQ ID NO: 37	3121
AD500	DR6 and P75	Heavy chain variable region	M62-B02	WO20 10062904 SEQ ID NO: 47	3122
AD501	DR6 and P75	Heavy chain variable region	M63-E10	WO20 10062904 SEQ ID NO: 57	3123
AD502	DR6 and P75	Heavy chain variable region	M66-B03	WO20 10062904 SEQ ID NO: 67	3111
AD503	DR6 and P75	Heavy chain variable region	M50-H01	WO20 10062904 SEQ ID NO: 7	3112
AD504	DR6 and P75	Heavy chain variable region	M67-G02	WO20 10062904 SEQ ID NO: 77	3113
AD505	DR6 and P75	Heavy chain variable region	M72-F03	WO20 10062904 SEQ ID NO: 87	3114
AD506	DR6 and P75	Heavy chain variable region	M73-C04	WO20 10062904 SEQ ID NO: 97	3115
AD507	10D5	Heavy chain variable region		WO2002088307 SEQ ID NO: 10	3782
AD508	10D5	Heavy chain variable region		WO2002088307 SEQ ID NO: 12	3783
AD509	10 D5	Heavy chain variable region		WO2002088307 SEQ ID NO: 8	3784

AD510	LPG (lysophosphatidylglucoside)	Heavy chain variable region	#7	US8591902 SEQ ID NO: 18	3124
AD511	LPG (lysophosphatidylglucoside)	Heavy chain variable region	#15	US8591902 SEQ ID NO: 8	3125
AD512	MAG	Heavy chain variable region		US8071731 SEQ ID NO: 13	3126
AD513	MAG	Heavy chain variable region		US8071731 SEQ ID NO: 14	3127
AD514	MAG	Heavy chain variable region		US8071731 SEQ ID NO: 15	3128
AD515	MAI (myelin associated inhibitor)	Heavy chain variable region		WO2013158748 SEQ ID NO: 1	3129
AD516	MAI (myelin associated inhibitor)	Heavy chain variable region		WO2013158748 SEQ ID NO: 17	3130
AD517	NMDA	Heavy chain variable region		EP2805972 SEQ ID NO: 43	3131
AD518	NOGO	Heavy chain variable region	H5L13, H5L16, H5L18, H5L14, H5L15, H5L17, H5L6, H5L11	US20140147435 SEQ ID NO: 11	3132
AD519	NOGO	Heavy chain variable region	H6L13, H6L16, H6L18, H6L14, H6L15, H6L17, H6L6	US20140147435 SEQ ID NO: 12	3133
AD520	NOGO	Heavy chain variable region	H700L13, H700L16, H700L18, H700L14, H700L15, H700L17, H700L6, H700L11	US20140147435 SEQ ID NO: 13	3134
AD521	NOGO	Heavy chain variable region	H14L13, H14L16, H14L18, H14L14, H14L15, H14L17, H14L6, H14L11	US20140147435 SEQ ID NO: 14	3135
AD522	NOGO	Heavy chain variable region	H15L13, H15L16, H15L18, H15L14, H15L15, H15L17, H15L6, H15L11	US20140147435 SEQ ID NO: 15	3136
AD523	NOGO	Heavy chain variable region	H16L13, H16L16, H16L18, H16L14, H16L15, H16L17, H16L6, H16L11	US20140147435 SEQ ID NO: 16	3137
AD524	NOGO	Heavy chain variable region	H17L13, H17L16, H17L18, H17L14, H17L15, H17L17, H17L6, H17L11	US20140147435 SEQ ID NO: 17	3138
AD525	NOGO	Heavy chain variable region	H18L13, H18L16, H18L18, H18L14, H18L15, H18L17, H18L6, H18L11	US20140147435 SEQ ID NO: 18	3139
AD526	NOGO	Heavy chain variable region	H1L13, H1L16, H1L18, H1L14, H1L15, H1L17, H1L6	US20140147435 SEQ ID NO: 77	3140
AD527	NOGO	Heavy chain variable region	H19L13, H19L16, H19L18, H19L14, H19L15, H19L17, H19L6, H19L11	US20140147435 SEQ ID NO: 85	3141
AD528	NOGO	Heavy chain variable region	H20L13, H20L16, H20L18, H20L14,	US20140147435 SEQ ID NO: 86	3142

			H20L15, H20L17, H20L6, H20L11		
AD529	NOGO	Heavy chain variable region	H21L13, H21L16, H21L18, H21L14, H21L15, H21L17, H21L6, H21L11	US20140147435 SEQ ID NO: 87	3143
AD530	NOGO	Heavy chain variable region	H22L13, H22L16, H22L18, H22L14, H22L15, H22L17, H22L6, H22L11	US20140147435 SEQ ID NO: 88	3144
AD531	NOGO	Heavy chain variable region	H23L13, H23L16, H23L18, H23L14, H23L15, H23L17, H23L6, H23L11	US20140147435 SEQ ID NO: 89	3145
AD532	NOGO	Heavy chain variable region	H24L13, H24L16, H24L18, H24L14, H24L15, H24L17, H24L6, H24L11	US20140147435 SEQ ID NO: 90	3146
AD533	NOGO	Heavy chain variable region	H25L13, H25L16, H25L18, H25L14, H25L15, H25L17, H25L6, H25L11	US20140147435 SEQ ID NO: 91	3147
AD534	Nogo-66	Heavy chain variable region	Antibody clone 50	US20140065155 SEQ ID NO: 3	3148
AD535	Nogo-66	Heavy chain variable region	Antibody clone 51	US20140065155 SEQ ID NO: 5	3149
AD536	NogoA/NiG	Heavy chain variable region	6A3-Ig4	WO2009056509 SEQ ID NO: 24	3150
AD537	NogoA/NiG	Heavy chain variable region	6A3-IgG1	WO2009056509 SEQ ID NO: 4	3151
AD538	N-terminal region of Aβ8-x peptide	Heavy chain variable region	Antibody Tea 1.1 (Secreted by Hybridoma IGH525)	US20110059092 SEQ ID NO: 10	3785
AD539	N-terminal region of Aβ8-x peptide	Heavy chain variable region	Antibody TeiA 1.6 (Secreted by Hybridoma IGH521)	US20110059092 SEQ ID NO: 2	3786
AD540	N-terminal region of Aβ8-x peptide	Heavy chain variable region	Antibody TeiA 1.7 (Secreted by Hybridoma IGH522)	US20110059092 SEQ ID NO: 4	3787
AD541	N-terminal region of Aβ8-x peptide	Heavy chain variable region	Antibody TeiA 1.8 (Secreted by Hybridoma IGH523)	US20110059092 SEQ ID NO: 6	3788
AD542	N-terminal region of Aβ8-x peptide	Heavy chain variable region	Antibody TeiA 2b.6 (Secreted by Hybridoma IGH524)	US20110059092 SEQ ID NO: 8	3789
AD543	oligomers of N-terminal truncated Aβ	Heavy chain variable region	9D5	US8795664 SEQ ID NO: 26	3790
AD544	oligomers of N-terminal truncated Aβ	Heavy chain variable region	8C4	US8795664 SEQ ID NO: 30	3791
AD545	PrP	Heavy chain variable region	ICSM18VH	US20140294844 SEQ ID NO: 4	3792
AD546	PrPC and/or PrPSc	Heavy chain variable region		US20150166668 SEQ ID NO: 8	3793
AD547	pyroglutamated A β	Heavy chain variable region		WO2012136552 SEQ ID NO: 25	3794
AD548	pyroglutamated A β	Heavy chain variable region		WO2012136552 SEQ ID NO: 29	3795

AD549	pvroglutamated A β	Heavy chain variable region		WO2012136552 SEQ ID NO: 5	3796
AD550	pyiDglutamated A β	Heavy chain variable region		WO2012 136552 SEQ ID NO: 9	3797
AD55 i	RGM A	Heavy chain variable region	5F9. 1-GL	US2015018387 I SEQ ID NO: 35	3152
AD552	RGM A	Heavy chain variable region	5F9.2-C-L	US20 l50l83871 SEQ ID NO: 36	3153
AD553	RGM A	Heavy chain variable region	5F9.3-GL	US2015018387 I SEQ ID NO: 37	3154
AD554	RGM A	Heavy chain variable region	5F9.4-C-L	US20 l50l83871 SEQ ID NO: 38	3155
AD555	RGM A	Heavy chain variable region	5F9.5-GL	US2015018387 I SEQ ID NO: 39	3156
AD556	RGM A	Heavy chain variable region	5F9.6-C-L	US20 150l83871 SEQ ID NO: 40	3157
AD557	RGM A	Heavy chain variable region	5F9.7-GL	US2015018387 I SEQ ID NO: 41	3158
AD558	RGM A	Heavy chain variable region	5F9.8-C-L	US20 150l83871 SEQ ID NO: 42	3159
AD559	RGM A	Heavy chain variable region	5F9.9-GL	US2015018387 I SEQ ID NO: 43	3160
AD560	RGM A	Heavy chain variable region	h5F9.1, h5F9. 1, li5F9.1, h5F9. l, ii5F9.1, h5F9.2, h5F9.3	U820 150183871 SEQ ID NO: 47	3161
AD561	RGM A	Heavy chain variable region	h5F9.3, h5F9.9, h5F9.25	US20150183871 SEQ ID NO: 53	3162
AD562	RGM A	Heavy chain variable region	h5F9.4, h5F9. 10, h5F9.26	US20 150 18387 l SEQ ID NO: 54	3163
AD563	RGMa	Heavy chain variable region	AE12- 1	US20140023659 SEQ ID NO: I	3164
AD564	RGMa	Heavy chain variable region	AEI2-20	US20 140023659 SEQ ID NO: 107	3165
AD565	RGMa	Heavy chain variable region	AE 12-21	US20 140023659 SEQ ID NO: 115	3166
AD566	RGMa	Heavy chain variable region	AEI2-23	US20 140023659 SEQ ID NO: 123	3167
AD567	RGMa	Heavy chain variable region	AE 12-24	US20 140023659 SEQ ID NO: 131	3168
AD568	RGMa	Heavy chain variable region	AE I2-3	US20 140023659 SEQ ID NO: 17	3169
AD569	RGMa	Heavy chain variable region	AE12-4	US20 140023659 SEQ ID NO: 25	3170
AD570	RGMa	Heavy chain variable region	AE I2-5	US20 140023659 SEQ ID NO: 33	3171
AD571	RGMa	Heavy chain variable region	AE12-6	US20 140023659 SEQ ID NO: 41	3172
AD572	RGMa	Heavy chain variable region	AE I2-7	US20 140023659 SEQ ID NO: 49	3173
AD573	RGMa	Heavy chain variable region	AE12-8	US20 140023659 SEQ ID NO: 57	3174
AD574	RGMa	Heavy chain variable region	AE I2-2	US20 140023659 SEQ ID NO: 9	3175
AD575	RGMa	Heavy chain variable region	AE12- I3	US20 140023659 SEQ ID NO: 91	3176
AD576	RGMa	Heavy chain variable region	AE1 2-15	US20 140023659 SEQ ID NO: 99	3177

AD577	tau	Heavy chain variable region		WO20 14 100600 SEQ ID NO: 45	3798
AD578	tau	Heavy chain variable region	NI-105.24B2	US20 [50252 102 SEQ JD NO: 13	3799
AD579	tau	Heavy chain variable region	NM05.4A3	US20150252 102 SEQ ID NO: 17	3800
AD580	tau	Heavy chain variable region	Ni- 10:>,4E4	US20 I 50252 102 SEQ ID NO: 9	380 I
AD58 I	tau	Heavy chain variable region		WO20 I 304 1962 SEQ ID NO: 138	3802
AD582	tau	Heavy chain variable region		WO20 13041962 SEQ ID NO: 139	3803
AD583	tau	Heavy chain variable region		WO20 1304 1962 SEQ ID NO: 140	3804
AD584	tau	Heavy chain variable region		WO201 3041962 SEQ JD NO: 145	3805
AD585	tau	Heavy chain variable region		WO20 I 304 1962 SEQ ID NO: 147	3806
AD586	tau	Heavy chain variable region		WO20 13041962 SEQ ID NO: 148	3807
AD587	tau	Heavy chain variable region		WO20 !4 I 00600 SEQ ID NO: 220	3808
AD 588	tau	Heavy chain variable region	N1-105. 17C1	WO20 I4 100600 SEQ ID NO: 44	3809
AD589	tau	Heavy chain variable region		WO20 14 100600 SEQ ID NO: 47	3810
AD 590	tau	Heavy chain variable region	NI-105.6C5	WO2014100600 SEQ ID NO: 48	381 I
AD591	tau	Heavy chain variable region	NM05.29G10	WO20 14 I 00600 SEQ ID NO: 50	3812
AD 592	tau	Heavy chain variable region	Ni- 105.6L9	WO2014100600 SEQ ID NO: 52	3813
AD593	tau	Heavy chain variable region	NI- 105.40E8	WO20 I 4 !00600 SEQ ID NO: 54	3814
AD 594	tau	Heavy chain variable region	N1-105.48E5	WO20 I4 100600 SEQ ID NO: 56	3815
AD595	tau	Heavy chain variable region	NM05.6E3	WO20 14 100600 SEQ ID NO: 58	3816
AD 596	tau	Heavy chain variable region	NI-105.22E1	WO20 14 100600 SEQ ID NO: 60	3817
AD597	tau	Heavy chain variable region	NM05.26B12	WO2014100600 SEQ ID NO: 62	3818
AD598	tau	Heavy chain variable region	NI-105. 12E12	WO2014100600 SEQ ID NO: 65	38 19
AD599	tau	Heavy chain variable region	NI-105.60E7	WO20 I4 100600 SEQ ID NO: 67	3820
AD600	tau	Heavy chain variable region	NI-105. 14E2	WO20 I4 100600 SEQ ID NO: 69	382 1
AD601	tau	Heavy chain variable region	NI-105.39E2	WO20 14 100600 SEQ ID NO: 71	3822
AD602	tau	Heavy chain variable region	NI-105. 19C6	WO20 14 100600 SEQ ID NO: 73	3823
AD603	tau	Heavy chain variable region		WO2014100600 SEQ ID NO: 75	3824
AD604	tau	Heavy chain variable region	NI-I05.9C4	WO20 I4 100600 SEQ ID NO: 76	3825
AD605	tau	Heavy chain variable region	ÏPN002 variant 1	US8926974 SEQ ID NO: 36	3826

AD606	**tau**	**Heavy chain** variable region	**IPN002** variant 2	US8926974 SEQ ID NO: 37	3827
AD607	tau	Heavy chain variable region	**IPN002** variant 3	**US8926974** SEQ **ID** NO: 38	3828
AD608	**tau**	Heavy **chain variable** region	**IPN002** variant 4	**US8926974** SEQ **ID** NO: 39	3829
AD609	tau	Heavy chain variable region	**PTl**	US20150307600 SEQ ID NO: 35	3830
AD610	**tau**	Heavy **chain** variable region	**PT3**	**US20 150307600** SEQ **ID** NO: 37	3831
AD611	tau	Heavy chain variable region		**US9304138** SEQ **ID** NO: **1**	3832
AD612	**tau**	Heavy **chain** variable region		**US9304138** SEQ **ID** NO: **2**	3833
AD613	tau	Heavy chain variable region		**US9304138** SEQ **ID** NO: **3**	3834
AD614	**tau**	Heavy chain variable region		**US9304138** SEQ **ID** NO: 4	3835
AD615	tau	Heavy chain variable region		**US9304138** SEQ **ID** NO: 5	3836
AD616	**tau**	Heavy chain variable region		**US9304138** SEQ ID NO: 68	3837
AD617	tau	Heavy chain variable region		**US9304138** SEQ ID **NO:** 76	3838
AD618	**tau**	Heavy chain variable region		US9304138 SEQ ID NO: 88	3839
AD619	tau	Heavy chain variable region		**US9304138** SEQ ID **NO:** 96	3840
AD620	tau	Heavy chain variable region		US9304138 SEQ ID NO: 104	3841
AD621	tau	Heavy chain variable region	**hACl-36-3A8-Abl and hACl-36-2B6-Abl**	**US20150175682** SEQ ID NO: 7	3842
AD622	tau	Heavy chain variable region	**hACl-36-3A8-Abl.v2.**	**US20150175682** SEQ ID NO: 20	3843
AD623	tau	Heavy chain variable region	**hACl-36-2B6-Abl.v2**	**US201 50175682** SEQ ID NO: 21	3844
AD624	tau	Heavy chain variable region	**ADx210**	**US20140161875** SEQ ID NO: 15	3845
AD625	tau	**Heavy** chain variable region	**ADx210** subpart	**US20140161875** SEQ ID NO: 17	3846
AD626	tau	**Heavy** chain variable region	ADx215	**US20140161875** SEQ ID NO: 25	3847
AD627	tau antigen	**Heavy** chain variable region	ADx202	**WO20 15004 163** SEQ ID NO: 14	3848
AD628	tau ps 422	**Heavy** chain variable region	antibody Mab2. 10.3	**US20 10059093** SEQ ID NO: 2	3849
AD629	tau ps 422	**Heavy** chain variable region	**Mab** 005	**US20 10059093** SEQ ID NO: 22	3850
AD63G	tau ps 422	**Heavy** chain variable region	**Mab 019**	**US20 10059093** SEQ ID NO: 30	3851
AD63 1	tau ps 422	**Heavy** chain variable region	Mab 020	**US20 10059093** SEQ ID NO: 38	3852
AD632	tau ps 422	**Heavy** chain variable region	Mab 085	**US20 10059093** SEQ ID NO: 46	3853
AD633	tau ps 422	**Heavy** chain variable region	Mab 086	**US20 10059093** SEQ ID NO: 54	3854
AD634	tau ps 422	**Heavy** chain variable region	Mab 097	**US20 10059093** SEQ ID NO: 62	3855

AD635	**TrkA**	**Heavy chain** variable region	**HuVHWO**	**WO2009098238** SEQ ID **NO:** 17	3856
AD636	NOGO	Heavy chain variable region humanized construct H1	2A10 construct	**WO200700342 1** SEQ ID **NO:** 77	3181
AD637	NOGO	**Heavy** chain variable region **humanized construct H14**	**2A10** construct	**WO2007003421** SEQ ID NO: **14**	3182
AD638	NOGO	Heavy **chain variable** region **humanized construct H15**	**2A10** construct	**WO200700342 1** SEQ ID NO: **15**	3183
AD639	NOGO	**Heavy** chain variable region **humanized construct H16**	**2A10** construct	**WO2007003421** SEQ ID NO: 16	3184
AD640	NOGO	Heavy chain variable region humanized **construct H17**	2A10 **construct**	**WO200700342** 1 SEQ ID NO: 17	3185
AD641	NOGO	Heavy chain variable region humanized construct H18	2A10 construct	**WO200700342 1** SEQ ID **NO: 18**	3186
AD642	NOGO	Heavy chain variable region **humanized** construct **H19**	**2A10** construct	**WO2007003421** SEQ ID NO: 85	3187
AD643	NOGO	Heavy **chain** variable region humanized construct H20	2A10 construct	**WO2007003421** SEQ ID **NO:** 86	3188
AD644	NOGO	**Heavy** chain variable region **humanized construct H21**	**2A10** construct	**WO2007003421** SEQ ID NO: 87	3189
AD645	NOGO	Heavy chain variable region humanized construct H22	2A10 **construct**	**WO200700342** 1 SEQ ID NO: 88	3190
AD646	NOGO	Heavy chain variable region **humanized construct H23**	**2A10** construct	**WO2007003421** SEQ ID NO: 89	3191
AD647	NOGO	Heavy **chain** variable region **humanized** construct **H24**	**2A10** construct	**WO200700342 1** SEQ ID NO: 90	3192
AD648	NOGO	Heavy **chain** variable region humanized construct H25	2A10 construct	**WO2007003421** SEQ ID **NO:** 91	3193
AD649	NOGO	Heavy chain variable region humanized **construct H5**	2A10 construct	**WO200700342** 1 SEQ ID NO: 11	3194
AD650	NOGO	Heavy chain variable region	2A10 construct	**WO200700342 1** SEQ ID **NO: 12**	3195

		humanized construct H6			
AD651	NOGO	Heavy chain variable region humanized construct H700	2A10 construct	WO2007003421 SEQ ID NO: 13	3196
AD652	beta A4 peptide/Alpha beta 8	Heavy chain with Fc region	Antibody A	WO2007068429 SEQ ID NO: 26	3857
AD653	ACTH	Light chain	Ab3	WO2015127288 SEQ ID NO: 101	3205
AD654	ACTH	Light chain	Ab4	WO2015127288 SEQ ID NO: 141	3206
AD655	ACTH	Light chain	Ab5	WO2015127288 SEQ ID NO: 181	3207
AD656	ACTH	Light chain	Ab1	WO2015127288 SEQ ID NO: 21	3208
AD657	ACTH	Light chain	Ab6	WO2015127288 SEQ ID NO: 221	3209
AD658	ACTH	Light chain	Ab7	WO2015127288 SEQ ID NO: 261	3210
AD659	ACTH	Light chain	Ab9	WO2015127288 SEQ ID NO: 301	3211
AD660	ACTH	Light chain	Ab10	WO2015127288 SEQ ID NO: 341	3212
AD661	ACTH	Light chain	Ab11	WO2015127288 SEQ ID NO: 381	3213
AD662	ACTH	Light chain	Ab12	WO2015127288 SEQ ID NO: 421	3214
AD663	ACTH	Light chain	Ab1.H	WO2015127288 SEQ ID NO: 461	3215
AD664	ACTH	Light chain	Ab2.H	WO2015127288 SEQ ID NO: 501	3216
AD665	ACTH	Light chain	Ab3.H	WO2015127288 SEQ ID NO: 541	3217
AD666	ACTH	Light chain	Ab4.H	WO2015127288 SEQ ID NO: 581	3218
AD667	ACTH	Light chain	Ab2	WO2015127288 SEQ ID NO: 61	3219
AD668	ACTH	Light chain	Ab6.H	WO2015127288 SEQ ID NO: 621	3220
AD669	ACTH	Light chain	Ab7.H	WO2015127288 SEQ ID NO: 661	3221
AD670	ACTH	Light chain	Ab7A.H	WO2015127288 SEQ ID NO: 701	3222
AD671	ACTH	Light chain	Ab10.H	WO2015127288 SEQ ID NO: 741	3223
AD672	ACTH	Light chain	Ab11.H	WO2015127288 SEQ ID NO: 781	3224
AD673	ACTH	Light chain	Ab11A.H	WO2015127288 SEQ ID NO: 821	3225
AD674	ACTH	Light chain	Ab12.H	WO2015127288 SEQ ID NO: 861	3226
AD675	Alpha beta fibril	Light chain	Gantenerumab	Immunogenetics Information System; CHAIN ID NO: 8894_L.	3858
AD676	amyloid beta peptide Aβ	Light chain		US719576 SEQ ID NO: 11	3859

AD677	Amyloid beta/BACE1	Light chain	3 Fab of Yw412.8.31	Wang, W. et al. "A Therapeutic Antibody Targeting BACE1 Inhibits Amyloid NO: -{beta}Production in Vivo" Sci Transl Med 3 (84), 84RA43 (2011), NCBI Accession # 3RIG_L (222aa)	3860
AD678	amyloid or amyloid-like proteins	Light chain	Humanized C2	WO2008061796 SEQ ID NO: 2	3861
AD679	amyloid protein	Light chain	C2	US20100150906 SEQ ID NO: 13	3862
AD680	amyloids	Light chain	#118	WO2010012004 SEQ ID NO: 10	3242
AD681	amyloids	Light chain	#121	WO2010012004 SEQ ID NO: 12	3243
AD682	amyloids	Light chain	#201	WO2010012004 SEQ ID NO: 14	3244
AD683	amyloids	Light chain	#204	WO2010012004 SEQ ID NO: 15	3245
AD684	amyloids	Light chain	#205	WO2010012004 SEQ ID NO: 17	3246
AD685	APP	Light chain	F5.100	WO2014151747 SEQ ID NO:	3863
AD686	APP	Light chain	BBSI MAb	WO2014151747 SEQ ID NO: 25	3864
AD687	APP	Light chain	F5.87	WO2014151747 SEQ ID NO: 27	3865
AD688	APP	Light chain	F5.87	WO2014151747 SEQ ID NO: 54	3866
AD689	Aβ amyloids	Light chain	Humanized 12A11, version 2	US8784810 SEQ ID NO: 10	3867
AD690	Aβ amyloids	Light chain	Humanized 3D6 (Bapineuzumab), version 3	US8784810 SEQ ID NO: 6	3868
AD691	beta A4 peptide/Alpha beta 6	Light chain	Antibody A	WO2007068429 SEQ ID NO: 8	3869
AD692	beta A4 peptide/Alpha beta 7	Light chain	Antibody A	WO2007068429 SEQ ID NO: 22	3870
AD693	beta amyloid	Light chain		US10476265 SEQ ID NO: 19	3871
AD694	beta amyloid	Light chain		US13319710 SEQ ID NO: 22	3872
AD695	beta amyloid	Light chain		US13319710 SEQ ID NO: 28	3873
AD696	beta amyloid	Light chain	(13C3)	US13319710 SEQ ID NO: 4	3874
AD697	beta amyloid	Light chain	C2	US20070166311 SEQ ID NO: 21	3875
AD698	beta amyloid peptide	Light chain	Solanezumab	Immunogenetics Information System; CHAIN ID NO: 9097_L.	3876

AD699	beta amyloid peptide	Light chain	Mature L1	WO2007113172 SEQ ID NO: 40	3877
AD700	beta-amyloid	Light chain	Aducanumab, BIIB0307		3878
AD701	EAG1	Light chain	chimeric ImAb3	WO2006037604 SEQ ID NO: 10	3247
AD702	EAG1	Light chain	chimeric ImAb4	WO2006037604 SEQ ID NO: 14	3248
AD703	EAG1	Light chain	LC-ImAb3-humB3	WO2006037604 SEQ ID NO: 18	3249
AD704	EAG1	Light chain	ImAb4	WO2006037604 SEQ ID NO: 2	3250
AD705	EAG1	Light chain	LC-ImAb4-humA17	WO2006037604 SEQ ID NO: 22	3251
AD706	EAG1	Light chain	LC-ImAb3-humA3	WO2006037604 SEQ ID NO: 26	3252
AD707	EAG1	Light chain	LC-ImAb3-humA17	WO2006037604 SEQ ID NO: 30	3253
AD708	EAG1	Light chain	LC-ImAb4-humA5-1	WO2006037604 SEQ ID NO: 34	3254
AD709	EAG1	Light chain	LC-ImAb4-humO1	WO2006037604 SEQ ID NO: 38	3255
AD710	EAG1	Light chain	ImAb3	WO2006037604 SEQ ID NO: 6	3256
AD711	IGG1 Abeta	Light chain	Humanized C2	US20090155249 SEQ ID NO: 13	3879
AD712	NOGO	Light chain	H6L13 FL, H19L13 FL, H20L13 FL, H21L13 FL, H25L13 FL	US20140147435 SEQ ID NO: 35	3257
AD713	NOGO	Light chain	H16L16 FL, H19L16 FL, H20L16 FL, H21L16 FL, H25L16 FL, H18L16 FL	US20140147435 SEQ ID NO: 38	3258
AD714	NOGO	Light chain	H16L18 FL, H19L18 FL, H20L18 FL, H21L18 FL, H25L18 FL	US20140147435 SEQ ID NO: 40	3259
AD715	Nogo receptor-1	Light chain	7E11	US20090215691 SEQ ID NO: 15	3260
AD716	Nogo receptor-1	Light chain	7E11	US20090215691 SEQ ID NO: 17	3261
AD717	PrPC and/or PrPSc	Light chain		US20150166668 SEQ ID NO: 9	3880
AD718	PrPC and/or PrPSc	Light chain		US8852587 SEQ ID NO: 5	3881
AD719	tau	Light chain	hACI-36-3A8 Ab1, hACI-36-3A8 Ab1.v2, hACI-36-3A8 Ab1.v3, hACI-36-3A8 Ab1.v4	WO2013151762 SEQ ID NO: 22	3882
AD720	tau	Light chain	hACI-36-3B8 Ab1, hACI-36-3B8 Ab1.v2, hACI-36-3B8 Ab1.v3, hACI-36-3B8 Ab1.v4	WO2013151762 SEQ ID NO: 23	3883
AD721	tau	Light chain	IPN001	US8980271 SEQ ID NO: 13	3884
AD722	tau	Light chain	IPN002	US8980271 SEQ ID NO: 15	3885

AD723	tau	Light chain	hACI-36-3A8-Ab1 and hACI-36-2B6-Ab1	US20150175682 SEQ ID NO: 18	3886
AD724	tau	Light chain	hACI-36-3A8-Ab1 (IgG4), hACI-36-3A8-Ab1.v2 (IgG4), hACI-36-3A8-Ab1.v3 (IgG1), and hACI-36-3A8-Ab1.v4 (IgG1 N297G)	US20150175682 SEQ ID NO: 22	3887
AD725	tau	Light chain	hACI-36-2B6-Ab1 (IgG4), hACI-36-2B6-Ab1.v2 (IgG4), hACI-36-2B6-Ab1.v3 (IgG1), and hACI-36-2B6-Ab1.v4 (IgG1 N297G)	US20150175682 SEQ ID NO: 23	3888
AD726	tau	Light chain	hACI-36-3A8-Ab1 (IgG4)	US20150175682 SEQ ID NO: 24	3889
AD727	TrkA	Light chain	BXhVL4	WO2009098238 SEQ ID NO: 10	3890
AD728	TrkA	Light chain	BXhVL5	WO2009098238 SEQ ID NO: 11	3891
AD729	TrkA	Light chain	BXhVLβ	WO2009098238 SEQ ID NO: 12	3892
AD730	TrkA	Light chain	BXhVL7	WO2009098238 SEQ ID NO: 13	3893
AD731	TrkA	Light chain	BXhVL8	WO2009098238 SEQ ID NO: 14	3894
AD732	TrkA	Light chain	mVLEP	WO2009098238 SEQ ID NO: 16	3895
AD733	TrkA	Light chain	BXhVL1	WO2009098238 SEQ ID NO: 7	3896
AD734	TrkA	Light chain	BXhVL2	WO2009098238 SEQ ID NO: 8	3897
AD735	TrkA	Light chain	BXhVL3	WO2009098238 SEQ ID NO: 9	3898
AD736	trk-C (NT-3 trkC ligand)	Light chain	2250	US7615383 SEQ ID NO: 49	3262
AD737	trk-C (NT-3 trkC ligand)	Light chain	2253	US7615383 SEQ ID NO: 50	3263
AD738	trk-C (NT-3 trkC ligand)	Light chain	2256	US7615383 SEQ ID NO: 51	3264
AD739	trk-C (NT-3 trkC ligand)	Light chain	6.1.2	US7615383 SEQ ID NO: 52	3265
AD740	trk-C (NT-3 trkC ligand)	Light chain	6.4.1	US7615383 SEQ ID NO: 53	3266
AD741	trk-C (NT-3 trkC ligand)	Light chain	2345	US7615383 SEQ ID NO: 54	3267
AD742	trk-C (NT-3 trkC ligand)	Light chain	2349	US7615383 SEQ ID NO: 55	3268
AD743		Light chain	Crenezumab light CHAIN		3899
AD744		Light chain	Gantenerumab light chain		3900
AD745		Light chain	Ponezumab light CHAIN		3901
AD746		Light chain	Solanezumab light CHAIN		3902

AD747	amyloid protein	Light chain constant region	C2	US20100150906 SEQ ID NO: 14	3903
AD748	IGG1 Abeta	Light Chain constant region	Humanized C2	US20090155249 SEQ ID NO: 14	3904
AD749	ApoE	Light chain fragment	2e8 Fab	Trakhanov, S. et al. "Structure of a monoclonal 2E8 Fab antibody fragment specific for the low-density lipoprotein-receptor binding region of apolipoprotein E refined at 1.9 A", Acta Crystallogr. D Biol. Crystallogr. 55 (PT 1), 122-128 (1999), NCBI Accession # 12E8_M	3905
AD750	many - growth factors	Light chain fusion protein	H21L13, H21L16, H21L18, H21L14, H21L15, H21L17, H21L6, H21L11	US8053569 SEQ ID NO: 31	3275
AD751	many - growth factors	Light chain fusion protein	H23L13, H23L16, H23L18, H23L14, H23L15, H23L17, H23L6, H23L11	US8053569 SEQ ID NO: 36	3276
AD752	NOGO	Light chain humanized construct L11	2A10 construct	WO2007003421 SEQ ID NO: 80	3277
AD753	NOGO	Light chain humanized construct L13	2A10 construct	WO2007003421 SEQ ID NO: 35	3278
AD754	NOGO	Light chain humanized construct L14	2A10 construct	WO2007003421 SEQ ID NO: 36	3279
AD755	NOGO	Light chain humanized construct L15	2A10 construct	WO2007003421 SEQ ID NO: 37	3280
AD756	NOGO	Light chain humanized construct L16	2A10 construct	WO2007003421 SEQ ID NO: 38	3281
AD757	NOGO	Light chain humanized construct L17	2A10 construct	WO2007003421 SEQ ID NO: 39	3282
AD758	NOGO	Light chain humanized construct L18	2A10 construct	WO2007003421 SEQ ID NO: 40	3283
AD759	NOGO	Light chain humanized construct L6	2A10 construct	WO2007003421 SEQ ID NO: 34	3284
AD760	RTN4	Light chain IgG4, immunomodulator	Atinumab	US8163285 SEQ ID NO: 25	3285
AD761	tau	Light chain mature	ch4E4	US20150252102 SEQ ID NO: 21	3906
AD762	A beta oligomers	Light chain variable region	IR-008	US8858949 SEQ ID NO: 100	3907

AD763	A beta **oligomers**	Light chain variable region	IR-072	US8858949 SEQ ID NO: 1012	3908
AD764	A beta oligomers	Light **chain** variable region	IR-073	US8858949 SEQ ID NO: 1028	3909
AD765	A beta oligomers	Light chairs **variable** region	**IR**-074	US8858949 SEQ ID NO: 1044	3910
AD766	A beta oligomers	Light chain variable region	IR-075	US8858949 SEQ ID NO: 1060	3911
AD767	A beta oligomers	Light chairs variable region	**IR**-076	US8858949 SEQ ID NO: 1076	3912
AD768	A beta oligomers	Light chain variable **region**	IR-077	US8858949 SEQ ID NO: 1092	3913
AD769	A beta oligomers	Light chairs variable region	**IR**-078	US8858949 SEQ ID NO: 1108	3914
AD770	A beta oligomers	Light chain variable region	IR-079	US8858949 SEQ ID NO: 1124	3915
AD771	A beta oligomers	Light chairs variable region	**IR**-080	US8858949 SEQ ID NO: 1140	3916
AD772	A beta oligomers	Light chain variable region	IR-081	US8858949 SEQ ID NO: 1156	3917
AD773	A beta **oligomers**	Light chairs variable region	**IR-011**	US8858949 SEQ ID NO: 116	3918
AD774	A beta oligomers	Light chain variable region	IR-082	US8858949 SEQ ID NO: 1172	3919
AD775	A beta oligomers	Light chain variable region	**IR**-083	US8858949 SEQ ID NO: 1188	3920
AD776	A beta oligomers	Light chain variable region	IR-084	US8858949 SEQ ID NO: 1204	3921
AD777	A beta oligomers	Light chain variable region	**IR**-085	US8858949 SEQ ID NO: 1220	3922
AD778	A beta oligomers	Light chain variable region	IR-086	US8858949 SEQ ID NO: 1236	3923
AD779	A beta oligomers	Light chain variable region	**IR**-087	US8858949 SEQ ID NO: 1252	3924
AD780	A beta oligomers	Light chain variable region	IR-088	US8858949 SEQ ID NO: 1268	3925
AD781	A beta oligomers	Light chain variable region	**IR**-089	US8858949 SEQ ID NO: 1284	3926
AD782	A beta oligomers	Light chain variable region	IR-090	US8858949 SEQ ID NO: 1300	3927
AD783	A beta oligomers	Light **chain** variable region	**IR**-092	US8858949 SEQ ID NO: 1316	3928
AD784	A beta oligomers	Light chain variable region	**IR**-012	US8858949 SEQ ID NO: 132	3929
AD785	A beta oligomers	Light **chain** variable region	**IR**-093	US8858949 SEQ ID NO: 1332	3930
AD786	A beta oligomers	Light chain variable region	IR-094	US8858949 SEQ ID NO: 1348	3931
AD787	A beta oligomers	Light **chain** variable region	**IR**-095	US8858949 SEQ ID NO: 1364	3932
AD788	A beta oligomers	Light chain variable region	IR-097	US8858949 SEQ ID NO: 1380	3933
AD789	A beta oligomers	Light **chain** variable region	**IR**-098	US8858949 SEQ ID NO: 1396	3934
AD790	A beta oligomers	Light chain variable region	**IR**-100	US8858949 SEQ ID NO: 1412	3935
AD791	A beta oligomers	Light **chain** variable region	**IR**-101	US8858949 SEQ ID NO: 1428	3936

AD792	**A** beta **oligomers**	Light chain variable region	**IR-102**	**US8858949** SEQ **ID** NO: 1444	3937
AD793	A beta oligomers	Light **chain** variable region	**IR-104**	**US8858949** SEQ **ID** NO: 1460	3938
AD794	A beta oligomers	Light chairs **variable** region	**IR-105**	**US8858949** SEQ ID NO: 1476	3939
AD795	**A** beta oligomers	Light chain variable region	**IR-013**	**US8858949** SEQ **ID** NO: 148	3940
AD796	A beta oligomers	Light chairs variable region	**IR-106**	**US8858949** SEQ ID NO: 1492	3941
AD797	**A** beta oligomers	Light chain variable region	**IR-107**	**US8858949** SEQ **ID** NO: 1508	3942
AD798	A beta oligomers	Light chairs variable region	**IR-108**	**US8858949** SEQ **ID** NO: 1524	3943
AD799	**A** beta oligomers	Light chain variable region	**IR-109**	**US8858949** SEQ **ID** NO: 1540	3944
AD800	A beta oligomers	Light chairs variable region	**IR-110**	**US8858949** SEQ ID NO: 1556	3945
AD801	**A** beta oligomers	Light chain variable region	**IR-112**	**US8858949** SEQ **ID** NO: 1572	3946
AD802	A beta **oligomers**	Light chairs variable region	**IR-114**	**US8858949** SEQ ID NO: 1588	3947
AD803	**A** beta oligomers	Light chain variable region	**IR-115**	**US8858949** SEQ ID **NO:** 1604	3948
AD804	A beta oligomers	Light chairs variable region	**IR-116**	US8858949 SEQ ID NO: 1620	3949
AD805	**A** beta oligomers	Light chain variable region	**IR-117**	**US8858949** SEQ ID **NO:** 1636	3950
AD806	A beta oligomers	Light chairs variable region	**IR-014**	US8858949 SEQ ID NO: 164	3951
AD807	**A** beta oligomers	Light chain variable region	**IR-118**	**US8858949** SEQ ID **NO:** 1652	3952
AD808	A beta oligomers	Light chairs variable region	IR-119	US8858949 SEQ ID NO: 1668	3953
AD809	**A** beta oligomers	Light chain variable region	**IR-120**	**US8858949** SEQ ID **NO:** 1684	3954
ADS **10**	A beta oligomers	Light chairs variable region	**IR-121**	US8858949 SEQ ID NO: 1700	3955
ADS 11	A beta oligomers	Light chain variable region	IR-122	US8858949 SEQ **ID NO:** 1716	3956
ADS 12	A beta oligomers	Light **chain** variable region	IR-123	US8858949 SEQ ID NO: 1732	3957
ADS 13	A beta oligomers	Light chain variable region	IR-124	US8858949 SEQ ID NO: 1748	3958
AD814	A beta oligomers	Light **chain** variable region	**IR-125**	US8858949 SEQ ID NO: 1764	3959
ADS 15	A beta oligomers	Light chain variable region	IR-126	US8858949 SEQ ID NO: 1780	3960
AD816	A beta oligomers	Light **chain** variable region	**IR-127**	US8858949 SEQ ID NO: 1796	3961
ADS 17	A beta oligomers	Light chain variable region	**IR-015**	US8858949 SEQ ID NO: 180	3962
AD818	A beta oligomers	Light **chain** variable region	**IR-128**	US8858949 SEQ ID NO: 18 12	3963
ADS 19	A beta oligomers	Light chain variable region	**IR-129**	US8858949 SEQ ID NO: 1828	3964
AD820	A beta **oligomers**	Light **chain** variable region	**IR-13 1**	US8858949 SEQ ID **NO:** 1844	3965

AD821	A beta oligomers	Light chain variable region	IR-132	US8858949 SEQ ID NO: 1860	3966
AD822	A beta oligomers	Light chain variable region	IR-133	US8858949 SEQ ID NO: 1876	3967
AD823	A beta oligomers	Light chains variable region	IR-134	US8858949 SEQ ID NO: 1892	3968
AD824	A beta oligomers	Light chain variable region	IR-135	US8858949 SEQ ID NO: 1908	3969
AD825	A beta oligomers	Light chains variable region	IR-136	US8858949 SEQ ID NO: 1924	3970
AD826	A beta oligomers	Light chain variable region	IR-137	US8858949 SEQ ID NO: 1940	3971
AD827	A beta oligomers	Light chains variable region	IR-138	US8858949 SEQ ID NO: 1956	3972
AD828	A beta oligomers	Light chain variable region	IR-017	US8858949 SEQ ID NO: 196	3973
AD829	A beta oligomers	Light chains variable region	IR-139	US8858949 SEQ ID NO: 1972	3974
AD830	A beta oligomers	Light chain variable region	IR-140	US8858949 SEQ ID NO: 1988	3975
AD831	A beta oligomers	Light chains variable region	IR-002	US8858949 SEQ ID NO: 20	3976
AD832	A beta oligomers	Light chain variable region	IR-141	US8858949 SEQ ID NO: 2004	3977
AD833	A beta oligomers	Light chain variable region	IR-142	US8858949 SEQ ID NO: 2020	3978
AD834	A beta oligomers	Light chain variable region	IR-143	US8858949 SEQ ID NO: 2036	3979
AD835	A beta oligomers	Light chain variable region	IR-144	US8858949 SEQ ID NO: 2052	3980
AD836	A beta oligomers	Light chain variable region	IR-145	US8858949 SEQ ID NO: 2068	3981
AD837	A beta oligomers	Light chain variable region	IR-146	US8858949 SEQ ID NO: 2084	3982
AD838	A beta oligomers	Light chain variable region	IR-147	US8858949 SEQ ID NO: 2100	3983
AD839	A beta oligomers	Light chain variable region	IR-149	US8858949 SEQ ID NO: 2116	3984
AD840	A beta oligomers	Light chain variable region	IR-020	US8858949 SEQ ID NO: 212	3985
AD841	A beta oligomers	Light chain variable region	IR-150	US8858949 SEQ ID NO: 2132	3986
AD842	A beta oligomers	Light chain variable region	IR-151	US8858949 SEQ ID NO: 2148	3987
AD843	A beta oligomers	Light chain variable region	IR-152	US8858949 SEQ ID NO: 2164	3988
AD844	A beta oligomers	Light chain variable region	IR-153	US8858949 SEQ ID NO: 2180	3989
AD845	A beta oligomers	Light chain variable region	IR-154	US8858949 SEQ ID NO: 2196	3990
AD846	A beta oligomers	Light chain variable region	IR-155	US8858949 SEQ ID NO: 2212	3991
AD847	A beta oligomers	Light chain variable region	IR-156	US8858949 SEQ ID NO: 2228	3992
AD848	A beta oligomers	Light chain variable region	IR-157	US8858949 SEQ ID NO: 2244	3993
AD849	A beta oligomers	Light chain variable region	IR-158	US8858949 SEQ ID NO: 2260	3994

AD850	A beta **oligomers**	Light chain variable region	IR-159	US8858949 SEQ ID NO: 2276	3995
AD851	A beta oligomers	Light **chain** variable region	IR-021	US8858949 SEQ ID NO: 228	3996
AD852	A beta oligomers	Light chairs **variable** region	IR-022	US8858949 SEQ ID NO: 244	3997
AD853	A beta oligomers	Light chain variable region	**IR**-023	US8858949 SEQ ID NO: 260	3998
AD854	A beta oligomers	Light chairs variable region	IR-024	US8858949 SEQ ID NO: 276	3999
AD855	A beta oligomers	Light chain variable **region**	**IR**-160	US8858949 SEQ ID NO: 2864	4000
AD856	A beta oligomers	Light chairs variable region	IR-161	US8858949 SEQ ID NO: 2880	4001
AD857	A beta oligomers	Light chain variable region	**IR**-025	US8858949 SEQ ID NO: 292	4002
AD858	A beta oligomers	Light chairs variable region	IR-026	US8858949 SEQ ID NO: 308	4003
AD859	A beta oligomers	Light chain variable region	**IR**-027	US8858949 SEQ ID NO: 324	4004
AD860	A beta **oligomers**	Light chairs variable region	IR-028	US8858949 SEQ ID NO: 340	4005
AD861	A beta oligomers	Light chain variable region	**IR**-029	US8858949 SEQ ID NO: 356	4006
AD862	A beta oligomers	Light chain variable region	IR-004	US8858949 SEQ ID NO: 36	4007
AD863	A beta oligomers	Light chain variable region	**IR**-030	US8858949 SEQ ID NO: 372	4008
AD864	A beta oligomers	Light chain variable region	IR-031	US8858949 SEQ ID NO: 388	4009
AD865	A beta oligomers	Light chain variable region	**IR**-001	US8858949 SEQ ID NO: 4	4010
AD866	A beta oligomers	Light chain variable region	IR-032	US8858949 SEQ ID NO: 404	4011
AD867	A beta oligomers	Light chain variable region	IR-033	US8858949 SEQ ID NO: 420	4012
AD868	A beta oligomers	Light chain variable region	IR-034	US8858949 SEQ ID NO: 436	4013
AD869	A beta oligomers	Light chain variable region	IR-035	US8858949 SEQ ID NO: 452	4014
AD870	A beta oligomers	Light **chain** variable region	IR-036	US8858949 SEQ ID NO: 468	4015
AD871	A beta oligomers	Light chain variable region	IR-037	US8858949 SEQ ID NO: 484	4016
AD872	A beta oligomers	Light **chain** variable region	IR-038	US8858949 SEQ ID NO: 500	4017
AD873	A beta oligomers	Light chain variable region	IR-039	US8858949 SEQ ID NO: 516	4018
AD874	A beta oligomers	Light **chain** variable region	IR-005	US8858949 SEQ ID NO: 52	4019
AD875	A beta oligomers	Light chain variable region	IR-040	US8858949 SEQ ID NO: 532	4020
AD876	A beta oligomers	Light **chain** variable region	IR-041	US8858949 SEQ ID NO: 548	4021
AD877	A beta oligomers	Light chain variable region	IR-043	US8858949 SEQ ID NO: 564	4022
AD878	A beta oligomers	Light **chain** variable region	IR-044	US8858949 SEQ ID NO: 580	4023

AD879	A beta oligomers	Light chain variable region	IR-045	US8858949 SEQ ID NO: 596	4024
AD880	A beta oligomers	Light chain variable region	IR-046	US8858949 SEQ ID NO: 612	4025
AD881	A beta oligomers	Light chain variable region	IR-048	US8858949 SEQ ID NO: 628	4026
AD882	A beta oligomers	Light chain variable region	IR-049	US8858949 SEQ ID NO: 644	4027
AD883	A beta oligomers	Light chain variable region	IR-050	US8858949 SEQ ID NO: 660	4028
AD884	A beta oligomers	Light chain variable region	IR-051	US8858949 SEQ ID NO: 676	4029
AD885	A beta oligomers	Light chain variable region	IR-006	US8858949 SEQ ID NO: 68	4030
AD886	A beta oligomers	Light chain variable region	IR-052	US8858949 SEQ ID NO: 692	4031
AD887	A beta oligomers	Light chain variable region	IR-053	US8858949 SEQ ID NO: 708	4032
AD888	A beta oligomers	Light chain variable region	IR-054	US8858949 SEQ ID NO: 724	4033
AD889	A beta oligomers	Light chain variable region	IR-055	US8858949 SEQ ID NO: 740	4034
AD890	A beta oligomers	Light chain variable region	IR-056	US8858949 SEQ ID NO: 756	4035
AD891	A beta oligomers	Light chain variable region	IR-057	US8858949 SEQ ID NO: 772	4036
AD892	A beta oligomers	Light chain variable region	IR-058	US8858949 SEQ ID NO: 788	4037
AD893	A beta oligomers	Light chain variable region	IR-059	US8858949 SEQ ID NO: 804	4038
AD894	A beta oligomers	Light chain variable region	IR-060	US8858949 SEQ ID NO: 820	4039
AD895	A beta oligomers	Light chain variable region	IR-061	US8858949 SEQ ID NO: 836	4040
AD896	A beta oligomers	Light chain variable region	IR-007	US8858949 SEQ ID NO: 84	4041
AD897	A beta oligomers	Light chain variable region	IR-062	US8858949 SEQ ID NO: 852	4042
AD898	A beta oligomers	Light chain variable region	IR-063	US8858949 SEQ ID NO: 868	4043
AD899	A beta oligomers	Light chain variable region	IR-064	US8858949 SEQ ID NO: 884	4044
AD900	A beta oligomers	Light chain variable region	IR-065	US8858949 SEQ ID NO: 900	4045
AD901	A beta oligomers	Light chain variable region	IR-066	US8858949 SEQ ID NO: 916	4046
AD902	A beta oligomers	Light chain variable region	IR-067	US8858949 SEQ ID NO: 932	4047
AD903	A beta oligomers	Light chain variable region	IR-068	US8858949 SEQ ID NO: 948	4048
AD904	A beta oligomers	Light chain variable region	IR-069	US8858949 SEQ ID NO: 964	4049
AD905	A beta oligomers	Light chain variable region	IR-070	US8858949 SEQ ID NO: 980	4050
AD906	A beta oligomers	Light chain variable region	IR-071	US8858949 SEQ ID NO: 996	4051
AD907	AB (1-42) Globulomer	Light chain variable region	Hu8F5VL	US20090232801 SEQ ID NO: 105	4052

AD908	AB (1-42) **Globulomer**	Light chain variable region	**TR1.37'CL**	**US2009023280** I SEQ ID **NO:** 106	4053
AD909	AB (1-42) Globulomer	Light **chain** variable region	**Hu8F5VL**	**US20090232801** SEQ ID **NO: 112**	4054
AD910	AB (1-42) **Globulomer**	Light **chain variable** region	8F5 hum7 **VH**	**US2009023280 I** SEQ ID **NO:** 2	4055
AD911	AB (20-42) Globulomer	Light chain variable region	VL **5F7hum8**	**US20090 175847** SEQ ID **NO: 2**	4056
AD912	AB (20-42) Globulomer	Light chain variable region	**VL 7C6hutn7**	**US20090175847** SEQ ID **NO:** 4	4057
AD913	**ADDL**	Light chain variable region		**WO2007050359** SEQ ID **NO: 112**	4058
AD914	ADDL	Light chain variable region		**WO2007050359** SEQ ID **NO:** 140	4059
AD915	amyloid beta peptide Aβ	Light chain variable region		US7 19576 SEQ ID **NO:** 7	4060
AD916	**amyloid** beta peptide Aβ	Light chain variable region		**US7 19576 SEQ ID NO:** 9	4061
AD917	amyloid oligomers	Light chain variable region	F11G3	**US9 125846** SEQ ID **NO: 12**	3315
AD918	**amyloid** or amyloid-like proteins	Light chain variable region	**Humanized** C2 HIV 1	**WO200806 1796** SEQ ID **NO:** 1	4062
AD919	amyloid protein **(IGG1** Abeta)	Light **chain** variable region	C2 HuVK	**US20 100 150906** SEQ ID **NO:** 12	4063
AD920	amyloid β peptide	Light chain variable region	Fv lE4	**US8222002** SEQ ID **NO:** 16	4064
AD921	amyloid β peptide	Light **chain** variable region	**FvlE7**	**US8222002** SEQ ID **NO:** 26	4065
AD922	amyloid β peptide	Light chain variable region	Fv2A7	**US8222002** SEQ ID **NO:** 36	4066
AD923	amyloid β peptide	Light **chain** variable region	**Fv2A8**	**US8222002** SEQ ID **NO: 46**	4067
AD924	amyloid β peptide	Light chain variable region	Fv2B6	**US8222002** SEQ ID **NO:** 56	4068
AD925	amyloid β peptide	Light **chain** variable region	**FvlEl**	**US8222002** SEQ ID **NO:** 6	4069
AD926	amyloid β peptide	Light chain variable region	B7	**US8222002** SEQ ID **NO:** 66	4070
AD927	amyloid β peptide	Light **chain** variable region	B6	**US8222002** SEQ ID **NO: 76**	4071
AD928	amyloid β peptide	Light chain variable region	**F10**	**US8222002** SEQ ID **NO:** 86	4072
AD929	amyloid β peptide	Light **chain** variable region	D1	**US8222002** SEQ ID **NO:** 96	4073
AD930	ApoE-CTD	Light chain variable region	**807B-M0001-B07**	**WO200505 1998** SEQ ID **NO:** 150	4074
AD931	**ApoE-CTD**	Light **chain** variable region	807B-M0004-A03	**WO2005051998** SEQ ID **NO:** 151	4075
AD932	ApoE-CTD	Light chain variable region	**807B-M0004-A05**	**WO200505 1998** SEQ ID **NO:** 152	4076
AD933	ApoE-CTD	Light **chain** variable region	807B-M0004-C04	**WO2005051998** SEQ ID **NO:** 153	4077
AD934	ApoE-CTD	Light chain variable region	**807B-M0004-C05**	**WO200505 1998** SEQ ID **NO:** 154	4078
AD935	ApoE-CTD	Light **chain** variable region	**807B-M0004-F06**	**WO2005051998** SEQ ID **NO: 155**	4079
AD936	ApoE-CTD	Light chain variable region	**807B-M0004-F10**	**WO200505 I998** SEQ ID **NO: 156**	4080

AD937	**ApoE-CTD**	Light chain variable region	**807B-M0004-H03**	**WO200505 I998** SEQ ID **NO:** 157	4081
AD938	**ApoE-CTD**	Light **chain** variable region	807B-M0009-C03	**WO2005051998** SEQ ID **NO:** 158	4082
AD939	**ApoE-CTD**	Light chairs **variable** region	**807B-M0009-F06**	**WO200505 I998** SEQ ID NO: **159**	4083
AD940	ApoE-CTD	Light chain variable region	**807B-M0013-A12**	**WO2005051998** SEQ ID NO: 160	4084
AD94 **i**	ApoE-CTD	Light chairs variable region	**807B-M0079-D I0**	**WO200505 I998** SEQ ID NO: **16 1**	4085
AD942	ApoE-CTD	Light chain variable **region**	**807B-M008** I**-F12**	**WO2005051998** SEQ ID NO: 162	4086
AD943	ApoE-CTD	Light chairs variable region	**807B-M0081-H03**	**WO200505 I998** SEQ ID NO: **163**	4087
AD944	ApoE-CTD	Light chain variable region	**807B-M0083-E I1**	**WO2005051998** SEQ ID NO: 164	4088
AD945	ApoE-CTD	Light chairs variable region	807A-M0027-E! I	**WO200505 I998** SEQ ID NO: 42	4089
AD946	ApoE-CTD	Light chain variable region	**807A-M0028-B02**	**WO2005051998** SEQ ID NO: 43	4090
AD947	ApoE-CTD	Light chairs variable region	807A-M0026-F05	**WO200505 I998** SEQ ID NO: 44	4091
AD948	**APP**	Light chain variable region		**WO201415 1747** SEQ **NO** 47	4092
AD949	APP	Light chain variable region		**WO201415 1747** SEQ NO 45	4093
AD950	APP	Light chain variable region		**WO201415 1747** SEQ **NO** 49	4094
AD951	APP	Light chain variable region		**WO201415 1747** SEQ NO 51	4095
AD952	A β amyloid	Light chain variable region	**15C1 1**	WO2006066049 SEQ ID NO: 2	4096
AD953	A β amyloid	Light chain variable region	9G8	**WO2006066049** SEQ ID NO: 8	4097
AD954	A β amyloid	Light chain variable region	266	WO2006066049 SEQ ID NO: **9**	4098
AD955	A β amyloid	Light chain variable region	**12A1**	**WO2006066089** SEQ ID NO: 2	4099
AD956	**Ap** amyloid	Light chain variable region	12A1	**WO2006066089** SEQ ID NO: 4	4100
AD957	A β amyloid	Light **chain** variable region	**humanized** 12A1 1	**WO2006066089** SEQ ID NO: 7	4101
AD958	**Ap** amyloids	Light chain variable region	Humanized 3D6 **(Bapineuzuinab)**	**US8784810** SEQ ID NO: **1**	4102
AD959	A β amyloids	Light **chain** variable region	Humanized 10D5	**US8784810** SEQ ID NO: 28	4103
AD960	**Ap** amyloids	Light chain variable region	Humanized 3D6 **(Bapineuzuinab),** version 2	**US8784810** SEQ ID NO: 3	4104
AD961	A β amyloids	Light chain variable region	**Humanized 12A1 1**	**US8784810** SEQ ID NO: 7	4105
AD962	A β peptide	Light **chain** variable region		**US8066999** SEQ ID NO: 1	4106
AD963	A β polypeptide	Light chain variable region	preferred embodiment 1, 8, **12**	**WO2008084402** SEQ ID **NO:** 145	4107
AD964	A β polypeptide	Light **chain** variable region	preferred embodiment 5, **13**	**WO2008084402** SEQ ID NO: 146	4108
AD965	A β polypeptide	Light chairs variable region		**WO2008084402** SEQ ID NO: **147**	4109

AD966	Aβ polypeptide	Light chain variable region		WO2008084402 SEQ ID NO: 47	4110
AD967	Aβ polypeptide	Light chain variable region		WO2008084402 SEQ ID NO: 48	4111
AD968	Aβ polypeptide	Light chairs variable region		WO2008084402 SEQ ID NO: 49	4112
AD969	Aβ polypeptide	Light chain variable region		WO2008084402 SEQ ID NO: 50	4113
AD970	Aβ polypeptide	Light chairs variable region	preferred embodiment 3	WO2008084402 SEQ ID NO: 51	4114
AD971	Aβ polypeptide	Light chain variable region	preferred embodiment 4	WO2008084402 SEQ ID NO: 52	4115
AD972	Aβ polypeptide	Light chairs variable region	preferred embodirnersi 2.6	WO2008084402 SEQ ID NO: 53	4116
AD973	Aβ polypeptide	Light chain variable region	preferred embodiment 9, 10, 11	WO2008084402 SEQ ID NO: 54	4117
AD974	Aβ polypeptide	Light chairs variable region	preferred embodirnersi 7	WO2008084402 SEQ ID NO: 55	4118
AD975	Aβ polypeptide	Light chain variable region		WO2008084402 SEQ ID NO: 56	4119
AD976	beta amyloid	Light chairs variable region	12B4	US7256273 SEQ ID NO: 2	4120
AD977	beta amyloid	Light chain variable region	Gennline A19	US7256273 SEQ ID NO: 30	4121
AD978	beta amyloid	Light chain variable region	Kabat ID 000333	US7256273 SEQ ID NO: 32	4122
AD979	beta amyloid	Light chain variable region	humanized 12B4	US7256273 SEQ ID NO: 6	4123
AD980	beta amyloid	Light chain variable region	VL A	US8323647 SEQ ID NO: 10	4124
AD981	beta amyloid	Light chain variable region	VL B	US8323647 SEQ ID NO: 11	4125
AD982	beta amyloid	Light chain variable region	VL C	US8323647 SEQ ID NO: 12	4126
AD983	beta amyloid	Light chain variable region	VL D	US8323647 SEQ ID NO: 13	4127
AD984	beta amyloid	Light chain variable region	VL E	US8323647 SEQ ID NO: 14	4128
AD985	beta amyloid	Light chain variable region	VL F	US8323647 SEQ ID NO: 15	4129
AD986	beta amyloid	Light chain variable region	VL G	US8323647 SEQ ID NO: 16	4130
AD987	beta amyloid	Light chain variable region	ESBA212	US8323647 SEQ ID NO: 7	4131
AD988	beta amyloid	Light chain variable region	Framework 2.3	US8323647 SEQ ID NO: 8	4132
AD989	beta amyloid	Light chain variable region	22C4	US8323647 SEQ ID NO: 9	4133
AD990	beta amyloid	Light chain variable region		US10476265 SEQ ID NO: 7	4134
AD991	beta amyloid	Light chain variable region		US10476265 SEQ ID NO: 8	4135
AD992	beta amyloid	Light chain variable region		US10476265 SEQ ID NO: 9	4136
AD993	beta amyloid	Light chain variable region	ACI-l l-Ab-9	US20140199323 SEQ ID NO: 7	4137
AD994	beta amyloid	Light chain variable region	ACI-12-Ab-l l	US20 140 199323 SEQ ID NO: 9	4138

AD995	beta amyloid	Light chain variable region	8C5	US20150071915 SEQ ID NO: 20	4139
AD996	beta amyloid	Light chain variable region	8F5	US2015007 19 15 SEQ ID NO: 4	4140
AD997	beta amyloid	Light chairs variable region		US7189819 SEQ ID NO: 11	4141
AD998	beta amyloid	Light chain variable region	I0D5	US71898 19 SEQ ID NO: 14	4142
AD999	beta amyloid	Light chairs variable region	m3D6	US7189819 SEQ ID NO: 2	4143
AD 1000	beta amyloid	Light chain variable region	humanized 3D6	US71898 19 SEQ ID NO: 5	4144
AD 1001	beta amyloid	Light chairs variable region	Kabat ID 109230	US7189819 SEQ ID NO: 6	4145
AD 1002	beta amyloid	Light chain variable region	germline A19 antibody	US71898 19 SEQ ID NO: 7	4146
AD 1003	beta amyloid	Light chairs variable region	Bapineuzumab, AAB-001	US8613920 SEQ ID NO: 1	4147
AD 1004	beta amyloid peptide	Light chain variable region	CAA51 135	WO20071 13172 SEQ ID NO: 24	4148
AD 1005	beta amyloid peptide	Light chairs variable region	Humanized L1	WO2007 113172 SEQ ID NO: 32	4149
AD 1006	beta amyloid peptide	Light chain variable region	Mature H2	WO20071 13172 SEQ ID NO: 36	4150
AD1007	BETA-AMYLOID	Light chain variable region	NI-101. 12	WO200808 1008 SEQ ID NO: 12	4151
AD 1008	BETA -AMYLOID	Light chain variable region	Ni-101. 13	WO2008081008 SEQ ID NO: 16	4152
AD1009	BETA-AMYLOID	Light chain variable region	NI-101. 12F6A	WO200808 1008 SEQ ID NO: 41	4153
AD 1010	BETA-AMYLOID	Light chain variable region	Ni-101. 13A	WO2008081008 SEQ ID NO: 43	4154
AD 101 1	BETA-AMYLOID	Light chain variable region	NI-101. 13B	WO200808 1008 SEQ ID NO: 45	4155
AD 1012	BETA-AMYLOID	Light chain variable region	NI- 10 1.10, NI-101.11	WO2008081008 SEQ ID NO: 8	4156
AD 1013	DR6 and P75	Light chain variable region	M73-C04	WO20 10062904 SEQ ID NO: 102	3316
AD1014	DR6 and P75	Light chain variable region	1P1D6.3	WO20 10062904 SEQ ID NO: 112	3317
AD1015	DR6 and P75	Light chain variable region	M50-H02	WO20 10062904 SEQ ID NO: 12	3318
AD1016	DR6 and P75	Light chain variable region	1P2F2. 1	WO20 10062904 SEQ ID NO: 122	3319
AD1017	DR6 and P75	Light chain variable region	1P5D10.2	WO20 10062904 SEQ ID NO: 132	3320
AD1018	DR6 and P75	Light chain variable region	M51-H09	WO20 10062904 SEQ ID NO: 22	3321
AD1019	DR6 and P75	Light chain variable region	M53-E04	WO2010062904 SEQ ID NO: 32	3322
AD 1020	DR6 and P75	Light chain variable region	M53-F04	WO20 10062904 SEQ ID NO: 42	3323
AD 1021	DR6 and P75	Light chain variable region	M62-B02	WO20 10062904 SEQ ID NO: 52	3324
AD 1022	DR6 and P75	Light chain variable region	M63-E10	WO2010062904 SEQ ID NO: 62	3325
AD 1023	DR6 and P75	Light chain variable region	M66-B03	WO20 10062904 SEQ ID NO: 72	3326

AD1024	DR6 and P75	Light chain variable region	M67-G02	WO2010062904 SEQ ID NO: 82	3327
AD1025	DR6 and P75	Light chain variable region	M72-F03	WO2010062904 SEQ ID NO: 92	3328
AD1026	IOD5	Light chain variable region		WO2002088307 SEQ ID NO: 11	4157
AD1027	IOD5	Light chain variable region		WO2002088307 SEQ ID NO: 7	4158
AD1028	IOD5	Light chain variable region		WO2002088307 SEQ ID NO: 9	4159
AD1029	LPG (lysophosphatidylglucoside)	Light chain variable region	#7	US8591902 SEQ ID NO: 17	3329
AD1030	LPG (lysophosphatidylglucoside)	Light chain variable region	#15	US8591902 SEQ ID NO: 7	3330
AD1031	MAG	Light chain variable region		US8071731 SEQ ID NO: 16	3331
AD1032	MAG	Light chain variable region		US8071731 SEQ ID NO: 17	3332
AD1033	MAG	Light chain variable region		US8071731 SEQ ID NO: 18	3333
AD1034	MAG	Light chain variable region		US8071731 SEQ ID NO: 19	3334
AD1035	MAI (myelin associated inhibitor)	Light chain variable region		WO2013158748 SEQ ID NO: 11	3335
AD1036	MAI (myelin associated inhibitor)	Light chain variable region		WO2013158748 SEQ ID NO: 27	3336
AD1037	NMDA	Light chain variable region		EP2805972 SEQ ID NO: 44	3337
AD1038	NOGO	Light chain variable region	H1L6, H5L6, H6L6, H14L6, H15L6, H16L6, H17L6, H18L6, H19L6, H20L6, H21L6, H22L6, H23L6, H24L6, H25L6, H700L6	US20140147435 SEQ ID NO: 19	3338
AD1039	NOGO	Light chain variable region	H1L13, H5L13, H6L13, H14L13, H15L13, H16L13, H17L13, H18L13, H19L13, H20L13, H21L13, H22L13, H23L13, H24L13, H25L13, H700L13	US20140147435 SEQ ID NO: 20	3339
AD1040	NOGO	Light chain variable region	H1L14, H5L14, H6L14, H14L14, H15L14, H16L14, H17L14, H18L14, H19L14, H20L14, H21L14, H22L14, H23L14, H24L14, H25L14, H700L14	US20140147435 SEQ ID NO: 21	3340
AD1041	NOGO	Light chain variable region	H1L15, H5L15, H6L15, H14L15, H15L15, H16L15, H17L15, H18L15,	US20140147435 SEQ ID NO: 22	3341

			H19L15, H20L15, H21L15, H22L15, H23L15, H24L15, H25L15, H700L15		
AD1042	NOGO	Light chain variable region	H1L16, H5L16, H6L16, H14L16, H15L16, H16L16, H17L16, H18L16, H19L16, H20L16, H21L16, H22L16, H23L16, H24L16, H25L16, H700L16	US20140147435 SEQ ID NO: 23	3342
AD1043	NOGO	Light chain variable region	H1L17, H5L17, H6L17, H14L17, H15L17, H16L17, H17L17, H18L17, H19L17, H20L17, H21L17, H22L17, H23L17, H24L17, H25L17, H700L17	US20140147435 SEQ ID NO: 24	3343
AD1044	NOGO	Light chain variable region	H1L18, H5L18, H6L18, H14L18, H15L18, H16L18, H17L18, H18L18, H19L18, H20L18, H21L18, H22L18, H23L18, H24L18, H25L18, H700L18	US20140147435 SEQ ID NO: 25	3344
AD1045	NOGO	Light chain variable region	H5L11, H6L11, H14L11, H15L11, H16L11, H17L11, H18L11, H19L11, H20L11, H21L11, H22L11, H23L11, H24L11, H25L11, H700L11	US20140147435 SEQ ID NO: 78	3345
AD1046	Nogo-66	Light chain variable region	Antibody clone 50	US20140065155 SEQ ID NO: 4	3346
AD1047	Nogo-66	Light chain variable region	Antibody clone 51	US20140065155 SEQ ID NO: 6	3347
AD1048	NogoA/NiG	Light chain variable region	6A3-Ig4	WO2009056509 SEQ ID NO: 25	3348
AD1049	NogoA/NiG	Light chain variable region	6A3-IgG1	WO2009056509 SEQ ID NO: 5	3349
AD1050	N-terminal region of Aβ8-x peptide	Light chain variable region	Antibody TeiA 1.6 (Secreted by Hybridoma IGH521)	US20110059092 SEQ ID NO: 1	4160
AD1051	N-terminal region of Aβ8-x peptide	Light chain variable region	Antibody TeiA 1.7 (Secreted by Hybridoma IGH522)	US20110059092 SEQ ID NO: 3	4161
AD1052	N-terminal region of Aβ8-x peptide	Light chain variable region	Antibody TeiA 1.8 (Secreted by Hybridoma IGH523)	US20110059092 SEQ ID NO: 5	4162
AD1053	N-terminal region of Aβ8-x peptide	Light chain variable region	Antibody TeiA 2b.6 (Secreted by Hybridoma IGH524)	US20110059092 SEQ ID NO: 7	4163
AD1054	N-terminal region of Aβ8-x peptide	Light chain variable region	Antibody TeiA 1.1 (Secreted by Hybridoma IGH525)	US20110059092 SEQ ID NO: 9	4164

AD1055	oligomers of N-terminal truncated Aβ	Light chain variable region	9D5	US8795664 SEQ ID NO: 28	4165
AD1056	oligomers of N-terminal truncated Aβ	Light chain variable region	8C4	US8795664 SEQ ID NO: 32	4166
AD1057	PrPC and/or PrPSc	Light chain variable region		US20150166668 SEQ ID NO: 7	4167
AD1058	pyroglutamated A β	Light chain variable region		WO2012136552 SEQ ID NO: 11	4168
AD1059	pyroglutamated A β	Light chain variable region		WO2012136552 SEQ ID NO: 27	4169
AD1060	pyroglutamated A β	Light chain variable region		WO2012136552 SEQ ID NO: 31	4170
AD1061	pyroglutamated A β	Light chain variable region		WO2012136552 SEQ ID NO: 7	4171
AD1062	RGM A	Light chain variable region	5F9.1-GL, 5F9.1-GL, 5F9.1-GL, 5F9.1-GL, 5F9.1-GL, 5F9.1-GL, 5F9.1-GL, 5F9.1-GL, 5F9.1-GL, h5F9.4, h5F9.11, h5F9.12	US20150183871 SEQ ID NO: 44	3350
AD1063	RGM A	Light chain variable region	5F9.2-GL, 5F9.2-GL, 5F9.2-GL, 5F9.2-GL, 5F9.2-GL, 5F9.2-GL, 5F9.2-GL, 5F9.2-GL, 5F9.2-GL, h5F9.5, h5F9.19, h5F9.20	US20150183871 SEQ ID NO: 45	3351
AD1064	RGM A	Light chain variable region	5F9.3-GL, 5F9.3-GL, 5F9.3-GL, 5F9.3-GL, 5F9.3-GL, 5F9.3-GL, 5F9.3-GL, 5F9.3-GL, 5F9.3-GL, h5F9.6, h5F9.21, h5F9.22	US20150183871 SEQ ID NO: 46	3352
AD1065	RGM A	Light chain variable region	h5F9.5, h5F9.6, h5F9.7, h5F9.8, h5F9.9, h5F9.10	US20150183871 SEQ ID NO: 48	3353
AD1066	RGM A	Light chain variable region	h5F9.11, h5F9.19, h5F9.21	US20150183871 SEQ ID NO: 49	3354
AD1067	RGM A	Light chain variable region	h5F9.12, h5F9.20, h5F9.22, h5F9.23, h5F9.25, h5F9.25, h5F9.26	US20150183871 SEQ ID NO: 50	3355
AD1068	RGM A	Light chain variable region	h5F9.1, h5F9.7, h5F9.23	US20150183871 SEQ ID NO: 51	3356
AD1069	RGM A	Light chain variable region	h5F9.2, h5F9.8, h5F9.25	US20150183871 SEQ ID NO: 52	3357
AD1070	RGMa	Light chain variable region	AE12-1	US20140023659 SEQ ID NO: 5	3368
AD1071	RGMa	Light chain variable region	AE12-7	US20140023659 SEQ ID NO: 53	3369
AD1072	RGMa	Light chain variable region	AE12-8	US20140023659 SEQ ID NO: 61	3370
AD1073	RGMa	Light chain variable region	AE12-13	US20140023659 SEQ ID NO: 95	3371
AD1074	RGMa	Light chain variable region	AE12-15	US20140023659 SEQ ID NO: 103	3358

AD1075	RGMa	Light chain variable region	AE12-20	US20140023659 SEQ ID NO: 111	3359
AD1076	RGMa	Light chain variable region	AE12-21	US20140023659 SEQ ID NO: 119	3360
AD1077	RGMa	Light chairs variable region	AE12-23	US20140023659 SEQ ID NO: 127	3361
AD1078	RGMa	Light chain variable region	AE12-2	US20140023659 SEQ ID NO: 13	3362
AD1079	RGMa	Light chairs variable region	AE12-24	US20140023659 SEQ ID NO: 135	3363
AD1080	RGMa	Light chain variable region	AE12-3	US20140023659 SEQ ID NO: 21	3364
AD1081	RGMa	Light chairs variable region	AE12-4	US20140023659 SEQ ID NO: 29	3365
AD1082	RGMa	Light chain variable region	AE12-5	US20140023659 SEQ ID NO: 37	3366
AD1083	RGMa	Light chairs variable region	AE12-6	US20140023659 SEQ ID NO: 45	3367
AD1084	tau	Light chain variable region	NI-105.4E4	US20150252102 SEQ ID NO: 11	4172
AD1085	tau	Light chairs variable region	NI-105.24B2	US20150252102 SEQ ID NO: 15	4173
AD1086	taxi	Light chain variable region	NI-105.4A3	US20150252102 SEQ ID NO: 19	4174
AD1087	tau	Light chain variable region		WO2013041962 SEQ ID NO: 141	4175
AD1088	taxi	Light chain variable region		WO2013041962 SEQ ID NO: 142	4176
AD1089	tau	Light chain variable region		WO2013041962 SEQ ID NO: 143	4177
AD1090	tan	Light chain variable region		WO2013041962 SEQ ID NO: 150	4178
AD1091	tau	Light chain variable region		WO2013041962 SEQ ID NO: 152	4179
AD1092	tan	Light chain variable region		WO2013041962 SEQ ID NO: 153	4180
AD1093	tau	Light chain variable region		WO2014100600 SEQ ID NO: 221	4181
AD1094	tau	Light chain variable region		WO2014100600 SEQID NO: 222	4182
AD1095	tau	Light chain variable region	NI-105.17C1	WO2014100600 SEQID NO: 46	4183
AD1096	tau	Light chain variable region	NM05.6C5	WO2014100600 SEQID NO: 49	4184
AD1097	tau	Light chain variable region	NI-105.29G10	WO2014100600 SEQID NO: 51	4185
AD1098	tau	Light chain variable region	NM05.6L9	WO2014100600 SEQID NO: 53	4186
AD1099	tau	Light chain variable region	NM05.40E8	WO2014100600 SEQID NO: 55	4187
AD1100	tau	Light chain variable region	NM05.48E5	WO2014100600 SEQID NO: 57	4188
AD1101	tau	Light chain variable region	NI-105.6E3	WO2014100600 SEQID NO: 59	4189
AD1102	tau	Light chain variable region	NI-105.22E1	WO2014100600 SEQID NO: 61	4190
AD1103	tau	Light chain variable region		WO2014100600 SEQID NO: 63	4191

AD1104	tau	Light chain variable region	NI-105.26B12	WO2014 100600 SEQID NO: 64	4192
AD1105	tau	Light chain variable region	NI-105. 12E12	WO20 14 100600 SEQID NO: 66	4193
AD1106	tau	Light chairs variable region	NÏ-105.60E7	WO20 14 100600 SEQID NO: 68	4194
AD1107	tau	Light chain variable region	NI-105. 14E2	WO20 14 100600 SEQID NO: 70	4195
AD1108	tau	Light chairs variable region	NÏ-105.39E2	WO20 14 100600 SEQID NO: 72	4196
AD 1109	tau	Light chain variable region	NI-105. 19C6	WO20 14 100600 SEQID NO: 74	4197
AD1110	tau	Light chairs variable region		WO20 14 100600 SEQID NO: 77	4198
ADl 111	tau	Light chain variable region	NI-105.9C4	WO20 14 100600 SEQID NO: 78	4199
AD 1112	tau	Light chairs variable region	IPN002 variant 1	US8926974 SEQ ID NO: 40	4200
AD1 1113	tau	Light chain variable region	ÏPN002 variant 2	US8926974 SEQ ID NO: 41	420 1
AD 1114	tau	Light chairs variable region	IPN002 variant 3	US8926974 SEQ ID NO: 42	4202
AD1115	tau	Light chain variable region	IPN002 variant 4	1JS8926974 SEQ ID NO: 43	4203
AD1116	tau	Light chairs variable region	PT1	US20 150307600 SEQ ID NO: 36	4204
AD 1117	tau	Light chain variable region	PT3	ıı S20 150307600 SEQ ID NO: 38	4205
AD1118	tau	Light chairs variable region		US9304138 SEQ ID NO: 6	4206
AD1119	tau	Light chain variable region		US9304138 SEQ ID NO: 7	4207
AD1120	tau	Light chairs variable region		US9304138 SEQ ID NO: 8	4208
AD 1121	tau	Light chain variable region		US9304138 SEQ ID NO: 9	4209
AD1122	tau	Light chairs variable region		US9304138 SEQ ID NO: 10	4210
AD 1123	tau	Light chain variable region		US9304138 SEQ ID NO: 11	421 1
AD1124	tau	Light chain variable region		US9304138 SEQ ID NO: 69	4212
AD1125	tau	Light chain variable region		US9304138 SEQ ID NO: 77	4213
AD1126	tau	Light chain variable region		US9304138 SEQ ID NO: 92	4214
AD1127	tau	Light chain variable region		US9304138 SEQ ID NO: 97	4215
AD1128	tau	Light chain variable region		US9304138 SEQ ID NO: 105	4216
AD1129	tau	Light chain variable region		US9304138 SEQ ID NO: 116	4217
AD1130	tau	Light chain variable region		US9304138 SEQ ID NO: 118	4218
AD1131	tau	Light chain variable region	hACl-36-3A8-Abl	US20 150 175682 SEQ ID NO: 8	4219
AD1132	tau	Light chain variable region	hACl-36-2B6-Abl	US20150175682 SEQ ID NO: 9	4220

ADI 133	tau	Light chain variable region	ADx210	US2014016 1875 SEQ ID NO: 16	422 1
ADI [3-1	tan	Light chain variable region	ADx2 IG isoform	US2014016 1875 SEQ ID NO: 18	4222
ADI 135	tau	Light chairs variable region	ADx215	US20140161875 SEQ ID NO: 26	4223
AD 1136	tau antigen	Light chain variable region	ADx202	WO20 15004 163 SEQ ID NO: 9	4224
ADI 137	tau ps 422	Light chairs variable region	antibody Mab2. 10.3	US201 10059093 SEQ ID NO: 1	4225
AD 1138	tau ps 422	Light chain variable region	Mab 005	US20 110059093 SEQ ID NO: 26	4226
ADI 139	*tau ps* 422	Light chain variable region	Mab 019	US20M0059093 SEQ ID NO: 34	4227
AD 1140	tau ps 422	Light chain variable region	Mab 020	US20 110059093 SEQ ID NO: 42	4228
AD 1141	tau ps 422	Light chairs variable region	Mab 085	US201 10059093 SEQ ID NO: 50	4229
ADI 142	tau ps 422	Light chain variable region	Mab 086	US20 110059093 SEQ ID NO: 58	4230
AD 1143	tau ps 422	Light chairs variable region	Mab 097	US201 10059093 SEQ ID NO: 66	423 1
ADI 144	TrkA	Light chain variable region	Hullo	WO2009098238 SEQ ID NO: 18	4232
ADI 145	TrkA	Lighi chain variable region	3-23*01	WQ2009098238 SEQ ID NO: 19	4233
AD I 146	TrkA	Light chain variable region	JH4	WO2009098238 SEQ ID NO: 20	4234
AD 1147	TrkA	Light chain variable region	L6*01	WO2009098238 SEQ ID NO: 21	4235
ADI 148	TrkA	Light chain variable region	JKi	WO2009098238 SEQ ID NO: 22	4236
AD 1149	TrkA	Light chain variable region	BXhVH5VLJ N297A i	WO2009098238 SEQ ID NO: 23	4237
ADI 150	NOGO	Light chain variable region humanized construct L I 1	2A10 construct	WO200700342 I SEQ ID NO: 78	3375
ADI 15 I	NOGO	Light chain variable region humanized construct L13	2A10 construct	WO200700342 1 SEQ ID NO: 20	3376
AD1 152	NOGO	Light chain variable region humanized construct L14	2A10 construct	WO2007003421 SEQ ID NO: 21	3377
AD 1153	NOGO	Light chairs variable region humanized construct L15	2A10 construct	WO200700342 1 SEQ ID NO: 22	3378
AD 1154	NOGO	Light chain variable region humanized construct L16	2A10 construct	WO200700342 1 SEQ ID NO: 23	3379
ADI 155	NOGO	Light chain variable region humanized construct L 17	2A10 construct	WO200700342 I SEQ ID NO: 24	3380

AD1156	NOGO	Light chain variable region humanized construct L18	2A10 construct	WO2007003421 SEQ ID NO: 25	3381
AD1157	NOGO	Light chain variable region humanized construct L6	2A10 construct	WO2007003421 SEQ ID NO: 19	3382
AD1158	beta A4 peptide/Alpha beta 9	Light chain with leader sequence	Antibody A	WO2007068429 SEQ ID NO: 28	4238
AD1159	Aβ amyloid	Light chain, consensus		WO2006066089 SEQ ID NO: 38	4239
AD1160	Aβ amyloid	Light chain, consensus		WO2006066089 SEQ ID NO: 39	4240
AD1161	Aβ amyloid	Light chain, consensus		WO2006066089 SEQ ID NO: 40	4241
AD1162	Aβ amyloid	Light chain, consensus		WO2006066089 SEQ ID NO: 41	4242
AD1163	Aβ amyloid	Light chain, consensus		WO2006066089 SEQ ID NO: 42	4243
AD1164	Aβ amyloid	Light chain, consensus		WO2006066089 SEQ ID NO: 43	4244
AD1165	Aβ amyloid	Light chain, consensus		WO2006066089 SEQ ID NO: 44	4245
AD1166	Aβ amyloid	Light chain, consensus		WO2006066089 SEQ ID NO: 45	4246
AD1167	Aβ amyloid	Light chain, consensus		WO2006066089 SEQ ID NO: 46	4247
AD1168	Aβ amyloid	Light chain, consensus		WO2006066089 SEQ ID NO: 47	4248
AD1169	Aβ amyloid	Light chain, consensus		WO2006066089 SEQ ID NO: 48	4249
AD1170	Aβ amyloid	Light chain, consensus		WO2006066089 SEQ ID NO: 49	4250
AD1171	Aβ amyloid	Light chain, consensus		WO2006066089 SEQ ID NO: 50	4251
AD1172	Aβ amyloid	Light chain, consensus		WO2006066089 SEQ ID NO: 51	4252
AD1173	PrPC and/or PrPSc	scFv		US8852587 SEQ ID NO: 6	4253
AD1174	beta amyloid	scFv	RCK37	US8221750 SEQ ID NO: 6	4254
AD1175	beta amyloid	scFv	RCK22	US8221750 SEQ ID NO: 8	4255
AD1176	PrP		ICSM181c	US20140294844 SEQ ID NO: 6	4256
AD1177	PrPC and/or PrPSc			US8852587 SEQ ID NO: 3	4257
AD1178	tau			US20140302046 SEQ ID NO: 103	4258

Huntington's Disease Antibodies

[00276] In one embodiment, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding one or more of the Huntington's Disease payload antibody polypeptides listed in Table 5 (HD1-HD245; SEQ ID NO: 2948-2970, 3018-3021, 3031-3046,

3056-3076, 3110-3130, 3132-3160, 3164-3177, 3181-3196, 3242-3246, 3257-3268, 3275-3285, 3315-3336, 3338-3371, 3375-3382, 4259-4267).

Table 5, **Huntington's** Disease Antibodies

Antibody No.	Target	Description	Antibody Name	Reference Information	SEQ ID NO
HD1	amyloid proteins	consensus sequence	M13 g3p, fd g3p, f1 g3p	US20150376239 SEQ ID NO: 4	2948
HD2	amyloid proteins	consensus sequence	12-2 g3p, Ike g3p	US20150376239 SEQ ID NO: 7	2949
HD3	118-126 of α-synuclein	constant region	IgG1	US20150259404 SEQ ID NO: 38	2950
HD4	amyloid proteins	Fusion protein	M13 g3p	US20150376239 SEQ ID NO: 1	2951
HD5	amyloid proteins	Fusion protein	Construct 5	US20150376239 SEQ ID NO: 11	2952
HD6	amyloid proteins	Fusion protein	Construct 6	US20150376239 SEQ ID NO: 13	2953
HD7	amyloid proteins	Fusion protein	fd N2	US20150376239 SEQ ID NO: 14	2954
HD8	amyloid proteins	Fusion protein	f1 N2	US20150376239 SEQ ID NO: 15	2955
HD9	amyloid proteins	Fusion protein	M13 N2	US20150376239 SEQ ID NO: 16	2956
HD10	amyloid proteins	Fusion protein	Ike N2	US20150376239 SEQ ID NO: 17	2957
HD11	amyloid proteins	Fusion protein	12-2 N2	US20150376239 SEQ ID NO: 18	2958
HD12	amyloid proteins	Fusion protein	If1 N2	US20150376239 SEQ ID NO: 19	2959
HD13	amyloid proteins	Fusion protein	fd g3p	US20150376239 SEQ ID NO: 2	2960
HD14	amyloid proteins	Fusion protein	Construct 3	US20150376239 SEQ ID NO: 20	2961
HD15	amyloid proteins	Fusion protein	Construct 3m g3p portion	US20150376239 SEQ ID NO: 24	2962
HD16	amyloid proteins	Fusion protein	If1 g3p	US20150376239 SEQ ID NO: 29	2963
HD17	amyloid proteins	Fusion protein	f1 g3p	US20150376239 SEQ ID NO: 3	2964
HD18	amyloid proteins	Fusion protein	fd g3p	US20150376239 SEQ ID NO: 30	2965
HD19	amyloid proteins	Fusion protein	Construct 8, rs-g3p (If1-N1N2)-hIgG1-Fc	US20150376239 SEQ ID NO: 31	2966
HD20	amyloid proteins	Fusion protein	12-2 g3p	US20150376239 SEQ ID NO: 5	2967
HD21	amyloid proteins	Fusion protein	Ike g3p	US20150376239 SEQ ID NO: 6	2968
HD22	amyloid proteins	Fusion protein	If1 g3p	US20150376239 SEQ ID NO: 8	2969
HD23	amyloid proteins	Fusion protein	Construct 4	US20150376239 SEQ ID NO: 9	2970
HD24	amyloids	Heavy chain	#118	WO2010012004 SEQ ID NO: 11	3018
HD25	amyloids	Heavy chain	#121	WO2010012004 SEQ ID NO: 13	3019

HD26	amyloids	Heavy chain	#204	WO2010012004 SEQ ID NO: 16	3020
HD27	amyloids	Heavy chain	#205	WO2010012004 SEQ ID NO: 18	3021
HD28	NOGO	Heavy chain	H6L13 FL	US20140147435 SEQ ID NO: 27	3031
HD29	NOGO	Heavy chain	H16L16 FL, H16L18 FL	US20140147435 SEQ ID NO: 31	3032
HD30	NOGO	Heavy chain	H18L16 FL	US20140147435 SEQ ID NO: 33	3033
HD31	NOGO	Heavy chain	H19L13 FL, H19L16 FL, H19L18 FL	US20140147435 SEQ ID NO: 92	3034
HD32	NOGO	Heavy chain	H20L13 FL, H20L16 FL, H20L18 FL	US20140147435 SEQ ID NO: 93	3035
HD33	NOGO	Heavy chain	H21L13 FL, H21L16 FL, H21L18 FL	US20140147435 SEQ ID NO: 94	3036
HD34	NOGO	Heavy chain	H25L13 FL, H25L16 FL, H25L18 FL	US20140147435 SEQ ID NO: 98	3037
HD35	Nogo receptor-1	Heavy chain	5B10	US20090215691 SEQ ID NO: 16	3038
HD36	Nogo receptor-1	Heavy chain	5B10	US20090215691 SEQ ID NO: 18	3039
HD37	trk-C (NT-3 trkC ligand)	Heavy chain	2250	US7615383 SEQ ID NO: 42	3040
HD38	trk-C (NT-3 trkC ligand)	Heavy chain	2253	US7615383 SEQ ID NO: 43	3041
HD39	trk-C (NT-3 trkC ligand)	Heavy chain	2256	US7615383 SEQ ID NO: 44	3042
HD40	trk-C (NT-3 trkC ligand)	Heavy chain	6.1.2	US7615383 SEQ ID NO: 45	3043
HD41	trk-C (NT-3 trkC ligand)	Heavy chain	6.4.1	US7615383 SEQ ID NO: 46	3044
HD42	trk-C (NT-3 trkC ligand)	Heavy chain	2345	US7615383 SEQ ID NO: 47	3045
HD43	trk-C (NT-3 trkC ligand)	Heavy chain	2349	US7615383 SEQ ID NO: 48	3046
HD44	many	Heavy chain fusion protein	H19L13, H19L16, H19L18, H19L14, H19L15, H19L17, H19L6, H19L11	US8053569 SEQ ID NO: 25	3056
HD45	many	Heavy chain fusion protein	H20L13, H20L16, H20L18, H20L14, H20L15, H20L17, H20L6, H20L11	US8053569 SEQ ID NO: 28	3057
HD46	many	Heavy chain fusion protein	H22L13, H22L16, H22L18, H22L14, H22L15, H22L17, H22L6, H22L11	US8053569 SEQ ID NO: 34	3058
HD47	many - growth factors	Heavy chain fusion protein	H5L11, H6L11, H14L11, H15L11, H16L11, H17L11, H18L11, H19L11, H20L11, H21L11, H22L11, H23L11, H24L11, H25L11, H700L11	US8053569 SEQ ID NO: 24	3059
HD48	NOGO	Heavy chain humanized construct H1	2A10 construct	WO2007003421 SEQ ID NO: 79	3060

HD49	NOGO	Heavy cliain humanized construct H14	2A10 construct	WO2007003421 SEQ ID NO: 29	3061
HD50	NOGO	Heavy chain humanized construct H15	2A10 construct	WO2007003421 SEQ ID NO: 30	3062
HD5 1	NOGO	Heavy chain humanized construct H16	2A10 construct	WO2007003421 SEQ ID NO: 31	3063
HD52	NOGO	Heavy chain humanized construct H17	2A10 construct	WO200700342 1 SEQ ID NO: 32	3064
HD53	NOGO	Heavy chain humanized construct H18	2A10 construct	WO200700342 1 SEQ ID NO: 33	3065
HD54	NOGO	Heavy chain humanized construct H19	2A10 construct	WO200700342 1 SEQ ID NO: 92	3066
HD55	NOGO	Heaw chain humanized construct H20	2A10 construct	WO2007003421 SEQ ID NO: 93	3067
HD56	NOGO	Heavy chain humanized construct H21	2A10 construct	WO200700342 1 SEQ ID NO: 94	3068
HD57	NOGO	Heavy chain humanized construct H22	2A10 construct	WO2007003421 SEQ ID NO: 95	3069
HD58	NOGO	Heavy chain humanized construct H23	2A10 construct	WO2007003421 SEQ ID NO: 96	3070
HD59	NOGO	Heavy chain humanized construct H24	2A10 construct	WO200700342 1 SEQ ID NO: 97	3071
HD60	NOGO	Heavy chain humanized construct H25	2A10 construct	WO200700342 1 SEQ ID NO: 98	3072
HD61	NOGO	Heavy chain humanized construct H5	2A10 construct	WO2007003421 SEQ ID NO: 26	3073
HD62	NOGO	Heavy cliain humanized construct H6	2A10 construct	WO2007003421 SEQ ID NO: 27	3074
HD63	NOGO	Heavy chain humanized construct H700	2A10 construct	WO200700342 1 SEQ ID NO: 28	3075
HD64	RTN4 (NOGO)	Heavy chain IgG4, immunomodulator	Atinumab	US8I63285 SEQ ID NO: 24	3076
HD65	amyloid oligomers	Heavy chain variable region	F11G3	u S9125846 SEQ ID NO: 11	3110
HD66	DR6 and P75	Heavy chain variable region	1P1D6.3	WO20 10062904 SEQ ID NO: 107	3116
HD67	DR6 and P75	Heavy chain variable region	M50-H01	WO20 10062904 SEQ ID NO: 7	3112
HD68	DR6 and P75	Heavy chain variable region	M67-G02	WO20 10062904 SEQ ID NO: 77	3113
HD69	DR6 and P75	Heavy chain variable region	M72-F03	WO20 10062904 SEQ ID NO: 87	3114
HD70	DR6 and P75	Heavy chain variable region	M73-C04	WO20 10062904 SEQ ID NO: 97	3115

HD71	DR6 and P75	Heavy chain variable region	1P2F2.1	WO2010062904 SEQ ID NO: 117	3117
HD72	DR6 and P75	Heavy chain variable region	1P5D10.2	WO2010062904 SEQ ID NO: 127	3118
HD73	DR6 and P75	Heavy chain variable region	M51-H09	WO2010062904 SEQ ID NO: 17	3119
HD74	DR6 and P75	Heavy chain variable region	M53-E04	WO2010062904 SEQ ID NO: 27	3120
HD75	DR6 and P75	Heavy chain variable region	M53-F04	WO2010062904 SEQ ID NO: 37	3121
HD76	DR6 and P75	Heavy chain variable region	M62-B02	WO2010062904 SEQ ID NO: 47	3122
HD77	DR6 and P75	Heavy chain variable region	M63-E10	WO2010062904 SEQ ID NO: 57	3123
HD78	DR6 and P75	Heavy chain variable region	M66-B03	WO2010062904 SEQ ID NO: 67	3111
HD79	LPG (lysophosphatidylglucoside)	Heavy chain variable region	#7	US8591902 SEQ ID NO: 18	3124
HD80	LPG (lysophosphatidylglucoside)	Heavy chain variable region	#15	US8591902 SEQ ID NO: 8	3125
HD81	MAG	Heavy chain variable region		US8071731 SEQ ID NO: 13	3126
HD82	MAG	Heavy chain variable region		US8071731 SEQ ID NO: 14	3127
HD83	MAG	Heavy chain variable region		US8071731 SEQ ID NO: 15	3128
HD84	MAI (myelin associated inhibitor)	Heavy chain variable region		WO2013158748 SEQ ID NO: 1	3129
HD85	MAI (myelin associated inhibitor)	Heavy chain variable region		WO2013158748 SEQ ID NO: 17	3130
HD86	NOGO	Heavy chain variable region	H5L13, H5L16, H5L18, H5L14, H5L15, H5L17, H5L6, H5L11	US20140147435 SEQ ID NO: 11	3132
HD87	NOGO	Heavy chain variable region	H6L13, H6L16, H6L18, H6L14, H6L15, H6L17, H6L6	US20140147435 SEQ ID NO: 12	3133
HD88	NOGO	Heavy chain variable region	H700L13, H700L16, H700L18, H700L14, H700L15, H700L17, H700L6, H700L11	US20140147435 SEQ ID NO: 13	3134
HD89	NOGO	Heavy chain variable region	H14L13, H14L16, H14L18, H14L14, H14L15, H14L17, H14L6, H14L11	US20140147435 SEQ ID NO: 14	3135
HD90	NOGO	Heavy chain variable region	H15L13, H15L16, H15L18, H15L14, H15L15, H15L17, H15L6, H15L11	US20140147435 SEQ ID NO: 15	3136
HD91	NOGO	Heavy chain variable region	H16L13, H16L16, H16L18, H16L14, H16L15, H16L17, H16L6, H16L11	US20140147435 SEQ ID NO: 16	3137
HD92	NOGO	Heavy chain variable region	H17L13, H17L16, H17L18, H17L14,	US20140147435 SEQ ID NO: 17	3138

			H17L15, H17L17, H17L6, H17L11		
HD93	NOGO	Heavy chain variable region	H18L13, H18L16, H18L18, H18L14, H18L15, H18L17, H18L6, H18L11	US20140147435 SEQ ID NO: 18	3139
HD94	NOGO	Heavy chain variable region	H1L13, H1L16, H1L18, H1L14, H1L15, H1L17, H1L6	US20140147435 SEQ ID NO: 77	3140
HD95	NOGO	Heavy chain variable region	H19L13, H19L16, H19L18, H19L14, H19L15, H19L17, H19L6, H19L11	US20140147435 SEQ ID NO: 85	3141
HD96	NOGO	Heavy chain variable region	H20L13, H20L16, H20L18, H20L14, H20L15, H20L17, H20L6, H20L11	US20140147435 SEQ ID NO: 86	3142
HD97	NOGO	Heavy chain variable region	H21L13, H21L16, H21L18, H21L14, H21L15, H21L17, H21L6, H21L11	US20140147435 SEQ ID NO: 87	3143
HD98	NOGO	Heavy chain variable region	H22L13, H22L16, H22L18, H22L14, H22L15, H22L17, H22L6, H22L11	US20140147435 SEQ ID NO: 88	3144
HD99	NOGO	Heavy chain variable region	H23L13, H23L16, H23L18, H23L14, H23L15, H23L17, H23L6, H23L11	US20140147435 SEQ ID NO: 89	3145
HD100	NOGO	Heavy chain variable region	H24L13, H24L16, H24L18, H24L14, H24L15, H24L17, H24L6, H24L11	US20140147435 SEQ ID NO: 90	3146
HD101	NOGO	Heavy chain variable region	H25L13, H25L16, H25L18, H25L14, H25L15, H25L17, H25L6, H25L11	US20140147435 SEQ ID NO: 91	3147
HD102	Nogo-66	Heavy chain variable region	Antibody clone 50	US20140065155 SEQ ID NO: 3	3148
HD103	Nogo-66	Heavy chain variable region	Antibody clone 51	US20140065155 SEQ ID NO: 5	3149
HD104	NogoA/NiG	Heavy chain variable region	6A3-Ig4	WO2009056509 SEQ ID NO: 24	3150
HD105	NogoA/NiG	Heavy chain variable region	6A3-IgG1	WO2009056509 SEQ ID NO: 4	3151
HD106	RGM A	Heavy chain variable region	5F9.1-GL	US20150183871 SEQ ID NO: 35	3152
HD107	RGM A	Heavy chain variable region	5F9.2-GL	US20150183871 SEQ ID NO: 36	3153
HD108	RGM A	Heavy chain variable region	5F9.3-GL	US20150183871 SEQ ID NO: 37	3154
HD109	RGM A	Heavy chain variable region	5F9.4-GL	US20150183871 SEQ ID NO: 38	3155
HD110	RGM A	Heavy chain variable region	5F9.5-GL	US20150183871 SEQ ID NO: 39	3156
HD111	RGM A	Heavy chain variable region	5F9.6-GL	US20150183871 SEQ ID NO: 40	3157
HD112	RGM A	Heavy chain variable region	5F9.7-GL	US20150183871 SEQ ID NO: 41	3158

ESD113	RGM A	**Heavy chain** variable region	5F9.8-GL	**US2015018387 1** SEQ ID **NO:** 42	3159
HD1 14	RGM A	Heavy chain variable region	5F9.9-GL	**US20150183871** SEQ ID NO: 43	3160
HD115	**RGM A**	Heavy chain **variable** region	h5F9.1, h5F9. i, **h5F9.1, h5F9. 1,** li5F9.1, h5F9.2, ii5F9.3	**US2015/0 183871** SEQ ID NO: 47	4259
HD1 16	RGM A	**Heavy** chain variable region	**h5F9.3,** h5F9.9, li5F9.25	**US2015/0183871** SEQ ID NO: 53	4260
HD1 17	**RGM A**	**Heavy** chain variable region	li5F9.4, h5F9. 10, h5F9.26	**US2015/0183871** SEQ ID NO: 54	4261
HD1 18	RGMa	**Heavy** chain variable region	AE12-21	**US20 140023659** SEQ ID NO: 115	3166
HD1 19	RGMa	**Heavy** chain variable region	AE12-23	**US20 140023659** SEQ ID NO: 123	3167
HD120	RGMa	**Heavy** chain variable region	AE12-24	**US20 140023659** SEQ ID NO: 13 **1**	3168
HD121	RGMa	**Heavy** chain variable region	AE12-3	**US20 140023659** SEQ ID **NO:** 17	3169
HD122	RGMa	**Heavy chain** variable region	AEI2-4	**US20 140023659** SEQ ID NO: 25	3170
HD123	RGMa	Heavy chain variable region	AE12-5	**US20140023659** SEQ ID NO: 33	3171
HD 124	RGMa	**Heavy chain** variable region	AEI2-6	**US20 140023659** SEQ ID **NO: 41**	3172
HD125	RGMa	Heavy chain variable region	AE12-7	**US20140023659** SEQ ID NO: 49	3173
HD126	RGMa	**Heavy chain** variable region	AEI2-8	**US20 140023659** SEQ ID **NO:** 57	3174
HD127	RGMa	Heavy chain variable region	AE12-2	**US20140023659** SEQ ID **NO:** 9	3175
HD128	RGMa	**Heavy chain** variable region	**AE12-13**	**US20 140023659** SEQ ID **NO:** 91	3176
HD129	RGMa	Heavy chain variable region	**AE12-15**	**US20 140023659** SEQ ID **NO:** 99	3177
HD130	RGMa	**Heavy chain** variable region	AEI2-1	**US20 140023659** SEQ ID **NO:** 1	3164
HD13 1	RGMa	Heavy chain variable region	AE12-20	**US20 140023659** SEQ ID NO: 107	3165
HD I32	NOGO	Heavy **chain** variable region **humanized** construct H1	**2A10** construct	**WO200700342 1** SEQ ID NO: 77	3181
HD133	NOGO	**Heavy** chain variable region **humanized construct H14**	**2A10** construct	**WO2007003421** SEQ ID NO: 14	3182
HI) 134	NOGO	Heavy chain variable region humanized construct H15	2A10 **construct**	**WO200700342** 1 SEQ ID NO: 15	3183
HD135	NOGO	Heavy chain variable region humanized construct H16	2A10 construct	WO200700342 1 SEQ ID NO: 16	3184
HD136	NOGO	Heavy chain variable region	**2A10** construct	**WO2007003421** SEQ ID NO: 17	3185

		humanized construct H17			
HD137	NOGO	Heavy chain variable region humanized construct H18	2A10 construct	WO2007003421 SEQ ID NO: 18	3186
HD138	NOGO	Heavy chain variable region humanized construct H19	2A10 construct	WO2007003421 SEQ ID NO: 85	3187
HD139	NOGO	Heavy chain variable region humanized construct H20	2A10 construct	WO2007003421 SEQ ID NO: 86	3188
HD140	NOGO	Heavy chain variable region humanized construct H21	2A10 construct	WO2007003421 SEQ ID NO: 87	3189
HD141	NOGO	Heavy chain variable region humanized construct H22	2A10 construct	WO2007003421 SEQ ID NO: 88	3190
HD142	NOGO	Heavy chain variable region humanized construct H23	2A10 construct	WO2007003421 SEQ ID NO: 89	3191
HD143	NOGO	Heavy chain variable region humanized construct H24	2A10 construct	WO2007003421 SEQ ID NO: 90	3192
HD144	NOGO	Heavy chain variable region humanized construct H25	2A10 construct	WO2007003421 SEQ ID NO: 91	3193
HD145	NOGO	Heavy chain variable region humanized construct H5	2A10 construct	WO2007003421 SEQ ID NO: 11	3194
HD146	NOGO	Heavy chain variable region humanized construct H6	2A10 construct	WO2007003421 SEQ ID NO: 12	3195
HD147	NOGO	Heavy chain variable region humanized construct H700	2A10 construct	WO2007003421 SEQ ID NO: 13	3196
HD148	amyloids	Light chain	#118	WO2010012004 SEQ ID NO: 10	3242
HD149	amyloids	Light chain	#121	WO2010012004 SEQ ID NO: 12	3243
HD150	amyloids	Light chain	#201	WO2010012004 SEQ ID NO: 14	3244
HD151	amyloids	Light chain	#204	WO2010012004 SEQ ID NO: 15	3245
HD152	amyloids	Light chain	#205	WO2010012004 SEQ ID NO: 17	3246
HD153	NOGO	Light chain	H6L13 FL, H19L13 FL, H20L13 FL, H21L13 FL, H25L13 FL	US20140147435 SEQ ID NO: 35	3257

HD154	NOGO	Light chain	H16L16 FL, H19L16 FL, H20L16 FL, H21L16 FL, H25L16 FL, H18L16 FL	US20140147435 SEQ ID NO: 38	3258
HD155	NOGO	Light chain	H16L18 FL, H19L18 FL, H20L18 FL, H21L18 FL, H25L18 FL	US20140147435 SEQ ID NO: 40	3259
HD156	Nogo receptor-1	Light chain	7E11	US20090215691 SEQ ID NO: 15	3260
HD157	Nogo receptor-1	Light chain	7E11	US20090215691 SEQ ID NO: 17	3261
HD158	trk-C (NT-3 trkC ligand)	Light chain	2250	US7615383 SEQ ID NO: 49	3262
HD159	trk-C (NT-3 trkC ligand)	Light chain	2253	US7615383 SEQ ID NO: 50	3263
HD160	trk-C (NT-3 trkC ligand)	Light chain	2256	US7615383 SEQ ID NO: 51	3264
HD161	trk-C (NT-3 trkC ligand)	Light chain	6.1.2	US7615383 SEQ ID NO: 52	3265
HD162	trk-C (NT-3 trkC ligand)	Light chain	6.4.1	US7615383 SEQ ID NO: 53	3266
HD163	trk-C (NT-3 trkC ligand)	Light chain	2345	US7615383 SEQ ID NO: 54	3267
HD164	trk-C (NT-3 trkC ligand)	Light chain	2349	US7615383 SEQ ID NO: 55	3268
HD165	many	Light chain fusion protein	H21L13, H21L16, H21L18, H21L14, H21L15, H21L17, H21L6, H21L11	US8053569 SEQ ID NO: 31	3275
HD166	many	Light chain fusion protein	H23L13, H23L16, H23L18, H23L14, H23L15, H23L17, H23L6, H23L11	US8053569 SEQ ID NO: 36	3276
HD167	NOGO	Light chain humanized construct L11	2A10 construct	WO2007003421 SEQ ID NO: 80	3277
HD168	NOGO	Light chain humanized construct L13	2A10 construct	WO2007003421 SEQ ID NO: 35	3278
HD169	NOGO	Light chain humanized construct L14	2A10 construct	WO2007003421 SEQ ID NO: 36	3279
HD170	NOGO	Light chain humanized construct L15	2A10 construct	WO2007003421 SEQ ID NO: 37	3280
HD171	NOGO	Light chain humanized construct L16	2A10 construct	WO2007003421 SEQ ID NO: 38	3281
HD172	NOGO	Light chain humanized construct L17	2A10 construct	WO2007003421 SEQ ID NO: 39	3282
HD173	NOGO	Light chain humanized construct L18	2A10 construct	WO2007003421 SEQ ID NO: 40	3283
HD174	NOGO	Light chain humanized **construct** L6	2A10 construct	WO2007003421 SEQ ID NO: 34	3284

HD175	RTN4	Light chain IgG4, inimunoniodulator	Atinumab	US8163285 SEQ ID NO: 25	3285
HD176	huntingtin protein	Light chain single domain		US20050226863 SEQ ID NO: 1	4262
HD177	huntingtin protein	Light chairs single domain	VL I2.3	US20050226863 SEQ ID NO: 10	4263
HI) 178	huntingtin protein	Light chain single domain		US20050226863 SEQ ID NO: 2	4264
HD179	huntingtin protein	Light chain single domain		US20050226863 SEQ ID NO: 3	4265
HI) 180	huntingtin protein	Light chain single domain		US20050226863 SEQ ID NO: 4	4266
HD181	amyloid oligomers	Light chain variable region	F11G3	US9 125846 SEQ ID NO: 12	3315
HI) 182	DR6 and P75	Light chain variable region	M73-C04	WO20 10062904 SEQ ID NO: 102	3316
HD183	DR6 and P75	Light chain variable region	1P1D6.3	WO20 10062904 SEQ ID NO: 112	3317
HI) 184	DR6 and P75	Light chain variable region	M50-H02	WO20 10062904 SEQ ID NO: 12	3318
HD185	DR6 and P75	Light chain variable region	1P2F2. 1	WO20 10062904 SEQ ID NO: 122	3319
HI) 186	DR6 and P75	Light chain variable region	1P5D 10.2	WO20 10062904 SEQ ID NO: 132	3320
HD 187	DR6 and P75	Light chain variable region	M51-H09	WO20 10062904 SEQ ID NO: 22	3321
HI) 188	DR6 and P75	Light chain variable region	M53-E04	WO2010062904 SEQ ID NO: 32	3322
HD 189	DR6 and P75	Light chain variable region	M53-F04	WO20 10062904 SEQ ID NO: 42	3323
HI) 190	DR6 and P75	Light chain variable region	M62-B02	WO20 10062904 SEQ ID NO: 52	3324
HD 191	DR6 and P75	Light chain variable region	M63-E10	WO2010062904 SEQ ID NO: 62	3325
HI) 192	DR6 and P75	Light chain variable region	M66-B03	WO20 10062904 SEQ ID NO: 72	3326
HD 193	DR6 and P75	Light chain variable region	M67-G02	WO20 10062904 SEQ ID NO: 82	3327
HD194	DR6 and P75	Light chain variable region	M72-F03	WO20 10062904 SEQ ID NO: 92	3328
HD195	LPG (lysophosphatidylglucoside)	Light chain variable region	#7	US8591902 SEQ ID NO: 17	3329
HD196	LPG (lysophosphatidylglucoside)	Light chain variable region	#15	US8591902 SEQ ID NO: 7	3330
HI) 197	MAG-	Light chain variable region		US8071731 SEQ ID NO: 16	3331
HD198	MAG	Light chain variable region		US807173 1 SEQ ID NO: 17	3332
HI) 199	MAG-	Light chain variable region		US8071731 SEQ ID NO: 18	3333
HD200	MAG	Light chain variable region		US807173 1 SEQ ID NO: 19	3334
HD201	MAI (myelin associated inhibitor)	Light chain variable region		WO2013 158748 SEQ ID NO: 11	3335

HD202	MAI (myelin associated inhibitor)	Light chain variable region		WO2013158748 SEQ ID NO: 27	3336
HD203	NOGO	Light chain variable region	H1L6, H5L6, H6L6, H14L6, H15L6, H16L6, H17L6, H18L6, H19L6, H20L6, H21L6, H22L6, H23L6, H24L6, H25L6, H700L6	US20140147435 SEQ ID NO: 19	3338
HD204	NOGO	Light chain variable region	H1L13, H5L13, H6L13, H14L13, H15L13, H16L13, H17L13, H18L13, H19L13, H20L13, H21L13, H22L13, H23L13, H24L13, H25L13, H700L13	US20140147435 SEQ ID NO: 20	3339
HD205	NOGO	Light chain variable region	H1L14, H5L14, H6L14, H14L14, H15L14, H16L14, H17L14, H18L14, H19L14, H20L14, H21L14, H22L14, H23L14, H24L14, H25L14, H700L14	US20140147435 SEQ ID NO: 21	3340
HD206	NOGO	Light chain variable region	H1L15, H5L15, H6L15, H14L15, H15L15, H16L15, H17L15, H18L15, H19L15, H20L15, H21L15, H22L15, H23L15, H24L15, H25L15, H700L15	US20140147435 SEQ ID NO: 22	3341
HD207	NOGO	Light chain variable region	H1L16, H5L16, H6L16, H14L16, H15L16, H16L16, H17L16, H18L16, H19L16, H20L16, H21L16, H22L16, H23L16, H24L16, H25L16, H700L16	US20140147435 SEQ ID NO: 23	3342
HD208	NOGO	Light chain variable region	H1L17, H5L17, H6L17, H14L17, H15L17, H16L17, H17L17, H18L17, H19L17, H20L17, H21L17, H22L17, H23L17, H24L17, H25L17, H700L17	US20140147435 SEQ ID NO: 24	3343
HD209	NOGO	Light chain variable region	H1L18, H5L18, H6L18, H14L18, H15L18, H16L18, H17L18, H18L18, H19L18, H20L18, H21L18, H22L18, H23L18, H24L18, H25L18, H700L18	US20140147435 SEQ ID NO: 25	3344

HD210	NOGO	Light chain variable region	H5L11, H6L11, H14L11, H15L11, H16L11, H17L11, H18L11, H19L11, H20L11, H21L11, H22L11, H23L11, H24L11, H25L11, H700L11	US20140147435 SEQ ID NO: 78	3345
HD211	Nogo-66	Light chain variable region	Antibody clone 50	US20140065155 SEQ ID NO: 4	3346
HD212	Nogo-66	Light chain variable region	Antibody clone 51	US20140065155 SEQ ID NO: 6	3347
HD213	NogoA/NiG	Light chain variable region	6A3-Ig4	WO2009056509 SEQ ID NO: 25	3348
HD214	NogoA/NiG	Light chain variable region	6A3-IgG1	WO2009056509 SEQ ID NO: 5	3349
HD215	RGM A	Light chain variable region	5F9.1-GL, 5F9.1-GL, 5F9.1-GL, 5F9.1-GL, 5F9.1-GL, 5F9.1-GL, 5F9.1-GL, 5F9.1-GL, h5F9.4, h5F9.11, h5F9.12	US20150183871 SEQ ID NO: 44	3350
HD216	RGM A	Light chain variable region	5F9.2-GL, 5F9.2-GL, 5F9.2-GL, 5F9.2-GL, 5F9.2-GL, 5F9.2-GL, 5F9.2-GL, 5F9.2-GL, h5F9.5, h5F9.19, h5F9.20	US20150183871 SEQ ID NO: 45	3351
HD217	RGM A	Light chain variable region	5F9.3-GL, 5F9.3-GL, 5F9.3-GL, 5F9.3-GL, 5F9.3-GL, 5F9.3-GL, 5F9.3-GL, 5F9.3-GL, h5F9.6, h5F9.21, h5F9.22	US20150183871 SEQ ID NO: 46	3352
HD218	RGM A	Light chain variable region	h5F9.5, h5F9.6, h5F9.7, h5F9.8, h5F9.9, h5F9.10	US20150183871 SEQ ID NO: 48	3353
HD219	RGM A	Light chain variable region	h5F9.11, h5F9.19, h5F9.21	US20150183871 SEQ ID NO: 49	3354
HD220	RGM A	Light chain variable region	h5F9.12, h5F9.20, h5F9.22, h5F9.23, h5F9.25, h5F9.25, h5F9.26	US20150183871 SEQ ID NO: 50	3355
HD221	RGM A	Light chain variable region	h5F9.1, h5F9.7, h5F9.23	US20150183871 SEQ ID NO: 51	3356
HD222	RGM A	Light chain variable region	h5F9.2, h5F9.8, h5F9.25	US20150183871 SEQ ID NO: 52	3357
HD223	RGMa	Light chain variable region	AE12-15	US20140023659 SEQ ID NO: 103	3358
HD224	RGMa	Light chain variable region	AE12-20	US20140023659 SEQ ID NO: 111	3359
HD225	RGMa	Light chain variable region	AE12-21	US20140023659 SEQ ID NO: 119	3360
HD226	RGMa	Light chain variable region	AE12-23	US20140023659 SEQ ID NO: 127	3361
HD227	RGMa	Light chain variable region	AE12-2	US20140023659 SEQ ID NO: 13	3362

HD228	RGMa	Light chain variable region	AE 12-24	US20 140023659 SEQ ID NO: 135	3363
HD229	RGMa	Light chain variable region	AE12-3	US20140023659 SEQ ID NO: 21	3364
HD230	RGMa	Light chairs variable region	AE I2-4	US20 140023659 SEQ ID NO: 29	3365
HD23 1	RGMa	Light chain variable region	AE12-5	US20 140023659 SEQ ID NO: 37	3366
HD232	RGMa	Light chairs variable region	AE I2-6	US20 140023659 SEQ ID NO: 45	3367
HD233	RGMa	Light chain variable region	AE12- 1	US20 140023659 SEQ ID NO: 5	3368
HD234	RGMa	Light chairs variable region	AE I2-7	US20 140023659 SEQ ID NO: 53	3369
HD235	RGMa	Light chain variable region	AE 12-8	US20 140023659 SEQ ID NO: 61	3370
HD236	RGMa	Light chairs variable region	AE I2-13	US20 140023659 SEQ ID NO: 95	3371
HD237	NOGO	Light chain variable region humanized construct L11	2A 10 construct	WO200700342 1 SEQ ID NO: 78	3375
HD238	NOGO	Light chain variable region humanized construct L 13	2A10 construct	WO200700342 1 SEQ ID NO: 20	3376
HD239	NOGO	Light chairs variable region humanized construct L 14	2A10 construct	WO2007003421 SEQ ID NO: 21	3377
HD240	NOGO	Light chain variable region humanized construct LIS	2A10 construct	WO2007003421 SEQ ID NO: 22	3378
HD241	NOGO	Light chain variable region humanized construct L 16	2A10 construct	WO200700342 1 SEQ ID NO: 23	3379
HD242	NOGO	Light chain variable region humanized construct L 17	2A 10 construct	WO200700342 1 SEQ ID NO: 24	3380
HD243	NOGO	Light chain variable region humanized construct L18	2A10 construct	WO2007003421 SEQ ID NO: 25	3381
HD244	NOGO	Light chairs variable region humanized constntet L6	2A10 construct	WO200700342 1 SEQ ID NO: 19	3382
HD245	HTT			Lecerf, J.M. et al., Human single-chairs Fv intrabodies counteract in situ huntingtin aggregation in cellular models of Huntington's disease, Proc. Natl.	4267

				Acad. Sci. U.S.A. 98 (8), 4764-4769 (2001), NCBI Accession # ACA53373.1	

Muscle Disease Antibodies

[00277] In one embodmieni, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding one or more of the muscle disease payload antibody polypeptides listed in Table 6 (MUS1-MUS485; SEQ ID NO: 2948-2970, 3018-3046, 3056-3076, 3110-3130, 3132-3177, 3181-3196, 3242-3268, 3275-3285, 3315-3336. 3338-3371, 3375-3382, 4268-4494). A non-exhaustive listing of muscle diseases includes Multiple System Atrophy (MSA), Amyotrophic Lateral Sclerosis (ALS) and Duchenne Muscular Dystrophy (DMD).

Table 6, Muscle Disease Antibodies

Antibody No.	Target	Description	Antibody Name	Reference Information	SEQ ID NO
MUS1	amyloid proteins	consensus sequence	M13 g3p, fd g3p, f1 g3p	US20150376239 SEQ ID NO: 4	2948
MUS2	amyloid proteins	consensus sequence	12-2 g3p, Ike g3p	US20150376239 SEQ ID NO: 7	2949
MUS3	118-126 of α-synuclein	constant region	IgG1	US20150259404 SEQ ID NO: 38	2950
MUS4	amyloid proteins	Fusion protein	M13 g3p	US20150376239 SEQ ID NO: 1	2951
MUS5	amyloid proteins	Fusion protein	Construct 5	US20150376239 SEQ ID NO: 11	2952
MUS6	amyloid proteins	Fusion protein	Construct 6	US20150376239 SEQ ID NO: 13	2953
MUS7	amyloid proteins	Fusion protein	fd N2	US20150376239 SEQ ID NO: 14	2954
MUS8	amyloid proteins	Fusion protein	f1 N2	US20150376239 SEQ ID NO: 15	2955
MUS9	amyloid proteins	Fusion protein	M13 N2	US20150376239 SEQ ID NO: 16	2956
MUS10	amyloid proteins	Fusion protein	Ike N2	US20150376239 SEQ ID NO: 17	2957
MUS11	amyloid proteins	Fusion protein	12-2 N2	US20150376239 SEQ ID NO: 18	2958
MUS12	amyloid proteins	Fusion protein	If1 N2	US20150376239 SEQ ID NO: 19	2959
MUS13	amyloid proteins	Fusion protein	fd g3p	US20150376239 SEQ ID NO: 2	2960
MUS14	amyloid proteins	Fusion protein	Construct 3	US20150376239 SEQ ID NO: 20	2961
MUS15	amyloid proteins	Fusion protein	Construct 3m g3p portion	US20150376239 SEQ ID NO: 24	2962
MUS16	amyloid proteins	Fusion protein	If1 g3p	US20150376239 SEQ ID NO: 29	2963
MUS17	amyloid proteins	Fusion protein	f1 g3p	US20150376239 SEQ ID NO: 3	2964

MUS18	amyloid proteins	Fusion protein	fd g3p	US20150376239 SEQ ID NO: 30	2965
MUS19	amyloid proteins	Fusion protein	Construct 8, rs-g3p (If1-N1N2)-hIgG1-Fc	US20150376239 SEQ ID NO: 31	2966
MUS20	amyloid proteins	Fusion protein	I2-2 g3p	US20150376239 SEQ ID NO: 5	2967
MUS21	amyloid proteins	Fusion protein	Ike g3p	US20150376239 SEQ ID NO: 6	2968
MUS22	amyloid proteins	Fusion protein	If1 g3p	US20150376239 SEQ ID NO: 8	2969
MUS23	amyloid proteins	Fusion protein	Construct 4	US20150376239 SEQ ID NO: 9	2970
MUS24	ACVR2B (SMA - muscle growth)	Heavy chain	H6L4, H6L5, H6L6	US8388968 SEQ ID NO: 146	4268
MUS25	ACVR2B (SMA - muscle growth)	Heavy chain		US8388968 SEQ ID NO: 146	4269
MUS26	amyloids	Heavy chain	#118	WO2010012004 SEQ ID NO: 11	3018
MUS27	amyloids	Heavy chain	#121	WO2010012004 SEQ ID NO: 13	3019
MUS28	amyloids	Heavy chain	#204	WO2010012004 SEQ ID NO: 16	3020
MUS29	amyloids	Heavy chain	#205	WO2010012004 SEQ ID NO: 18	3021
MUS30	EAG1	Heavy chain	chimeric ImAb3	WO2006037604 SEQ ID NO: 12	3022
MUS31	EAG1	Heavy chain	chimeric ImAb4	WO2006037604 SEQ ID NO: 16	3023
MUS32	EAG1	Heavy chain	HC-ImAb3-humVH3-72	WO2006037604 SEQ ID NO: 20	3024
MUS33	EAG1	Heavy chain	HC-ImAb4-humVH4-59	WO2006037604 SEQ ID NO: 24	3025
MUS34	EAG1	Heavy chain	HC-ImAb3-humVH3 23	WO2006037604 SEQ ID NO: 28	3026
MUS35	EAG1	Heavy chain	HC-ImAb3-humVH2 26	WO2006037604 SEQ ID NO: 32	3027
MUS36	EAG1	Heavy chain	HC-ImAb4-humVH1-3	WO2006037604 SEQ ID NO: 36	3028
MUS37	EAG1	Heavy chain	ImAb4	WO2006037604 SEQ ID NO: 4	3029
MUS38	EAG1	Heavy chain	ImAb3	WO2006037604 SEQ ID NO: 8	3030
MUS39	GDF-8	Heavy chain	358-22	US20130287762 SEQ ID NO: 10	4270
MUS40	GDF-8	Heavy chain	358-11-M1	US20130287762 SEQ ID NO: 16	4271
MUS41	GDF-8	Heavy chain	358-22-M1	US20130287762 SEQ ID NO: 4	4272
MUS42	growth differentiation factor 8	Heavy chain			4273
MUS43	growth differentiation factor 8	Heavy chain	Domagrozumab		4274
MUS44	MAG	Heavy chain			4275
MUS45	MSTN	Heavy chain	H24L13, H24L16, H24L18, H24L14,		4276

			H24L15, H24L17, H24L6, H24L11		
MUS46	myostatin	Heavy chain	NI-204.11F11	US20110256132 SEQ ID NO: 26	4277
MUS47	myostatin	Heavy chain	NI-204.67E12	US20110256132 SEQ ID NO: 28	4278
MUS48	myostatin	Heavy chain	NI-204.6H1	US20110256132 SEQ ID NO: 29	4279
MUS49	myostatin	Heavy chain	NI-204.6H1	US20110256132 SEQ ID NO: 30	4280
MUS50	Myostatin	Heavy chain	312-19, 312-19-M1	US20130142788 SEQ ID NO: 123	4281
MUS51	Myostatin	Heavy chain	591-33, 591-33-M1	US20130142788 SEQ ID NO: 125	4282
MUS52	Myostatin	Heavy chain	114-41, 114-41-M1	US20130142788 SEQ ID NO: 127	4283
MUS53	Myostatin	Heavy chain	595-16, 595-16- M1	US20130142788 SEQ ID NO: 138	4284
MUS54	Myostatin	Heavy chain	591-37, 591-37-M1	US20130142788 SEQ ID NO: 139	4285
MUS55	Myostatin	Heavy chain	358-11, 358-11-M1	US20130142788 SEQ ID NO: 140	4286
MUS56	Myostatin	Heavy chain	358-22, 358-22-M1	US20130142788 SEQ ID NO: 141	4287
MUS57	Myostatin	Heavy chain	597-120, 597-120-M1	US20130142788 SEQ ID NO: 142	4288
MUS58	Myostatin	Heavy chain	311-3	US20130142788 SEQ ID NO: 143	4289
MUS59	Myostatin	Heavy chain	311-3-M1	US20130142788 SEQ ID NO: 144	4290
MUS60	Myostatin	Heavy chain	312-19-M1	US20130142788 SEQ ID NO: 26	4291
MUS61	Myostatin	Heavy chain	114-41	US20130142788 SEQ ID NO: 30	4292
MUS62	Myostatin	Heavy chain	311-3-M1	US20130142788 SEQ ID NO: 35	4293
MUS63	Myostatin	Heavy chain	312-19	US20130142788 SEQ ID NO: 36	4294
MUS64	Myostatin	Heavy chain	591-33	US20130142788 SEQ ID NO: 38	4295
MUS65	Myostatin	Heavy chain	591-33-M1	US20130142788 SEQ ID NO: 39	4296
MUS66	Myostatin	Heavy chain	312-56	US20130142788 SEQ ID NO: 98	4297
MUS67	myostatin antagonists	Heavy chain	NI-205.21G2	US20130209489 SEQ ID NO: 11	4298
MUS68	myostatin antagonists	Heavy chain	NI-205.8A2	US20130209489 SEQ ID NO: 12	4299
MUS69	myostatin antagonists	Heavy chain	NI-205.8A2	US20130209489 SEQ ID NO: 13	4300
MUS70	myostatin antagonists	Heavy chain	NI-205.15F12	US20130209489 SEQ ID NO: 14	4301
MUS71	myostatin antagonists	Heavy chain	NI-205.15F12	US20130209489 SEQ ID NO: 15	4302
MUS72	myostatin antagonists	Heavy chain	NI-205.113C4	US20130209489 SEQ ID NO: 16	4303
MUS73	myostatin antagonists	Heavy chain	NI-205.113C4	US20130209489 SEQ ID NO: 17	4304

MUS74	myostatin antagonists	Heavy chain	NI-205.25F3	US20130209489 SEQ ID NO: 18	4305
MUS75	myostatin antagonists	Heavy chain	NI-205.25F3	US20130209489 SEQ ID NO: 19	4306
MUS76	NOGO	Heavy chain	H19L13 FL, H19L16 FL, H19L18 FL	US20140147435 SEQ ID NO: 92	3034
MUS77	NOGO	Heavy chain	H20L13 FL, H20L16 FL, H20L18 FL	US20140147435 SEQ ID NO: 93	3035
MUS78	NOGO	Heavy chain	H21L13 FL, H21L16 FL, H21L18 FL	US20140147435 SEQ ID NO: 94	3036
MUS79	NOGO	Heavy chain	H25L13 FL, H25L16 FL, H25L18 FL	US20140147435 SEQ ID NO: 98	3037
MUS80	NOGO	Heavy chain	H6L13 FL	US20140147435 SEQ ID NO: 27	3031
MUS81	NOGO	Heavy chain	H16L16 FL, H16L18 FL	US20140147435 SEQ ID NO: 31	3032
MUS82	NOGO	Heavy chain	H18L16 FL	US20140147435 SEQ ID NO: 33	3033
MUS83	Nogo receptor-1	Heavy chain	5B10	US20090215691 SEQ ID NO: 16	3038
MUS84	Nogo receptor-1	Heavy chain	5B10	US20090215691 SEQ ID NO: 18	3039
MUS85	RTN4	Heavy chain		SEQ ID NO: 38 US7780964	4307
MUS86	S1P4	Heavy chain		WO2015057939 SEQ ID NO: 39	4308
MUS87	trk-C (NT-3 trkC ligand)	Heavy chain	2250	US7615383 SEQ ID NO: 42	3040
MUS88	trk-C (NT-3 trkC ligand)	Heavy chain	2253	US7615383 SEQ ID NO: 43	3041
MUS89	trk-C (NT-3 trkC ligand)	Heavy chain	2256	US7615383 SEQ ID NO: 44	3042
MUS90	trk-C (NT-3 trkC ligand)	Heavy chain	6.1.2	US7615383 SEQ ID NO: 45	3043
MUS91	trk-C (NT-3 trkC ligand)	Heavy chain	6.4.1	US7615383 SEQ ID NO: 46	3044
MUS92	trk-C (NT-3 trkC ligand)	Heavy chain	2345	US7615383 SEQ ID NO: 47	3045
MUS93	trk-C (NT-3 trkC ligand)	Heavy chain	2349	US7615383 SEQ ID NO: 48	3046
MUS94	myostatin antagonists	Heavy chain consensus	NI-205.87E7	US20130209489 SEQ ID NO: 20	4309
MUS95	GDF-8	Heavy chain constant region		US8956608 SEQ ID NO: 19	4310
MUS96	many - growth factors (to increase transport across BBB)	Heavy chain fusion protein	H19L13, H19L16, H19L18, H19L14, H19L15, H19L17, H19L6, H19L11	US8053569 SEQ ID NO: 25	3056
MUS97	many - growth factors (to increase transport across BBB)	Heavy chain fusion protein	H20L13, H20L16, H20L18, H20L14, H20L15, H20L17, H20L6, H20L11	US8053569 SEQ ID NO: 28	3057
MUS98	many - growth factors (to increase transport across BBB)	Heavy chain fusion protein	H22L13, H22L16, H22L18, H22L14, H22L15, H22L17, H22L6, H22L11	US8053569 SEQ ID NO: 34	3058

MUS99	many - growth factors (to increase transport across BBB)	Heavy chain fusion protein	H5L1 1, H6L1 1, H14L1 I, H15L l 1, H 16L1 l, H17L 11, H 18L1 1, H19L 11, H20L1 l, H2 1L l 1, H22L1 1, H23L 11, H24L1 l, H25L l 1, H700L1 l	US8053569 SEQ ID NO: 24	3059
MUSI 00	NOGO	Heaw chain humanized construct H I	2A10 construct	WO2007003421 SEQ ID NO: 79	3060
MUS 10 1	NOGO	Heaw chain humanized construct H 14	2A I0 construct	WO200700342 1 SEQ ID NO: 29	3061
MUS l02	NOGO	Heavy chain humanized construct H15	2A 10 construct	WO200700342 1 SEQ ID NO: 30	3062
MUSl03	NOGO	Heavy chain humanized construct H16	2A 10 construct	WO200700342 l SEQ ID NO: 31	3063
MUSI 04	NOGO	Heavy chain humanized construct H17	2A10 construct	WO2007003421 SEQ ID NO: 32	3064
MUS105	NOGO	Heavy chain humanized construct HIS	2A10 construct	WO200700342 1 SEQ ID NO: 33	3065
MUSl06	NOGO	Heavy chain humanized construct H 19	2A10 construct	WO2007003421 SEQ ID NO: 92	3066
MUSI 07	NOGO	Heaw chain humanized construct H20	2A10 construct	WO2007003421 SEQ ID NO: 93	3067
MUS l08	NOGO	Heavy chain humanized construct H21	2A I0 construct	WO200700342 1 SEQ ID NO: 94	3068
MUSI09	NOGO	Heavy chain humanized construct H22	2A l0 construct	WO200700342 l SEQ ID NO: 95	3069
MUSl 10	NOGO	Heavy chain humanized construct H23	2A10 construct	WO2007003421 SEQ ID NO: 96	3070
MUSI 1l	NOGO	Heavy chain humanized construct H24	2A10 construct	WO2007003421 SEQ ID NO: 97	3071
MU Sl l2	NOGO	Heavy chain humanized construct H25	2A10 construct	WO200700342 1 SEQ ID NO: 98	3072
MUSI 13	NOGO	Heavy chain humanized construct H5	2A10 construct	WO2007003421 SEQ ID NO: 26	3073
MUS I14	NOGO	Heavy chain humanized construct H6	2A I0 construct	WO200700342 1 SEQ ID NO: 27	3074
MUSI15	NOGO	Heavy chain humanized construct H700	2A 10 construct	WO200700342 1 SEQ ID NO: 28	3075
MUSl 16	RTN4 (NOGO)	Heavy chain IgG4, immunomodulator	Atinumab	U S8 163285 SEQ ID NO: 24	3076
MUSI 17	amyloid oligomers	Heavy chain variable region	F 11G3	US9125846 SEQ ID NO: 11	3 110

MUS118	differentiation factor 8 (GDF8)	Heavy chain variable region	H8L4, H8L5, H8L6	US20140023638 SEQ ID NO: 17	4311
MUS119	DR6 and P75	Heavy chain variable region	M62-B02	WO2010062904 SEQ ID NO: 47	3122
MUS120	DR6 and P75	Heavy chain variable region	M63-E10	WO2010062904 SEQ ID NO: 57	3123
MUS121	DR6 and P75	Heavy chain variable region	M66-B03	WO2010062904 SEQ ID NO: 67	3111
MUS122	DR6 and P75	Heavy chain variable region	M50-H01	WO2010062904 SEQ ID NO: 7	3112
MUS123	DR6 and P75	Heavy chain variable region	M67-G02	WO2010062904 SEQ ID NO: 77	3113
MUS124	DR6 and P75	Heavy chain variable region	M72-F03	WO2010062904 SEQ ID NO: 87	3114
MUS125	DR6 and P75	Heavy chain variable region	M73-C04	WO2010062904 SEQ ID NO: 97	3115
MUS126	DR6 and P75	Heavy chain variable region	1P1D6.3	WO2010062904 SEQ ID NO: 107	3116
MUS127	DR6 and P75	Heavy chain variable region	1P2F2.1	WO2010062904 SEQ ID NO: 117	3117
MUS128	DR6 and P75	Heavy chain variable region	1P5D10.2	WO2010062904 SEQ ID NO: 127	3118
MUS129	DR6 and P75	Heavy chain variable region	M51-H09	WO2010062904 SEQ ID NO: 17	3119
MUS130	DR6 and P75	Heavy chain variable region	M53-E04	WO2010062904 SEQ ID NO: 27	3120
MUS131	DR6 and P75	Heavy chain variable region	M53-F04	WO2010062904 SEQ ID NO: 37	3121
MUS132	GDF-8	Heavy chain variable region	595-16	US8956608 SEQ ID NO: 26	4312
MUS133	GDF-8	Heavy chain variable region	12A5-10HC	US8956608 SEQ ID NO: 7	4313
MUS134	growth differentiation factor 8	Heavy chain variable region		US8840894 SEQ ID NO: 360	4314
MUS135	LPG (lysophosphatidylglucoside)	Heavy chain variable region	#7	US8591902 SEQ ID NO: 18	3124
MUS136	LPG (lysophosphatidylglucoside)	Heavy chain variable region	#15	US8591902 SEQ ID NO: 8	3125
MUS137	MAG	Heavy chain variable region		US8071731 SEQ ID NO: 13	3126
MUS138	MAG	Heavy chain variable region		US8071731 SEQ ID NO: 14	3127
MUS139	MAG	Heavy chain variable region		US8071731 SEQ ID NO: 15	3128
MUS140	MAI (myelin associated inhibitor)	Heavy chain variable region		WO2013158748 SEQ ID NO: 1	3129
MUS141	MAI (myelin associated inhibitor)	Heavy chain variable region		WO2013158748 SEQ ID NO: 17	3130
MUS142	myostatin	Heavy chain variable region	NI-204.7B3	SEQ ID 6 WO 2006107611	4315
MUS143	myostatin	Heavy chain variable region	NI-204.10A8	US20110256132 SEQ ID NO: 14	4316

MUS144	myostatin	Heavy chain variable region	NI-204.10D12	US20110256132 SEQ ID NO: 19	4317
MUS145	myostatin	Heavy chain variable region	NI-204.10D12	US20110256132 SEQ ID NO: 20	4318
MUS146	myostatin	Heavy chain variable region	NI-104.12G7	US20110256132 SEQ ID NO: 22	4319
MUS147	myostatin	Heavy chain variable region	NI-204.10A8	US20110256132 SEQ ID NO: 23	4320
MUS148	myostatin	Heavy chain variable region	NI-104.12G7	US20110256132 SEQ ID NO: 25	4321
MUS149	myostatin	Heavy chain variable region	312-56	US20110256132 SEQ ID NO: 8	4322
MUS150	NOGO	Heavy chain variable region	H20L13, H20L16, H20L18, H20L14, H20L15, H20L17, H20L6, H20L11	US20140147435 SEQ ID NO: 86	3142
MUS151	NOGO	Heavy chain variable region	H21L13, H21L16, H21L18, H21L14, H21L15, H21L17, H21L6, H21L11	US20140147435 SEQ ID NO: 87	3143
MUS152	NOGO	Heavy chain variable region	H22L13, H22L16, H22L18, H22L14, H22L15, H22L17, H22L6, H22L11	US20140147435 SEQ ID NO: 88	3144
MUS153	NOGO	Heavy chain variable region	H23L13, H23L16, H23L18, H23L14, H23L15, H23L17, H23L6, H23L11	US20140147435 SEQ ID NO: 89	3145
MUS154	NOGO	Heavy chain variable region	H24L13, H24L16, H24L18, H24L14, H24L15, H24L17, H24L6, H24L11	US20140147435 SEQ ID NO: 90	3146
MUS155	NOGO	Heavy chain variable region	H25L13, H25L16, H25L18, H25L14, H25L15, H25L17, H25L6, H25L11	US20140147435 SEQ ID NO: 91	3147
MUS156	NOGO	Heavy chain variable region	H5L13, H5L16, H5L18, H5L14, H5L15, H5L17, H5L6, H5L11	US20140147435 SEQ ID NO: 11	3132
MUS157	NOGO	Heavy chain variable region	H6L13, H6L16, H6L18, H6L14, H6L15, H6L17, H6L6	US20140147435 SEQ ID NO: 12	3133
MUS158	NOGO	Heavy chain variable region	H700L13, H700L16, H700L18, H700L14, H700L15, H700L17, H700L6, H700L11	US20140147435 SEQ ID NO: 13	3134
MUS159	NOGO	Heavy chain variable region	H14L13, H14L16, H14L18, H14L14, H14L15, H14L17, H14L6, H14L11	US20140147435 SEQ ID NO: 14	3135
MUS160	NOGO	Heavy chain variable region	H15L13, H15L16, H15L18, H15L14, H15L15, H15L17, H15L6, H15L11	US20140147435 SEQ ID NO: 15	3136
MUS161	NOGO	Heavy chain variable region	H16L13, H16L16, H16L18, H16L14, H16L15, H16L17, H16L6, H16L11	US20140147435 SEQ ID NO: 16	3137

MUS162	NOGO	Heavy chain variable region	H17L13, H17L16, H17L18, H17L14, H17L15, H17L17, H17L6, H17L11	US20140147435 SEQ ID NO: 17	3138
MUS163	NOGO	Heavy chain variable region	H18L13, H18L16, H18L18, H18L14, H18L15, H18L17, H18L6, H18L11	US20140147435 SEQ ID NO: 18	3139
MUS164	NOGO	Heavy chain variable region	H1L13, H1L16, H1L18, H1L14, H1L15, H1L17, H1L6	US20140147435 SEQ ID NO: 77	3140
MUS165	NOGO	Heavy chain variable region	H19L13, H19L16, H19L18, H19L14, H19L15, H19L17, H19L6, H19L11	US20140147435 SEQ ID NO: 85	3141
MUS166	Nogo-66	Heavy chain variable region	Antibody clone 50	US20140065155 SEQ ID NO: 3	3148
MUS167	Nogo-66	Heavy chain variable region	Antibody clone 51	US20140065155 SEQ ID NO: 5	3149
MUS168	NogoA/NiG	Heavy chain variable region	6A3-Ig4	WO2009056509 SEQ ID NO: 24	3150
MUS169	NogoA/NiG	Heavy chain variable region	6A3-IgG1	WO2009056509 SEQ ID NO: 4	3151
MUS170	RGM A	Heavy chain variable region	5F9.1-GL	US20150183871 SEQ ID NO: 35	3152
MUS171	RGM A	Heavy chain variable region	5F9.2-GL	US20150183871 SEQ ID NO: 36	3153
MUS172	RGM A	Heavy chain variable region	5F9.3-GL	US20150183871 SEQ ID NO: 37	3154
MUS173	RGM A	Heavy chain variable region	5F9.4-GL	US20150183871 SEQ ID NO: 38	3155
MUS174	RGM A	Heavy chain variable region	5F9.5-GL	US20150183871 SEQ ID NO: 39	3156
MUS175	RGM A	Heavy chain variable region	5F9.6-GL	US20150183871 SEQ ID NO: 40	3157
MUS176	RGM A	Heavy chain variable region	5F9.7-GL	US20150183871 SEQ ID NO: 41	3158
MUS177	RGM A	Heavy chain variable region	5F9.8-GL	US20150183871 SEQ ID NO: 42	3159
MUS178	RGM A	Heavy chain variable region	5F9.9-GL	US20150183871 SEQ ID NO: 43	3160
MUS179	RGM A	Heavy chain variable region	h5F9.1, h5F9.1, h5F9.1, h5F9.1, h5F9.1, h5F9.2, h5F9.3	US20150183871 SEQ ID NO: 47	3161
MUS180	RGM A	Heavy chain variable region	h5F9.3, h5F9.9, h5F9.25	US20150183871 SEQ ID NO: 53	3162
MUS181	RGM A	Heavy chain variable region	h5F9.4, h5F9.10, h5F9.26	US20150183871 SEQ ID NO: 54	3163
MUS182	RGMa	Heavy chain variable region	AE12-1	US20140023659 SEQ ID NO: 1	3164
MUS183	RGMa	Heavy chain variable region	AE12-20	US20140023659 SEQ ID NO: 107	3165
MUS184	RGMa	Heavy chain variable region	AE12-21	US20140023659 SEQ ID NO: 115	3166
MUS185	RGMa	Heavy chain variable region	AE12-23	US20140023659 SEQ ID NO: 123	3167
MUS186	RGMa	Heavy chain variable region	AE12-24	US20140023659 SEQ ID NO: 131	3168

MUS187	RGMa	Heavy chain variable region	AEI2-3	US20 140023659 SEQ ID NO: 17	3169
MUS I88	RGMa	Heavy chain variable region	AE12-4	US20140023659 SEQ ID NO: 25	3170
MUS189	RGMa	Heavy chain variable region	AE I2-5	US20 140023659 SEQ ID NO: 33	3171
MUS I90	RGMa	Heavy chain variable region	AE12-6	US20 140023659 SEQ ID NO: 41	3172
MU S191	RGMa	Heavy chain variable region	AE I2-7	US20 140023659 SEQ ID NO: 49	3173
MUSI92	RGMa	Heavy chain variable region	AE12-8	US20 140023659 SEQ ID NO: 57	3174
MUS193	RGMa	Heavy chain variable region	AE I2-2	US20 140023659 SEQ ID NO: 9	3175
MUSI94	RGMa	Heavy chain variable region	AE12- I3	US20 140023659 SEQ ID NO: 91	3176
MUS195	RGMa	Heavy chain variable region	AE I2-15	US20 140023659 SEQ ID NO: 99	3177
MUSI96	SIP4	Heavy chain variable region		WO20 150579339 SEQ ID NO: 7	4323
MUS197	SOD1	Heavy chain variable region	NI205. 19G5	US20 14030 1945 SEQ ID NO: 12	4324
MUS198	SOD 1	Heavy chain variable region		US20 14030 1945 SEQ ID NO: 16	4325
MUS199	SOD1	Heavy chain variable region		US20 14030 1945 SEQ ID NO: 20	4326
MUS200	SOD 1	Heavy chain variable region		US20 14030 1945 SEQ ID NO: 24	4327
MUS201	SOD1	Heavy chain variable region	Landogrozuniab, LY2495655, LY-2495655	US20 14030 1945 SEQ ID NO: 28	4328
MUS202	SOD1	Heavy chain variable region	2A10 construct	US20140301945 SEQ ID NO: 32	4329
MUS203	SOD1	Heavy chain variable region	2A10 construct	US20140301945 SEQ ID NO: 36	4330
MUS204	SOD1	Heavy chain variable region	NI205. 1A9	US20 14030 1945 SEQ ID NO: 4	4331
MUS205	SOD1	Heavy chain variable region	2A10 construct	US20140301945 SEQ ID NO: 40	4332
MUS206	SOD1	Heavy chain variable region	2A10 construct	US20140301945 SEQ ID NO: 44	4333
MUS207	SOD1	Heavy chain variable region	2A10 construct	US20140301945 SEQ ID NO: 48	4334
MUS208	SOD 1	Heavy chain variable region	NI205. 14W3	US20 140301945 SEQ ID NO: 8	4335
MUS209	SOD1	Heavy chain variable region	NI-205.87E7	US9109037 SEQ ID NO: 1	4336
MUS210	SOD 1	Heavy chain variable region	NI205.9E12	US9 109037 SEQ ID NO: 107	4337
MUS2 I1	SOD1	Heavy chain variable region	NI205.9E12	US9109037 SEQ ID NO: 113	4338
MUS212	SOD 1	Heavy chain variable region	NI205.98H6	US9 109037 SEQ ID NO: 129	4339
MUS2 I3	SOD1	Heavy chain variable region	NI205.98H6	US9109037 SEQ ID NO: 131	4340
MUS214	SOD 1	Heavy chain variable region	NI205. 10D3	US9 109037 SEQ ID NO: 147	4341
MUS2 I5	SOD1	Heavy chain variable region	NI205. 10D3	US9 109037 SEQ ID NO: 149	4342

MUS2 16	SOD1	Heavy chain variable **region**	NI205.44B22	**US9109037** SEQ **ID** NO: 165	4343
MUS217	SOD!	Heavy chain variable region	**NI205.44B22**	**US9 109037** SEQ **ID** NO: **167**	4344
MUS2 I8	**SOD1**	Heavy chain variable region	**NI-205.21G1**	**US9 109037** SEQ ID NO: 17	4345
MUS219	SOD !	Heavy chain variable region	**NI205.38H2**	**US9 109037** SEQ **ID** NO: **183**	4346
MUS220	**SOD1**	Heavy chain variable region	**NI-205.21G1**	**US9 109037** SEQ ID NO: 19	4347
MUS22 i	SOD !	Heavy chain variable region	**NI205.38H2**	**US9 109037** SEQ ID NO: **20 1**	4348
MUS222	**SOD1**	Heavy chain variable region	**NI205.36D5**	**US9 109037** SEQ ID NO: 2 17	4349
MUS223	SOD !	Heavy chain variable region	**NI-205.68G5**	**US9 109037** SEQ ID NO: 35	4350
MUS224	**SOD1**	Heavy chain variable region	**NI-205.68G5**	**US9 109037** SEQ ID NO: 37	4351
MUS225	SOD !	Heavy chain variable region	**N I-**205.20A !	**US9 109037** SEQ ID NO: 53	4352
MUS226	**SOD1**	Heavy chain variable region	NI-205.20A I	**US9 109037** SEQ ID NO: 55	4353
MUS227	**SOD 1**	Heavy chain variable region	**NI205.41D 1**	u S9 109037 SEQ ID **NO:** 7 1	4354
MUS228	**SOD1**	Heavy chain variable region	**NI205.41D1**	**US9109037** SEQ ID NO: 73	4355
MUS229	**SOD 1**	Heavy chain variable region	**NI205.29E1 1**	u S9 109037 SEQ ID **NO:** 89	4356
MUS230	**SOD1**	Heavy chain variable region	**NI205.29E1 1**	**US9109037** SEQ ID NO: **9 1**	4357
MUS23 1	**TDP-43**	Heavy chain variable region	2A10 **construct**	**US20140255304** SEQ ID NO: 1	4358
MUS232	**TDP-43**	Heavy chain variable region	2A10 **construct**	US20 140255304 SEQ ID NO: 10	4359
MUS233	**TDP-43**	Heavy chain variable region	2A10 construct	**US20140255304** SEQ ID NO: 130	4360
MUS234	TDP-43	Heavy chain variable region	2A10 construct	US20 140255304 SEQ ID NO: 138	4361
MUS235	**TDP-43**	Heavy **chain** variable region	2A10 construct	US20 140255304 SEQ ID NO: 146	4362
MUS236	TDP-43	**Heavy** chain variable region	**2A10** construct	**US20 140255304** SEQ ID NO: 15 1	4363
MUS237	TDP-43	Heavy **chain** variable region	2A10 construct	US20 140255304 SEQ ID NO: 159	4364
MUS238	TDP-43	**Heavy** chain variable region	**2A10** construct	**US20 140255304** SEQ ID NO: 167	4365
MUS239	TDP-43	Heavy **chain** variable region	2A10 construct	US20 140255304 SEQ ID NO: 175	4366
MUS240	TDP-43	**Heavy** chain variable region	**2A10** construct	**US20 140255304** SEQ ID NO: 18	4367
MUS241	TDP-43	Heavy **chain** variable region	H6L13 **FL, H19L13 FL,** H20L13 FL, **H2 1L** I3 **FL, H25L 13 FL**	US20 140255304 SEQ ID NO: 183	4368
MUS242	TDP-43	Heavy chain variable region	**H16L18 FL, H 19L 18** FL, H20L18 FL, H21L18 **FL,** H25L18 **FL**	US20 140255304 SEQ ID NO: 191	4369

MUS243	TDP-43	Heavy chain variable region	H18L16 FL	US20140255304 SEQ ID NO: 199	4370
MUS244	TDP-43	Heavy chain variable region	H6L13, H6L16, H6L18, H6L14, H6L15, H6L17, H6L6	US20140255304 SEQ ID NO: 207	4371
MUS245	TDP-43	Heavy chain variable region	H14L13, H14L16, H14L18, H14L14, H14L15, H14L17, H14L6, H14L11	US20140255304 SEQ ID NO: 215	4372
MUS246	TDP-43	Heavy chain variable region	H16L13, H16L16, H16L18, H16L14, H16L15, H16L17, H16L6, H16L11	US20140255304 SEQ ID NO: 223	4373
MUS247	TDP-43	Heavy chain variable region	H18L13, H18L16, H18L18, H18L14, H18L15, H18L17, H18L6, H18L11	US20140255304 SEQ ID NO: 231	4374
MUS248	TDP-43	Heavy chain variable region	H1L13, H5L13, H6L13, H14L13, H15L13, H16L13, H17L13, H18L13, H19L13, H20L13, H21L13, H22L13, H23L13, H24L13, H25L13, H700L13	US20140255304 SEQ ID NO: 239	4375
MUS249	TDP-43	Heavy chain variable region	H1L15, H5L15, H6L15, H14L15, H15L15, H16L15, H17L15, H18L15, H19L15, H20L15, H21L15, H22L15, H23L15, H24L15, H25L15, H700L15	US20140255304 SEQ ID NO: 247	4376
MUS250	TDP-43	Heavy chain variable region	H1L17, H5L17, H6L17, H14L17, H15L17, H16L17, H17L17, H18L17, H19L17, H20L17, H21L17, H22L17, H23L17, H24L17, H25L17, H700L17	US20140255304 SEQ ID NO: 255	4377
MUS251	TDP-43	Heavy chain variable region	2A10 construct	US20140255304 SEQ ID NO: 26	4378
MUS252	TDP-43	Heavy chain variable region	H16L16 FL, H16L18 FL	US20140255304 SEQ ID NO: 263	4379
MUS253	TDP-43	Heavy chain variable region	2A10 construct	US20140255304 SEQ ID NO: 35	4380
MUS254	TDP-43	Heavy chain variable region	2A10 construct	US20140255304 SEQ ID NO: 45	4381
MUS255	TDP-43	Heavy chain variable region	2A10 construct	US20140255304 SEQ ID NO: 53	4382
MUS256	TDP-43	Heavy chain variable region	2A10 construct	US20140255304 SEQ ID NO: 61	4383
MUS257	TDP-43	Heavy chain variable region	2A10 construct	US20140255304 SEQ ID NO: 69	4384
MUS258	TDP-43	Heavy chain variable region	2A10 construct	US20140255304 SEQ ID NO: 77	4385
MUS259	TDP-43	Heavy chain variable region	2A10 construct	US20140255304 SEQ ID NO: 87	4386

MUS260	trkC	Heavy chain variable region		US2007003 1418 SEQ ID NO: 1	4387
MUS26 1	NOGO	*Heavy* chain variable region humanized construct H1	2A 10 construct	WO200700342 1 SEQ ID NO: 77	3181
MUS262	NOGO	Heavy chain variable region humanized construct H14	2A10 construct	WO2007003421 SEQ ID NO: 14	3182
MUS263	NOGO	Heavy chain variable region humanized construct H15	2A10 construct	WO200700342 1 SEQ ID NO: 15	3183
MUS264	NOGO	Heavy chain variable region humanized construct H 16	2A10 construct	WO2007003421 SEQ ID NO: 16	3184
MUS265	NOGO	Heavy chain variable region humanized construct H 17	2A 10 construct	WO200700342 1 SEQ ID NO: 17	3185
MUS266	NOGO	Heavy chain variable region humanized construct HIS	2A 10 construct	WO200700342 1 SEQ ID NO: 18	3186
MUS267	NOGO	Heavy chain variable region humanized construct H19	2A10 construct	WO2007003421 SEQ ID NO: 85	3187
MUS268	NOGO	Heavy chain variable region humanized construct H20	2A10 construct	WO2007003421 SEQ ID NO: 86	3188
MUS269	NOGO	Heavy chain variable region humanized construct H21	2A10 construct	WO2007003421 SEQ ID NO: 87	3189
MUS270	NOGO	Heavy chain variable region humanized construct H22	2A 10 construct	WO200700342 1 SEQ ID NO: 88	3190
MUS271	NOGO	Heavy chain variable region humanized construct H23	2A10 construct	WO2007003421 SEQ ID NO: 89	3191
MUS272	NOGO	Heavy chain variable region humanized construct H24	2A10 construct	WO200700342 1 SEQ ID NO: 90	3192
MUS273	NOGO	Heavy chain variable region humanized construct H25	2A10 construct	WO2007003421 SEQ ID NO: 91	3193
MUS274	NOGO	Heavy chain variable region humanized construct H5	2A10 construct	WO200700342 1 SEQ ID NO: 11	3194
MUS275	NOGO	Heavy chain variable region	2A 10 construct	WO200700342 1 SEQ ID NO: 12	3195

		humanized construct H6			
MUS276	NOGO	Heavy chain variable region humanized construct H700	2A10 construct	WO2007003421 SEQ ID NO: 13	3196
MUS277	ACVR2B (SMA - muscle growth)	Light chain	H7L4, H7L5, H7L6	US8388968 SEQ ID NO: 141	4388
MUS278	ACVR2B	Light chain		US8388968 SEQ ID NO: 141	4389
MUS279	amyloids	Light chain	#118	WO2010012004 SEQ ID NO: 10	3242
MUS280	amyloids	Light chain	#121	WO2010012004 SEQ ID NO: 12	3243
MUS281	amyloids	Light chain	#201	WO2010012004 SEQ ID NO: 14	3244
MUS282	amyloids	Light chain	#204	WO2010012004 SEQ ID NO: 15	3245
MUS283	amyloids	Light chain	#205	WO2010012004 SEQ ID NO: 17	3246
MUS284	EAG1	Light chain	chimeric ImAb3	WO2006037604 SEQ ID NO: 10	3247
MUS285	EAG1	Light chain	chimeric ImAb4	WO2006037604 SEQ ID NO: 14	3248
MUS286	EAG1	Light chain	LC-ImAb3-humB3	WO2006037604 SEQ ID NO: 18	3249
MUS287	EAG1	Light chain	ImAb4	WO2006037604 SEQ ID NO: 2	3250
MUS288	EAG1	Light chain	LC-ImAb4-humA17	WO2006037604 SEQ ID NO: 22	3251
MUS289	EAG1	Light chain	LC-ImAb3-humA3	WO2006037604 SEQ ID NO: 26	3252
MUS290	EAG1	Light chain	LC-ImAb3-humA17	WO2006037604 SEQ ID NO: 30	3253
MUS291	EAG1	Light chain	LC-ImAb4-humA5-1	WO2006037604 SEQ ID NO: 34	3254
MUS292	EAG1	Light chain	LC-ImAb4-humO1	WO2006037604 SEQ ID NO: 38	3255
MUS293	EAG1	Light chain	ImAb3	WO2006037604 SEQ ID NO: 6	3256
MUS294	GDF-8	Light chain	597-120-M1	US20130287762 SEQ ID NO: 12	4390
MUS295	GDF-8	Light chain	597-120	US20130287762 SEQ ID NO: 18	4391
MUS296	GDF-8	Light chain	311-3	US20130287762 SEQ ID NO: 6	4392
MUS297	growth differentiation factor 8	Light chain			4393
MUS298	growth differentiation factor 8	Light chain	Domagrozumab		4394
MUS299	MAG	Light chain			4395
MUS300	MSTN	Light chain	H25L13, H25L16, H25L18, H25L14, H25L15, H25L17, H25L6, H25L11		4396

MUS301	Myostatin	Light chain	306-155	US20130142788 SEQ ID NO: 145	4397
MUS302	Myostatin	Light chain	14-173	US20130142788 SEQ ID NO: 146	4398
MUS303	Myostatin	Light chain	14-173-M1	US20130142788 SEQ ID NO: 147	4399
MUS304	myostatin	Light chain	NI-204.67E12	US20110256132 SEQ ID NO: 27	4400
MUS305	myostatin	Light chain	NI-204.12G3	US20110256132 SEQ ID NO: 31	4401
MUS306	myostatin	Light chain	NI-204.12G3	US20110256132 SEQ ID NO: 32	4402
MUS307	myostatin	Light chain	NI-204.7G5	US20110256132 SEQ ID NO: 33	4403
MUS308	myostatin	Light chain	NI-204.7G5	US20110256132 SEQ ID NO: 34	4404
MUS309	Myostatin	Light chain	114-41-M1	US20130142788 SEQ ID NO: 27	4405
MUS310	Myostatin	Light chain	14-173, 14-173-M1	US20130142788 SEQ ID NO: 33	4406
MUS311	Myostatin	Light chain	306-155	US20130142788 SEQ ID NO: 37	4407
MUS312	Myostatin	Light chain	303-8	US20130142788 SEQ ID NO: 40	4408
MUS313	myostatin antagonists	Light chain	NI-204.34A3	US20130209489 SEQ ID NO: 1	4409
MUS314	myostatin antagonists	Light chain	NI-205.21G2	US20130209489 SEQ ID NO: 10	4410
MUS315	myostatin antagonists	Light chain	NI-204.25H3	US20130209489 SEQ ID NO: 2	4411
MUS316	myostatin antagonists	Light chain	NI-204.25H3	US20130209489 SEQ ID NO: 3	4412
MUS317	myostatin antagonists	Light chain	B12	US20130209489 SEQ ID NO: 4	4413
MUS318	myostatin antagonists	Light chain	B1	US20130209489 SEQ ID NO: 5	4414
MUS319	myostatin antagonists	Light chain	NI-205.3F10	US20130209489 SEQ ID NO: 6	4415
MUS320	myostatin antagonists	Light chain	NI-205.3F10	US20130209489 SEQ ID NO: 7	4416
MUS321	myostatin antagonists	Light chain	NI-205.51C1	US20130209489 SEQ ID NO: 8	4417
MUS322	myostatin antagonists	Light chain	NI-205.51C1	US20130209489 SEQ ID NO: 9	4418
MUS323	NOGO	Light chain	H6L13 FL, H19L13 FL, H20L13 FL, H21L13 FL, H25L13 FL	US20140147435 SEQ ID NO: 35	3257
MUS324	NOGO	Light chain	H16L16 FL, H19L16 FL, H20L16 FL, H21L16 FL, H25L16 FL, H18L16 FL	US20140147435 SEQ ID NO: 38	3258
MUS325	NOGO	Light chain	H16L18 FL, H19L18 FL, H20L18 FL, H21L18 FL, H25L18 FL	US20140147435 SEQ ID NO: 40	3259
MUS326	Nogo receptor-1	Light chain	7E11	US20090215691 SEQ ID NO: 15	3260

MUS327	Nogo receptor-1	Light chain	7E11	US20090215691 SEQ ID NO: 17	3261
MUS328	RTN4	Light chain			4419
MUS329	S1P4	Light chain		WO2015057939 SEQ ID NO: 41	4420
MUS330	trk-C (NT-3 trkC ligand)	Light chain	2250	US7615383 SEQ ID NO: 49	3262
MUS331	trk-C (NT-3 trkC ligand)	Light chain	2253	US7615383 SEQ ID NO: 50	3263
MUS332	trk-C (NT-3 trkC ligand)	Light chain	2256	US7615383 SEQ ID NO: 51	3264
MUS333	trk-C (NT-3 trkC ligand)	Light chain	6.1.2	US7615383 SEQ ID NO: 52	3265
MUS334	trk-C (NT-3 trkC ligand)	Light chain	6.4.1	US7615383 SEQ ID NO: 53	3266
MUS335	trk-C (NT-3 trkC ligand)	Light chain	2345	US7615383 SEQ ID NO: 54	3267
MUS336	trk-C (NT-3 trkC ligand)	Light chain	2349	US7615383 SEQ ID NO: 55	3268
MUS337	GDF-8	Light chain constant region	12A5-18HC	US8956608 SEQ ID NO: 17	4421
MUS338	many - growth factors (to increase transport across BBB)	Light chain fusion protein	H21L13, H21L16, H21L18, H21L14, H21L15, H21L17, H21L6, H21L11	US8053569 SEQ ID NO: 31	3275
MUS339	many - growth factors (to increase transport across BBB)	Light chain fusion protein	H23L13, H23L16, H23L18, H23L14, H23L15, H23L17, H23L6, H23L11	US8053569 SEQ ID NO: 36	3276
MUS340	NOGO	Light chain humanized construct L11	2A10 construct	WO2007003421 SEQ ID NO: 80	3277
MUS341	NOGO	Light chain humanized construct L13	2A10 construct	WO2007003421 SEQ ID NO: 35	3278
MUS342	NOGO	Light chain humanized construct L14	2A10 construct	WO2007003421 SEQ ID NO: 36	3279
MUS343	NOGO	Light chain humanized construct L15	2A10 construct	WO2007003421 SEQ ID NO: 37	3280
MUS344	NOGO	Light chain humanized construct L16	2A10 construct	WO2007003421 SEQ ID NO: 38	3281
MUS345	NOGO	Light chain humanized construct L17	2A10 construct	WO2007003421 SEQ ID NO: 39	3282
MUS346	NOGO	Light chain humanized construct L18	2A10 construct	WO2007003421 SEQ ID NO: 40	3283
MUS347	NOGO	Light chain humanized construct L6	2A10 construct	WO2007003421 SEQ ID NO: 34	3284
MUS348	RTN4	Light chain IgG4, immunomodulator	Atinumab	US8163285 SEQ ID NO: 25	3285
MUS349	amyloid oligomers	Light chain variable region	F11G3	US9125846 SEQ ID NO: 12	3315

MUS350	differentiation factor 8 (GDF8)	Light chain variable region	H9L4, H9L5, H8L6	US20140023638 SEQ ID NO: 18	4422
MUS351	DR6 and P75	Light chain variable region	M73-C04	WO2010062904 SEQ ID NO: 102	3316
MUS352	DR6 and P75	Light chain variable region	1P1D6.3	WO2010062904 SEQ ID NO: 112	3317
MUS353	DR6 and P75	Light chain variable region	M50-H02	WO2010062904 SEQ ID NO: 12	3318
MUS354	DR6 and P75	Light chain variable region	1P2F2.1	WO2010062904 SEQ ID NO: 122	3319
MUS355	DR6 and P75	Light chain variable region	1P5D10.2	WO2010062904 SEQ ID NO: 132	3320
MUS356	DR6 and P75	Light chain variable region	M51-H09	WO2010062904 SEQ ID NO: 22	3321
MUS357	DR6 and P75	Light chain variable region	M53-E04	WO2010062904 SEQ ID NO: 32	3322
MUS358	DR6 and P75	Light chain variable region	M53-F04	WO2010062904 SEQ ID NO: 42	3323
MUS359	DR6 and P75	Light chain variable region	M62-B02	WO2010062904 SEQ ID NO: 52	3324
MUS360	DR6 and P75	Light chain variable region	M63-E10	WO2010062904 SEQ ID NO: 62	3325
MUS361	DR6 and P75	Light chain variable region	M66-B03	WO2010062904 SEQ ID NO: 72	3326
MUS362	DR6 and P75	Light chain variable region	M67-G02	WO2010062904 SEQ ID NO: 82	3327
MUS363	DR6 and P75	Light chain variable region	M72-F03	WO2010062904 SEQ ID NO: 92	3328
MUS364	GDF-8	Light chain variable region	595-16- M1	US8956608 SEQ ID NO: 27	4423
MUS365	GDF-8	Light chain variable region	A12A5-12HC	US8956608 SEQ ID NO: 9	4424
MUS366	growth differentiation factor 8	Light chain variable region		US8840894 SEQ ID NO: 368	4425
MUS367	LPG (lysophosphatidylglucoside)	Light chain variable region	#7	US8591902 SEQ ID NO: 17	3329
MUS368	LPG (lysophosphatidylglucoside)	Light chain variable region	#15	US8591902 SEQ ID NO: 7	3330
MUS369	MAG	Light chain variable region		US8071731 SEQ ID NO: 16	3331
MUS370	MAG	Light chain variable region		US8071731 SEQ ID NO: 17	3332
MUS371	MAG	Light chain variable region		US8071731 SEQ ID NO: 18	3333
MUS372	MAG	Light chain variable region		US8071731 SEQ ID NO: 19	3334
MUS373	MAI (myelin associated inhibitor)	Light chain variable region		WO2013158748 SEQ ID NO: 11	3335
MUS374	MAI (myelin associated inhibitor)	Light chain variable region		WO2013158748 SEQ ID NO: 27	3336
MUS375	myostatin	Light chain variable region	Ni-204.34A3	SEQ ID 8 WO 2006107611	4426

MUS376	myostatin	Light chain variable region	NI-204.9F6	US20110256132 SEQ ID NO: 17	4427
MUS377	myostatin	Light chain variable region	NI-204.9F6	US20110256132 SEQ ID NO: 21	4428
MUS378	myostatin	Light chain variable region	NI-204.11F11	US20110256132 SEQ ID NO: 24	4429
MUS379	myostatin	Light chain variable region	303-8	US20110256132 SEQ ID NO: 7	4430
MUS380	NOGO	Light chain variable region	H1L6, H5L6, H6L6, H14L6, H15L6, H16L6, H17L6, H18L6, H19L6, H20L6, H21L6, H22L6, H23L6, H24L6, H25L6, H700L6	US20140147435 SEQ ID NO: 19	3338
MUS381	NOGO	Light chain variable region	H1L13, H5L13, H6L13, H14L13, H15L13, H16L13, H17L13, H18L13, H19L13, H20L13, H21L13, H22L13, H23L13, H24L13, H25L13, H700L13	US20140147435 SEQ ID NO: 20	3339
MUS382	NOGO	Light chain variable region	H1L14, H5L14, H6L14, H14L14, H15L14, H16L14, H17L14, H18L14, H19L14, H20L14, H21L14, H22L14, H23L14, H24L14, H25L14, H700L14	US20140147435 SEQ ID NO: 21	3340
MUS383	NOGO	Light chain variable region	H1L15, H5L15, H6L15, H14L15, H15L15, H16L15, H17L15, H18L15, H19L15, H20L15, H21L15, H22L15, H23L15, H24L15, H25L15, H700L15	US20140147435 SEQ ID NO: 22	3341
MUS384	NOGO	Light chain variable region	H1L16, H5L16, H6L16, H14L16, H15L16, H16L16, H17L16, H18L16, H19L16, H20L16, H21L16, H22L16, H23L16, H24L16, H25L16, H700L16	US20140147435 SEQ ID NO: 23	3342
MUS385	NOGO	Light chain variable region	H1L17, H5L17, H6L17, H14L17, H15L17, H16L17, H17L17, H18L17, H19L17, H20L17, H21L17, H22L17, H23L17, H24L17, H25L17, H700L17	US20140147435 SEQ ID NO: 24	3343
MUS386	NOGO	Light chain variable region	H1L18, H5L18, H6L18, H14L18, H15L18, H16L18, H17L18, H18L18,	US20140147435 SEQ ID NO: 25	3344

			H19L18, H20L18, H21L18, H22L18, H23L18, H24L18, H25L18, H700L18		
MUS387	NOGO	Light chain variable region	H5L11, H6L11, H14L11, H15L11, H16L11, H17L11, H18L11, H19L11, H20L11, H21L11, H22L11, H23L11, H24L11, H25L11, H700L11	US20140147435 SEQ ID NO: 78	3345
MUS388	Nogo-66	Light chain variable region	Antibody clone 50	US20140065155 SEQ ID NO: 4	3346
MUS389	Nogo-66	Light chain variable region	Antibody clone 51	US20140065155 SEQ ID NO: 6	3347
MUS390	NogoA/NiG	Light chain variable region	6A3-Ig4	WO2009056509 SEQ ID NO: 25	3348
MUS391	NogoA/NiG	Light chain variable region	6A3-IgG1	WO2009056509 SEQ ID NO: 5	3349
MUS392	RGM A	Light chain variable region	5F9.1-GL, 5F9.1-GL, 5F9.1-GL, 5F9.1-GL, 5F9.1-GL, 5F9.1-GL, 5F9.1-GL, 5F9.1-GL, 5F9.1-GL, 5F9.1-GL, h5F9.4, h5F9.11, h5F9.12	US20150183871 SEQ ID NO: 44	3350
MUS393	RGM A	Light chain variable region	5F9.2-GL, 5F9.2-GL, 5F9.2-GL, 5F9.2-GL, 5F9.2-GL, 5F9.2-GL, 5F9.2-GL, 5F9.2-GL, 5F9.2-GL, 5F9.2-GL, h5F9.5, h5F9.19, h5F9.20	US20150183871 SEQ ID NO: 45	3351
MUS394	RGM A	Light chain variable region	5F9.3-GL, 5F9.3-GL, 5F9.3-GL, 5F9.3-GL, 5F9.3-GL, 5F9.3-GL, 5F9.3-GL, 5F9.3-GL, 5F9.3-GL, 5F9.3-GL, h5F9.6, h5F9.21, h5F9.22	US20150183871 SEQ ID NO: 46	3352
MUS395	RGM A	Light chain variable region	h5F9.5, h5F9.6, h5F9.7, h5F9.8, h5F9.9, h5F9.10	US20150183871 SEQ ID NO: 48	3353
MUS396	RGM A	Light chain variable region	h5F9.11, h5F9.19, h5F9.21	US20150183871 SEQ ID NO: 49	3354
MUS397	RGM A	Light chain variable region	h5F9.12, h5F9.20, h5F9.22, h5F9.23, h5F9.25, h5F9.25, h5F9.26	US20150183871 SEQ ID NO: 50	3355
MUS398	RGM A	Light chain variable region	h5F9.1, h5F9.7, h5F9.23	US20150183871 SEQ ID NO: 51	3356
MUS399	RGM A	Light chain variable region	h5F9.2, h5F9.8, h5F9.25	US20150183871 SEQ ID NO: 52	3357
MUS400	RGMa	Light chain variable region	AE12-15	US20140023659 SEQ ID NO: 103	3358
MUS401	RGMa	Light chain variable region	AE12-20	US20140023659 SEQ ID NO: 111	3359
MUS402	RGMa	Light chain variable region	AE12-21	US20140023659 SEQ ID NO: 119	3360

MUS403	RGMa	Light chain variable region	AE12-23	US20140023659 SEQ ID NO: 127	3361
MUS404	RGMa	Light chain variable region	AE12-2	US20140023659 SEQ ID NO: 13	3362
MUS405	RGMa	Light chain variable region	AE12-24	US20140023659 SEQ ID NO: 135	3363
MUS406	RGMa	Light chain variable region	AE12-3	US20140023659 SEQ ID NO: 21	3364
MUS407	RGMa	Light chain variable region	AE12-4	US20140023659 SEQ ID NO: 29	3365
MUS408	RGMa	Light chain variable region	AE12-5	US20140023659 SEQ ID NO: 37	3366
MUS409	RGMa	Light chain variable region	AE12-6	US20140023659 SEQ ID NO: 45	3367
MUS410	RGMa	Light chain variable region	AE12-1	US20140023659 SEQ ID NO: 5	3368
MUS411	RGMa	Light chain variable region	AE12-7	US20140023659 SEQ ID NO: 53	3369
MUS412	RGMa	Light chain variable region	AE12-8	US20140023659 SEQ ID NO: 61	3370
MUS413	RGMa	Light chain variable region	AE12-13	US20140023659 SEQ ID NO: 95	3371
MUS414	S1P4	Light chain variable region		WO2015057939 SEQ ID NO: 9	4431
MUS415	SOD1	Light chain variable region	NI205.14W3	US20140301945 SEQ ID NO: 10	4432
MUS416	SOD1	Light chain variable region	NI205.19G5	US20140301945 SEQ ID NO: 14	4433
MUS417	SOD1	Light chain variable region		US20140301945 SEQ ID NO: 18	4434
MUS418	SOD1	Light chain variable region		US20140301945 SEQ ID NO: 22	4435
MUS419	SOD1	Light chain variable region		US20140301945 SEQ ID NO: 26	4436
MUS420	SOD1	Light chain variable region	Landogrozumab, LY2495655, LY-2495656	US20140301945 SEQ ID NO: 30	4437
MUS421	SOD1	Light chain variable region	2A10 construct	US20140301945 SEQ ID NO: 34	4438
MUS422	SOD1	Light chain variable region	2A10 construct	US20140301945 SEQ ID NO: 38	4439
MUS423	SOD1	Light chain variable region	2A10 construct	US20140301945 SEQ ID NO: 42	4440
MUS424	SOD1	Light chain variable region	2A10 construct	US20140301945 SEQ ID NO: 46	4441
MUS425	SOD1	Light chain variable region	2A10 construct	US20140301945 SEQ ID NO: 50	4442
MUS426	SOD1	Light chain variable region	NI205.1A9	US20140301945 SEQ ID NO: 6	4443
MUS427	SOD1	Light chain variable region	NI205.31D2	US9109037 SEQ ID NO: 109	4444
MUS428	SOD1	Light chain variable region	NI205.8F8	US9109037 SEQ ID NO: 121	4445
MUS429	SOD1	Light chain variable region	NI205.8F8	US9109037 SEQ ID NO: 139	4446
MUS430	SOD1	Light chain variable region	NI205.31C11	US9109037 SEQ ID NO: 157	4447

MUS431	SOD1	Light chain variable region	NI205.31C11	US9109037 SEQ ID NO: 175	4448
MUS432	SOD1	Light chain variable region	NI205.8C10	US9109037 SEQ ID NO: 191	4449
MUS433	SOD1	Light chain variable region	NI205.8C10	US9109037 SEQ ID NO: 199	4450
MUS434	SOD1	Light chain variable region	NI205.10H7	US9109037 SEQ ID NO: 209	4451
MUS435	SOD1	Light chain variable region	NI205.10H7	US9109037 SEQ ID NO: 225	4452
MUS436	SOD1	Light chain variable region	NI205.58E11	US9109037 SEQ ID NO: 27	4453
MUS437	SOD1	Light chain variable region	NI205.58E 11	US9109037 SEQ ID NO: 45	4454
MUS438	SOD1	Light chain variable region	NI205.14H5	US9109037 SEQ ID NO: 63	4455
MUS439	SOD1	Light chain variable region	NI205.14H5	US9109037 SEQ ID NO: 81	4456
MUS440	SOD1	Light chain variable region	NI205.36D5	US9109037 SEQ ID NO: 9	4457
MUS441	SOD1	Light chain variable region	NI205.31D2	US9109037 SEQ ID NO: 99	4458
MUS442	TDP-43	Light chain variable region	2A10 construct	US20140255304 SEQ ID NO: 122	4459
MUS443	TDP-43	Light chain variable region	2A10 construct	US20140255304 SEQ ID NO: 134	4460
MUS444	TDP-43	Light chain variable region	2A10 construct	US20140255304 SEQ ID NO: 14	4461
MUS445	TDP-43	Light chain variable region	2A10 construct	US20140255304 SEQ ID NO: 142	4462
MUS446	TDP-43	Light chain variable region	2A10 construct	US20140255304 SEQ ID NO: 150	4463
MUS447	TDP-43	Light chain variable region	2A10 construct	US20140255304 SEQ ID NO: 155	4464
MUS448	TDP-43	Light chain variable region	2A10 construct	US20140255304 SEQ ID NO: 163	4465
MUS449	TDP-43	Light chain variable region	2A10 construct	US20140255304 SEQ ID NO: 171	4466
MUS450	TDP-43	Light chain variable region	2A10 construct	US20140255304 SEQ ID NO: 179	4467
MUS451	TDP-43	Light chain variable region	H16L16 FL, H19L16 FL, H20L16 FL, H21L16 FL, H25L16 FL, H18L16 FL	US20140255304 SEQ ID NO: 187	4468
MUS452	TDP-43	Light chain variable region	H6L13 FL	US20140255304 SEQ ID NO: 195	4469
MUS453	TDP-43	Light chain variable region	H5L13, H5L16, H5L18, H5L14, H5L15, H5L17, H5L6, H5L11	US20140255304 SEQ ID NO: 203	4470
MUS454	TDP-43	Light chain variable region	H700L13, H700L16, H700L18, H700L14, H700L15, H700L17, H700L6, H700L11	US20140255304 SEQ ID NO: 211	4471
MUS455	TDP-43	Light chain variable region	H15L13, H15L16, H15L18, H15L14, H15L15, H15L17, H15L6, H15L11	US20140255304 SEQ ID NO: 219	4472

MUS456	TDP-43	Light chain variable region	2A10 construct	US20140255304 SEQ ID NO: 22	4473
MUS457	TDP-43	Light chain variable region	H17L13, H17L16, H17L18, H17L14, H17L15, H17L17, H17L6, H17L11	US20140255304 SEQ ID NO: 227	4474
MUS458	TDP-43	Light chain variable region	H1L6, H5L6, H6L6, H14L6, H15L6, H16L6, H17L6, H18L6, H19L6, H20L6, H21L6, H22L6, H23L6, H24L6, H25L6, H700L6	US20140255304 SEQ ID NO: 235	4475
MUS459	TDP-43	Light chain variable region	H1L14, H5L14, H6L14, H14L14, H15L14, H16L14, H17L14, H18L14, H19L14, H20L14, H21L14, H22L14, H23L14, H24L14, H25L14, H700L14	US20140255304 SEQ ID NO: 243	4476
MUS460	TDP-43	Light chain variable region	H1L16, H5L16, H6L16, H14L16, H15L16, H16L16, H17L16, H18L16, H19L16, H20L16, H21L16, H22L16, H23L16, H24L16, H25L16, H700L16	US20140255304 SEQ ID NO: 251	4477
MUS461	TDP-43	Light chain variable region	H1L18, H5L18, H6L18, H14L18, H15L18, H16L18, H17L18, H18L18, H19L18, H20L18, H21L18, H22L18, H23L18, H24L18, H25L18, H700L18	US20140255304 SEQ ID NO: 259	4478
MUS462	TDP-43	Light chain variable region	H1L13, H1L16, H1L18, H1L14, H1L15, H1L17, H1L6	US20140255304 SEQ ID NO: 267	4479
MUS463	TDP-43	Light chain variable region	2A10 construct	US20140255304 SEQ ID NO: 31	4480
MUS464	TDP-43	Light chain variable region	2A10 construct	US20140255304 SEQ ID NO: 40	4481
MUS465	TDP-43	Light chain variable region	2A10 construct	US20140255304 SEQ ID NO: 49	4482
MUS466	TDP-43	Light chain variable region	2A10 construct	US20140255304 SEQ ID NO: 57	4483
MUS467	TDP-43	Light chain variable region	2A10 construct	US20140255304 SEQ ID NO: 6	4484
MUS468	TDP-43	Light chain variable region	2A10 construct	US20140255304 SEQ ID NO: 65	4485
MUS469	TDP-43	Light chain variable region	2A10 construct	US20140255304 SEQ ID NO: 73	4486
MUS470	TDP-43	Light chain variable region	2A10 construct	US20140255304 SEQ ID NO: 82	4487
MUS471	trkC	Light chain variable region		US20070031418 SEQ ID NO: 2	4488

MUS472	NOGO	Light chain variable region humanized construct L11	2A10 construct	WO2007003421 SEQ ID NO: 78	3375
MUS473	NOGO	Light chain variable region humanized construct L13	2A10 construct	WO2007003421 SEQ ID NO: 20	3376
MUS474	NOGO	Light chain variable region humanized construct L14	2A10 construct	WO2007003421 SEQ ID NO: 21	3377
MUS475	NOGO	Light chain variable region humanized construct L15	2A10 construct	WO2007003421 SEQ ID NO: 22	3378
MUS476	NOGO	Light chain variable region humanized construct L16	2A10 construct	WO2007003421 SEQ ID NO: 23	3379
MUS477	NOGO	Light chain variable region humanized construct L17	2A10 construct	WO2007003421 SEQ ID NO: 24	3380
MUS478	NOGO	Light chain variable region humanized construct L18	2A10 construct	WO2007003421 SEQ ID NO: 25	3381
MUS479	NOGO	Light chain variable region humanized construct L6	2A10 construct	WO2007003421 SEQ ID NO: 19	3382
MUS480	GDF-8	scFv	591-37	US20130287762 SEQ ID NO: 14	4489
MUS481	GDF-8	scFv	358-11	US20130287762 SEQ ID NO: 2	4490
MUS482	GDF-8	scFv	591-37-M1	US20130287762 SEQ ID NO: 8	4491
MUS483	myostatin	scFv	NI-204.7B3	SEQ ID 4 WO 2006107611	4492
MUS484	SOD1	scFv	2A10 construct	Ghadge, G.D. et al., Single chain variable fragment antibodies block aggregation and toxicity induced by familial ALS-linked mutant forms of SOD1, Neurobiol. Dis. (2013), NCBI Accession # AGK37119.1	4493
MUS485	SOD1	scFv	2A10 construct	Ghadge, G.D. et al., Single chain variable fragment antibodies block aggregation and toxicity induced by **familial ALS-**	4494

				linked mutant forms of SOD1, Neurobiol. Dis. (2013), NCBI Accession # AGK37120.1	

Neuropathy Antibodies

[00278] In one embodiment, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding one or more of the neuropathy payload antibody polypeptides listed in Table 7 (NEURO1-NEURO65; SEQ ID NO; 3040-3046, 3076, 3124-3130, 3164-3177, 3262-3268, 3285, 3329-3336, 3358-3371, 4495-4500).

Table 7. Neuropathy Antibodies

Antibody No.	Target	Description	Antibody Name	Reference Information	SEQ ID NO
NEURO1	trk-C (NT-3 trkC ligand)	Heavy chain	2250	US7615383 SEQ ID NO: 42	3040
NEURO2	trk-C (NT-3 trkC ligand)	Heavy chain	2253	US7615383 SEQ ID NO: 43	3041
NEURO3	trk-C (NT-3 trkC ligand)	Heavy chain	2256	US7615383 SEQ ID NO: 44	3042
NEURO4	trk-C (NT-3 trkC ligand)	Heavy chain	6.1.2	US7615383 SEQ ID NO: 45	3043
NEURO5	trk-C (NT-3 trkC ligand)	Heavy chain	6.4.1	US7615383 SEQ ID NO: 46	3044
NEURO6	trk-C (NT-3 trkC ligand)	Heavy chain	2345	US7615383 SEQ ID NO: 47	3045
NEURO7	trk-C (NT-3 trkC ligand)	Heavy chain	2349	US7615383 SEQ ID NO: 48	3046
NEURO8	RTN4 (NOGO)	Heavy chain IgG4, immunomodulator	Atinumab	US8163285 SEQ ID NO: 24	3076
NEURO9	LPG (lysophosphatidylglucoside)	Heavy chain variable region	#7	US8591902 SEQ ID NO: 18	3124
NEURO10	LPG (lysophosphatidylglucoside)	Heavy chain variable region	#15	US8591902 SEQ ID NO: 8	3125
NEURO11	MAG	Heavy chain variable region		US8071731 SEQ ID NO: 13	3126
NEURO12	MAG	Heavy chain variable region		US8071731 SEQ ID NO: 14	3127
NEURO13	MAG	Heavy chain variable region		US8071731 SEQ ID NO: 15	3128
NEURO14	MAI (myelin associated inhibitor)	Heavy chain variable region		WO2013158748 SEQ ID NO: 1	3129
NEURO15	MAI (myelin associated inhibitor)	Heavy chain variable region		WO2013158748 SEQ ID NO: 17	3130
NEURO16	RAGE protein	Heavy chain variable region	Mab 7F9	US20130149313 SEQ ID NO: 1	4495
NEURO17	RAGE protein	Heavy chain variable region	Mab 4E5	US20130149313 SEQ ID NO: 17	4496
NEURO18	RAGE protein	Heavy chain variable region	Mab 11E6	US20130149313 SEQ ID NO: 9	4497

NEUR019	RGMa	**Heavy chain** variable region	AEI2-1	**US20 140023659** SEQ ID **NO:** 1	3164
NEURO20	RGMa	Heavy chain variable region	AE12-20	**US20 140023659** SEQ ID NO: **107**	3165
NEUR02 i	RGMa	Heavy **chain variable** region	AE12-21	**US20 140023659** SEQ ID **NO:** 115	3166
NEUR022	RGMa	Heavy chain variable region	**AE12-23**	**US20 140023659** SEQ ID NO: **123**	3167
NEUR023	RGMa	Heavy **chain** variable region	**AE12-24**	**US20 140023659** SEQ ID **NO: 131**	3168
NEUR024	RGMa	Heavy chain variable region	AE12-3	**US20 140023659** SEQ ID **NO: 17**	3169
NEUR025	RGMa	Heavy chain variable region	**AE I2-4**	**US20 140023659** SEQ ID **NO:** 25	3170
NEUR026	RGMa	Heavy chain variable region	AE12-5	**US20 140023659** SEQ ID **NO:** 33	3171
NEUR027	RGMa	Heavy chain variable region	**AE I2-6**	**US20 140023659** SEQ ID **NO: 41**	3172
NEUR028	RGMa	Heavy chain variable region	AE12-7	**US20 140023659** SEQ ID **NO:** 49	3173
NEUR029	RGMa	Heavy chain variable region	**AE I2-8**	**US20 140023659** SEQ ID **NO: 57**	3174
NEURO30	RGMa	Heavy chain variable region	AE12-2	**US20 140023659** SEQ ID NO: 9	3175
NEUR03 1	RGMa	Heavy chain variable region	**AE1 2-13**	**US20 140023659** SEQ ID NO: **91**	3176
NEUR032	RGMa	Heavy chain variable region	**AE12-**15	**US20 140023659** SEQ ID NO: 99	3177
NEUR033	trk-C (**NT-3** trkC ligand)	Light chain	22.50	**US76 15383** SEQ ID NO: 49	3262
NEUR034	trk-C (NT-3 trkC ligand)	Light chain	2253	**US76 15383** SEQ ID **NO: 50**	326.3
NEUR035	trk-C (NT-3 trkC ligand)	Light chain	2256	**US76 15383** SEQ ID NO: 51	3264
NEUR036	trk-C (NT-3 trkC ligand)	Light chain	6.12	**US76 15383** SEQ ID **NO:** 52	3265
NEUR037	trk-C (NT-3 trkC Jigand)	Light chain	6.4. i	**US76 15383** SEQ ID NO: 53	3266
NEUR038	trk-C (**NT-3** trkC ligand)	Light chain	2.345	**US7615383** SEQ ID **NO:** 54	3267
NEUR039	trk-C (NT-3 trkC ligand)	Light **chain**	2349	**US76 15383** SEQ ID NO: 55	3268
NEURO40	**RTN4**	Light chain **IgG4, immunomodulator**	**Atinumab**	**US8 163285** SEQ ID NO: 25	3285
NEUR041	LPG **(lysophosphatidylglucoside)**	Light **chain** variable region	#7	**US8591902** SEQ ID NO: 17	3329
NEUR042	LPG **(lysophosphatidylglucoside)**	Light **chain** variable region	#15	**US8591902** SEQ ID NO: 7	3330
NEUR043	MAG	Light chain variable **region**		**US807173** 1 SEQ ID NO: **16**	3331
NEUR044	MAG	Light chairs variable region		**US807 I731** SEQ ID **NO:** 17	3332
NEUR045	MAG	Light chain variable region		**US807173** 1 SEQ ID **NO:** 18	3333
NEUR046	MAG	Light chain variable region		US807 1731 SEQ ID NO: 19	3334

NEUR047	MAI (myelin associated inhibitor)	Light chain variable region		WO20 13 158748 SEQ ID NO: 11	3335
NEUR048	MAI (myelin associated inhibitor)	Light chain variable region		WO20 13 158748 SEQ ID NO: 27	3336
NEUR049	RAGE protein	Light chain variable region	Mab 11E6	US201301493 13 SEQ ID NO: 13	4498
NEURO50	RAGE protein	Light chain variable region	Mab 4E5	US201301493 13 SEQ ID NO: 21	4499
NEUR051	RAGE protein	Light chain variable region	Mab 7F9	US201301493 13 SEQ ID NO: 5	4500
NEUR052	RGMa	Light chain variable region	AE12-15	US20 140023659 SEQ ID NO: 103	3358
NEUR053	RGMa	Light chain variable region	AE 12-20	US20 140023659 SEQ ID NO: 111	3359
NEUR054	RGMa	Light chain variable region	AE12-21	US20 140023659 SEQ ID NO: 119	3360
NEUR055	RGMa	Light chain variable region	AE12-23	US20 140023659 SEQ ID NO: 127	3361
NEUR056	RGMa	Light chain variable region	AE12-2	US20 140023659 SEQ ID NO: 13	3362
NEUR057	RGMa	Light chain variable region	AE 12-24	US20 140023659 SEQ ID NO: 135	3363
NEUR058	RGMa	Light chain variable region	AE12-3	US20 140023659 SEQ ID NO: 21	3364
NEUR059	RGMa	Light chain variable region	AE12-4	US20 140023659 SEQ ID NO: 29	3365
NEURO60	RGMa	Light chain variable region	AE12-5	US20 140023659 SEQ ID NO: 37	3366
NEUR06 1	RGMa	Light chain variable region	AE12-6	US20 140023659 SEQ ID NO: 45	3367
NEUR062	RGMa	Light chain variable region	AE12-1	US20 140023659 SEQ ID NO: 5	3368
NEUR063	RGMa	Light chain variable region	AE12-7	US20 140023659 SEQ ID NO: 53	3369
NEUR064	RGMa	Light chain variable region	AE12-8	US20 140023659 SEQ ID NO: 61	3370
NEUR065	RGMa	Light chain variable region	AE12-13	US20 140023659 SEQ ID NO: 95	3371

Psychiatric Disorder Antibodies

[00279] In one embodiment, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding one or more of the psychiatric disorder payload antibody polypeptides listed in Table 8 (PSYCH1 -PSYCH1 60, SEQ ID NO: 2977-2998, 3152-3177, 3205-3226, 3350-3371 , 4501-4568).

Table 8. Psychiatric Disorder **Antibodies**

Antibody No.	Target	Description	Antibody Name	Reference Information	SEQ ID NO
PSYCH1	ACTH	Heavy chain	Ab4	WO2015127288 SEQ ID NO: 121	2995
PSYCH2	ACTH	Heavy chain	Ab1.H	WO2015127288 SEQ ID NO: 441	2983

PSYCH3	ACTH	Heavy chain	Ab2.H	WO2015127288 SEQ ID NO: 481	2984
PSYCH4	ACTH	Heavy chain	Ab3.H	WO2015127288 SEQ ID NO: 521	2985
PSYCH5	ACTH	Heavy chain	Ab4.H	WO2015127288 SEQ ID NO: 561	2986
PSYCH6	ACTH	Heavy chain	Ab6.H	WO2015127288 SEQ ID NO: 601	2987
PSYCH7	ACTH	Heavy chain	Ab7.H	WO2015127288 SEQ ID NO: 641	2988
PSYCH8	ACTH	Heavy chain	Ab7A.H	WO2015127288 SEQ ID NO: 681	2989
PSYCH9	ACTH	Heavy chain	Ab10.H	WO2015127288 SEQ ID NO: 721	2990
PSYCH10	ACTH	Heavy chain	Ab11.H	WO2015127288 SEQ ID NO: 761	2991
PSYCH11	ACTH	Heavy chain	Ab11A.H	WO2015127288 SEQ ID NO: 801	2992
PSYCH12	ACTH	Heavy chain	Ab5	WO2015127288 SEQ ID NO: 161	2996
PSYCH13	ACTH	Heavy chain	Ab3	WO2015127288 SEQ ID NO: 81	2993
PSYCH14	ACTH	Heavy chain	Ab12.H	WO2015127288 SEQ ID NO: 841	2994
PSYCH15	ACTH	Heavy chain	Ab6	WO2015127288 SEQ ID NO: 201	2997
PSYCH16	ACTH	Heavy chain	Ab7	WO2015127288 SEQ ID NO: 241	2977
PSYCH17	ACTH	Heavy chain	Ab9	WO2015127288 SEQ ID NO: 281	2978
PSYCH18	ACTH	Heavy chain	Ab10	WO2015127288 SEQ ID NO: 321	2979
PSYCH19	ACTH	Heavy chain	Ab11	WO2015127288 SEQ ID NO: 361	2980
PSYCH20	ACTH	Heavy chain	Ab12	WO2015127288 SEQ ID NO: 401	2981
PSYCH21	ACTH	Heavy chain	Ab2	WO2015127288 SEQ ID NO: 41	2982
PSYCH22	ACTH	Heavy chain	Ab1	WO2015127288 SEQ ID NO: 1	2998
PSYCH23	neuregulin (NRG)	Heavy chain		US20140363438 SEQ ID NO: 72	4501
PSYCH24	neuregulin (NRG)	Heavy chain		US20140363438 SEQ ID NO: 74	4502
PSYCH25	Anx-A1	Heavy chain variable region	VJ-4B6	US20150004164 SEQ ID NO: 16	4503
PSYCH26	Anx-A1	Heavy chain variable region	VJ-4B6	US20150004164 SEQ ID NO: 20	4504
PSYCH27	RGM A	Heavy chain variable region	5F9.1-GL	US20150183871 SEQ ID NO: 35	3152
PSYCH28	RGM A	Heavy chain variable region	5F9.2-GL	US20150183871 SEQ ID NO: 36	3153
PSYCH29	RGM A	Heavy chain variable region	5F9.3-GL	US20150183871 SEQ ID NO: 37	3154
PSYCH30	RGM A	Heavy chain variable region	5F9.4-GL	US20150183871 SEQ ID NO: 38	3155
PSYCH31	RGM A	Heavy chain variable region	5F9.5-GL	US20150183871 SEQ ID NO:39	3156

PSYCH32	RGM A	Heavy chain variable region	5F9.6-GL	US20150183871 SEQ ID NO: 40	3157
PSYCH33	RGM A	Heavy chain variable region	5F9.7-GL	US20150183871 SEQ ID NO: 41	3158
PSYCH34	RGM A	Heavy chain variable region	5F9.8-GL	US20150183871 SEQ ID NO: 42	3159
PSYCH35	RGM A	Heavy chain variable region	5F9.9-C-L	US20150183871 SEQ ID NO: 43	3160
PSYCH36	RGM A	Heavy chain variable region	h5F9.1, h5F9.1, h5F9.1, h5F9.1, h5F9.1, hSF9.2, li5F9.3	US20150183871 SEQ ID NO: 47	3161
PSYCH37	RGM A	Heavy chain variable region	h5F9.3, hSF9.9, hSF9.25	US20150183871 SEQ ID NO: 53	3162
PSYCH38	RGM A	Heavy chain variable region	h5F9.4, h5F9.10, h5F9.26	US20150183871 SEQ ID NO: 54	3163
PSYCH39	RGMa	Heavy chain variable region	AE12-1	US20140023659 SEQ ID NO: 1	3164
PSYCH40	RGMa	Heavy chain variable region	AE12-20	US20140023659 SEQ ID NO: 107	3165
PSYCH41	RGMa	Heavy chain variable region	AE12-21	US20140023659 SEQ ID NO: 115	3166
PSYCH42	RGMa	Heavy chain variable region	AE12-23	US20140023659 SEQ ID NO: 123	3167
PSYCH43	RGMa	Heavy chain variable region	AE12-24	US20140023659 SEQ ID NO: 131	3168
PSYCH44	RGMa	Heavy chain variable region	AE12-3	US20140023659 SEQ ID NO: 17	3169
PSYCH45	RGMa	Heavy chain variable region	AE12-4	US20140023659 SEQ ID NO: 25	3170
PSYCH46	RGMa	Heavy chain variable region	AE12-5	US20140023659 SEQ ID NO: 33	3171
PSYCH47	RGMa	Heavy chain variable region	AE12-6	US20140023659 SEQ ID NO: 41	3172
PSYCH48	RGMa	Heavy chain variable region	AE12-7	US20140023659 SEQ ID NO: 49	3173
PSYCH49	RGMa	Heavy chain variable region	AE12-8	US20140023659 SEQ ID NO: 57	3174
PSYCH50	RGMa	Heavy chain variable region	AE12-2	US20140023659 SEQ ID NO: 9	3175
PSYCHS1	RGMa	Heavy chain variable region	AE12-13	US20140023659 SEQ ID NO: 91	3176
PSYCH52	RGMa	Heavy chain variable region	AE12-15	US20140023659 SEQ ID NO: 99	3177
PSYCHS3	TMEFE2	Heavy chain variable region	PQ01	US20150030602 SEQ ID NO: 10	4505
PSYCH54	TNFa	Heavy chain variable region	2SD4	US20140296493 SEQ ID NO: 10	4506
PSYCHS5	TNFa	Heavy chain variable region	D2E7	US20140296493 SEQ ID NO: 2	4507
PSYCH56	ghrelin	Heavy chain variable region		US20060233788 SEQ ID NO: 12	4508
PSYCH57	ghrelin	Heavy chain variable region		US20060233788 SEQ ID NO: 13	4509
PSYCHS8	ghrelin	Heavy chain variable region		US20060233788 SEQ ID NO: 32	4510
PSYCHS9	ghrelin	Heavy chain variable region		US20060233788 SEQ ID NO: 33	4511
PSYCH60	neuregulin (NRG)	Heavy chain variable region		US20140363438 SEQ ID NO: 21	4512

PSYCH61	neuregulin (NRG)	Heavy chain variable region		US20140363438 SEQ ID NO: 52	4513
PSYCH62	neuregulin (NRG)	Heavy chain variable region		US20140363438 SEQ ID NO: 54	4514
PSYCH63	neuregulin (NRG)	Heavy chain variable region		US20140363438 SEQ ID NO: 56	4515
PSYCH64	neuregulin (NRG)	Heavy chain variable region		US20140363438 SEQ ID NO: 58	4516
PSYCH65	neuregulin (NRG)	Heavy chain variable region		US20140363438 SEQ ID NO: 60	4517
PSYCH66	neuregulin (NRG)	Heavy chain variable region		US20140363438 SEQ ID NO: 62	4518
PSYCH67	neuregulin (NRG)	Heavy chain variable region		US20140363438 SEQ ID NO: 63	4519
PSYCH68	neuregulin (NRG)	Heavy chain variable region		US20140363438 SEQ ID NO: 64	4520
PSYCH69	neuregulin (NRG)	Heavy chain variable region		US20140363438 SEQ ID NO: 66	4521
PSYCH70	neuregulin (NRG)	Heavy chain variable region		US20140363438 SEQ ID NO: 68	4522
PSYCH71	neuregulin (NRG)	Heavy chain variable region		US20140363438 SEQ ID NO: 70	4523
PSYCH72	ACTH	Light chain	Ab3	WO2015127288 SEQ ID NO: 101	3205
PSYCH73	ACTH	Light chain	Ab4	WO2015127288 SEQ ID NO: 141	3206
PSYCH74	ACTH	Light chain	Ab5	WO2015127288 SEQ ID NO: 181	3207
PSYCH75	ACTH	Light chain	Ab1	WO2015127288 SEQ ID NO: 21	3208
PSYCH76	ACTH	Light chain	Ab6	WO2015127288 SEQ ID NO: 221	3209
PSYCH77	ACTH	Light chain	Ab7	WO2015127288 SEQ ID NO: 261	3210
PSYCH78	ACTH	Light chain	Ab9	WO2015127288 SEQ ID NO: 301	3211
PSYCH79	ACTH	Light chain	Ab10	WO2015127288 SEQ ID NO: 341	3212
PSYCH80	ACTH	Light chain	Ab11	WO2015127288 SEQ ID NO: 381	3213
PSYCH81	ACTH	Light chain	Ab12	WO2015127288 SEQ ID NO: 421	3214
PSYCH82	ACTH	Light chain	Ab1.H	WO2015127288 SEQ ID NO: 461	3215
PSYCH83	ACTH	Light chain	Ab2.H	WO2015127288 SEQ ID NO: 501	3216
PSYCH84	ACTH	Light chain	Ab3.H	WO2015127288 SEQ ID NO: 541	3217
PSYCH85	ACTH	Light chain	Ab4.H	WO2015127288 SEQ ID NO: 581	3218
PSYCH86	ACTH	Light chain	Ab2	WO2015127288 SEQ ID NO: 61	3219
PSYCH87	ACTH	Light chain	Ab6.H	WO2015127288 SEQ ID NO: 621	3220
PSYCH88	ACTH	Light chain	Ab7.H	WO2015127288 SEQ ID NO: 661	3221
PSYCH89	ACTH	Light chain	Ab7A.H	WO2015127288 SEQ ID NO: 701	3222

PSYCH90	ACTH	Light chain	Ab10.H	WO2015127288 SEQ ID NO: 741	3223
PSYCH91	ACTH	Light chain	Ab11.H	WO2015127288 SEQ ID NO: 781	3224
PSYCH92	ACTH	Light chain	Ab11A.H	WO2015127288 SEQ ID NO: 821	3225
PSYCH93	ACTH	Light chain	Ab12.H	WO2015127288 SEQ ID NO: 861	3226
PSYCH94	neuregulin (NRG)	Light chain		US20140363438 SEQ ID NO: 73	4524
PSYCH95	neuregulin (NRG)	Light chain		US20140363438 SEQ ID NO: 75	4525
PSYCH96	Anx-A1	Light chain variable region	VJ-4B6	US20150004164 SEQ ID NO: 15	4526
PSYCH97	Anx-A1	Light chain variable region	VJ-4B6	US20150004164 SEQ ID NO: 19	4527
PSYCH98	RGM A	Light chain variable region	5F9.1-GL, 5F9.1-GL, 5F9.1-GL, 5F9.1-GL, 5F9.1-GL, 5F9.1-GL, 5F9.1-GL, 5F9.1-GL, h5F9.4, h5F9.11, h5F9.12	US20150183871 SEQ ID NO: 44	3350
PSYCH99	RGM A	Light chain variable region	5F9.2-GL, 5F9.2-GL, 5F9.2-GL, 5F9.2-GL, 5F9.2-GL, 5F9.2-GL, 5F9.2-GL, 5F9.2-GL, h5F9.5, h5F9.19, h5F9.20	US20150183871 SEQ ID NO: 45	3351
PSYCH100	RGM A	Light chain variable region	5F9.3-GL, 5F9.3-GL, 5F9.3-GL, 5F9.3-GL, 5F9.3-GL, 5F9.3-GL, 5F9.3-GL, 5F9.3-GL, h5F9.6, h5F9.21, h5F9.22	US20150183871 SEQ ID NO: 46	3352
PSYCH101	RGM A	Light chain variable region	h5F9.5, h5F9.6, h5F9.7, h5F9.8, h5F9.9, h5F9.10	US20150183871 SEQ ID NO: 48	3353
PSYCH102	RGM A	Light chain variable region	h5F9.11, h5F9.19, h5F9.21	US20150183871 SEQ ID NO: 49	3354
PSYCH103	RGM A	Light chain variable region	h5F9.12, h5F9.20, h5F9.22, h5F9.23, h5F9.25, h5F9.25, h5F9.26	US20150183871 SEQ ID NO: 50	3355
PSYCH104	RGM A	Light chain variable region	h5F9.1, h5F9.7, h5F9.23	US20150183871 SEQ ID NO: 51	3356
PSYCH105	RGM A	Light chain variable region	h5F9.2, h5F9.8, h5F9.25	US20150183871 SEQ ID NO: 52	3357
PSYCH106	RGMa	Light chain variable region	AE12-15	US20140023659 SEQ ID NO: 103	3358
PSYCH107	RGMa	Light chain variable region	AE12-20	US20140023659 SEQ ID NO: 111	3359
PSYCH108	RGMa	Light chain variable region	AE12-21	US20140023659 SEQ ID NO: 119	3360
PSYCH109	RGMa	Light chain variable region	AE12-23	US20140023659 SEQ ID NO: 127	3361

PSYCH 110	RGMa	Light chain variable region	AEI2-2	**US20 140023659 SEQ** ID NO: **13**	3362
PSYCHl 11	RGMa	Light **chain** variable region	AE 12-24	**US20 140023659** SEQ ID NO: **135**	3363
PSYCH 1l2	RGMa	Light **chain variable** region	**AE I2-3**	**US20 140023659** SEQ ID **NO: 2 1**	3364
PSYCH l 13	RGMa	Light chain variable region	**AE 12-4**	**US20 140023659** SEQ ID **NO:** 29	3365
PSYCH 1!4	RGMa	Light **chain** variable region	**AE I2-5**	**US20 140023659** SEQ ID **NO:** 37	3366
PSYCH l **15**	RGMa	Light chain variable **region**	**AE 12-6**	**US20 140023659** SEQ ID **NO:** 45	**3367**
PSYCH l16	RGMa	Light chairs variable region	**AE I2-1**	**US20 140023659** SEQ ID **NO:** 5	3368
PSYCH l **17**	RGMa	Light chain variable **region**	**AE12-7**	**US20 140023659** SEQ ID **NO:** 53	3369
PSYCH 1!8	RGMa	Light chairs variable region	**AE I2-8**	**US20 140023659** SEQ ID **NO: 6 1**	3370
PSYCH l **19**	RGMa	Light chain variable region	**AE12- I3**	**US20 140023659** SEQ ID **NO:** 95	337 1
PSYCH **120**	TMEFE3	Light chairs variable region	PQ0 1	**US20 150030602** SEQ ID **NO:** l2	4528
PSYCH **121**	**TNFa**	Light chain variable region	**D2E7**	**US20 140296493** SEQ ID **NO:** 1	4529
PSYCH122	**TNFa**	Light chain variable region	**2SD4**	**US20 140296493** SEQ ID NO: 9	4530
PSYCH **123**	**ghrelin**	Light chain variable region		**US20060233788** SEQ ID **NO:** 3	453 1
PSYCH 124	ghrelin	Light chain variable region		**US20060233788** SEQ ID **NO:** 30	4532
PSYCH **125**	**ghrelin**	Light chain variable region		**US20060233788** SEQ ID NO: 31	4533
PSYCH 126	**ghrelin**	Light chain variable region		**US20060233788** SEQ ID NO: 4	4534
PSYCH **127**	**neuregulin** (NRG)	Light chain variable region		**US20 140363438** SEQ ID NO: 22	4535
PSYCH128	**neuregulin** (NRG)	Light chain variable region		**US20140363438** SEQ ID NO: 23	4536
PSYCH 129	neuregulin (NRG)	Light chain variable region		**US20140363438** SEQ ID NO: 24	4537
PSYCH 130	neuregulin (NRG)	Light **chain** variable region		**US20140363438** SEQ ID NO: 25	4538
PSYCH13 1	neuregulin (NRG)	Light chain variable region		**US20140363438** SEQ ID NO: 26	4539
PSYCH 132	neuregulin (NRG)	Light **chain** variable region		**US20140363438** SEQ ID NO: 27	4540
PSYCH 133	neuregulin (NRG)	Light chain variable region		**US20140363438** SEQ ID NO: 53	4541
PSYCH 134	neuregulin (NRG)	Light **chain** variable region		**US20140363438** SEQ ID NO: 55	4542
PSYCH 135	neuregulin (NRG)	Light chain variable region		**US20140363438** SEQ ID NO: 57	4543
PSYCH 136	neuregulin (NRG)	Light **chain** variable region		**US20140363438** SEQ ID NO: 59	4544
PSYCH 137	neuregulin (NRG)	Light chain variable region		**US20140363438** SEQ ID NO: 6 1	4545
PSYCH 138	neuregulin (NRG)	Light **chain** variable region		**US20140363438** SEQ ID **NO:** 65	4546

PSYCH 139	**neuregulin (NRG)**	Light chain variable region		**US20** 140363438 SEQ ID NO: 67	4547
PSYCH140	**neuregulin (NRG)**	Light **chain** variable region		**US20 140363438** SEQ ID **NO:** 69	4548
PSYCH 141	**neuregulin (NRG)**	Light chain **variable** region		**US20** 140363438 SEQ ID **NO: 71**	4549
PSYCH 142	**neurokinin** B	Single **chain** scFv	**N024C01**	**US75 14079** SEQ ID NO: 22	4550
PSYCH 143	neurokinin **B**	**Single** chain **scFv**	**N025B07**	**US75 14079** SEQ ID **NO:** 23	4551
PSYCH 144	neurokinin B	Single **chain** scFv	**N0 I5E08**	**US75 14079** SEQ ID NO: 24	4552
PSYCH **145**	neurokinin **B**	Single chain **scFv**	**N015F 10**	**US75 14079** SEQ ID **NO:** 25	4553
PSYCH 146	neurokinin B	Single **chain** scFv	**N024D0** 1	**US75 14079** SEQ ID NO: 26	4554
PSYCH **147**	neurokinin **B**	Single chain **scFv**	**N015D08**	**US75 14079** SEQ ID **NO: 27**	4555
PSYCH148	neurokinin B	Single **chain** scFv	**N024B07**	**US75 14079** SEQ ID **NO: 28**	4556
PSYCH **149**	neurokinin **B**	Single chain **scFv**	**N024E07**	**US75 14079** SEQ ID NO: 29	4557
PSYCH **150**	neurokinin **B**	Single chain **scFv**	**N023F05**	**US75 14079** SEQ ID **NO:** 30	4558
PSYCH151	**neurokinin B**	Single chain **scFv**	N024D08	**US75 14079** SEQ ID NO: 31	4559
PSYCH **152**	neurokinin **B**	Single chain **scFv**	N023B03	**US75 14079** SEQ ID **NO:** 32	4560
PSYCH153	**neurokinin B**	Single chain **scFv**	**N023E01**	**US75 14079** SEQ ID NO: 33	4561
PSYCH **154**	neurokinin **B**	Single chain **scFv**	N024C05	**US75 14079** SEQ ID **NO:** 34	4562
PSYCH155	neurokinin **B**	Single chain **scFv**	**N025E05**	**US75 14079** SEQ ID NO: 35	4563
PSYCH **156**	neurokinin **B**	Single chain **scFv**	**N025C01**	**US75 14079** SEQ ID **NO:** 36	4564
PSYCH 157	neurokinin **B**	Single chain **scFv**	**N024F09**	**US75 14079** SEQ ID NO: 37	4565
PSYCH 158	**neurokinin** B	Single chain scFv	**N024B01**	US75 14079 SEQ ID **NO:** 38	4566
PSYCH 159	neurokinin B	Single **chain** scFv	N024F07	US75 14079 SEQ ID NO: 39	4567
PSYCH 160	**neurokinin** B	Single chain scFv	**N015D10**	US75 14079 SEQ ID NO: 40	4568

Cancer, Inflammation and Immune System Antibodies

[ΘΘ280] In one embodiment the payload region of the AAV particle comprises one or more nucleic acid sequences encoding one or more of **the** cancer, inflanimation and immune system payload antibody polypeptides listed **in** Table 9 **(CH1-CH13310;** SEQ ID NO: 2977-2998, **3031-**3039, 3060-3076, 3129-3147, 3181-3196. 3205-3226, 3277-3285, 3335-3345, 3375-3382, 3453-3459, 3856, 3890-3898, 4232-4237, 4308, 4323, 4420, 4431, 4501-4504, 4512-4527, 4535-17658).

Table 9. Cancer, **Inflammation** and **Immune** System Antibodies

Antibody No.	Target No	Description No.	Antibody Name	Reference Information	SEQ ID NO
CII1	97	1	MIM-IgG1	US8623357 SEQ ID NO: 1	4569
CII2	97	1	P61-IgG1	US8623357 SEQ ID NO: 6	4570
CII3	53	2	VL43-Y32F, clone#2	US20140286934 SEQ ID NO: 15	4571
CII4	53	2	VL43-P44I, clone#5	US20140286934 SEQ ID NO: 16	4572
CII5	53	2	VL43-P44L, clone#16	US20140286934 SEQ ID NO: 17	4573
CII6	53	2	VL43-N92A, clone#20	US20140286934 SEQ ID NO: 18	4574
CII7	44	4	Carlumab, CNTO 888		4575
CII8	44	4	Carlumab, CNTO 888		4576
CII9	84	6	CAS-105	WO2015116729 SEQ ID NO: 46	4577
CII10	84	6	CAS-106	WO2015116729 SEQ ID NO: 48	4578
CII11	84	6	CAS-107	WO2015116729 SEQ ID NO: 50	4579
CII12	84	6	CAS-108	WO2015116729 SEQ ID NO: 52	4580
CII13	84	6	CAS-109	WO2015116729 SEQ ID NO: 54	4581
CII14	84	6	CAS-110	WO2015116729 SEQ ID NO: 56	4582
CII15	84	6	CAS-111	WO2015116729 SEQ ID NO: 58	4583
CII16	84	6	CAS-112	WO2015116729 SEQ ID NO: 60	4584
CII17	84	6	LAG100	WO2015116729 SEQ ID NO: 63	4585
CII18	90	9	Catumaxomab		4586
CII19	89	10	Catumaxomab		4587
CII20	53	11		US20140271635 SEQ ID NO: 102	4588
CII21	53	11		US20140271635 SEQ ID NO: 31	4589
CII22	53	11		US20140271635 SEQ ID NO: 32	4590
CII23	53	11		US20140271635 SEQ ID NO: 33	4591
CII24	53	11		US20140271635 SEQ ID NO: 34	4592
CII25	53	11		US20140271635 SEQ ID NO: 35	4593
CII26	53	11		US20140271635 SEQ ID NO: 36	4594
CII27	53	11		US20140271635 SEQ ID NO: 37	4595
CII28	53	11		US20140271635 SEQ ID NO: 38	4596
CII29	53	11		US20140271635 SEQ ID NO: 39	4597
CII30	53	11		US20140271635 SEQ ID NO: 40	4598
CII31	53	11		US20140271635 SEQ ID NO: 41	4599
CII32	53	11		US20140271635 SEQ ID NO: 42	4600
CII33	53	12		US20090285808 SEQ ID NO: 10	4601
CII34	53	12		US20090285808 SEQ ID NO: 5	4602
CII35	56	13		US20150125453 SEQ ID NO: 55	4603
CII36	56	13		US20150125453 SEQ ID NO: 57	4604
CII37	56	13		US20150125453 SEQ ID NO: 78	4605
CII38	56	13		US20150125453 SEQ ID NO: 79	4606
CII39	56	13		US20150125453 SEQ ID NO: 80	4607
CII40	56	13		US20150125453 SEQ ID NO: 81	4608
CII41	56	13		US20150125453 SEQ ID NO: 82	4609
CII42	56	13		US20150125453 SEQ ID NO: 83	4610
CII43	66	18	hXR32VL-Her-2VH E coil	US20140099318 SEQ ID NO: 58	4611
CII44	66	18	Her2VL-hXR32VH-K coil	US20140099318 SEQ ID NO: 59	4612
CII45	66	18	CD19VL-hXR32VH-E coil	US20140099318 SEQ ID NO: 60	4613
CII46	66	18	hXR32VL-CD19VH-K coil	US20140099318 SEQ ID NO: 61	4614
CII47	66	18	hXR32VL-EGFRVH-E coil	US20140099318 SEQ ID NO: 62	4615
CII48	66	18	EGFRVL-hXR32VH-K coil	US20140099318 SEQ ID NO: 63	4616
CII49	66	18	hBRCA69DVL-hXR32VH-E coil	US20140099318 SEQ ID NO: 64	4617
CII50	66	18	hXR32VL-hBRCA69DVH-K coil	US20140099318 SEQ ID NO: 65	4618
CII51	66	18	hBRCA84DVL-hXR32VH-E coil	US20140099318 SEQ ID NO: 66	4619
CII52	66	18	hXR32VL-hBRCA84DVH-K coil	US20140099318 SEQ ID NO: 67	4620
CII53	66	18	4420VL-hXR32VH-E coil	US20140099318 SEQ ID NO: 68	4621

CII54	66	18	hXR32VL-4420VH-K coil	US20140099318 SEQ ID NO: 69	4622
CII55	66	18	RECA47VL-hXR32VH-K coil	US20140099318 SEQ ID NO: 70	4623
CII56	66	18	hXR32VL-RECA47VH-E coil	US20140099318 SEQ ID NO: 71	4624
CII57	65	19	Lulizumab pegol. BMS-931699	US8168759 SEQ ID NO: 543	4625
CII58	58	24	Rituximab modified at position L178	US20150239977 SEQ ID NO: 24	4626
CII59	58	24	Cetuximab	US20150239977 SEQ ID NO: 35	4627
CII60	58	24	Cetuximab modified at position L176S.	US20150239977 SEQ ID NO: 41	4628
CII61	58	24	Cetuximab modified at position L176	US20150239977 SEQ ID NO: 55	4629
CII62	58	24	Rituximab modified at position L178S	US20150239977 SEQ ID NO: 9	4630
CII63	58	27	Rituximab modified at position L15K	US20150239977 SEQ ID NO: 15	4631
CII64	58	27	Rituximab modified at position I33K	US20150239977 SEQ ID NO: 16	4632
CII65	58	27	Rituximab modified at position V62K	US20150239977 SEQ ID NO: 17	4633
CII66	58	27	Rituximab modified at position L89K	US20150239977 SEQ ID NO: 18	4634
CII67	58	27	Rituximab modified at position L15	US20150239977 SEQ ID NO: 30	4635
CII68	58	27	Rituximab modified at position I33	US20150239977 SEQ ID NO: 31	4636
CII69	58	27	Rituximab modified at position V62	US20150239977 SEQ ID NO: 32	4637
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CII73	58	27	Cetuximab modified at position I37K	US20150239977 SEQ ID NO: 48	4641
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CII76	58	27	Cetuximab modified at position L19	US20150239977 SEQ ID NO: 61	4644
CII77	58	27	Cetuximab modified at position I37	US20150239977 SEQ ID NO: 62	4645
CII78	58	27	Cetuximab modified at position V66	US20150239977 SEQ ID NO: 63	4646
CII79	58	27	Cetuximab modified at position L93	US20150239977 SEQ ID NO: 64	4647
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CII84	36	34		WO2014110438 SEQ ID NO: 18	4652
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CII86	56	35	2H7ScFv-Ig fusion protein	US8197810 SEQ ID NO: 16	4654
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CII98		35	Delantercept fusion protein		4666
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CII101		35	Riloacept fusion protein		4669
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CII104	53	38	VH16-R94K/Y97F, humIGHV175 [V3-11*01]	US20140286934 SEQ ID NO: 12	4672
CII105	53	38	VH16-R94K/Y98F, humIGHV195 [V3-30*18]	US20140286934 SEQ ID NO: 13	4673
CII106	53	38	VH16-R94K/Y100bF, humIGHV031 [V3-48*01]	US20140286934 SEQ ID NO: 14	4674

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cm 14	2	40	Ab7.H	WO2015127288 SEQ ID NO: 64l	2988
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cm is	2	40	Ab11A.H	WO20 15 127288 SEQ ID NO: 801	2992
cm 19	2	40	Ab5	WO20 l5 127288 SEQ ID NO: 161	2996
cm 20	2	40	Ab3	WO2015127288 SEQ ID NO: 81	2993
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CII133	9	40	Nesvacuniab, REGN-9 l0		4679
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cm 36	l 1	40	C2	WO20141 16880 SEQ ID NO: 36	4682
Cil l37	18	40	Vepalinioinab, 1B2		4683
CII138	24	40	Enoblituzumab, MGA-271		4684
CII139	32	40	rhuMAB 4D5-8	US8377437 SEQ ID NO: 14	4685
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CII141	33	40	H-20	WO20 15099838 SEQ ID NO: 63	4687
CII142	33	40	H-21	WO20 15099838 SEQ ID NO: 64	4688
CII143	33	40	H-22	WO20 15099838 SEQ ID NO: 65	4689
CII144	33	40	H-23	WO20 15099838 SEQ ID NO: 66	4690
CI1145	33	40	H-24	WO20 15099838 SEQ ID NO: 67	4691
CIII 46	33	40	H-25	WO20 15099838 SEQ ID NO: 68	4692
CII147	33	40	H-26	WO20 15099838 SEQ ID NO: 69	4693
CII148	33	40	H-27	WO20 15099838 SEQ ID NO: 70	4694
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CII150	33	40	H-29	WO20 15099838 SEQ ID NO: 72	4696
CII15 1	33	40	H-30	WO20 15099838 SEQ ID NO: 73	4697
CII152	33	40	H-3 1	WO20 15099838 SEQ ID NO: 74	4698
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cm 54	33	40	H-33	WO20 15099838 SEQ ID NO: 76	4700
CII155	33	40	H-34	WO20 15099838 SEQ ID NO: 77	4701
CII156	33	40	H-35	WO20 15099838 SEQ ID NO: 78	4702
CII157	33	40	H-36	WO20 15099838 SEQ ID NO: 79	4703
CII158	33	40	H-37	WO20 15099838 SEQ ID NO: 80	4704
CII159	33	40	H-38	WO20 15099838 SEQ ID NO: 8l	4705
CII160	33	40	H-39	WO20 15099838 SEQ ID NO: 82	4706
CI1161	33	40	H-40	WO20 15099838 SEQ ID NO: 83	4707
CIII 62	33	40	H-41	WO20 15099838 SEQ ID NO: 84	4708
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CII215	34	40	H6	US20150239966 SEQ ID NO: 12	4761
CII2 16	34	4tf	H1	US20150239966 SEQ ID NO: 2	4762
CII217	34	40	H2	US20150239966 SEQ ID NO: 4	4763
CII218	34	40	H3	US20150239966 SEQ ID NO: 6	4764
CI1219	34	40	H4	US20150239966 SEQ ID NO: 8	4765
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CII231	34	40	BHL009	WO2015134894 SEQ ID NO: 33	4777
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CII234	35	40	BNJ367, BNJ371, BNJ378	US20130224187 SEQ ID NO: 33	4780
CII235	35	40	BNJ366	US20130224187 SEQ ID NO: 44	4781
CII236	35	40	BNJ369, BNJ381, BNJ383	US20130224187 SEQ ID NO: 49	4782
CII237	37	40	Sofituzumab vedotin, DMUC5754A (conjugate), MMUC1206A (nonconjugate)	US7723485 SEQ ID NO: 1	4783
CII238	41	40	Girentuximab, Rencarex	US8962804 SEQ ID NO: 94	4784
CII239	45	40	Plozalizumab, MLN-1202, MLN1202, anti-CCR2, Hu1D9		4785
CII240	46	40	Mogamulizumab, AMG-761, KW-0761, POTELIGEO®		4786
CII241	47	40	H1235	US20080219971 SEQ ID NO: 1	4787
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CII272	47	40	H1751	US20080219971 SEQ ID NO: 6	4818
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CII274	53	40	H16-R94K/S298A heavy chain	US20140286934 SEQ ID NO: 114	4820

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CI1276	53	40	VH16-R94K/S298A/S324N heavy chain	ıı S20 140286934 SEQ ID NO: 116	4822
CII277	53	40	VH16-R94K/E269D/S298A/S324N heavy chain	US20 140286934 SEQ ID NO: 117	4823
CII278	53	40	VH16-R94K/S324N heavy chain	US20 140286934 SEQ ID NO: 118	4824
CI1279	53	40	VH16-R94K/K274Q heavy chain	US20 140286934 SEQ ID NO: 119	4825
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CII282	53	40	VH16-R94K/K274Q/N276K heavy chain	US20 140286934 SEQ ID NO: 122	4828
CII283	53	40	VH16-R94K/K274Q/N276K/K334R heavy chain	US20 140286934 SEQ ID NO: 123	4829
CII284	53	40	VH16-R94K (1133) heavy chain	US20 140286934 SEQ ID NO: 124	4830
CII285	53	40	VL43-T93V, VH2	US20 140286934 SEQ ID NO: 19	4831
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CII287	53	40	VH16-R94K/Y97W, VH6	US20 140286934 SEQ ID NO: 21	4833
CII288	53	40	VH16-Y32F/R94K/Y97F, VH20	US20 140286934 SEQ ID NO: 22	4834
CI1289	53	40	VH16- R94K Y100BF heavy chain	US20 140286934 SEQ ID NO: 33	4835
CII290	53	40	FM(C63 chimeric Heavy Chain	US20 140286934 SEQ ID NO: 35	4836
CII29 1	53	40	Denintuzuinab mafodotin, SGN-19A, SGN-CD 19A, HBU 12-491, unconj ugated: huBU 12	US7968687 SEQ ID NO: 56	4837
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CII293	53	40	BLY3	WO 1996036360 SEQ ID NO: 16	4839
CII294	53	40	Coltuximab ravtansine,		4840
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CII299	56	40	hu2H7.vl6 H	US20 100143352 SEQ ID NO: 4	4845
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CII303	56	40	2H7.V96	US7799900 SEQ ID NO: 23	4849
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CTI306	56	40		US7799900 SEQ ID NO: 46	4852
CII307	56	40		US7799900 SEQ ID NO: 48	4853
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CII309	56	40		US7799900 SEQ ID NO: 50	4855
CII3 10	56	40	Ibritamomab (Ibritumomab tiuxetan, Zevalin)	US8906681 SEQ ID NO: 206	4856
CIO 11	56	40	hu2H7.v3 1	WO2006068867 SEQ ID NO: 11	4857
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CII320	56	40		US201 10129412 SEQ ID NO: 142	4866
CII321	56	40		US201 10129412 SEQ ID NO: 143	4867
CIO 22	56	40		US20 1101294 12 SEQ ID NO: 144	4868
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CII335	56	40	huCD20-7HCv1.0	US20110195021 SEQ ID NO: 35	4881
CII336	56	40	huCD20-7HCv1.1	US20110195021 SEQ ID NO: 36	4882
CII337	56	40	muCD20-6HC	US20110195021 SEQ ID NO: 4	4883
CII338	56	40	muCD20-6HC	US20110195021 SEQ ID NO: 47	4884
CII339	56	40	huCD20-7HCv1.1	US20110195021 SEQ ID NO: 6	4885
CII340	56	40	huCD20-4HC	US20110195022 SEQ ID NO: 14	4886
CII341	56	40	huCD20-4VH	US20110195022 SEQ ID NO: 16	4887
CII342	56	40	muCD20-4HC	US20110195022 SEQ ID NO: 2	4888
CII343	56	40	muCD20-20HC	US20110195022 SEQ ID NO: 4	4889
CII344	56	40	muCD20-4VH	US20110195022 SEQ ID NO: 6	4890
CII345	56	40	muCD20-20VH	US20110195022 SEQ ID NO: 8	4891
CII346	56	40		US20120100133 SEQ ID NO: 8	4892
CII347	57	40	CHIR-12.12	US20070098718 SEQ ID NO: 4	4893
CII348	57	40	variant of CHIR-12.12	US20070098718 SEQ ID NO: 5	4894
CII349	57	40	CHIR-5.9	US20070098718 SEQ ID NO: 7	4895
CII350	57	40	variant of CHIR-5.9	US20070098718 SEQ ID NO: 8	4896
CII351	59	40	Samalizumab, ALXN6000, Anti-CD200, HB7V3V2 G2G4	US8075884 SEQ ID NO: 13	4897
CII352	60	40	Inotuzumab ozogamicin	US8153768 SEQ ID NO: 30	4898
CII353	60	40	Pinatuzumab vedotin, ACD22-VCMMAE, DCDT2980S, FCU2803, RG-7593, RO5541072-000	US8226945 SEQ ID NO: 88	4899
CII354	60	40	DP7	US8747857 SEQ ID NO: 21	4900
CII355	60	40	gH4	US8747857 SEQ ID NO: 24	4901
CII356	60	40	gH5	US8747857 SEQ ID NO: 25	4902
CII357	60	40	gH6	US8747857 SEQ ID NO: 26	4903
CII358	60	40	gH7	US8747857 SEQ ID NO: 27	4904
CII359	60	40	anti-CD22 antibody	US8747857 SEQ ID NO: 30	4905
CII360	60	40	Moxetumomab Pasudotox		4906
CII361	61	40	Teprotumumab,	US8907069 SEQ ID NO: 10	4907
CII362	62	40	Ontuxizumab, MORAb-004	US7807382 SEQ ID NO: 24, 26	4908
CII363	63	40	Varlilumab, 1F5, CDX-1127		4909
CII364	64	40	Avelumab, MSB-0010718C, MSB0010682, MSB0010718C		4910
CII365	65	40	TGN1412, CD28-SuperMAB	US8709414 SEQ ID NO: 14	4911
CII366	83	40	B2	US20150266967 SEQ ID NO: 11	4912
CII367	83	40	B4	US20150266967 SEQ ID NO: 13	4913
CII368	83	40	A2	US20150266967 SEQ ID NO: 5	4914
CII369	83	40	A4	US20150266967 SEQ ID NO: 9	4915
CII370	83	40	Otlertuzumab, TRU-016	US8333966 SEQ ID NO: 253 222	4916
CII371	83	40	Lilotomab (satetraxetan), HH1		4917
CII372	84	40	huCD37-3v1.0	WO2015116729 SEQ ID NO: 40	4918
CII373	84	40	huCD37-3v1.1	WO2015116729 SEQ ID NO: 41	4919
CII374	85	40	005 mAb	US20150246123 SEQ ID NO: 12	4920
CII375	85	40	Isatuximab, SAR-650984, SAR650984, hu38SB19		4921
CII376	86	40	Daratumumab, HuMax-CD38		4922
CII377	92	40	Lucatumumab, CHIR-122, HCD122	US8828396 SEQ ID NO: 9	4923

CII378	92	40	Dacetuzumab, SGN-40, huS2C	US8303955 SEQ ID NO: 19	4924
CII379	92	40	Dacetuzumab, SGN-40, huS2C	US8303955 SEQ ID NO: 18	4925
CII380	92	40	12.12	US8926979 SEQ ID NO: 4	4926
CII381	92	40	12.12 variant	US8926979 SEQ ID NO: 5	4927
CII382	92	40	HCD122	WO2012075111 SEQ ID NO: 4	4928
CII383	92	40	variant of HCD122	WO2012075111 SEQ ID NO: 5	4929
CII384	94	40	Bivatuzumab, DM1, BiWA4	US7361347 SEQ ID NO: 4	4930
CII385	96	40	Abituzumab, EMD525797, DI17E6	WO2009010290	4931
CII386	97	40		US20090220520 SEQ ID NO: 4	4932
CII387	97	40	2C3	US8617554 SEQ ID NO: 272	4933
CII388	97	40	7F11	US8617554 SEQ ID NO: 274	4934
CII389	97	40	9D9	US8617554 SEQ ID NO: 276	4935
CII390	97	40	9D9	US8617554 SEQ ID NO: 277	4936
CII391	97	40	12G6	US8617554 SEQ ID NO: 279	4937
CII392	97	40	4B10	US8617554 SEQ ID NO: 281	4938
CII393	101	40	Vorsetuzumab, SNG-70 (Vorsetumab mafodotina, SNG-75)	US8067546 SEQ ID NO: 16	4939
CII394	102	40	Milatuzumab, CD74-DOX (ADC), MEDI-115, HLL1, HLL1-DOX (ADC),		4940
CII395	103	40	Polatuzumab vedotin, ACD79B-VCMMAE, DCDS4501A, FCU2711, RO5541077-000	US8088378 SEQ ID NO: 232	4941
CII396	104	40	mAb 14.1	US20030082643 SEQ ID NO: 2	4942
CII397	104	40		US20030082643 SEQ ID NO: 6	4943
CII398	106	40	Labetuzumab govitecanum, CEA-Cide, IMMU-130, hMN-14-SN-38, hMN-14-SN-38 ADC, HMN14-CL-SN-38, HMN14-SN-38	US7696322 SEQ ID NO: 3	4944
CII399	118	40	Emactuzumab, RG7155, RO5509554		4945
CII400	125	40	Telimomab, Ticilimumab, CP-675207	US6682737 SEQ ID NO: 71	4946
CII401	126	40	Ulocuplumab, BMS-936564, MDX-1338		4947
CII402	132	40	Rovalpituzumab		4948
CII403	133	40	Demcizumab, OMP-21M18	US8551715 SEQ ID NO: 34	4949
CII404	133	40	Enoticumab, REGN-421, SAR153192		4950
CII405	134	40	(iodinum) DerlotuximabBiotin, (131)I-chTNT-1/B, I-131 ch-TNT-1/B,131I-chTNT (Tumor Necrosis Therapy)		4951
CII406	139	40	Parsatuzumab, RG7414		4952
CII407	140	40	Imgatuzumab, GA201, RG7160, RO5083945		4953
CII408	140	40	Necitumumab		4954
CII409	142	40	Futuximab, DS 992	US7887805 SEQ ID NO: 40	4955
CII410	145	40	Modotuximab, Zatuximab		4956
CII411	157	40	Citatuzumab bogatox, VB6-845	US8263744 SEQ ID NO: 6; US7339031 SEQ ID NO: 24,20	4957
CII412	157	40	Adecatumumab, MT201, HD69	WO2010142990	4958
CII413	160	40	Fibatuzumab, KB-004, KB004	US8664365 SEQ ID NO: 30	4959
CII414	166	40	Margetuximab, MGAH-22	US8802093 SEQ ID NO: 11	4960
CII415	166	40	Pertuzumab	WO2013096812 SEQ ID NO: 8	4961
CII416	167	40	Elgemtumab, LJM716, NVS201010	US8735551 SEQ ID NO: 145	4962
CII417	167	40	Seribantumab, MM-121, MM121, SAR256212	US9011863 SEQ ID NO: 17	4963
CII418	167	40	Duligotuzumab (Duligotumab), MEHD7945A, RG-7597, RG7597		4964
CII419	167	40	Lumretuzumab, RG-7116, RG7116, RO5479599		4965

CII420	174	40	Racotumomab	US6491914	4966
CII421	175	40	Tisotumab, HuMax-TF		4967
CII422	178	40	AMF-3a-118	WO2014186878 SEQ ID NO: 89	4968
CII423	178	40	AMF 3d-19	WO2014186878 SEQ ID NO: 103	4969
CII424	179	40	3B3.11	US20130078262 SEQ ID NO: 21	4970
CII425	179	40	31.1	US20130078262 SEQ ID NO: 23	4971
CII426	180	40	2B6	US20080138349 SEQ ID NO: 29	4972
CII427	180	40	4d5	US20080138349 SEQ ID NO: 32	4973
CII428	180	40	humanized 4d5	US20080138349 SEQ ID NO: 34	4974
CII429	180	40	humanized 2B6	US20080138349 SEQ ID NO: 42	4975
CII430	180	40	H2B6Hc-3Fc0088	US8697071 SEQ ID NO: 29	4976
CII431	188	40	Icrucumab, 18F1, IMC-18F1, LY3012212		4977
CII432	190	40	Mirvetuximab soravtansine, IMGN853, M9346A-sulfo-SPDB-DM4	US8557966 SEQ ID NO: 6	4978
CII433	191	40	Farletuzumab	US7498414 US20050232919 SEQ ID NO: 5	4979
CII434	192	40	Vantictumab, OMP-18R5	US7982013 SEQ ID NO: 11	4980
CII435	194	40	Dinutuximab, Unituxin, ch 14.18	US8470991 SEQ ID NO: 1	4981
CII436	201	40	Codrituzumab, GC33, RG7686, RO5137382		4982
CII437	203	40	Glembatumumab vedotin, CDX-011, CR011-vcMMAE	US8846873 SEQ ID NO: 394	4983
CII438	205	40	Indusatumab, 5F9, MLN2045 (conjugated Indusatumab vedotin, 5F9vcMMAE, MLN-0264, MLN0264)	US8785600 SEQ ID NO: 231	4984
CII439	216	40	Patritumab, U3-1287		4985
CII440	217	40	Ab1	US20140271464 SEQ ID NO: 1	4986
CII441	217	40	Ab27	US20140271464 SEQ ID NO: 1001	4987
CII442	217	40	Ab28	US20140271464 SEQ ID NO: 1041	4988
CII443	217	40	Ab4	US20140271464 SEQ ID NO: 121	4989
CII444	217	40	Ab5	US20140271464 SEQ ID NO: 161	4990
CII445	217	40	Ab6	US20140271464 SEQ ID NO: 201	4991
CII446	217	40	Ab7	US20140271464 SEQ ID NO: 241	4992
CII447	217	40	Ab8	US20140271464 SEQ ID NO: 281	4993
CII448	217	40	Ab9	US20140271464 SEQ ID NO: 321	4994
CII449	217	40	Ab10	US20140271464 SEQ ID NO: 361	4995
CII450	217	40	Ab11	US20140271464 SEQ ID NO: 401	4996
CII451	217	40	Ab2	US20140271464 SEQ ID NO: 41	4997
CII452	217	40	Ab12	US20140271464 SEQ ID NO: 441	4998
CII453	217	40	Ab13	US20140271464 SEQ ID NO: 481	4999
CII454	217	40	Ab14	US20140271464 SEQ ID NO: 521	5000
CII455	217	40	Ab15	US20140271464 SEQ ID NO: 561	5001
CII456	217	40	Ab16	US20140271464 SEQ ID NO: 601	5002
CII457	217	40	Ab17	US20140271464 SEQ ID NO: 641	5003
CII458	217	40	Ab18	US20140271464 SEQ ID NO: 681	5004
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CII460	217	40	Ab20	US20140271464 SEQ ID NO: 761	5006
CII461	217	40	Ab21	US20140271464 SEQ ID NO: 801	5007
CII462	217	40	Ab3	US20140271464 SEQ ID NO: 81	5008
CII463	217	40	Ab23	US20140271464 SEQ ID NO: 841	5009
CII464	217	40	Ab24	US20140271464 SEQ ID NO: 881	5010
CII465	217	40	Ab25	US20140271464 SEQ ID NO: 921	5011
CII466	217	40	Ab26	US20140271464 SEQ ID NO: 961	5012

CII467	217	40	Ficlatuzumab, AV-299, SCH 900105	US7649083 SEQ ID NO: 191	5013
CII468	217	40	Rilotumumab	US8609090 SEQ ID NO: 39 (20-139)	5014
CII469	225	40	ATROSAB	WO2012035141 SEQ ID NO: 10	5015
CII470	229	40	Sifalimumab, MDX-1103, MEDI-545		5016
CII471	233	40	Figitumumab, CP-751871	US7618626 SEQ ID NO: 45	5017
CII472	233	40	Robatumumab, 19D12, SCH 717454,		5018
CII473	233	40	Dalotuzumab, MK-0646		5019
CII474	232	40	Ganitumab, AMG 479	US8961970 SEQ ID NO: 1	5020
CII475	237	40	F4-465	EP1810979 SEQ ID NO: 10	5021
CII476	237	40	4D11	EP1810979 SEQ ID NO: 2	5022
CII477	237	40	4D11G4	EP1810979 SEQ ID NO: 44	5023
CII478	237	40	4D11G4PEK	EP1810979 SEQ ID NO: 48	5024
CII479	237	40	KM281-1-10	EP1810979 SEQ ID NO: 6	5025
CII480	238	40	Quilizumab, 47H7, Anti-M1 prime, MEMP1972A, RG7449		5026
CII481	242	40	Briakinumab heavy chain		5027
CII482	249	40	gHl 1	WO2006054059 SEQ ID NO: 11	5028
CII483	249	40	CDP435	WO2006054059 SEQ ID NO: 18	5029
CII484	240	40	240g1	WO2007066082 SEQ ID NO: 16	5030
CII485	246	40	Lebrikizumab, TNX-659	WO2013066866 SEQ ID NO: 10	5031
CII486	246	40	Lebrikizumab, TNX-660	WO2013066866 SEQ ID NO: 11	5032
CII487	246	40	Lebrikizumab, TNX-661	WO2013066866 SEQ ID NO: 12	5033
CII488	246	40	Lebrikizumab, TNX-662	WO2013066866 SEQ ID NO: 13	5034
CII489	246	40	Anrukinzumab	US7390786 SEQ ID NO: 7	5035
CII490	246	40	Dectrekumab, QAX-576, QAX576	WO 2007045477	5036
CII491	247	40	Tralokinumab		5037
CII492	249	40	Afasevikumab, MCAF-5352A, MCAF5352A, NI-1401, RG-7624, RG7624, RO5553110		5038
CII493	250	40	Ixekizumab	WO2006013107	5039
CII494	250	40	Perakizumab, RG4934, RO5310074		5040
CII495	250	40	Secukinumab		5041
CII496	252	40	Brodalumab	WO2006013107 SEQ ID NO: 427	5042
CII497	256	40	AAL 160	WO2001053353 SEQ ID NO: 2	5043
CII498	259	40	Fezakinumab, ILV-094		5044
CII499	260	40	Tildrakizumab	US8263748 SEQ ID NO: 7	5045
CII500	264	40	Nemolizumab, CIM331	US8575317 SEQ ID NO: 228	5046
CII501	266	40	Dupilumab, CD124, REGN668, SAR231893	US8980273 SEQ ID NO: 71	5047
CII502	268	40	Benralizumab	WO2008143878 SEQ ID NO: 3	5048
CII503	268	40	Benralizumab	WO2008143878 SEQ ID NO: 4	5049
CII504	269	40	Olokizumab, CDP 6038	US8075889 SEQ ID NO: 16, 24	5050
CII505	269	40	Siltuximab, Sylvant, CLB8		5051
CII506	269	40		WO2007066082 SEQ ID NO: 2	5052
CII507	269	40	Ab7	US20100150829 SEQ ID NO: 102	5053
CII508	269	40	Ab7	US20100150829 SEQ ID NO: 117	5054
CII509	269	40	Ab7	US20100150829 SEQ ID NO: 118	5055
CII510	269	40	Ab8	US20100150829 SEQ ID NO: 123	5056
CII511	269	40	Ab9	US20100150829 SEQ ID NO: 139	5057
CII512	269	40	Ab10	US20100150829 SEQ ID NO: 155	5058
CII513	269	40	Ab11	US20100150829 SEQ ID NO: 171	5059
CII514	269	40	Ab1	US20100150829 SEQ ID NO: 18	5060
CII515	269	40	Ab12	US20100150829 SEQ ID NO: 187	5061
CII516	269	40	Ab1	US20100150829 SEQ ID NO: 19	5062
CII517	269	40	Ab13	US20100150829 SEQ ID NO: 203	5063
CII518	269	40	Ab14	US20100150829 SEQ ID NO: 219	5064
CII519	269	40	Ab2	US20100150829 SEQ ID NO: 22	5065

CII520	269	40	AM 5	US20 100 150829 SEQ ID NO: 235	5066
CII521	269	40	Ab16	US20 100 150829 SEQ ID NO: 251	5067
CII522	269	40	AM7	US20 100 150829 SEQ ID NO: 267	5068
CII523	269	40	AM 8	US20 100 150829 SEQ ID NO: 283	5069
CI1524	269	40	AM 9	US20 100 150829 SEQ ID NO: 299	5070
CII525	269	40	AM	US20 [00150829 SEQ ID NO: 3	5071
CII526	269	40	Ab20	US20 [00 150829 SEQ ID NO: 3 15	5072
CII527	269	40	Ab21	US20 100 150829 SEQ ID NO: 331	5073
CII528	269	40	Ab22	US20 100 150829 SEQ ID NO: 347	5074
CII529	269	40	Ab23	US20 100 150829 SEQ ID NO: 363	5075
CII530	269	40	Ab24	US20 100 150829 SEQ ID NO: 379	5076
CII53 1	269	40	Ab3	US20 100 150829 SEQ ID NO: 38	5077
CII532	269	40	Ab25	US20 100 150829 SEQ ID NO: 395	5078
CI1533	269	40	Ab26	US20 100 150829 SEQ ID NO: 4 11	5079
CII534	269	40	Ab27	US20 [00 150829 SEQ ID NO: 427	5080
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CII536	269	40	Ab29	US20 100 150829 SEQ ID NO: 459	5082
CII537	269	40	Ab30	US20 100 150829 SEQ ID NO: 475	5083
CII538	269	40	Ab3 !	US20 100 150829 SEQ ID NO: 491	5084
CII539	269	40	Ab32	US20 100 150829 SEQ ID NO: 507	5085
CII540	269	40	Ab33	US20 100 150829 SEQ ID NO: 523	5086
CI1541	269	40	Ab34	US20 100 150829 SEQ ID NO: 539	5087
CII542	269	40	Ab4	US20 [00 150829 SEQ ID NO: 54	5088
CII543	269	40	Ab35	US20 100 150829 SEQ ID NO: 555	5089
CII544	269	40	Ab36	US20 100 150829 SEQ ID NO: 571	5090
CII545	269	40	AM	US20 100 150829 SEQ ID NO: 652	5091
CII546	269	40	Abl	US20 100 150829 SEQ ID NO: 653	5092
CII547	269	40	Ab1	US20 100 150829 SEQ ID NO: 654	5093
CII548	269	40	Abl	US20 100 150829 SEQ ID NO: 655	5094
CI1549	269	40	Abl	US20 100 150829 SEQ ID NO: 656	5095
CII550	269	40	Ab1	US20 [00 150829 SEQ ID NO: 657	5096
CII55 1	269	40	Ab1	US20 100 150829 SEQ ID NO: 658	5097
CII552	269	40	Ab1	US20 100 150829 SEQ ID NO: 661	5098
CII553	269	40	Abl	US20 100 150829 SEQ ID NO: 664	5099
CII554	269	40	Ab1	US20 100 150829 SEQ ID NO: 665	5100
CII555	269	40	Ab2	US20 100 150829 SEQ ID NO: 668	5101
CII556	269	40	Ab3	US20 100 150829 SEQ ID NO: 672	5102
CII557	269	40	Ab4	US20 100 150829 SEQ ID NO: 676	5103
CI1558	269	40	Ab5	US20 100 150829 SEQ ID NO: 680	5104
CII559	269	40	Ab6	US20 [00 150829 SEQ ID NO: 684	5105
CII560	269	40	Ab7	US20 100 150829 SEQ ID NO: 688	5106
CII561	269	40	Ab7	US20 100 150829 SEQ ID NO: 691	5107
CII562	269	40	Ab7	US20 100 150829 SEQ ID NO: 692	5108
CII563	269	40	Ab5	US20 100 150829 SEQ ID NO: 70	5109
CII564	269	40	Abl	US20 100 150829 SEQ ID NO: 704	5110
CII565	269	40	Abl	US20 100 150829 SEQ ID NO: 708	5111
CI1566	269	40	Ab6	US20 100 150829 SEQ ID NO: 86	5112
CII567	270	40	Sarilumab		5113
CII568	273	40	HAL403a	US8637273 SEQ ID NO: 10	5114
CII569	273	40	HAL403b	US8637273 SEQ ID NO: 12	5115
CII570	273	40	HAL403a	US8637273 SEQ ID NO: 17	5116
CII571	273	40	P3A9	US8637273 SEQ ID NO: 2	5117
CII572	273	40	P4B3	US8637273 SEQ ID NO: 4	5118
CII573	273	40	C1GM, C2M3	US8637273 SEQ ID NO: 40	5119
CI1574	273	40	C1CM	US8637273 SEQ ID NO: 42	5120
CII575	273	40	ClGM-2	US8637273 SEQ ID NO: 45	5121
CII576	273	40	P2D2	US8637273 SEQ ID NO: 6	5122
CII577	273	40	P2E1 1	US8637273 SEQ ID NO: 8	5123

CII578	274	40	gL10	WO2007066082 SEQ ID NO: 11	5124
CII579	275	40	Enokizumab, 7F3com-2H2, MEDI-528		5125
CII580	278	40	Abrilumab		5126
CII581	282	40	Vatelizumab, GBR500		5127
CII582	285	40	Etaracizumab, Abegrin, Vitaxin, MEDI-522, hLM60		5128
CII583	286	40	Intetumumab, CNTO 095, CNTO-95	US8138315 SEQ ID NO: 1	5129
CII584	287	40	Ramucirumab	Immunogenetics Information System; CHAIN ID NO: 9098_H	5130
CII585	289	40	Lirilumab, BMS-986015, IPH2102	US8709411 SEQ ID NO: 3	5131
CII586	290	40	Monalizumab, IPH-2201,IPH2201, NN-8765, NNC-0141-0000-0100, NNC-141-01000, anti-NKG2A, HumZ270		5132
CII587	291	40	BAP050-hum01-Ser, BAP050-hum02-Ser, BAP050-hum03-Ser, BAP050-hum04-Ser, BAP050-hum05-Ser, BAP050-hum06-Ser, BAP050-hum07-Ser, BAP050-hum08-Ser, BAP050-hum18-Ser, BAP050-hum19-Ser	US20150259420 SEQ ID NO: 102	5133
CII588	291	40	BAP050-hum09-Ser, BAP050-hum10-Ser, BAP050-hum11-Ser, BAP050-hum12-Ser, BAP050-hum20-Ser	US20150259420 SEQ ID NO: 106	5134
CII589	291	40	BAP050-hum13-Ser	US20150259420 SEQ ID NO: 110	5135
CII590	291	40	BAP050-Clone-F, BAP050-Clone-G	US20150259420 SEQ ID NO: 113	5136
CII591	291	40	BAP050-Clone-H, BAP050-Clone-I	US20150259420 SEQ ID NO: 122	5137
CII592	291	40	BAP050-Clone-J	US20150259420 SEQ ID NO: 134	5138
CII593	291	40	BAP050-hum14-Ser, BAP050-hum15-Ser	US20150259420 SEQ ID NO: 18	5139
CII594	291	40	BAP050-chi	US20150259420 SEQ ID NO: 22	5140
CII595	291	40	BAP050-hum01, BAP050-hum02, BAP050-hum03, BAP050-hum04, BAP050-hum05, BAP050-hum06, BAP050-hum07, BAP050-hum08, BAP050-hum18, BAP050-hum19	US20150259420 SEQ ID NO: 30	5141
CII596	291	40	BAP050-hum09, BAP050-hum10, BAP050-hum11, BAP050-hum12, BAP050-hum20	US20150259420 SEQ ID NO: 66	5142
CII597	291	40	BAP050-hum13	US20150259420 SEQ ID NO: 70	5143
CII598	291	40	BAP050-hum14, BAP050-hum15	US20150259420 SEQ ID NO: 74	5144
CII599	291	40	BAP050-hum16	US20150259420 SEQ ID NO: 78	5145
CII600	291	40	BAP050-hum17	US20150259420 SEQ ID NO: 82	5146
CII601	305	40	Opicinumab, BiIB033	US805840 SEQ ID NO: 506; US8128926 SEQ ID NO: 474	5147
CII602	305	40	Li33 Fab'	US8425910 SEQ ID NO: 146	5148
CII603	305	40	Aglycosylated Li81	US8425910 SEQ ID NO: 50	5149
CII604	305	40	Li81	US8425910 SEQ ID NO: 86	5150
CII605	306	40	Simtuzumab, AB0024, GS-6624	US8680246 SEQ ID NO: 44	5151
CII606	310	40	hL243	US20140178294 SEQ ID NO: 37	5152
CII607	310	40	c208F2	WO2015162293 SEQ ID NO: 23	5153
CII608	310	40	c212A11	WO2015162293 SEQ ID NO: 24	5154
CII609	310	40	c214F8	WO2015162293 SEQ ID NO: 25	5155
CII610	310	40	c219D6	WO2015162293 SEQ ID NO: 26	5156
CII611	310	40	c213B10	WO2015162293 SEQ ID NO: 27	5157
CII612	319	40	Amatuximab, MORAb-009		5158
CII613	320	40	Onartuzumab		5159

CII614	323	40	2.00E+04	US20140170168 SEQ ID NO: 15	5160
CII615	323	40	1F11	US20140170168 SEQ ID NO: 31	5161
CII616	323	40	3A3	US20140170168 SEQ ID NO: 47	5162
CII617	323	40	3H5	US20140170168 SEQ ID NO: 63	5163
CII618	323	40	2C3	US20140170168 SEQ ID NO: 79	5164
CII619	324	40	Imalumab, BAX069, BAX69		5165
CII620	328	40	Obinutuzumab, Gazyva	US8883980 SEQ ID NO: 40	5166
CII621	328	40	Obinutuzumab, Afutuzumab	WO2005044859 Immunogenetics Information System; CHAIN ID NO: 9043_H (http: www:imgt:orgmAb-DBquery Query: obinutuzumab)	5167
CII622	328	40	Veltuzumab, IMMU-106, HA20		5168
CII623	328	40	Obinutuzumab, Gazyva		5169
CII624	328	40	Ublituximab, LFB-R603, TG-1101, TGTX-1101		5170
CII625	328	40	Ocaratuzumab, AME-133v, LY2469298	US7740847 SEQ ID NO: 31	5171
CII626	329	40	Anetumab ravtansine,	US8992932 SEQ ID NO: 408	5172
CII627	330	40	Narnatumab, IMC RON-8, RON8	US7947811 SEQ ID NO: 14, 50	5173
CII628	336	40	Cantuzumab ravtansine, IMGN242, huC242-DM4	US8815247 SEQ ID NO: 29	5174
CII629	336	40	Clivatuzumab tetraxetan, hPAM4, hPAM4 IgG-DOTA,	US9005613 SEQ 117	5175
CII630	338	40	Ensituximab, NOE-102, NPC-1C		5176
CII631	339	40	Cantuzumab (Cantuzumab mertansine, SB408075, humanized C242, huC242-DM1 (conjugated))	WO2004004639 SEQ ID NO: 1	5177
CII632	341	40	Lorvotuzumab mertansine, BB-10901, IMGN901, huN901-DM1		5178
CII633	343	40		US20140363438 SEQ ID NO: 72	4501
CII634	343	40		US20140363438 SEQ ID NO: 74	4502
CII635	350	40	H6L13 FL	US20140147435 SEQ ID NO: 27	3031
CII636	350	40	H16L16 FL, H16L18 FL	US20140147435 SEQ ID NO: 31	3032
CII637	350	40	H18L16 FL	US20140147435 SEQ ID NO: 33	3033
CII638	350	40	H19L13 FL, H19L16 FL, H19L18 FL	US20140147435 SEQ ID NO: 92	3034
CII639	350	40	H20L13 FL, H20L16 FL, H20L18 FL	US20140147435 SEQ ID NO: 93	3035
CII640	350	40	H21L13 FL, H21L16 FL, H21L18 FL	US20140147435 SEQ ID NO: 94	3036
CII641	350	40	H25L13 FL, H25L16 FL, H25L18 FL	US20140147435 SEQ ID NO: 98	3037
CII642	351	40	5B10	US20090215691 SEQ ID NO: 16	3038
CII643	351	40	5B10	US20090215691 SEQ ID NO: 18	3039
CII644	352	40	Tarextumab, OMP-59R5		5179
CII645	353	40	Brontictuzumab, OMP-52M51	US8435513 SEQ ID NO: 22	5180
CII646	354	40	Vesencumab, MNRP1685A	US8679767 SEQ ID NO: 24	5181
CII647	357	40	Oxelumab, R4930, RO4989991, huMAb OX40L	US8962807 SEQ ID NO: 177	5182
CII648	360	40	BAP049-Clone-D	US20150210769 SEQ ID NO: 102	5183
CII649	360	40	BAP049-chi	US20150210769 SEQ ID NO: 20	5184
CII650	360	40	BAP049-chi, BAP049-chi-Y	US20150210769 SEQ ID NO: 30	5185
CII651	360	40	BAP049-hum01, BAP049-hum02, BAP049-hum05, BAP049-hum06, BAP049-hum07, BAP049-hum09, BAP049-hum11, BAP049-hum12, BAP049-hum13	US20150210769 SEQ ID NO: 40	5186
CII652	360	40	BAP049-hum03, BAP049-hum04, BAP049-hum08, BAP049-hum10	US20150210769 SEQ ID NO: 52	5187
CII653	360	40	BAP049-hum14, BAP049-hum15	US20150210769 SEQ ID NO: 84	5188
CII654	360	40	BAP049-hum16	US20150210769 SEQ ID NO: 88	5189

CII655	360	40	BAP049-Clone-A, BAP049-Clone-B, BAP049-Clone-C, BAP049-Clone-E	US20150210769 SEQ ID NO: 91	5190
CII656	360	40	Lambrolizumab, Pembrolizumab, MK-3475, Keytruda	US8354509 SEQ ID NO: 31 (20-466)	5191
CII657	362	40	Olaratumab, 3G3, LY3012207 IMC-3G3,	EP2100618	5192
CII658	362	40	Tovetumab, MEDI-575		5193
CII659	366	40	RG7446, MPDL3280A, Atezolizumab	US8679767 SEQ ID NO: 23	5194
CII660	366	40	MEDI-4736, Durvalumab		5195
CII661	365	40		WO2015095410 SEQ ID NO: 20	5196
CII662	365	40		WO2015095410 SEQ ID NO: 22	5197
CII663	365	40		WO2015095410 SEQ ID NO: 24	5198
CII664	365	40		WO2015095410 SEQ ID NO: 26	5199
CII665	365	40		WO2015095410 SEQ ID NO: 28	5200
CII666	370	40	Bavituximab, PGN401		5201
CII667	374	40	Enfortumab vedotin, AGS-22CE, AGS-22M, AGS-22M6E, AGS-22ME, ASG-22M, unconjugated: AGS-22C3 or AGSM6	EP2621526	5202
CII668	381	40		WO2015057939 SEQ ID NO: 39	4308
CII669	390	40	KWAR23 chiFab	WO2015138600 SEQ ID NO: 11	5203
CII670	390	40	2B8 K23 DVD	WO2015138600 SEQ ID NO: 13	5204
CII671	390	40	4D5 K23 DVD	WO2015138600 SEQ ID NO: 15	5205
CII672	390	40	56 K23 DVD	WO2015138600 SEQ ID NO: 17	5206
CII673	391	40	Elotuzumab; BMS-901608, HuLuc63, PDL-063, PDL063		5207
CII674	392	40	Lifastuzumab vedotin, DNIB0600A (conjugate), MNIB2126A (non conjugate)	US8871911 SEQ ID NO: 80	5208
CII675	394	40	Vandortuzumab vedotin, DSTP-3086S, DSTP3086S, MSTP2109A, RG-7450, RG7450		5209
CII676	413	40	HZD-N-Nterm RabMAb	WO2009132037 SEQ ID NO: 11	5210
CII677	413	40	HZD-M RabMAb	WO2009132037 SEQ ID NO: 9	5211
CII678	414	40	Drozitumab, PRO95780, anti-DR5, rhuMAb DR5	US8029783 SEQ ID NO: 18	5212
CII679	414	40	Conatumumab, AMG 655, TRAIL-R2mAb, XG1-048 v w		5213
CII680	414	40	Tigatuzumab, CS-1008, TRA-8		5214
CII681	415	40	Enavatuzumab, PDL 192		5215
CII682	416	40	Brentuximab vedotin, Adcetris		5216
CII683	417	40	Urelumab	US8962804 SEQ ID NO: 123	5217
CII684	419	40	Tabalumab	US7317089 andUS8173124 SEQ ID NO: 17	5218
CII685	421	40	Lexatumumab, HGS-ETR2		5219
CII686	422	40	BXhVH5VL1	US20150183885 SEQ ID NO: 28	5220
CII687	422	40	GBR VH5(K3Q)VL1	US20150183885 SEQ ID NO: 50	5221
CII688	422	40	GBR VH5(V37A)VL1	US20150183885 SEQ ID NO: 51	5222
CII689	422	40	GBR VH5(V37A)VL1(*)	US20150183885 SEQ ID NO: 52	5223
CII690	422	40	GBR VH5(G42E)VL1	US20150183885 SEQ ID NO: 53	5224
CII691	422	40	GBR VH5(V89L)VL1	US20150183885 SEQ ID NO: 54	5225
CII692	422	40	GBR VH5(R94K)VL1	US20150183885 SEQ ID NO: 55	5226
CII693	422	40	GBR VH5(K3Q, V37A)VL1	US20150183885 SEQ ID NO: 56	5227
CII694	422	40	GBR VH5(K3Q, V37A)VL1(*)	US20150183885 SEQ ID NO: 57	5228
CII695	422	40	GBR VH5(K3Q, T40A)VL1	US20150183885 SEQ ID NO: 58	5229
CII696	422	40	GBR VH5(P60A, T62S)VL1	US20150183885 SEQ ID NO: 59	5230
CII697	422	40	GBR VH5(K3Q, V37A, R44G)VL1	US20150183885 SEQ ID NO: 60	5231
CII698	422	40	GBR VH5(K3Q, A49S, Y50A)VL1	US20150183885 SEQ ID NO: 61	5232

CII699	422	40	GBR VH5(K3Q, P60A, T62S)VL1	US20150183885 SEQ ID NO: 62	5233
CII700	422	40	GBR VH5(K3Q, T40A, P60A,T62S)VL1	US20150183885 SEQ ID NO: 63	5234
CII701	422	40	GBR VH5(K3Q, V37A, T40A, P60A, T62S) VL1	US20150183885 SEQ ID NO: 64	5235
CII702	422	40	GBR VH5(K3Q, T40A, R44G, A49S, Y50A)VL1	US20150183885 SEQ ID NO: 65	5236
CII703	422	40	GBR VH5(K3Q, A49S, Y50A, P60A, T62S)VL1	US20150183885 SEQ ID NO: 66	5237
CII704	422	40	GBR VH5(K3Q, T40A, R44G, A49S, Y50A, P60A, T62S) VL1	US20150183885 SEQ ID NO: 67	5238
CII705	422	40	GBR VH5(K3Q, T40A, R44G, A49S, Y50A, P60A, T62S, R94K) VL1	US20150183885 SEQ ID NO: 68	5239
CII706	422	40	BXhVH1	WO2009098238 SEQ ID NO: 1	3453
CII707	422	40	mVHEP	WO2009098238 SEQ ID NO: 15	3454
CII708	422	40	BXhVH2	WO2009098238 SEQ ID NO: 2	3455
CII709	422	40	BXhVH3	WO2009098238 SEQ ID NO: 3	3456
CII710	422	40	BXhVH4	WO2009098238 SEQ ID NO: 4	3457
CII711	422	40	BXhVH5	WO2009098238 SEQ ID NO: 5	3458
CII712	422	40	HUVHWOV	WO2009098238 SEQ ID NO: 6	3459
CII713	423	40	Tezepelumab, AMG 157, AMG-157, MEDI-9929, MEDI9929,		5240
CII714	425	40	Pankomab, PankoMab-GEX™	US20120128676 SEQ ID NO: 29	5241
CII715	426	40	Sacituzumab govitecan, IMMU-132, HRS7-SN-38, HRS7-SN-38-ADC, HRS7-[CL-SN-38], HrS7-SN-38	WO03074566	5242
CII716	427	40	Flanvotumab, 20D7S, IMC-20D7S, IMC20D7S	US7951370 SEQ ID NO: 19, 30	5243
CII717	430	40	Bevacizumab	US7060269	5244
CII718	432	40	Alacizumab pegol,	US7452976 SEQ ID NO: 71	5245
CII719	433	40	Pritumumab, CLN G11	US8815247 SEQ ID NO: 35	5246
CII720		40	BD20332	US20100104553 SEQ ID NO: 138	5247
CII721		40	BD20333	US20100104553 SEQ ID NO: 142	5248
CII722		40	BD20335	US20100104553 SEQ ID NO: 143	5249
CII723		40	BD20336	US20100104553 SEQ ID NO: 144	5250
CII724		40	BD20337	US20100104553 SEQ ID NO: 148	5251
CII725		40	BD20338	US20100104553 SEQ ID NO: 149	5252
CII726		40	BD20339	US20100104553 SEQ ID NO: 150	5253
CII727		40	BD20341	US20100104553 SEQ ID NO: 154	5254
CII728		40	Alefacept heavy CHAIN		5255
CII729		40	Arcitumomab 99tc heavy chain		5256
CII730		40	BLONTUVETMAB HEAVY CHAIN		5257
CII731		40	Enfortumab heavy chain		5258
CII732		40	IODINE I 131 DERLOTUXIMABBIOTIN HEAVY CHAIN		5259
CII733		40	Sarilumab heavy chain		5260
CII734		40	Satumomab pendetide heavy chain		5261
CII735	60	40	Epratuzumab	WO2011032633 - SEQ ID NO: 2 (CDRs in bold as identified in US Patent 5789554	5262
CII736	256	40	Gevokizumab	WO 2007002261 SEQ ID NO: 15	5263
CII737	281	40	Ustekinumab	WO2014004436; SEQ ID NO: 24	5264
CII738	288	40		US20120328615 SEQ ID NO: 6	5265
CII739	382	41	Indatuximab ravtansine, BT-062, BT062, nBT062-DM4	US8153583 SEQ ID NO: 7; US8057798 SEQ ID NO: 3	5266
CII740	34	43	Eculizumab	US6074642; WO1995029697; US6355245; US6074642; WO1995029697; US6355245	5267

CII741	56	44	hA20	EP2295468 SEQ ID NO: 48	5268
CII742	97	44	Alemtuzumab, CAMPATH-1H	Crowe JS: et al: 1992: Clin Exp Immunol: 87 105-10; US: Patent No: 6120766	5269
CII743	166	44	Trastuzumab, Adotrastuzumab (conjugate)	US5720954; US5770195; US5772997; US6165464; US6387371; US6399063	5270
CII744	88	45	Muromonab	US8906681 SEQ ID NO: NO 296	5271
CII745	56	46	hA20	EP2295468 SEQ ID NO: 50	5272
CII746	56	48	Ocrelizumab, hu2H7 v16	US20040202658 SEQ ID NO: NO: 4	5273
CII747	53	52	VL43-V3Q/T7S/Y32F/P44I/N92A	US20140286934 SEQ ID NO: 27	5274
CII748	53	52	VL43-F71H	US20140286934 SEQ ID NO: 28	5275
CII749	53	52	VL43-F71S	US20140286934 SEQ ID NO: 29	5276
CII750	263	53	Daclizumab	WO8909622; US5693761; US7521054	5277
CII751	263	54	Daclizumab	WO8909622; US5693761; US7521054	5278
CII752	263	55	Daclizumab	WO8909622; US5693761; US7521054	5279
CII753	267	56	Reslizumab	WO9535375 Fig 6	5280
CII754	123	57	Ipilimumab	WO2001014424 SEQ ID NO: 27	5281
CII755	233	57	Cixutumumab, IMC-A12, A12, LY3012217	WO2008067427 SEQ ID NO: 14	5282
CII756	246	57	Lebrikizumab, TNX-650	WO2013066866 SEQ ID NO: 1	5283
CII757	250	57	Secukinumab	WO2006013107 SEQ ID NO: 1	5284
CII758	252	57	Brodalumab	WO2006013107 SEQ ID NO: 146	5285
CII759	260	57	Tildrakizumab	US8263748 SEQ ID NO: 19	5286
CII760	266	57	Dupilumab	US8075887 SEQ ID NO: 148	5287
CII761	267	57	Mepolizumab	WO2009120927 SEQ ID NO: 7	5288
CII762	269	57	Siltuximab	US7955597 SEQ ID NO: 1	5289
CII763	281	57	Ustekinumab	WO2014004436 SEQ ID NO: 16; US6902734 SEQ ID NO: 1	5290
CII764	328	57	Ofatumumab	US8529902 SEQ ID NO: 13	5291
CII765	336	57	Clivatuzumab tetraxetan	US7282567; US8435529; US8586050 SEQ ID NO: 4	5292
CII766	397	57	Minretumomab, Mab CC-49	US8029788 SEQ ID NO: 4	5293
CII767	361	57	Nivolumab, ONO-4538, BMS-936558, MDX1106, Opdivo	US8008449 SEQ ID NO: 18	5294
CII768	34	58	Eculizumab	US6074642; WO1995029697; US6355245; US6074642; WO1995029697; US6355245	5295
CII769	269	59	Sirukumab	US7833755 SEQ ID NO: 39	5296
CII770	412	60	Golimumab	WO2013087912, Figure 2F, SEQ ID NO: 6	5297
CII771	123	61	Ipilimumab	WO2001014424 SEQ ID NO: 32	5298
CII772	233	61	Cixutumumab, IMC-A12, A12, LY3012217	WO2008067427 SEQ ID NO: 16	5299
CII773	246	61	Lebrikizumab, TNX-651	WO2013066866 SEQ ID NO: 2	5300
CII774	250	61	Secukinumab	WO2006013107 SEQ ID NO: 2	5301
CII775	252	61	Brodalumab	WO2006013107 SEQ ID NO: 147	5302
CII776	260	61	Tildrakizumab	US8263748 SEQ ID NO: 24	5303
CII777	260	61	Tildrakizumab	US8263748 SEQ ID NO: 25	5304
CII778	260	61	Tildrakizumab	US8263748 SEQ ID NO: 26	5305
CII779	266	61	Dupilumab	US8075887SEQ ID NO: 150	5306
CII780	267	61	Mepolizumab	WO2009120927 SEQ ID NO: 8	5307
CII781	269	61	Siltuximab	US7955597 SEQ ID NO: 2	5308
CII782	281	61	Ustekinumab	WO2014004436 SEQ ID NO: 17; US6902734 SEQ ID NO: 2	5309

CII783	328	61	Ofatumumab	US8529902 SEQ ID NO: 14	5310
CII784	336	61	Clivatuzumab tetraxetan	US7282567; US8435529; US8586050 SEQ ID NO: 5	5311
CII785	397	61	Minretumomab, Mab CC-49	US8029788 SEQ ID NO: 5	5312
CII786	361	61	Nivolumab, ONO-4538, BMS-936558, MDX1106, Opdivo	US8008449 SEQ ID NO: 25	5313
CII787	34	62	Eculizumab	US6074642; WO1995029697; US6355245; US6074642; WO1995029697; US6355245	5314
CII788	269	63	Sirukumab	US7833755 SEQ ID NO: 59	5315
CII789	412	64	Golimumab	WO2013087912, Figure 2F, SEQ ID NO: 6	5316
CII790	123	65	Ipilimumab	WO2001014424 SEQ ID NO: 37	5317
CII791	233	65	Cixutumumab, IMC-A12, A12, LY3012217	WO2008067427 SEQ ID NO: 18	5318
CII792	246	65	Lebrikizumab, TNX-652	WO2013066866 SEQ ID NO: 3	5319
CII793	250	65	Secukinumab	WO2006013107 SEQ ID NO: 3	5320
CII794	252	65	Brodalumab	WO2006013107 SEQ ID NO: 148	5321
CII795	260	65	Tildrakizumab	US8263748 SEQ ID NO: 31	5322
CII796	266	65	Dupilumab	US8075887SEQ ID NO: 152	5323
CII797	267	65	Mepolizumab	WO2009120927 SEQ ID NO: 9	5324
CII798	269	65	Siltuximab	US7955597 SEQ ID NO: 3	5325
CII799	281	65	Ustekinumab	WO2014004436 SEQ ID NO: 18; US6902734 SEQ ID NO: 3;	5326
CII800	328	65	Ofatumumab	US8529902 SEQ ID NO: 15	5327
CII801	336	65	Clivatuzumab tetraxetan	US7282567; US8435529; US8586050 SEQ ID NO: 6	5328
CII802	397	65	Minretumomab, Mab CC-49	US8029788 SEQ ID NO: 6	5329
CII803	361	65	Nivolumab, ONO-4538, BMS-936558, MDX1106, Opdivo	US8008449 SEQ ID NO: 32	5330
CII804	34	66	Eculizumab	US6074642; WO1995029697; US6355245; US6074642; WO1995029697; US6355245	5331
CII805	269	67	Sirukumab	US7833755 SEQ ID NO: 89	5332
CII806	412	68	Golimumab	WO2013087912, Figure 2F, SEQ ID NO: 6	5333
CII807	328	69	Rituximab	US5736137; US7422739	5334
CII808	382	245	Indatuximab ravtansine, BT-062, BT062, nBT062-DM4	US8980267 SEQ ID NO: 5	5335
CII809	66	41		US20150266966 SEQ ID NO: 26	5336
CII810	66	41		US20150266966 SEQ ID NO: 30	5337
CII811	75	41		US20070136826 SEQ ID NO: 39	5338
CII812	75	41		US7973136 SEQ ID NO: 13	5339
CII813	75	41		US7973136 SEQ ID NO: 14	5340
CII814	75	41		US7973136 SEQ ID NO: 15	5341
CII815	75	41		US7973136 SEQ ID NO: 16	5342
CII816	75	41		US7973136 SEQ ID NO: 17	5343
CII817	75	41		US7973136 SEQ ID NO: 18	5344
CII818	75	41		US7973136 SEQ ID NO: 19	5345
CII819	83	41		US20150266967 SEQ ID NO: 7	5346
CII820	83	41		WO2014198330 SEQ ID NO: 7	5347
CII821	145	41	Modotuximab, Zatuximab		5348
CII822	176	41	Sibrotuzumab, BiBH1	US20030103968 SEQ ID NO: 20	5349
CII823	310	41	hL243	US20140178294 SEQ ID NO: 38	5350
CII824	167	41	Duligotuzumab (Duligotumab), MEHD7945A, RG-7597, RG7597	US8362213 SEQ ID NO: 41; US770739 SEQ ID NO: 2; US6455677 SEQ ID NO: 22	5351
CII825	221	76	Apolizumab, Remitogen, Hu1D10	US7217797 SEQ ID NO: 2	5352

CII826	225	**79**	**ATROSAB**	**WO20 12035 141** SEQ **ID** NO: **12**	5353
CII827	225	80	**ATROSAB**	**WO20 12035 141** SEQ **ID** NO: **14**	5354
C1 828	225	81	ATROSAB	**WO20** 12035 **141** SEQ ID NO: 15	5355
C;i829	350	89	2A10 **construct**	**WO2007003421** SEQ ID NO: 79	3060
C][1830	350	90	2**A 10 construct**	**WO2007003421** SEQ ID NO: 29	3061
cII831	350	91	**2A 10 construct**	WO200700342 í SEQ ID NO: 30	3062
C][1832	350	92	2A10 **construct**	**WO200700342** 1 SEQ **ID NO**: 31	3063
C][1833	350	93	2A10 **construct**	WO200700342 1 SEQ ID NO: 32	3064
CII834	350	94	2A10 construct	**WO2007003421** SEQ ID NO: 33	3065
CII835	350	95	2A10 **construct**	**WO2007003421** SEQ **ID** NO: 92	3066
CII836	350	96	**2A10** construct	**WO2007003421** SEQ **ID** NO: 93	3067
C1 837	350	97	2A10 construct	**WO2007003421** SEQ ID NO: 94	3068
C][1838	350	98	2A10 construct	**WO2007003421** SEQ ID NO: 95	3069
C][1839	350	99	2**A 10** construct	**WO2007003421** SEQ ID NO: 96	3070
c][840	350	100	**2A 10 construct**	**WO200700342** 1 SEQ **ID NO**: 97	307 i
C][1841	350	101	2A10 construct	WO200700342 1 SEQ ID NO: 98	3072
CII**842**	350	102	2A10 construct	**WO2007003421** SEQ ID NO: 26	3073
CII843	350	**103**	2A10 construct	**WO2007003421** SEQ **ID** NO: 27	3074
CII844	350	**104**	**2A10 construct**	**WO2007003421** SEQ **ID** NO: 28	3075
C1 845	380	[05	**Atinumab**	**US8163285** SEQ ID NO: 24	3076
C][1846	**123**	**109**	10D1	**WO200 10 14424** SEQ ID NO: 17	5356
C][1847	**123**	109	4B6	**WO200 10 14424** SEQ **ID** NO: 19	5357
c][848	123	**109**	**[.00E+02**	**WO200 10 14424** SEQ **ID** NO: 23	5358
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CJ850	233	**110**		**US20100143340** SEQ ID NO: 16	5360
CII851	233	**n o**		**US20100143340** SEQ **ID** NO: 17	5361
CII852	52	**113**	**Ruplizumab, Antova, BG-9588, Hu5c8**	**US8784823** SEQ ID **NO:** 66	5362
c][853	276	**117**	**Dusigitumab, MEDI-573**	US7939637 SEQ **ID** NO: 6	5363
C][1854	267	**119**	**Mepolizumab**	**WO2009068649** SEQ ID NO: **19 1**	5364
CII855	267	119	**Mepolizumab**	**WO2009120927** SEQ ID NO: 19	5365
CII856	267	119	Mepolizumab	**WO2009068649** SEQ **ID** NO: 65	5366
CII857	92	**122**	**Teneliximab, chi220**	**US6051228** SEQ ID **NO:** 2	5367
CII858	**108**	[22	**HuMab-7D8**	**US20 100325744** SEQ **ID NO:** 6	5368
C1 859	140	[22	**Zalutuniumab, HuMax-EGFR,** HuMax-EGFR, **2f8**	**US858604 1** SEQ ID NO: 2	5369
CII860	176	122	**Sibrotuzumab,** BiBHl	**US20030103968** SEQ ID NO: 10	5370
CII861	176	122	**Sibrotuzumab,** BiBHl	**US20030103968** SEQ ID NO: 12	5371
CII862	176	**122**	Sibrotuzumab, **BiBH 1**	**US20030103968** SEQ **ID** NO: 14	5372
CII863	[76	[22	Sibrotuzumab, BiBH **1**	**US20030103968** SEQ **ID NO: 16**	5373
CII864	**176**	[22	Sibrotuzumab, BiBHl	**US20030103968** SEQ ID NO: 8	5374
CII865	**92**	121	**variant of HCD 122**	**WO20120751 11** SEQ ID NO: 19	5375
CI1866	92	**12 i**	variant **of HCD 123**	**WO20 120 75 111** SEQ ID NO: 20	5376
CII867	287	122	**Ramuciruinab**	**US74984 14** SEQ **ID** NO: 24; Immunogenetics **Information** System; CHAIN ID NO: 9098 H	5377
CI1868	416	**123**	**Brentuxiniab**	**US7090843; US8257706; WO2005001038; US7090843**	5378
CII869	416	[24	**Brentuximab**	**US7090843; US8257706; WO2005001038; US7090843**	5379
CI1870	416	125	Brentuxiniab	**US7090843; US8257706;** WO2005001038; US7090843	5380
CII871	416	126	Brentuximab	**US7090843; US8257706; WO2005001038; US7090843**	5381
CII872	416	127	**Brentuximab**	US7090843; US8257706; WO2005001038; US7090843	5382
CII873	416	128	Brentuximab	**US7090843; US8257706; WO200500 1038: US7090843**	5383

CII874	412	131	Adalimumab	US6090382	5384
CII875	419	132	Belimumab	US7605236	5385
CII876	419	134	Belimumab	US7138501	5386
CII877	9	42	Nesvacumab, REGN-910	US8980268 SEQ ID NO: 18	5387
CII878	12	42		US20150166661 SEQ ID NO: 184	5388
CII879	12	42		US20150166661 SEQ ID NO: 186	5389
CII880	12	42		US20150166661 SEQ ID NO: 188	5390
CII881	12	42		US20150166661 SEQ ID NO: 190	5391
CII882	12	42		US20150166661 SEQ ID NO: 192	5392
CII883	12	42		US20150166661 SEQ ID NO: 194	5393
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CII885	12	42		US20150166661 SEQ ID NO: 198	5395
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CII892	12	42		US20150166661 SEQ ID NO: 212	5402
CII893	12	42		US20150166661 SEQ ID NO: 214	5403
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CII902	12	42		US20150166661 SEQ ID NO: 232	5412
CII903	12	42		US20150166661 SEQ ID NO: 234	5413
CII904	12	42		US20150166661 SEQ ID NO: 236	5414
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CII906	12	42		US20150166661 SEQ ID NO: 240	5416
CII907	12	42		US20150166661 SEQ ID NO: 242	5417
CII908	12	42		US20150166661 SEQ ID NO: 244	5418
CII909	12	42		US20150166661 SEQ ID NO: 246	5419
CII910	12	42		US20150166661 SEQ ID NO: 248	5420
CII911	12	42		US20150166661 SEQ ID NO: 250	5421
CII912	12	42		US20150166661 SEQ ID NO: 252	5422
CII913	12	42		US20150166661 SEQ ID NO: 254	5423
CII914	12	42		US20150166661 SEQ ID NO: 256	5424
CII915	12	42		US20150166661 SEQ ID NO: 258	5425
CII916	12	42		US20150166661 SEQ ID NO: 260	5426
CII917	12	42		US20150166661 SEQ ID NO: 262	5427
CII918	12	42		US20150166661 SEQ ID NO: 264	5428
CII919	17	42	VJ-4B6	US20150004164 SEQ ID NO: 16	4503
CII920	17	42	VJ-4B6	US20150004164 SEQ ID NO: 20	4504
CII921	18	42	Vepalimomab, 1B2	US8722856 SEQ ID NO: 2; US8722856 SEQ ID NO: 14	5429
CII922	25	42	BRCA84D	US20130149236 SEQ ID NO: 11	5430
CII923	27	42	BRCA69D	US20130149236 SEQ ID NO: 27	5431
CII924	29	42	PRCA157	US20130149236 SEQ ID NO: 43	5432
CII925	34	42	BNJ421, BNJ423	WO2015134894 SEQ ID NO: 12	5433
CII926	42	42	7D12A	WO2011025962 SEQ ID NO: 12	5434
CII927	42	42	7D1G	WO2011025962 SEQ ID NO: 22	5435
CII928	42	42	18V4F	WO2011025962 SEQ ID NO: 32	5436
CII929	42	42	18P7E	WO2011025962 SEQ ID NO: 42	5437
CII930	42	42	3C12F	WO2011025962 SEQ ID NO: 52	5438

CII931	42	42	18V4F	WO20 11025962 SEQ ID NO: 62	5439
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CI1935	53	42	4G7	US20090285808 SEQ ID NO: 6	5443
CII936	53	42	HD37	US20090285808 SEQ ID NO: 7	5444
CII937	53	42	B43	US20090285808 SEQ ID NO: 8	5445
CII938	53	42	FMC63	US20090285808 SEQ ID NO: 9	5446
CII939	53	42	Inebilizumab, MEDI-55 1	US8323653 SEQ ID NO: 106	5447
CII940	53	42	hA19VH	WO2010053716 SEQ ID NO: 10	5448
CII941	53	42	hA 19	WO20 100537I6 SEQ ID NO: I5	5449
CII942	53	42	cA19	WO20100537 16 SEQ ID NO: 4	5450
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CI1944	53	42	CA 19VH	WO2010053716 SEQ ID NO: 9	5452
CII945	54	42	HA 19	US20 150252 1 10 SEQ ID NO: 10	5453
CII946	54	42	EU	US20150252 1I0 SEQ ID NO: 8	5454
CII947	56	42	A20	EP2295468 SEQ ID NO: 33	5455
CII948	56	42	cA20	EP2295468 SEQ ID NO: 37	5456
CII949	56	42	Ocrelizuraab, hu2H7 vl6	US20040202658 SEQ ID NO: NO: 2	5457
CII950	56	42		US20050202023 SEQ ID NO: 1!	5458
CII95 1	56	42	18B12	US20070136826 SEQ ID NO: 4	5459
CII952	56	42	3H7-6GSP	US201 10081681 SEQ ID NO: 115	5460
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CII954	56	42	5H2- 17GSP	US201 1008168 I SEQ ID NO: I39	5462
CII955	56	42	5H2-17FGL	US201 1008168 1 SEQ ID NO: 143	5463
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CI1957	56	42	6B9-4FGL	US201 1008 1681 SEQ ID NO: 167	5465
CII958	56	42	6F6-1GSP	US20 I 1008 1681 SEQ ID NO: 187	5466
CII959	56	42	3B9-I0GSP	US201 1008 1681 SEQ ID NO: 19	5467
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CII962	56	42	8G6-5FGL	US201 1008168 I SEQ ID NO: 215	5470
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CII965	56	42	9C3-8FGL	US201 10081681 SEQ ID NO: 239	5473
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CII971	56	42	9H4-12FGL	US201 1008168 I SEQ ID NO: 31!	5479
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CII973	56	42	10E3-17FGL	US201 10081681 SEQ ID NO: 335	5481
CI1974	56	42	10F2- 13GSP	US20 11008 1681 SEQ ID NO: 355	5482
CII975	56	42	10F2- I3FGL	US20 U008 1681 SEQ ID NO: 359	5483
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CII977	56	42	7E1-13FGL	US201 10081681 SEQ ID NO: 383	5485
CII978	56	42	9C1 1- 14GSP	US201 1008168 1 SEQ ID NO: 43	5486
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CII980	56	42	2B7-7GSP	US201 1008168 1 SEQ ID NO: 67	5488
CII981	56	42	2B7-7FGL	US201 10081681 SEQ ID NO: 71	5489
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CII983	56	42	2C I 1-4FGL	US20 I 1008 I681 SEQ ID NO: 95	549I
CII984	56	42	2F2	US201 1009 1473 SEQ ID NO: 1	5492
CII985	56	42	hA20	US20 130078 182 SEQ ID NO: 14	5493
CII986	56	42	11B8	US20 140093454 SEQ ID NO: I0	5494
CII987	56	42	7D8	US20 140093454 SEQ ID NO: 6	5495

CII988	56	42	**B-Ly** 1	US2015021 0772 SEQ ID NO: **30**	5496
CII989	56	42	**B-HH2**	US20 1502 107''2 SEQ **ID NO**: 32	5497
CII990	56	42	B-HH3	**US20 1502 107**''2 SEQ ID NO: 33	5498
CII991	56	42	B-HH4	US201502107 72 SEQ ID NO: 34	5499
CI1992	56	42	**B-HH5**	US201502107- '**2** SEQ ID NO: 35	5500
CII993	56	42	**B-HH6**	US20 1502107''2 SEQ ID NO: 36	550 1
CII994	56	42	**B-HH7**	US20 1502107''2 SEQ ID NO: 37	5502
CII995	56	42	B-HH8	**US201502 107**''2 SEQ ID NO: 38	5503
CII996	56	42	**B-HH9**	**US201502 10772** SEQ ID NO: 39	5504
CII997	56	42	**B-HL8**	US20150210772 SEQ ID NO: 40	5505
CII998	56	42	**B-HL 10**	US201502 10772 SEQ ID **NO: 4 1**	5506
CII999	56	42	**B-HL 11**	US201502S 0772 SEQ ID NO: 42	5507
CillOOO	56	42	B-HL12	**US20150210772** SEQ ID NO: 43	5508
CII **1001**	56	42	**B-HL13**	**US201 50210772** SEQ ID NO: 44	5509
CII1002	56	42	**B-HL 14**	US20 150210772 SEQ ID NO: 45	5510
CII1003	56	42	B-HL15	**US20 1502 10772** SEQ ID NO: 46	551 1
CII1004	56	42	B-HL16	**US201502 10772** SEQ ID NO: 47	5512
CII1005	56	42	**B-HL 17**	US20150210772 SEQ ID NO: 48	5513
CII1006	56	42	GA101	US20 1502 10772 SEQ ID **NO:** 56	5514
CII1007	56	42	2H7	US7799900 SEQ ID NO: 7	5515
CII1008	56	42	**humanized 2H7.vl6** variant	US7799900 SEQ ID NO: 8	5516
CII 1009	56	42	2C6	u S7850962 SEQ ID NO: 2	5517
GII10 **10**	56	42	2F2	US7850962 SEQ ID NO: 29	5518
CHIO1 1	56	42	**CA20VH**	**US8287864** SEQ ID NO: 10	5519
CII1012	56	42	hA2VHl	**US8287864** SEQ ID **NO:** 14	5520
CII1013	56	42		US8329181 SEQ ID NO: 115	5521
CII1014	56	42		**US8329 181** SEQ ID NO: 119	5522
CII1015	56	42		US832918S SEQ ID NO: 123	5523
CII1016	56	42		**US8329181** SEQ ID NO: **139**	5524
CI110 17	56	42		u S8329181 SEQ ID NO: 143	5525
GII 10 18	56	42		**US8329181** SEQ ID NO: **147**	5526
CII10 19	56	42		**US8329181** SEQ ID NO: 163	5527
CII1020	56	42		US8329181 SEQ ID **NO:** 167	5528
CII102 1	56	42		US8329181 SEQ ID NO: **171**	5529
CII1022	56	42		**US8329 181** SEQ ID NO: 187	5530
CII1023	56	42		**US8329181** SEQ ID NO: 19	553 1
CII1024	56	42		**US8329181** SEQ ID NO: 191	5532
GII 1025	56	42		**US8329181** SEQ ID NO: 195	5533
Gil 1026	56	42		u S8329181 SEQ ID NO: 211	5534
GII 1027	56	42		**US8329181** SEQ ID NO: 215	5535
CII1028	56	42		**US8329181** SEQ ID NO: 219	5536
CII1029	56	42		US8329181 SEQ ID **NO:** 23	5537
CII1030	56	42		US8329181 SEQ ID NO: 235	5538
CII103 1	56	42		**US8329 181** SEQ ID NO: 239	5539
CII1032	56	42		**US8329181** SEQ ID NO: 243	5540
GII 1033	56	42		**US8329181** SEQ ID NO: 259	5541
CI11034	56	42		u S8329181 SEQ ID NO: 263	5542
GII 1035	56	42		**US8329181** SEQ ID NO: 267	5543
CII1036	56	42		**US8329181** SEQ ID NO: 27	5544
CII1037	56	42		US8329181 SEQ ID **NO:** 283	5545
CII1038	56	42		US8329181 SEQ ID NO: 287	5546
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CII1040	56	42		US8329181 SEQ ID NO: 3	5548
GII 1041	56	42		**US8329181** SEQ ID NO: 307	5549
Gil 1042	56	42		u S8329181 SEQ ID NO: 311	5550
GII 1043	56	42		**US8329181** SEQ ID NO: 315	5551
CII1044	56	42		**US8329181** SEQ ID NO: 331	5552
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CII105 1	56	42		US8329181 SEQ ID NO: 383	5559
CII 1052	56	42		US8329181 SEQ ID NO: 43	5560
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CII1054	56	42		US8329181 SEQ ID NO: 51	5562
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CII1058	56	42		US8329181 SEQ ID NO: 91	5566
CI11059	56	42		US8329181 SEQ ID NO: 95	5567
CII1060	56	42		US8329181 SEQ ID NO: 99	5568
CII1061	56	42	Antibody 1534, 1535	US9045543 SEQ ID NO: 15	5569
CII1062	56	42	Antibody 1634, 1635	US9G45543 SEQ ID NO: 16	5570
CII1063	56	42	Antibody 3637	US9045543 SEQ ID NO: 36	5571
CII1064	56	42	VhY	WO20050 16969 SEQ ID NO: 10	5572
CII1065	56	42	VhC	WO20050 16969 SEQ ID NO: 2	5573
CII1066	56	42	VkB	WO20050 16969 SEQ ID NO: 6	5574
CII1067	56	42	VkD	WO20050 16969 SEQ ID NO: 8	5575
GII1068	56	42	m2H7	WO2006068867 SEQ ID NO: 23	5576
CII1069	56	42	2H7.vl6 (intact)	WO20061 16369 SEQ ID NO: 14	5577
CII1070	56	42	**2H7.V5** 11 (intact)	WO2006 116369 SEQ ID NO: 16	5578
CII107 1	56	42	2H7.vl6 (intact)	WO2006 116369 SEQ ID NO: 17	5579
CII1072	56	42	**2H7.V5** 1 1	WO2006 116369 SEQ ID NO: 19	5580
CIIl 073	56	42	**2H7.V5** 11 (intact)	WO2006 116369 SEQ ID NO: 20	5581
CII 1074	56	42	2H7.vl6	WO2006 116369 SEQ ID NO: 8	5582
Gil 1075	56	42	5H2-17N	US20 11008 1681 SEQ ID NO: 123	5583
GII 1076	56	42	6B9-4N	US20 11008 1681 SEQ ID NO: 147	5584
CII1077	56	42	6F6-1N	US201 1008 1681 SEQ ID NO: 171	5585
CII1078	56	42	8G6-5N, "8G6-5"	US201 10081681 SEQ ID NO: 195	5586
CII1079	56	42	9C3-8N	US201 1008168 1 SEQ ID NO: 219	5587
CII1080	56	42	9D4-7N	US201 1008168 1 SEQ ID NO: 243	5588
CII108 1	56	42	9E4-20N	US201 1008168 1 SEQ ID NO: 267	5589
CII1082	56	42	9C1 1- 14N	US201 1008168 1 SEQ ID NO: 27	5590
CII1083	56	42	9H4-12N	US201 10081681 SEQ ID NO: 291	5591
Gil 1084	56	42	3B9- 10N	US20 11008 1681 SEQ ID NO: 3	5592
GII 1085	56	42	10E3-17N	US20 11008 1681 SEQ ID NO: 315	5593
CII1086	56	42	10F2-13N, " I0F2-13 "	US20 11008 1681 SEQ ID NO: 339	5594
CII1087	56	42	7E1-13N	US20 1 10081681 SEQ ID NO: 363	5595
CII1088	56	42	2B7-7N	US20 1 1008168 1 SEQ ID NO: 51	5596
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CII1099	56	42	7.9. 1	US201 10129412 SEQ ID NO: 130	5607
Gill 100	56	42	8.2.1	US201 101294 12 SEQ ID NO: 134	5608
cm loi	56	42	1.12. 1	US20 1101294 12 SEQ ID NO: 14	5609
cm 102	56	42	1.13. 1	US201 101294 12 SEQ ID NO: 18	5610
cm 103	56	42	1.1.2	US201 10129412 SEQ ID NO: 2	561 1

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cm 107	56	42	1.6. 1	**US201 10129412** SEQ ID NO: 34	5615
cm 108	56	42	**1.7. 1**	US20**110** 1294 12 SEQ ID NO: 38	5616
CIII 109	56	42	**1.9. 1**	US20 110 1294 12 SEQ ID NO: 42	5617
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CIII 111	56	42	2.2. 1	**US201** 101294 12 SEQ ID NO: 50	5619
cm 112	56	42	2.4. 1	**US201 10129412** SEQ ID NO: 54	5620
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cm **U4**	56	42	**1** 10.3. 1	**US201 10129412** SEQ **ID NO**: 6	5622
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cm 116	56	42	3.3 1	**US201 10129412** SEQ ID NO: 66	5624
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cm **12 1**	56	42	6.3. 1	**US201 10129412** SEQ ID NO: 86	5629
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cm 125	56	42	hA?YH1	**US20 110236304** SEQ **ID** NO: 14	5633
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CIII 128	60	42	HB22-23 **VH**	**US20070264260** SEQ ID NO: 15	5636
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cm 131	60	42	HB22-5 VK	**US20070264260** SEQ ID NO: 21	5639
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CIII 137	60	42	**HB227-VH46898**	**US20 130266558** SEQ **ID** NO: 15	5645
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CIII 143	60	42	**HB227RHF**	**US20 130266558** SEQ **ID** NO: 25	565 1
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CIII 145	60	42	HB22.7	**US20 130266558** SEQ ID NO: **7**	5653
CIII 146	60	42	**V2-70**	**US20 130266558** SEQ **ID** NO: 9	5654
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CIII 148	60	42	gHl	**US8747857** SEQ ID NO: 23	5656
CIII 149	60	42	Antibody 5/44	**US8747857** SEQ ID NO: 8	5657
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cIII **15 1**	66	42	**n›Ab l**	US20 1400993 18 SEQ ID NO: 3	5659
CIII 152	66	42	**h-mAb2 VH-1**	**US201400993 18** SEQ ID NO: 36	5660
CIII 153	66	42	**h-mAb2 VH-2**	**US201400993 18** SEQ ID NO: 38	5661
CIII 154	66	42	**h-mAb2 VH-3**	**US201400993 18** SEQ **ID** NO: 40	5662
CIII 155	66	42	**h-mAb2 VH-4**	**US201400993 18** SEQ **ID NO:** 42	5663
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cm 157	66	42	**h-mAb2 VH-6**	US201400993 18 SEQ ID NO: 46	5665
CIII 158	66	42	**h-niAb2 VH-7**	**US20 1400993** 18 SEQ ID NO: 48	5666
CIII 159	66	42	**h-mAb2 VH-8**	US20 1400993 18 SEQ ID NO: 50	5667
cm 160	66	42	**h-mAb2 VL-QV**	**US20 1400993 18** SEQ ID NO: 52	5668
CIII 161	66	42	**hVH-6L**	**US20 1400993 18** SEQ ID NO: 54	5669

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CH1164	66	42	hXR32VH-8 di-2	US20140099318 SEQ ID NO: 57	5672
CH1165	66	42	mAb2	US20140099318 SEQ ID NO: 7	5673
CH1166	66	42	hVH-6M	US20140099318 SEQ ID NO: 72	5674
CH1167	66	42	hVH-8M	US20140099318 SEQ ID NO: 74	5675
CH1168	66	42	variant "a" (I51T Y52cA)	US20140099318 SEQ ID NO: 76	5676
CH1169	66	42	variant "b" (I51T N54S)	US20140099318 SEQ ID NO: 77	5677
CH1170	66	42	variant "c" (I51T A56T)	US20140099318 SEQ ID NO: 78	5678
CH1171	66	42	variant "d" (I51T Y52cA N54S)	US20140099318 SEQ ID NO: 79	5679
CH1172	66	42	variant "e" (I51T N54S A56T)	US20140099318 SEQ ID NO: 80	5680
CH1173	66	42	variant "f" (I51T Y52cA N54S A56T)	US20140099318 SEQ ID NO: 81	5681
CH1174	66	42	variant "g" (I51T D61A)	US20140099318 SEQ ID NO: 82	5682
CH1175	66	42	variant "h" (I51T D65G)	US20140099318 SEQ ID NO: 83	5683
CH1176	66	42	variant "i" (I51T Y52cA N54S D61A)	US20140099318 SEQ ID NO: 84	5684
CH1177	66	42	variant "j" (I51T Y52cA N54S D65G)	US20140099318 SEQ ID NO: 85	5685
CH1178	66	42	k (I51T Y52cA N54S D61A D65G)	US20140099318 SEQ ID NO: 86	5686
CH1179	66	42	variant "2k" (I51T Y52cA N54S D61A D65G (VH8-A49G V93A))	US20140099318 SEQ ID NO: 87	5687
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CH1188	75	42	VH 4-34	US20120276086 SEQ ID NO: 25	5696
CH1189	75	42	3-07	US20120276086 SEQ ID NO: 26	5697
CH1190	75	42		US20120276086 SEQ ID NO: 3	5698
CH1191	75	42	Anti-CD30 H3.69_V2 AC10	US7973136 SEQ ID NO: 11	5699
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CH1193	75	42	H3 AC10	US7973136 SEQ ID NO: 4	5701
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CIII 308	85	42	X355/04	WO20 13059885 SEQ ID NO: 423	5816
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CII13 13	92	42	hu sgn-0	US20090304687 SEQ ID NO: 3	5821
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cm 315	92	42	hu sgn-2	US20090304687 SEQ ID NO: 5	5823
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CI11330	93	42	BMS2h-583	US8895010 SEQ ID NO: 291	5838
CIII 331	93	42	BMS2h-584	US88950 10 SEQ ID NO: 292	5839
CII1332	93	42	BMS2h-586	US8895010 SEQ ID NO: 293	5840
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CII1337	93	42	**BMS2h-590**	US8895010 SEQ ID NO: 298	5845
CI11338	93	42	**BMS2h-59 1**	**US8895010** SEQ ID NO: 299	5846
CIII 339	**93**	42	**BMS2h- 128**	**US88950 10** SEQ ID NO: 30	5847
CI 1340	**93**	42	BMS211-592	**US88950 10** SEQ ID NO: 300	5848
CII1341	93	42	BMS2h-593	**US8895010** SEQ ID NO: 301	5849
CII1342	93	42	BMS2h-594	US8895010 SEQ ID NO: 302	5850
CII1343	93	42	BMS2h-595	US8895010 SEQ ID NO: 303	5851
CII1344	**93**	42	BMS2h-596	**US8895010** SEQ ID NO: 304	5852
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CIII 346	93	42	**BMS2h-598**	US8895010 SEQ ID NO: 306	5854
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CIII 348	**93**	42	**BMS2h-600**	**US88950 10** SEQ ID NO: 308	5856
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CII1350	93	42	BMS2h-129	US8895010 SEQ ID NO: 31	5858
CII135 1	93	42	BMS2h~602	US8895010 SEQ ID NO: **310**	5859
CII1352	**93**	42	BMS2h-603	**US8895010** SEQ ID NO: 311	5860
CII1353	93	42	**BMS2h-6 1**	US8895010 SEQ ID NO: 312	5861
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CI11355	93	42	**BMS2h-65**	**US8895010** SEQ ID NO: 314	5863
CII1356	**93**	42	BMS211-66	**US88950 10** SEQ ID NO: 315	5864
CII1357	93	42	BMS2h-67	**US8895010** SEQ ID NO: 316	5865
CII1358	93	42	**BMS2h-68**	**US8895010** SEQ ID NO: 317	5866
CII1359	93	42	BMS2h~69	US8895010 SEQ ID NO: 318	5867
CII1360	**93**	42	BMS2h-7	**US8895010** SEQ ID NO: 319	5868
CII136 1	93	42	**BMS2h-13**	US8895010 SEQ ID NO: 32	5869
CIII 362	93	42	**BMS2h-70**	US8895010 SEQ ID NO: 320	5870
CI11363	93	42	**BMS2h-70 1**	**US8895010** SEQ ID NO: **321**	5871
CIII 364	**93**	42	**BMS2h-702**	**US88950 10** SEQ ID NO: 322	5872
CII1365	93	42	BMS2h-703	**US8895010** SEQ ID NO: 323	5873
CIII 366	93	42	**BMS2h-704**	US8895010 SEQ ID NO: 324	5874
CII1367	93	42	BMS2h~705	US8895010 SEQ ID NO: 325	5875
CII1368	**93**	42	BMS2h-706	**US8895010** SEQ ID NO: 326	5876
CII1369	93	42	**BMS2h-707**	US8895010 SEQ ID NO: 327	5877
CIII 370	93	42	**BMS2h-708**	US8895010 SEQ ID NO: 328	5878
CII1371	93	42	**BMS2h-709**	US8895010 SEQ ID NO: 329	5879
CI11372	93	42	**BMS2h- 130**	**US8895010** SEQ ID NO: 33	5880
CII1373	**93**	42	**BMS2h-71**	**US88950 10** SEQ ID NO: 330	5881
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CII1377	**93**	42	BMS2h-713	**US8895010** SEQ ID NO: 334	5885
CII1378	93	42	**BMS2h-7 14**	US8895010 SEQ ID NO: 335	5886
CII1379	93	42	**BMS2h-715**	US8895010 SEQ ID NO: 336	5887
cm 380	93	42	**BMS2h-716**	**US8895010** SEQ ID NO: 337	5888
CIII 381	**93**	42	**BMS2h-717**	**US88950 10** SEQ ID NO: 338	5889
CII1382	93	42	BMS2h-718	**US8895010** SEQ ID NO: 339	5890
CII1383	93	42	BMS2h-13 1	US8895010 SEQ ID NO: 34	5891
CII1384	93	42	BMS2h~719	US8895010 SEQ ID NO: 340	5892
CII1385	**93**	42	**BMS211-7 I9-1**	**US8895010** SEQ ID NO: 341	5893
CIII 386	93	42	**BMS2h-7 19-10**	US8895010 SEQ ID NO: 342	5894
CIII 387	93	42	**BMS2h-719-l l**	US8895010 SEQ ID NO: 343	5895
CI11388	93	42	**BMS2h-719- 12**	**US8895010** SEQ ID NO: 344	5896
CII1389	**93**	42	**BMS2h-719- 13**	**US88950 10** SEQ ID NO: 345	5897
CIII 390	93	42	**BMS2h-719-14**	**US8895010** SEQ ID NO: 346	5898
CII1391	93	42	**BMS2h-719-15**	**US8895010** SEQ ID NO: 347	5899

CII1392	93	42	**BMS2h-719-16**	US8895010 SEQ **ID** NO: 348	5900
CII1393	93	42	BMS2h-719-17	**US8895010** SEQ **ID** NO: 349	5901
CII1394	93	42	**BMS2h-132**	US8895010 SEQ **ID** NO: 35	5902
CII1395	93	42	**BMS2h-719-18**	US8895010 SEQ **ID** NO: 350	5903
CII1396	93	42	**BMS2h-719-19**	**US8895010** SEQ **ID** NO: 351	5904
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CII1399	93	42	BMS2h-719-202	US8895010 SEQ **ID** NO: 354	5907
CII1400	93	42	BMS2h-719-203	US8895010 SEQ **ID** NO: 355	5908
CII1401	93	42	BMS2h~719-21	US8895010 SEQ **ID** NO: 356	5909
CII1402	93	42	**BMS211-719-213**	**US8895010** SEQ **ID** NO: 357	5910
CII1403	93	42	**BMS2h-719-214**	US8895010 SEQ **ID** NO: 358	5911
CII1404	93	42	**BMS2h-719-215**	US8895010 SEQ **ID** NO: 359	5912
CII1405	93	42	BMS2h-133	**US8895010** SEQ **ID** NO: 36	5913
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CII1407	93	42	BMS2h-719-225	US8895010 SEQ **ID** NO: 361	5915
CII1408	93	42	BMS2h-719-226	US8895010 SEQ **ID** NO: 362	5916
CII1409	93	42	**BMS2h-719-3**	US8895010 SEQ **ID** NO: 363	5917
CII1410	93	42	**BMS2h-719-4**	**US8895010** SEQ **ID** NO: 364	**5918**
CII1411	93	42	**BMS2h-719-5**	US8895010 SEQ **ID** NO: 365	5919
CII1412	93	42	**BMS2h-719-6**	US8895010 SEQ **ID** NO: 366	5920
CII1413	93	42	**BMS2h-719-7**	**US8895010** SEQ **ID** NO: 367	5921
CII1414	93	42	**BMS2h-719-8**	**US8950 10** SEQ **ID** NO: 368	5922
CII1415	93	42	BMS2h-719-9	US8895010 SEQ **ID** NO: 369	5923
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CII1417	93	42	BMS2h~72	US8895010 SEQ **ID** NO: 370	5925
CII1418	93	42	BMS2h-720	**US8895010** SEQ **ID** NO: 371	5926
CII1419	93	42	**BMS2h-722**	US8895010 SEQ **ID** NO: 372	5927
CII1420	93	42	**BMS2h-723**	US8895010 SEQ **ID** NO: 373	5928
CII1421	93	42	**BMS2h-724**	**US8895010** SEQ **ID** NO: 374	5929
CII1422	93	42	**BMS2h-725**	**US8950 10** SEQ **ID** NO: 375	5930
CII1423	93	42	BMS211-725-1	US8895010 SEQ **ID** NO: 376	5931
CII1424	93	42	BMS2h-725-10	US8895010 SEQ **ID** NO: 377	5932
CII1425	93	42	BMS2h~725~11	US8895010 SEQ **ID** NO: 378	5933
CII1426	93	42	BMS2h-725-12	**US8895010** SEQ **ID** NO: 379	5934
CII1427	93	42	**BMS2h-135**	US8895010 SEQ **ID** NO: 38	5935
CII1428	93	42	**BMS2h-725-13**	US8895010 SEQ **ID** NO: 380	5936
CII1429	93	42	**BMS2h-725-14**	US8895010 SEQ **ID** NO: 381	5937
CII1430	93	42	**BMS2h-725-15**	**US8895010** SEQ **ID** NO: 382	5938
CII1431	93	42	**BMS2h-725-16**	**US8950 10** SEQ **ID** NO: 383	5939
CII1432	93	42	BMS211-725-17	US8895010 SEQ **ID** NO: 384	5940
CII1433	93	42	**BMS2h-725-18**	US8895010 SEQ **ID** NO: 385	5941
CII1434	93	42	**BMS2h-725-19**	US8895010 SEQ **ID** NO: 386	5942
CII1435	93	42	BMS2h-725-2	**US8895010** SEQ **ID** NO: 387	5943
CII1436	93	42	**BMS2h-725-3**	US8895010 SEQ **ID** NO: 388	5944
CII1437	93	42	**BMS2h-725-4**	US8895010 SEQ **ID** NO: 389	5945
CII1438	93	42	**BMS2h-136**	**US8895010** SEQ **ID** NO: 39	5946
CII1439	93	42	**BMS2h-725-5**	**US8950 10** SEQ **ID** NO: 390	5947
CII1440	93	42	BMS2h-725-6	**US8895010** SEQ **ID** NO: 391	5948
CII1441	93	42	BMS2h-725-7	US8895010 SEQ **ID** NO: 392	5949
CII1442	93	42	BMS2h~725-8	US8895010 SEQ **ID** NO: 393	5950
CII1443	93	42	BMS2h-725-9	**US8895010** SEQ **ID** NO: 394	5951
CII1444	93	42	**BMS2h-726**	US8895010 SEQ **ID** NO: 395	5952
CII1445	93	42	**BMS2h-727**	US8895010 SEQ **ID** NO: 396	5953
CII1446	93	42	**BMS2h-728**	**US8895010** SEQ **ID** NO: 397	5954
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CII1448	93	42	BMS2h-73	US8895010 SEQ **ID** NO: 399	5956
CII1449	93	42	BMS2h-137	US8895010 SEQ **ID** NO: 40	5957

CII1450	93	42	BMS2h-74	US8895010 SEQ ID NO: 400	5958
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CII1453	93	42	BMS2h-743	US8895010 SEQ ID NO: 403	5961
CI11454	93	42	BMS2h-744	US8895010 SEQ ID NO: 404	5962
CII1 455	93	42	BMS2h-745	US88950 10 SEQ ID NO: 405	5963
CII1456	93	42	BMS211-745- !	US88950 10 SEQ ID NO: 406	5964
CII1457	93	42	BMS2h-745-10	US8895010 SEQ ID NO: 407	5965
CII1458	93	42	BMS2h-745-l l	US8895010 SEQ ID NO: 408	5966
CII1459	93	42	BMS2h-745-12	US8895010 SEQ ID NO: 409	5967
CII1460	93	42	BMS2h-138	US8895010 SEQ ID NO: 41	5968
CII146 1	93	42	BMS2h-745-13	US8895010 SEQ ID NO: 410	5969
CII1462	93	42	BMS2h-745-14	US8895010 SEQ ID NO: 411	5970
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CII1464	93	42	BMS2h-745- 16	US88950 10 SEQ ID NO: 413	5972
CII1465	93	42	BMS211-745-17	US8895010 SEQ ID NO: 414	5973
CII1466	93	42	BMS2h-745-18	US8895010 SEQ ID NO: 415	5974
CII1467	93	42	BMS2h-745-19	US8895010 SEQ ID NO: 416	5975
CII1468	93	42	BMS2h-745-2	US8895010 SEQ ID NO: 417	5976
CII1469	93	42	BMS2h-745-3	US8895010 SEQ ID NO: 418	5977
CII1470	93	42	BMS2h-745-4	US8895010 SEQ ID NO: 419	5978
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CII1472	93	42	BMS2h-745-5	US88950 10 SEQ ID NO: 420	5980
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CII1474	93	42	BMS2h-745-7	US8895010 SEQ ID NO: 422	5982
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CII1477	93	42	BMS2h-746	US8895010 SEQ ID NO: 425	5985
CII1478	93	42	BMS2h-747	US8895010 SEQ ID NO: 426	5986
CI11479	93	42	BMS2h-748	US8895010 SEQ ID NO: 427	5987
CII1480	93	42	BMS2h-749	US88950 10 SEQ ID NO: 428	5988
CII1481	93	42	BMS2h-75	US8895010 SEQ ID NO: 429	5989
CII1482	93	42	BMS2h-14	US8895010 SEQ ID NO: 43	5990
CII1483	93	42	BMS2h-750	US8895010 SEQ ID NO: 430	5991
CII1484	93	42	BMS2h-75 1	US8895010 SEQ ID NO: 431	5992
CII1485	93	42	BMS2h-752	US8895010 SEQ ID NO: 432	5993
CII1486	93	42	BMS2h-753	US8895010 SEQ ID NO: 433	5994
CII1487	93	42	BMS2h-754	US8895010 SEQ ID NO: 434	5995
CI11488	93	42	BMS2h-755	US8895010 SEQ ID NO: 435	5996
CIH 489	93	42	BMS2h-756	US88950 10 SEQ ID NO: 436	5997
CII1490	93	42	BMS211-757	US8895010 SEQ ID NO: 437	5998
CII1491	93	42	BMS2h-758	US8895010 SEQ ID NO: 438	5999
CII1492	93	42	BMS2h-758-l	US8895010 SEQ ID NO: 439	6000
CII1493	93	42	BMS2h-15	US8895010 SEQ ID NO: 44	6001
CII1494	93	42	BMS2h-758-2	US8895010 SEQ ID NO: 440	6002
CII1495	93	42	BMS2h-758-3	US8895010 SEQ ID NO: 441	6003
CI11496	93	42	BMS2h-758-4	US8895010 SEQ ID NO: 442	6004
CIH 497	93	42	BMS2h-758-5	US88950 10 SEQ ID NO: 443	6005
CII1498	93	42	BMS2h-758-6	US8895010 SEQ ID NO: 444	6006
CII1499	93	42	BMS2h-759	US8895010 SEQ ID NO: 445	6007
CII1500	93	42	BMS2h-760	US8895010 SEQ ID NO: 446	6008
CII150 1	93	42	BMS2h-761	US8895010 SEQ ID NO: 447	6009
CII1502	93	42	BMS2h-762	US8895010 SEQ ID NO: 448	6010
CII1503	93	42	BMS2h-763	US8895010 SEQ ID NO: 449	601 1
CI11504	93	42	BMS2h- 16	US8895010 SEQ ID NO: 45	6012
CH1505	93	42	BMS2h-764	US88950 10 SEQ ID NO: 450	6013
CII1506	93	42	BMS2h-765	US8895010 SEQ ID NO: 451	6014
CII1507	93	42	BMS2h-766	US8895010 SEQ ID NO: 452	6015

CII1508	93	42	**BMS2h-767**	**US8895010** SEQ **ID** NO: 453	6016
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CII15 10	93	42	**BMS2h-77**	**US8895010** SEQ ID NO: 455	6018
CII15 11	93	42	**BMS2h-770**	US8895010 SEQ ID NO: 456	6019
CII15 12	93	42	**BMS2h-77 1**	US8895010 SEQ ID NO: 457	6020
CII15!3	93	42	**BMS2h-772**	**US88950 10** SEQ ID NO: 458	602 i
CII15!4	93	42	**BMS2h-773**	US88950 10 SEQ ID NO: 459	6022
CII15 15	93	42	**BMS2h-17**	**US8895010** SEQ ID NO: 46	6023
CII15 16	93	42	**BMS2h-774**	US8895010 SEQ ID NO: 460	6024
CII15 17	93	42	**BMS2h-775**	**US8895010** SEQ ID NO: 461	6025
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CII15 19	93	42	**BMS2h-777**	**US8895010** SEQ ID NO: 463	6027
CII1520	93	42	**BMS2h-778**	US8895010 SEQ ID NO: 464	6028
CII152 1	93	42	**BMS2h-78**	**US8895010** SEQ ID NO: 465	6029
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CII1523	93	42	**BMS2h-78 1**	**US8895010** SEQ ID NO: 467	603 1
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CII1527	93	42	**BMS2h-784**	**US8895010** SEQ ID NO: 470	6035
CII1528	93	42	**BMS2h-80**	US8895010 SEQ ID NO: 471	6036
CI11529	93	42	**BMS2h-81**	**US8895010** SEQ ID NO: 472	6037
CII1530	93	42	**BMS2h-82**	US88950 10 SEQ ID NO: 473	6038
CII153 1	93	42	**BMS2h-83**	**US8895010** SEQ ID NO: 474	6039
CII1532	93	42	**BMS2h-84**	US8895010 SEQ ID NO: 475	6040
CII1533	93	42	**BMS2h-85**	**US8895010** SEQ ID NO: 476	6041
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CII1535	93	42	**BMS2h-93**	**US8895010** SEQ ID NO: 478	6043
CII1536	93	42	**BMS2h-94**	US8895010 SEQ ID NO: 479	6044
CI11537	93	42	**BMS2h- 177**	US8895010 SEQ ID NO: 48	6045
CII1538	93	42	**BMS2h-95**	US88950 10 SEQ ID NO: 480	6046
CII1539	93	42	BMS211-97	**US8895010** SEQ ID NO: 481	6047
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CII154 1	93	42	**BMS2h-99**	**US8895010** SEQ ID NO: 483	6049
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CII1543	93	42	**BMS2h-179**	**US8895010** SEQ ID NO: 50	6051
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CII1545	93	42	**BMS2h-180**	US8895010 SEQ ID NO: 52	6053
CI11546	93	42	**BMS2h- 18 1**	US8895010 SEQ ID NO: 53	6054
CII1547	93	42	**BMS2h- 182**	US88950 10 SEQ ID NO: 54	6055
CII1548	93	42	**BMS2h-183**	**US8895010** SEQ ID NO: 55	6056
CII1549	93	42	**BMS2h-184**	US8895010 SEQ ID NO: 56	6057
CII1550	93	42	**BMS2h-185**	**US8895010** SEQ ID NO: 57	6058
CII155 1	93	42	BMS2h-186	US8895010 SEQ ID NO: 58	6059
CII1552	93	42	**BMS2h-187**	**US8895010** SEQ ID NO: 59	6060
CII1553	93	42	**BMS2h-188**	US8895010 SEQ ID NO: 60	6061
CI11554	93	42	**BMS2h- 189**	US8895010 SEQ ID NO: 61	6062
CII1555	93	42	**BMS2h- 19**	US88950 10 SEQ ID NO: 62	6063
CII1556	93	42	**BMS2h-190**	**US8895010** SEQ ID NO: 63	**6064**
CII1557	93	42	**BMS2h-191**	US8895010 SEQ ID NO: 64	6065
CII1558	93	42	**BMS2h-192**	**US8895010** SEQ ID NO: 65	6066
CII1559	93	42	BMS2h-193	US8895010 SEQ ID NO: 66	6067
CII1560	93	42	**BMS2h-194**	**US8895010** SEQ ID NO: 67	6068
CII1561	93	42	**BMS2h-195**	US8895010 SEQ ID NO: 68	6069
CI11562	93	42	**BMS2h- 196**	**US8895010** SEQ ID NO: 69	6070
CII1563	93	42	**BMS2h- 197**	US88950 10 SEQ ID NO: 70	607 i
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CII1567	93	42	BMS2h-20	US8895010 SEQ ID NO: 74	6075
CII1568	93	42	BMS2h-200	US8895010 SEQ ID NO: 75	6076
CII1569	93	42	BMS2h-201	US8895010 SEQ ID NO: 76	6077
CIll 570	93	42	BMS2h-202	US8895010 SEQ ID NO: 77	6078
CHl571	93	42	BMS2h-203	US88950 l0 SEQ ID NO: 78	6079
CIl1572	93	42	BMS211-204	US88950 l0 SEQ ID NO: 79	6080
CII1573	93	42	BMS2h-205	US8895010 SEQ ID NO: 80	6081
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CII1575	93	42	BMS2h-207	US8895010 SEQ ID NO: 82	6083
CII1576	93	42	BMS2h-208	US8895010 SEQ ID NO: 83	6084
CII1577	93	42	BMS2h-209	US8895010 SEQ ID NO: 84	6085
CII1578	93	42	BMS2h-21	US8895010 SEQ ID NO: 85	6086
CI11579	93	42	BMS2h-22	US8895010 SEQ ID NO: 86	6087
CIl1580	93	42	BMS2h-23	US88950 l0 SEQ ID NO: 87	6088
CII1581	93	42	BMS211-24	US8895010 SEQ ID NO: 88	6089
CIll 582	93	42	BMS2h-24-l	US8895010 SEQ ID NO: 89	6090
CII1583	93	42	BMS2h-25	US8895010 SEQ ID NO: 90	6091
CII1584	93	42	BMS2h-26	US8895010 SEQ ID NO: 91	6092
CII1585	93	42	BMS2h-27	US8895010 SEQ ID NO: 92	6093
CIll 586	93	42	BMS2h-28	US8895010 SEQ ID NO: 93	6094
Gill 587	93	42	BMS2h-29	US8895010 SEQ ID NO: 94	6095
CIl1588	93	42	BMS2h-30	US88950 l0 SEQ ID NO: 95	6096
CII1589	93	42	BMS2h-300	US8895010 SEQ ID NO: 96	6097
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CI116 12	93	42	BMS2h-415	US8895010 SEQ ID NO: 119	6l20
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CI11620	93	42	BMS2h-422	US8895010 SEQ ID NO: 127	6128
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CII1627	93	42	BMS2h-429	US8895010 SEQ ID NO: 134	6135
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CII1629	93	42	BMS2h-430	US8895010 SEQ ID NO: 136	6137
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CII1631	93	42	BMS2h-449	US8895010 SEQ ID NO: 138	6139
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CI11778	93	42	BMS2h- 572-63 I	US8895010 SEQ ID NO: 272	6286
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CII1781	93	42	BMS2h-572-634	US8895010 SEQ ID NO: 275	6289
CII1782	93	42	BMS2h-572-635	US8895010 SEQ ID NO: 276	6290
CII1783	93	42	BMS2h-572-7	US8895010 SEQ ID NO: 277	6291
CII1784	93	42	BMS2h-572-8	US8895010 SEQ ID NO: 278	6292
CII1785	93	42	BMS2h-572-9	US8895010 SEQ ID NO: 279	6293
CI11786	93	42	BMS2h- 126	US8895010 SEQ ID NO: 28	6294
CII1787	93	42	BMS2h-573	US88950 10 SEQ ID NO: 280	6295
CII1788	93	42	BMS2h-574	US8895010 SEQ ID NO: 281	6296
CII1789	93	42	BMS211-575	US8895010 SEQ ID NO: 282	6297
CII1790	95	42		US20050276803 SEQ ID NO: 10	6298
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CII1792	95	42		US20050276803 SEQ ID NO: 12	6300
CII1793	95	42		US20050276803 SEQ ID NO: 16	6301
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CII1796	95	42		US20050276803 SEQ ID NO: 19	6304
CII1797	95	42		US20050276803 SEQ ID NO: 20	6305

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CII1799	97	42	4B10 (humanized)	US8617554 SEQ ID NO: 103	6307
CIIl 800	97	42	Campath-1G	US8617554 SEQ ID NO: 14	6308
cm 801	97	42	CF1D 12	US8617554 SEQ ID NO: 15	6309
CI11802	98	42	Clone anii CD 55	US8034902_SEQ ID NO: 12	6310
CII1803	98	42	Clone anii CD 59	US8034902_SEQ ID NO: 6	6311
CII1804	100	42		WO2006002438_SEQ ID NO: 11	6312
CIIl 805	100	42		WO2006002438_SEQ ID NO: 7	6313
CIIl 806	102	42	hLLl	US20110244546 SEQ ID NO: 11	6314
CII1807	102	42	LL1	US20110244546 SEQ ID NO: 2	6315
CII1808	102	42	chimeric LL1	US20110244546 SEQ ID NO: 6	6316
CII1809	102	42	RF-TS3	US20110244546 SEQ ID NO: 9	6317
CII1810	102	42		US20150166669 SEQ ID NO: 23	6318
CI11811	102	42		US20150166669 SEQ ID NO: 27	6319
CII1812	102	42		US20150166669 SEQ ID NO: 31	6320
CII1813	102	42		US20150166669 SEQ ID NO: 35	6321
CII1814	102	42	LL1	US8986699_SEQ ID NO: 23	6322
CII1815	102	42	cLLl	US8986699_SEQ ID NO: 27	6323
CII1816	102	42	RF-TS3	US8986699_SEQ ID NO: 30	6324
CII1817	102	42	hLL1	US8986699_SEQ ID NO: 33	6325
CII1818	102	42		US20140030273_SEQ ID NO: 15	6326
CI11819	102	42		US20140030273_SEQ ID NO: 19	6327
CII1820	102	42		US20140030273_SEQ ID NO: 7	6328
CII1821	118	42	Emactuzumab, RG7155, RO5509554	US20110165156 SEQ ID NO: 39	6329
CIIl 822	123	42	Ipilimumab	WO2001014424	6330
CII1823	126	42	Ulocuplumab, BMS-936564. MDX-1338	US8450464 SEQ ID NO: 41	6331
CI11824	128	42	XW25-3B5-3F4	US20080227704_SEQ ID NO: 13	6332
CII1825	128	42	XW25-4F2-5D2	US20080227704_SEQ ID NO: 21	6333
CII1826	128	42	XW25~5Di l-4F3~3Dl 1	US20080227704_SEQ ID NO: 29	6334
CIIl 827	128	42	XVV25-6A2-2F10	US20080227704_SEQ ID NO: 37	6335
CII1828	128	42	XW25-7C7-5E5	US20080227704_SEQ ID NO: 45	6336
CII1829	128	42	XW25-2C4-4H8	US20080227704_SEQ ID NO: 5	6337
CII1830	128	42	XW25-8H6-4F9	US20080227704_SEQ ID NO: 53	6338
CII1831	128	42	XW25-9C10-4B1 1	US20080227704_SEQ ID NO: 61	6339
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CIH834	131	42	MOR0492 1	WO2007084344_SEQ ID NO: 12	6342
CII1835	131	42	MOR04948	WO2007084344_SEQ ID NO: 13	6343
CII1836	131	42	MOR04914	WO2007084344_SEQ ID NO: 14	6344
CII1837	131	42	MOR04920	WO2007084344_SEQ ID NO: 15	6345
CII1838	131	42	MOR04945	WO2007084344_SEQ ID NO: 16	6346
CII1839	131	42	MOR04952	WO2007084344_SEQ ID NO: 17	6347
CII1840	131	42	MOR04954	WO2007084344_SEQ ID NO: 18	6348
Cill 841	131	42	MOR04947	WO2007084344_SEQ ID NO: 19	6349
CII1842	131	42	MOR04454	WO2007084344_SEQ ID NO: 2	6350
CII1843	131	42	MOR05145	WO2007084344_SEQ ID NO: 20	6351
CIIl 844	131	42	MOR04455	WO2007084344_SEQ ID NO: 3	6352
CII1845	131	42	MOR04456	WO2007084344_SEQ ID NO: 4	6353
CII1846	131	42	MOR04461	WO2007084344_SEQ ID NO: 5	6354
CIIl 847	131	42	MOR04470	W02 007084344 SEQ ID NO: 6	6355
CII1848	131	42	MOR045 16	WO2007084344_SEQ ID NO: 7	6356
CI11849	131	42	MOR04907	WO2007084344_SEQ ID NO: 8	6357
CII1850	131	42	MOR04913	WO2007084344_SEQ ID NO: 9	6358
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CII2263	324	42	Imalumab, BAX069, BAX69	US8668909 SEQ ID NO: 8	6769
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CII2287	350	42	H19L13, H19L16, H19L18, H19L14, H19L15, H19L17, H19L6, H19L11	US20140147435 SEQ ID NO: 85	3141
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CII2292	350	42	H24L13, H24L16, H24L18, H24L14, H24L15, H24L17, H24L6, H24L11	US20140147435 SEQ ID NO: 90	3146
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CII2296	360	42	Pidilizumab, CT-011	US20080025980 SEQ ID NO: 22	6785
CII2297	360	42	Pidilizumab, CT-011	US20080025980 SEQ ID NO: 23	6786
CII2298	360	42	Pidilizumab, CT-011	US20080025980 SEQ ID NO: 24	6787
CII2299	360	42	BAP049	US20150210769 SEQ ID NO: 6	6788
CII2300	360	42	BAP049	US20150210769 SEQ ID NO: 8	6789
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CII2302	362	42	Tovetumab, MEDI-575	US7754859 SEQ ID NO: 48	6791
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CII23 37	364	42	Cluster * 154 1	US20 110 177074 SEQ ID NO: 148	6826
CII2338	364	42	Cluster * 1550	US20 110177074 SEQ ID NO: 152	6827
CII2339	364	42	Cluster * 1564	US20 110 177074 SEQ ID NO: 156	6828
CII2340	364	42	Cluster # 607	US20 110 177074 SEQ ID NO: 16	6829
CII234 I	364	42	Cluster * 160l	US20l 10177074 SEQ ID NO: l60	6830
CII2342	364	42	Cluster # 1629	US20 l 10 177074 SEQ ID NO: 164	683 l
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CI12344	364	42	Cluster * 636	US20 110177074 SEQ ID NO: 172	6833
CII2345	364	42	Cluster # 638	US20 110 177074 SEQ ID NO: 176	6834
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CII2348	364	42	Cluster # 668	US20 l 10 177074 SEQ ID NO: 188	6837
CII2349	364	42	Cluster # 669	US20l 10177074 SEQ ID NO: l92	6838
CII2350	364	42	Cluster # 679	US20 l 10 177074 SEQ ID NO: l96	6839
CII235 1	364	42	Cluster # 613	US20 l l0 177074 SEQ ID NO: 20	6840
CI12352	364	42	Cluster # 695	US20 110177074 SEQ ID NO: 200	6841
CII2353	364	42	Cluster # 709	US20 110 177074 SEQ ID NO: 204	6842
CII2354	364	42	Cluster * 710	US20 110177074 SEQ ID NO: 208	6843
CII2355	364	42	Cluster # 741	US20 l 10 177074 SEQ ID NO: 212	6844
CII2356	364	42	Cluster # 752	US20 l 10 177074 SEQ ID NO: 2 16	6845
CII2357	364	42	Cluster # 772	US201 10177074 SEQ ID NO: 220	6846
CII2358	364	42	Cluster # 779	US20 l 10 177074 SEQ ID NO: 224	6847
CII2359	364	42	Cluster # 799	US20 l l0 177074 SEQ ID NO: 228	6848
CI12360	364	42	Cluster # 830	US20 110177074 SEQ ID NO: 232	6849
CII2361	364	42	Cluster # 844	US20 110 177074 SEQ ID NO: 236	6850
CII2362	364	42	Cluster # 94l	US20 110177074 SEQ ID NO: 24	685 1
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CII2365	364	42	Cluster # 870	US201 10177074 SEQ ID NO: 248	6854
CII2366	364	42	Cluster # 883	US20 l 10 177074 SEQ ID NO: 252	6855
CII2367	364	42	Cluster # 887	US20 l 10 177074 SEQ ID NO: 256	6856
CII2368	364	42	Cluster # 901	US20 l l0 177074 SEQ ID NO: 260	6857
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CII2370	364	42	Cluster # 909	US20 110 177074 SEQ ID NO: 268	6859
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CII2374	364	42	Cluster * 1039	US201 10177074 SEQ ID NO: 280	6863
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CII2376	364	42	Cluster # 1044	US20 l l0 177074 SEQ ID NO: 288	6865
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CII2378	364	42	Cluster # 1056	US20 110 177074 SEQ ID NO: 296	6867
CII2379	364	42	Cluster # 1064	US20 110177074 SEQ ID NO: 300	6868
CII2380	364	42	Cluster # 1080	US20 l 10 177074 SEQ ID NO: 304	6869
CII238 1	364	42	Cluster # 1092	US20 l 10 177074 SEQ ID NO: 308	6870
CII2382	364	42	Cluster * 1094	US201 10177074 SEQ ID NO: 312	6871
CII2383	364	42	Cluster # 1096	US20 l 10 177074 SEQ ID NO: 3 16	6872
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CI12385	364	42	Cluster # l 107	US20 110177074 SEQ ID NO: 320	6874
CII2386	364	42	Cluster * 1111	US20 110 177074 SEQ ID NO: 324	6875
CII2387	364	42	Cluster * 1123	US20 110177074 SEQ ID NO: 328	6876
CH2388	364	42	Cluster * 1135	US20 l 10 177074 SEQ ID NO: 332	6877

CII2389	364	42	Cluster # 1142	US20110177074 SEQ ID NO: 336	6878
CII2390	364	42	Cluster # 1155	US20110177074 SEQ ID NO: 340	6879
CII2391	364	42	Cluster # 1250	US20110177074 SEQ ID NO: 344	6880
CII2392	364	42	Cluster # 1252	US20110177074 SEQ ID NO: 348	6881
CII2393	364	42	Cluster # 1254	US20110177074 SEQ ID NO: 352	6882
CII2394	364	42	Cluster # 1257	US20110177074 SEQ ID NO: 356	6883
CII2395	364	42	Cluster # 949	US20110177074 SEQ ID NO: 36	6884
CII2396	364	42	Cluster # 1264	US20110177074 SEQ ID NO: 360	6885
CII2397	364	42	Cluster # 1266	US20110177074 SEQ ID NO: 364	6886
CII2398	364	42	Cluster # 1268	US20110177074 SEQ ID NO: 368	6887
CII2399	364	42	Cluster # 1269	US20110177074 SEQ ID NO: 372	6888
CII2400	364	42	Cluster # 1270	US20110177074 SEQ ID NO: 376	6889
CII2401	364	42	Cluster # 1281	US20110177074 SEQ ID NO: 380	6890
CII2402	364	42	Cluster # 1283	US20110177074 SEQ ID NO: 384	6891
CII2403	364	42	Cluster # 1285	US20110177074 SEQ ID NO: 388	6892
CII2404	364	42	Cluster # 1409	US20110177074 SEQ ID NO: 392	6893
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CII2408	364	42	Cluster # 1416	US20110177074 SEQ ID NO: 404	6897
CII2409	364	42	Cluster # 1420	US20110177074 SEQ ID NO: 408	6898
CII2410	364	42	Cluster # 1428	US20110177074 SEQ ID NO: 412	6899
CII2411	364	42	Cluster # 1437	US20110177074 SEQ ID NO: 416	6900
CII2412	364	42	Cluster # 1449	US20110177074 SEQ ID NO: 420	6901
CII2413	364	42	Cluster # 1458	US20110177074 SEQ ID NO: 424	6902
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CII2415	364	42	Cluster # 1479	US20110177074 SEQ ID NO: 432	6904
CII2416	364	42	Cluster # 997	US20110177074 SEQ ID NO: 44	6905
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CII2418	364	42	Cluster # 1223	US20110177074 SEQ ID NO: 52	6907
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CII2422	364	42	Cluster # 1236	US20110177074 SEQ ID NO: 68	6911
CII2423	364	42	Cluster # 1238	US20110177074 SEQ ID NO: 72	6912
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CII2429	364	42	Cluster # 1314	US20110177074 SEQ ID NO: 92	6918
CII2430	364	42	Cluster # 1317	US20110177074 SEQ ID NO: 96	6919
CII2431	365	42	14A4, BMS 936559, MDX-1105	US8383796 SEQ ID NO: 2	6920
CII2432	378	42	anti-CD22 LL2	US20150239974 SEQ ID NO: 10	6921
CII2433	378	42	humanized anti-CD22 LL2	US20150239974 SEQ ID NO: 11	6922
CII2434	378	42	murine anti-CD22 RFB4	US20150239974 SEQ ID NO: 12	6923
CII2435	378	42	hRFB4	US20150239974 SEQ ID NO: 7	6924
CII2436	378	42	EU human antibody	US20150239974 SEQ ID NO: 9	6925
CII2437	381	42		WO2015057939 SEQ ID NO: 7	4323
CII2438	382	42	Indatuximab ravtansine, BT-062, BT062, nBT062-DM4		6926
CII2439	390	42	KWAR23	WO2015138600 SEQ ID NO: 1	6927
CII2440	391	42	Elotuzumab; BMS-901608, HuLuc63, PDL-063, PDL063	US7709610	6928
CII2441	400	42	Tenatumomab, ST2146		6929
CII2442	408	42	ABTIM3	US20150218274 SEQ ID NO: 1	6930
CII2443	408	42	ABTIM3-hum23	US20150218274 SEQ ID NO: 100	6931
CII2444	408	42	ABTIM3-hum01, ABTIM3-hum08	US20150218274 SEQ ID NO: 16	6932

CII2445	408	42	ABTIM3-hum02	US20150218274 SEQ ID NO: 26	6933
CII2446	408	42	ABTIM3-hum03	US20150218274 SEQ ID NO: 32	6934
CII2447	408	42	ABTIM3-hum04, ABTIM3-hum07	US20150218274 SEQ ID NO: 36	6935
CII2448	408	42	ABTIM3-hum05	US20150218274 SEQ ID NO: 44	6936
CII2449	408	42	ABTIM3-hum06	US20150218274 SEQ ID NO: 48	6937
CII2450	408	42	ABTIM3-hum09, ABTIM3-hum11	US20150218274 SEQ ID NO: 52	6938
CII2451	408	42	ABTIM3-hum10, ABTIM3-hum12	US20150218274 SEQ ID NO: 60	6939
CII2452	408	42	ABTIM3-hum13, ABTIM3-hum17	US20150218274 SEQ ID NO: 68	6940
CII2453	408	42	ABTIM3-hum14, ABTIM3-hum18	US20150218274 SEQ ID NO: 72	6941
CII2454	408	42	ABTIM3-hum15, ABTIM3-hum19	US20150218274 SEQ ID NO: 76	6942
CII2455	408	42	ABTIM3-hum16, ABTIM3-hum20	US20150218274 SEQ ID NO: 80	6943
CII2456	408	42	ABTIM3-hum21	US20150218274 SEQ ID NO: 84	6944
CII2457	408	42	ABTIM3-hum22	US20150218274 SEQ ID NO: 92	6945
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CII2465	409	42		WO2006060513 SEQ ID NO: 53	6953
CII2466	409	42		WO2006060513 SEQ ID NO: 6	6954
CII2467	412	42		US20030157061 SEQ ID NO: 2	6955
CII2468	412	42		US20030157061 SEQ ID NO: 6	6956
CII2469	412	42	Infliximab	WO2013087911 SEQ ID NO: 2	6957
CII2470	413	42	MAK195	US20110250130 SEQ ID NO: 22	6958
CII2471	413	42	hMAK195VH.1z	US20110250130 SEQ ID NO: 24	6959
CII2472	413	42	hMAK195VH.2z	US20110250130 SEQ ID NO: 25	6960
CII2473	413	42	hMAK195VH.1, AB240, AB241, AB242, AB243	US20110250130 SEQ ID NO: 28	6961
CII2474	413	42	hMAK195VH.1	US20110250130 SEQ ID NO: 29	6962
CII2475	413	42	hMAK195VH.1b, AB248, AB249, AB250, AB251	US20110250130 SEQ ID NO: 30	6963
CII2476	413	42	hMAK195VH.2, AB252, AB253, AB254, AB255	US20110250130 SEQ ID NO: 31	6964
CII2477	413	42	hMAK195VH.2a, AB256, AB257, AB258, AB259	US20110250130 SEQ ID NO: 32	6965
CII2478	413	42	hMAK195VH.2b, AB260, AB261, AB262, AB263	US20110250130 SEQ ID NO: 33	6966
CII2479	413	42	EP43min	US20140193400 SEQ ID NO: 51	6967
CII2480	413	42	EP43max	US20140193400 SEQ ID NO: 53	6968
CII2481	413	42	EP43maxDHP	US20140193400 SEQ ID NO: 55	6969
CII2482	413	42	EP1min	US20140193400 SEQ ID NO: 60	6970
CII2483	413	42	EP1max	US20140193400 SEQ ID NO: 62	6971
CII2484	413	42	EP6min	US20140193400 SEQ ID NO: 64	6972
CII2485	413	42	EP6max	US20140193400 SEQ ID NO: 66	6973
CII2486	413	42	EP15min	US20140193400 SEQ ID NO: 68	6974
CII2487	413	42	EP15max	US20140193400 SEQ ID NO: 70	6975
CII2488	413	42	EP19maxmod	US20140193400 SEQ ID NO: 73	6976
CII2489	413	42	EP19minmod	US20140193400 SEQ ID NO: 75	6977
CII2490	413	42	EP34min	US20140193400 SEQ ID NO: 77	6978
CII2491	413	42	EP34max	US20140193400 SEQ ID NO: 79	6979
CII2492	413	42	EP35min	US20140193400 SEQ ID NO: 81	6980
CII2493	413	42	EP35max	US20140193400 SEQ ID NO: 83	6981
CII2494	413	42	EP42min	US20140193400 SEQ ID NO: 85	6982
CII2495	413	42	EP42max	US20140193400 SEQ ID NO: 87	6983
CII2496	413	42	Ab8	US20150337035 SEQ ID NO: 115	6984
CII2497	413	42	Ab9	US20150337035 SEQ ID NO: 131	6985

CII2498	413	42	Ab10	US20150337035 SEQ ID NO: 147	6986
CII2499	413	42	Ab11	US20150337035 SEQ ID NO: 163	6987
CII2500	413	42	Ab12	US20150337035 SEQ ID NO: 179	6988
CII2501	413	42	Ab2	US20150337035 SEQ ID NO: 19	6989
CII2502	413	42	Ab13	US20150337035 SEQ ID NO: 195	6990
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CII2504	413	42	Ab15	US20150337035 SEQ ID NO: 227	6992
CII2505	413	42	Ab16	US20150337035 SEQ ID NO: 243	6993
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CII2509	413	42	Ab1	US20150337035 SEQ ID NO: 3	6997
CII2510	413	42	Ab20	US20150337035 SEQ ID NO: 307	6998
CII2511	413	42	Ab21	US20150337035 SEQ ID NO: 323	6999
CII2512	413	42	Ab22	US20150337035 SEQ ID NO: 339	7000
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CII2514	413	42	Ab23	US20150337035 SEQ ID NO: 355	7002
CII2515	413	42	Ab24	US20150337035 SEQ ID NO: 371	7003
CII2516	413	42	Ab25	US20150337035 SEQ ID NO: 387	7004
CII2517	413	42	Ab26	US20150337035 SEQ ID NO: 403	7005
CII2518	413	42	Ab4	US20150337035 SEQ ID NO: 51	7006
CII2519	413	42	Ab5	US20150337035 SEQ ID NO: 67	7007
CII2520	413	42	Ab6	US20150337035 SEQ ID NO: 83	7008
CII2521	413	42	Ab7	US20150337035 SEQ ID NO: 99	7009
CII2522	413	42		WO2009132037 SEQ ID NO: 1	7010
CII2523	414	42	Tigatuzumab, CS-1008, TRA-8	US7244429 SEQ ID NO: 56	7011
CII2524	414	42	Conatumumab, AMG 655, TRAIL-R2mAb, XG1-048 v w	US8993727 SEQ ID NO: 327	7012
CII2525	416	42	Brentuximab vedotin, Adcetris	US7090843 SEQ ID NO: 2	7013
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CII2534	422	42	HuVHWO	WO2009098238 SEQ ID NO: 17	3856
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CII2536	430	42	H5	US20140086829 SEQ ID NO: 5	7023
CII2537	430	42	H7	US20140086829 SEQ ID NO: 6	7024
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CII2548	435	42		WO2015037005 SEQ ID NO: 273	7035
CII2549	435	42		WO2015037005 SEQ ID NO: 275	7036
CII2550	22	42	Etrolizumab	US7528236 SEQ ID NO: 32	7037
CII2551	123	42	Ipilimumab	WO2001014424 SEQ ID NO: 16	7038
CII2552	343	42		US20140363438 SEQ ID NO: 21	4512
CII2553	343	42		US20140363438 SEQ ID NO: 52	4513
CII2554	343	42		US20140363438 SEQ ID NO: 54	4514

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CII2556	343	42		US20140363438 SEQ ID NO: 58	4516
CII2557	343	42		US20140363438 SEQ ID NO: 60	4517
CII2558	343	42		US20140363438 SEQ ID NO: 62	4518
CII2559	343	42		US20140363438 SEQ ID NO: 63	4519
CII2560	343	42		US20140363438 SEQ ID NO: 64	4520
CII2561	343	42		US20140363438 SEQ ID NO: 66	4521
CII2562	343	42		US20140363438 SEQ ID NO: 68	4522
CII2563	343	42		US20140363438 SEQ ID NO: 70	4523
CII2564	328	42	Ofatumumab	US8529902 SEQ ID NO: 2	7039
CII2565	328	137	Ibritumomab	US5736137; US5776456; US6399061; US7744877; US8557248	7040
CII2566	254	138	1.31E+10	WO2015032932 SEQ ID NO: 20	7041
CII2567	254	139	1.31E+10	WO2015032932 SEQ ID NO: 21	7042
CII2568	413	142	Ozoralizumab, ATN-103	US8703131 SEQ ID NO: 417	7043
CII2569	256	42	Canakinumab	US7446175US8105587	7044
CII2570	328	144	Ibritumomab	US5736137; US5776456; US6399061; US7744877; US8557246	7045
CII2571	238	145	Omalizumab	US5994511; WO1999001556	7046
CII2572	404	146	Metelimumab, CAT-192, SL15A IgG4	US6492497 SEQ ID NO: 10	7047
CII2573	350	148	2A10 construct	WO2007003421 SEQ ID NO: 77	3181
CII2574	350	149	2A10 construct	WO2007003421 SEQ ID NO: 14	3182
CII2575	350	150	2A10 construct	WO2007003421 SEQ ID NO: 15	3183
CII2576	350	151	2A10 construct	WO2007003421 SEQ ID NO: 16	3184
CII2577	350	152	2A10 construct	WO2007003421 SEQ ID NO: 17	3185
CII2578	350	153	2A10 construct	WO2007003421 SEQ ID NO: 18	3186
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CII2582	350	157	2A10 construct	WO2007003421 SEQ ID NO: 88	3190
CII2583	350	158	2A10 construct	WO2007003421 SEQ ID NO: 89	3191
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CII2585	350	160	2A10 construct	WO2007003421 SEQ ID NO: 91	3193
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CII2588	350	163	2A10 construct	WO2007003421 SEQ ID NO: 13	3196
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CII2590	140	42	Necitumumab	US7598350 SEQ ID NO: 8	7049
CII2591	320	42	Onartuzumab	US13538901 SEQ ID NO: 19	7050
CII2592	305	164	Li62	US8425910 SEQ ID NO: 188	7051
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CII2594	305	164	Li62	US8425910 SEQ ID NO: 190	7053
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CII2602	305	164	Li62	US8425910 SEQ ID NO: 198	7061
CII2603	305	164	Li62	US8425910 SEQ ID NO: 199	7062
CII2604	305	164	Li62	US8425910 SEQ ID NO: 200	7063
CII2605	305	164	Li62	US8425910 SEQ ID NO: 201	7064
CII2606	305	164	Li62	US8425910 SEQ ID NO: 202	7065
CII2607	305	164	Li62	US8425910 SEQ ID NO: 203	7066

CII2608	305	164	Li62	US8425910 SEQ ID NO: 204	7067
CII2609	305	164	Li62	US8425910 SEQ ID NO: 205	7068
CII2610	305	164	Li62	US8425910 SEQ ID NO: 206	7069
CII261 1	305	164	Li62	US8425910 SEQ ID NO: 207	7070
CI126 12	305	164	Li62	US8425910 SEQ ID NO: 208	7071
CII26 13	305	164	Li62	US84259 10 SEQ ID NO: 209	7072
CII26 14	305	164	Li62	US84259 10 SEQ ID NO: 210	7073
CII26 15	305	164	Li62	US8425910 SEQ ID NO: 211	7074
CII2616	305	164	Li62	US8425910 SEQ ID NO: 212	7075
CII2617	305	164	Li62	US8425910 SEQ ID NO: 213	7076
CII2618	305	164	Li62	US8425910 SEQ ID NO: 214	7077
CII2619	305	164	Li62	US8425910 SEQ ID NO: 215	7078
CII2620	305	164	Li62	US8425910 SEQ ID NO: 216	7079
CI1262 1	305	164	Li62	US8425910 SEQ ID NO: 217	7080
CII2622	305	164	Li62	US84259 10 SEQ ID NO: 218	708 1
CII2623	305	164	Li62	US8425910 SEQ ID NO: 219	7082
CII2624	305	164	Li62	US8425910 SEQ ID NO: 220	7083
CII2625	305	164	Li81	US8425910 SEQ ID NO: 229	7084
CII2626	305	164	Li81	US8425910 SEQ ID NO: 230	7085
CII2627	305	164	Li81	US8425910 SEQ ID NO: 231	7086
CII2628	305	164	Li81	US8425910 SEQ ID NO: 232	7087
CI12629	305	164	Li8 1	US8425910 SEQ ID NO: 233	7088
CII2630	305	164	Lil 13	US84259 10 SEQ ID NO: 242	7089
CII263 1	305	164	Lil 13	US8425910 SEQ ID NO: 243	7090
CII2632	305	164	Lil 13	US8425910 SEQ ID NO: 244	7091
CII2633	305	164	Li113	US8425910 SEQ ID NO: 245	7092
CII2634	305	164	Li113	US8425910 SEQ ID NO: 246	7093
CII2635	305	164	Lil 13	US8425910 SEQ ID NO: 247	7094
CII2636	305	164	Lil 13	US8425910 SEQ ID NO: 248	7095
CI12637	305	164	Lil 13	US8425910 SEQ ID NO: 249	7096
CII2638	305	164	Lil 13	US84259 10 SEQ ID NO: 250	7097
CII2639	305	164	Lil 13	US8425910 SEQ ID NO: 251	7098
CII2640	305	164	Lil 13	US8425910 SEQ ID NO: 252	7099
CII264 1	305	164	Li113	US8425910 SEQ ID NO: 253	7100
CII2642	305	164	Li113	US8425910 SEQ ID NO: 254	7101
CII2643	305	164	Lil 13	US8425910 SEQ ID NO: 255	7102
CII2644	305	164	Lil 13	US8425910 SEQ ID NO: 256	7103
CII2645	305	164	Lil l3	US8425910 SEQ ID NO: 257	7104
CI12646	305	164	Lil 13	US8425910 SEQ ID NO: 258	7 105
CII2647	305	164	Lil 13	US84259 10 SEQ ID NO: 259	7106
CII2648	305	164	Lil 13	US8425910 SEQ ID NO: 260	7 107
CII2649	305	164	Lil 13	US8425910 SEQ ID NO: 261	7108
CII2650	305	164	Li113	US8425910 SEQ ID NO: 262	7109
CII265 !	305	164	Li113	US8425910 SEQ ID NO: 263	7110
CII2652	305	164	Lil 13	US8425910 SEQ ID NO: 264	7 111
CII2653	305	164	Li113	US8425910 SEQ ID NO: 265	7 112
CI12654	305	164	Lil 13	US8425910 SEQ ID NO: 266	7113
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CII2656	305	164	Lil 13	US8425910 SEQ ID NO: 268	7 115
CII2657	305	164	Lil 13	US8425910 SEQ ID NO: 269	7 116
CII2658	305	164	Li113	US8425910 SEQ ID NO: 270	7 117
CII2659	305	164	Li113	US8425910 SEQ ID NO: 271	7118
CII2660	305	164	Lil 13	US8425910 SEQ ID NO: 272	7 119
CII2661	305	164	Li113	US8425910 SEQ ID NO: 273	7120
CI12662	305	164	Lil 13	US8425910 SEQ ID NO: 274	7 121
CII2663	140	170	Panitumumab	US6235883 SEQ ID NO: NO 22	7122
CII2664	91	172	Cedelizumab, ORTHOCLONE OKT4 A	WO 199 1009966 FIG 1	7 123

CII2665	358	171	Orticumab,Bi-204, MLDL-1278A, R7418, RG-7418	US8318161 SEQ ID NO: 3	7124
CII2666	48	173	Efalizumab, Raptiva		7125
CII2667	271	174	Tocilizumab, SA237	US7479543 SEQ ID NO: NO 31	7126
CII2668	418	175	Denosumab, Prolia	US7364736; US8058418; US8409578	7127
CII2669	284	176	Efalizumab, Raptiva	US7396530 SEQ ID NO: 2	7128
CII2670	44	177	Carlumab, CNTO 888	US8114964 SEQ ID NO: 27	7129
CII2671	269	178	Sirukumab	US7833755 SEQ ID NO: 99	7130
CII2672	239	181	J348S2-48	US20140220020 SEQ ID NO: 100	7131
CII2673	239	181	J348S2-22	US20140220020 SEQ ID NO: 101	7132
CII2674	239	181	J348S2-42	US20140220020 SEQ ID NO: 102	7133
CII2675	239	181	gi10	US20140220020 SEQ ID NO: 103	7134
CII2676	239	181	gi15	US20140220020 SEQ ID NO: 104	7135
CII2677	239	181	gi68	US20140220020 SEQ ID NO: 105	7136
CII2678	239	181	gi80	US20140220020 SEQ ID NO: 106	7137
CII2679	239	181	gi5	US20140220020 SEQ ID NO: 107	7138
CII2680	239	181	gi49	US20140220020 SEQ ID NO: 108	7139
CII2681	239	181	gi78	US20140220020 SEQ ID NO: 109	7140
CII2682	239	181	gi4	US20140220020 SEQ ID NO: 110	7141
CII2683	239	181	gi66	US20140220020 SEQ ID NO: 111	7142
CII2684	239	181	gi77	US20140220020 SEQ ID NO: 112	7143
CII2685	239	181	gi19	US20140220020 SEQ ID NO: 113	7144
CII2686	239	181	gi33	US20140220020 SEQ ID NO: 114	7145
CII2687	239	181	gi58	US20140220020 SEQ ID NO: 115	7146
CII2688	239	181	gi79	US20140220020 SEQ ID NO: 116	7147
CII2689	239	181	gi37	US20140220020 SEQ ID NO: 117	7148
CII2690	239	181	gi9	US20140220020 SEQ ID NO: 118	7149
CII2691	239	181	gi1	US20140220020 SEQ ID NO: 119	7150
CII2692	239	181	gi2	US20140220020 SEQ ID NO: 120	7151
CII2693	239	181	gi38	US20140220020 SEQ ID NO: 121	7152
CII2694	239	181	gi74	US20140220020 SEQ ID NO: 122	7153
CII2695	239	181	gi27	US20140220020 SEQ ID NO: 123	7154
CII2696	239	181	gi64	US20140220020 SEQ ID NO: 124	7155
CII2697	239	181	gi85	US20140220020 SEQ ID NO: 125	7156
CII2698	239	181	gi46	US20140220020 SEQ ID NO: 126	7157
CII2699	239	181	gi35	US20140220020 SEQ ID NO: 127	7158
CII2700	239	181	gi45	US20140220020 SEQ ID NO: 128	7159
CII2701	239	181	gi90	US20140220020 SEQ ID NO: 129	7160
CII2702	239	181	gi11	US20140220020 SEQ ID NO: 130	7161
CII2703	239	181	gi21	US20140220020 SEQ ID NO: 131	7162
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CII2709	239	181	gi55	US20140220020 SEQ ID NO: 137	7168
CII2710	239	181	gi13	US20140220020 SEQ ID NO: 138	7169
CII2711	239	181	gi31	US20140220020 SEQ ID NO: 139	7170
CII2712	239	181	gi16	US20140220020 SEQ ID NO: 140	7171
CII2713	239	181	gi39	US20140220020 SEQ ID NO: 141	7172
CII2714	239	181	gi24	US20140220020 SEQ ID NO: 142	7173
CII2715	239	181	gi67	US20140220020 SEQ ID NO: 143	7174
CII2716	239	181	gi65	US20140220020 SEQ ID NO: 144	7175
CII2717	239	181	gi25	US20140220020 SEQ ID NO: 145	7176
CII2718	239	181	gi20	US20140220020 SEQ ID NO: 146	7177
CII2719	239	181	gi72	US20140220020 SEQ ID NO: 147	7178
CII2720	239	181	gi84	US20140220020 SEQ ID NO: 148	7179

CII272 1	239	[8 1	J348S2-84	US20 140220020 SEQ ID NO: 38[	7180
CII2722	239	18[	E26 #[	US20 140220020 SEQ ID NO: 60	7181
CII2723	239	[8 1	E26 #[1	US20 140220020 SEQ ID NO: 6 1	7182
CII2724	239	181	E26 #35	US20 140220020 SEQ ID NO: 62	7183
CI12725	239	181	E26 #37	US20 140220020 SEQ [D NO: 63	7 184
CII2726	239	ï 8 ï	J3 18 #2	US20 140220020 SEQ ID NO: 64	7[85
CII2727	239	181	J3 18 # 12	US20 140220020 SEQ ID NO: 65	7[86
CII2728	239	181	J3 18 #13	US20 140220020 SEQ ID NO: 66	7 187
CII2729	239	181	J348S2-10	US20 140220020 SEQ ID NO: 67	7188
CII2730	239	18 1	J348S2-85	US20 140220020 SEQ ID NO: 68	7189
CII273 !	239	18[	J348S2-1	US20 140220020 SEQ ID NO: 69	7190
CII2732	239	[8 1	J348S2-37	US20 140220020 SEQ ID NO: 70	7191
CII2733	239	181	J348S2-49	US20 140220020 SEQ ID NO: 7 1	7192
CI12734	239	181	J348S2-56	US20 140220020 SEQ [D NO: 72	7 193
CII2735	239	181	J348S2-25	US20 140220020 SEQ ID NO: 73	7[94
CII2736	239	181	J348S2-45	US20 140220020 SEQ ID NO: 74	7 195
CII2737	239	181	J348S2-94	US20 140220020 SEQ ID NO: 75	7196
CII2738	239	18 1	J348S2-34	US20 140220020 SEQ ID NO: 76	7[97
CII2739	239	[8 1	J348S2-58	US20 140220020 SEQ ID NO: 77	7198
CII2740	239	18 1	J348S2-61	US20 140220020 SEQ ID NO: 78	7199
CII2741	239	181	J348S2-80	US20 140220020 SEQ ID NO: 79	7200
CI12742	239	181	J348S2-96	US20 140220020 SEQ [D NO: 80	7201
CII2743	239	181	J348S2-90	US20 140220020 SEQ ID NO: 8 1	7202
CII2744	239	181	J348S2-2 [	US20 140220020 SEQ ID NO: 82	7203
CII2745	239	181	J348S2-39	US20 140220020 SEQ ID NO: 83	7204
CII2746	239	18 1	J348S2-53	US20 140220020 SEQ ID NO: 84	7205
CII2747	239	[8 1	J348S2-74	US20 140220020 SEQ ID NO: 85	7206
CII2748	239	18 1	J348S2-30	US20 140220020 SEQ ID NO: 86	7207
CII2749	239	181	J348S2-73	US20 140220020 SEQ ID NO: 87	7208
CI12750	239	181	J348S2-12	US20 140220020 SEQ [D NO: 88	7209
CII275 1	239	ï 8 ï	J348S2-92	US20 140220020 SEQ ID NO: 89	72[0
CII2752	239	181	J348S2-14	US20 140220020 SEQ ID NO: 90	721 1
CII2753	239	181	J348S2-33	US20 140220020 SEQ ID NO: 9 1	7212
CII2754	239	18 1	J348S2-2	US20 140220020 SEQ ID NO: 92	7213
CII2755	239	[8 1	J348S2-65	US20 140220020 SEQ ID NO: 93	72 14
CII2756	239	18 1	J348S2-20	US20 140220020 SEQ ID NO: 94	7215
CII2757	239	18 1	J348S2-54	US20 140220020 SEQ ID NO: 95	7216
CII2758	239	181	J348S2-13	US20 140220020 SEQ ID NO: 96	7217
CI12759	239	181	J348S2-17	US20 140220020 SEQ [D NO: 97	7218
CII2760	239	181	J348S2-44	US20 140220020 SEQ ID NO: 98	72[9
CII2761	239	181	J348S2-47	US20 140220020 SEQ ID NO: 99	7220
CII2762	412	184	Golimumab	US7250165 SEQ ID NO: 7; WO2013087912, Figure 2F, SEQ ID NO: 6	722 1
CII2763	166	189	Trastuzuniab, Adotrastuzumab (conjugate)	US8557243	7222
CII2764	166	190	Trastuzuniab, Adotrastuzumab (conjugate)	US8557243	7223
CII2765	166	191	Trastuzuniab, Adotrastuzumab (conjugate)	US8557243	7224
CII2766	140	192	Matuzumab, EMD-72000, EMD 72000	US8877706 SEQ ID NO: 10	7225
CII2767	166	42	Trastuzuniab, Adotrastuzumab (conjugate)	US8557243	7226
CII2768	52	196	Toralizumab, E6040, IDEC-13 [	US9028826 SEQ ID NO: 20	7227
CII2769	52	196	Toralizumab, E6040, IDEC-13 [	US9028826 SEQ ID NO: 2[	7228
CII2770	52	196	Toralizumab, £6040, IDEC-13 [	US9028826 SEQ ID NO: 22	7229
CI12771	52	196	Toralizumab, E6040. IDEC-[31	US9028826 SEQ ID NO: 23	7230

CII2772	238	193	Talizumab, "C21/AL-90, HU-901, Hu901, TNX-901"	US20020173477 SEQ ID NO: 23	7231
CII2773	55	194	Siplizumab, MEDI-507, LO-CD2a	US5730979 SEQ ID NO: 93	7232
CII2774	91	195	Keliximab, IDEC CE9.1/SB-210396	US6136310 SEQ ID NO: 4	7233
CII2775	56	197	H1638	US20080089885 SEQ ID NO: 15	7234
CII2776	56	197	H1639	US20080089885 SEQ ID NO: 16	7235
CII2777	56	197	H1640	US20080089885 SEQ ID NO: 17	7236
CII2778	56	197	H1670	US20080089885 SEQ ID NO: 18	7237
CII2779	305	197	Li33 Fab'	US8425910 SEQ ID NO: 147	7238
CII2780	305	197	Li33 Fab'	US8425910 SEQ ID NO: 148	7239
CII2781	305	197	Li33 Fab'	US8425910 SEQ ID NO: 149	7240
CII2782	305	197	Li33 Fab'	US8425910 SEQ ID NO: 150	7241
CII2783	305	197	Li33 Fab'	US8425910 SEQ ID NO: 151	7242
CII2784	305	197	Li33 Fab'	US8425910 SEQ ID NO: 152	7243
CII2785	305	197	Li33 Fab'	US8425910 SEQ ID NO: 153	7244
CII2786	305	197	Li33 Fab'	US8425910 SEQ ID NO: 154	7245
CII2787	305	197	Li33 Fab'	US8425910 SEQ ID NO: 155	7246
CII2788	305	197	Li33 Fab'	US8425910 SEQ ID NO: 156	7247
CII2789	305	197	Li33 Fab'	US8425910 SEQ ID NO: 157	7248
CII2790	305	197	Li33 Fab'	US8425910 SEQ ID NO: 158	7249
CII2791	305	197	Li33 Fab'	US8425910 SEQ ID NO: 159	7250
CII2792	305	197	Li33 Fab'	US8425910 SEQ ID NO: 160	7251
CII2793	305	197	Li33 Fab'	US8425910 SEQ ID NO: 161	7252
CII2794	305	197	Li33 Fab'	US8425910 SEQ ID NO: 162	7253
CII2795	305	197	Li33 Fab'	US8425910 SEQ ID NO: 163	7254
CII2796	305	197	Li33 Fab'	US8425910 SEQ ID NO: 164	7255
CII2797	305	197	Li33 Fab'	US8425910 SEQ ID NO: 173	7256
CII2798	305	197	Li33 Fab'	US8425910 SEQ ID NO: 174	7257
CII2799	305	197	Li33 Fab'	US8425910 SEQ ID NO: 175	7258
CII2800	305	197	Li33 Fab'	US8425910 SEQ ID NO: 176	7259
CII2801	305	197	Li33 Fab'	US8425910 SEQ ID NO: 177	7260
CII2802	305	197	Li33 Fab'	US8425910 SEQ ID NO: 178	7261
CII2803	305	197	Li33 Fab'	US8425910 SEQ ID NO: 179	7262
CII2804	305	197	Li33 Fab'	US8425910 SEQ ID NO: 180	7263
CII2805	305	197	Li33 Fab'	US8425910 SEQ ID NO: 181	7264
CII2806	305	197	Li33 Fab'	US8425910 SEQ ID NO: 182	7265
CII2807	305	197	Li33 Fab'	US8425910 SEQ ID NO: 183	7266
CII2808	305	197	Li33 Fab'	US8425910 SEQ ID NO: 184	7267
CII2809	305	197	Li33 Fab'	US8425910 SEQ ID NO: 185	7268
CII2810	305	197	Li33 Fab'	US8425910 SEQ ID NO: 186	7269
CII2811	305	197	Li33 Fab'	US8425910 SEQ ID NO: 187	7270
CII2812	35	201	BNJ364	US20130224187 SEQ ID NO: 24	7271
CII2813	35	201	BNJ367, BNJ371, BNJ378	US20130224187 SEQ ID NO: 32	7272
CII2814	35	201	BNJ366	US20130224187 SEQ ID NO: 43	7273
CII2815	35	201	BNJ369, BNJ381, BNJ383	US20130224187 SEQ ID NO: 48	7274
CII2816	431	202	Vanucizumab, RG-7221, RG7221, RO5520985	US8945552 SEQ ID NO: 8	7275
CII2817	257	229	Fletikumab, 15D2, NN-8226, NNC-0109-0012		7276
CII2818	358	203	Orticumab, Bi-204, MLDL-1278A, R7418, RG-7418		7277
CII2819	238	204	Ligelizumab, CL-2C	US8372396 SEQ ID NO: NO 44	7278
CII2820	43	205	CAT-212	US7323311 SEQ ID NO: 2	7279
CII2821	51	207	Gavilimomab, ABX-CBL, CBL-1	WO1999045031 SEQ ID NO: 18	7280
CII2822	119	208	Lenzilumab, KB-003, KB003		7281
CII2823	260	210	Risankizumab, Bi 655066, Bi-655066		7282

CII2824	412	209	Certolizumab pegol	US7012,135; US7186820; US7402662, US7012135, US7186820; US7402662	7283
CII2825	68	211	Foralumab, NI-0401		7284
CII2826	66	212	Teplizumab, MGA031, HOKT3-gamma-1 (Ala-Ala), Humanized OKT3	US8663634 SEQ ID NO: 13	7285
CII2827	66	213	Otelixizumab, ChAglyCD, TRX4	US20090258001 FIG 1b, SEQ ID NO: 4	7286
CII2828	255	214	MABp1, Xilonix	US8388956; US8388969; US8034337 SEQ ID NO: 9; US8242074; US8546331 SEQ ID NO: 3	7287
CII2829	122	215	Panrevlumab, FG-3019	US7405274 SEQ ID NO: 14	7288
CII2830	405	216	Fresolimumab, GC-1008		7289
CII2831	393	217	Romosozumab	US7592429; US7872106; US8003108; US8017120 SEQ ID NO: 147, 145	7290
CII2832	393	217	Blosozumab	US7744874 SEQ ID NO: 3	7291
CII2833	418	217	Denosumab, Prolia	US7364736; US8058418; US8409578	7292
CII2834	418	218	Denosumab, Prolia	US8962807 SEQ ID NO: 177; US7528236 SEQ ID NO: 28	7293
CII2835	34	219	Eculizumab	US6074642; WO1995029697; US6355245; US6074642; WO1995029697; US6355245	7294
CII2836	261	220	Guselkumab		7295
CII2837	66	221	Muromonab-CD3, Orthoclone OKT3	US8906681 SEQ ID NO: 296	7296
CII2838	99	222	Itolizumab		7297
CII2839	99	222	Itolizumab	US6572857 SEQ ID NO: 3	7298
CII2840	99	222	Itolizumab	WO2009113083 SEQ ID NO: 1	7299
CII2841	92	223	Bleselumab, 4D11, ASKP-1240, ASKP1240	US8568725 SEQ ID NO: 140	7300
CII2842	91	224	Tregalizumab, BT-061, HB-F5, HBF5(H37L, L4M)		7301
CII2843	224	225	Placulumab, ART621, CEP-37247, PN0621	US7846439 SEQ ID NO: 11, 62	7302
CII2844	243	226	Briakinumab, ABT-874	US7390786 SEQ ID NO: 5; US8168760 SEQ ID NO: 1	7303
CII2845	251	227	Bimekizumab, UCB4940	US8580265 SEQ ID NO: 16; US8580265 SEQ ID NO: 15	7304
CII2846	52	228	Ruplizumab, Antova, BG-9588, Hu5c8	US8784823 SEQ ID NO: 65	7305
CII2847	120	229	Mavrilimumab, CAM-3001	US8962804 SEQ ID NO: 121	7306
CII2848	127	229	Eldelumab, BMS-936557, MDX-1100		7307
CII2849	269	229	Clazakizumab, ALD-518, BMS-945429	US8178101 SEQ ID NO: 708, 704	7308
CII2850	269	229	Sirukumab	US8945560 SEQ ID NO: 106	7309
CII2851	307	230	Pateclizumab, MLTA3698A, PRO283698, RG7416	US7923011 SEQ ID NO: 106	7310
CII2852	119	231	Namilumab, MT203	US8017748 SEQ ID NO: 35	7311
CII2853	412	232	Adalimumab	US6090382	7312
CII2854	93	233	Dapirolizumab pegol, CDP7657	US8293237 SEQ ID NO: 13	7313
CII2855	93	233	Dapirolizumab pegol, CDP7657	US8293237 SEQ ID NO: 12	7314
CII2856	228	233	Anifrolumab, MEDI-546		7315
CII2857	137	233	Rontalizumab, RhuMAB IFNalpha		7316
CII2858	283	234	Vedolizumab	US20120282249 SEQ ID NO: 2; WO2008115504 SEQ ID NO: 12	7317
CII2859	140	235	Cetuximab	US62 17866; US7598350	7318

CII2860	263	241	Daclizumab	WO8909622; US5693761; US7521054	7319
CII2861	135	242	Begelomab		7320
CII2862	38	243	Abagovomab		7321
CII2863	431	244	Vanucizumab, RG-7221, RG7221, RO5520985	US8268314 SEQ ID NO: 115	7322
CII2864	66	206	Visilizumab, Nuvion, HuM291, SMART anti CD3	US20040253237 SEQ ID NO: 3	7323
CII2865	167	246	Duligotuzumab (Duligotumab), MEHD7945A, RG-7597, RG7597	US8541564SEQ ID NO: 69	7324
CII2866	167	248	Duligotuzumab (Duligotumab), MEHD7945A, RG-7597, RG7597	US8597652 SEQ ID NO: 14	7325
CII2867	198	248	Ecromeximab, KM871,	WO2006112556 SEQ ID NO: 3	7326
CII2868	221	249	Apolizumab, Remitogen, Hu1D10	US7217797 SEQ ID NO: 6	7327
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CII2887	360	253	Lambrolizumab, Pembrolizumab, MK-3475, Keytruda	US8354509 SEQ ID NO: 20	7346
CII2888	166	254	Trastuzumab, Adotrastuzumab (conjugate), Herceptin	US5720954; US5770195; US5772997; US6165464; US6387371; US6399063	7347
CII2889	256	255	Canakinumab	US7446175US8105587	7348
CII2890	166	256	Trastuzumab, Adotrastuzumab (conjugate)	US5720954; US5770195; US5772997; US6165464; US6387371; US6399063	7349
CII2891	97	257	Alemtuzumab	Crowe JS: et al: 1992: Clin Exp Immunol: 87 105-10; US Patent No: 6120766	7350
CII2892	162	259	Sontuzumab, AS1402, HuHMFG-1	US20060193849 SEQ ID NO: 1	7351
CII2893	391	260	Elotuzumab; BMS-901608, HuLuc63, PDL-063, PDL063	US7709610	7352
CII2894	391	261	Elotuzumab; BMS-901608, HuLuc63, PDL-063, PDL063	US7709610	7353
CII2895	391	262	Elotuzumab; BMS-901608, HuLuc63, PDL-063, PDL063	US7709610	7354
CII2896	391	263	Elotuzumab; BMS-901608, HuLuc63, PDL-063, PDL063	US7709610	7355

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CII2898	391	265	Elotuzumab; BMS-901608, HuLuc63, PDL-063, PDL063	US7709610	7357
CII2899	97	268	Alemtuzumab, CAMPATH-1H	Crowe JS: et al: 1992: Clin Exp Immunol: 87 105-10; US Patent No: 6120766	7358
CII2900	97	269	Alemtuzumab, CAMPATH-1H	Crowe JS: et al: 1992: Clin Exp Immunol: 87 105-10; US Patent No: 6120766	7359
CII2901	97	270	Alemtuzumab, CAMPATH-1H	Crowe JS: et al: 1992: Clin Exp Immunol: 87 105-10; US Patent No: 6120766	7360
CII2902	97	271	Alemtuzumab, CAMPATH-1H	Crowe JS: et al: 1992: Clin Exp Immunol: 87 105-10; US Patent No: 6120766	7361
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CII3110	56	284	muCD20-7LC	US20110195021 SEQ ID NO: 7	7547
CII3111	56	284	muCD20-4LC	US20110195022 SEQ ID NO: 1	7548
CII3112	56	284	huCD20-4LC	US20110195022 SEQ ID NO: 13	7549
CII3113	56	284	huCD20-4VL	US20110195022 SEQ ID NO: 15	7550
CII3114	56	284	muCD20-20LC	US20110195022 SEQ ID NO: 3	7551
CII3115	56	284	muCD20-4VL	US20110195022 SEQ ID NO: 5	7552
CII3116	56	284	muCD20-20VL	US20110195022 SEQ ID NO: 7	7553
CII3117	56	284		US20120100133 SEQ ID NO: 7	7554
CII3118	57	284	CHIR-12.12	US20070098718 SEQ ID NO: 2	7555
CII3119	57	284	CHIR-5.9	US20070098718 SEQ ID NO: 6	7556
CII3120	58	284	Rituximab modified at positions A9S and I10S.	US20150239977 SEQ ID NO: 10	7557
CII3121	58	284	Rituximab modified at positions V3Q, A9S and V59S.	US20150239977 SEQ ID NO: 11	7558
CII3122	58	284	Rituximab modified at positions V3Q, A9S, I10S and V59S.	US20150239977 SEQ ID NO: 12	7559
CII3123	58	284	Rituximab modified at positions V3Q, A9S, V59S and L153D.	US20150239977 SEQ ID NO: 13	7560
CII3124	58	284	Rituximab modified at positions V3Q, A9S, I10S, V59S and L153D.	US20150239977 SEQ ID NO: 14	7561
CII3125	58	284	Rituximab modified at position V3.	US20150239977 SEQ ID NO: 19	7562
CII3126	58	284	Rituximab modified at position A9.	US20150239977 SEQ ID NO: 20	7563
CII3127	58	284	Rituximab modified at position I10.	US20150239977 SEQ ID NO: 21	7564
CII3128	58	284	Rituximab modified at position V59.	US20150239977 SEQ ID NO: 22	7565
CII3129	58	284	Rituximab modified at position L153.	US20150239977 SEQ ID NO: 23	7566
CII3130	58	284	Rituximab modified at positions A9 and I10.	US20150239977 SEQ ID NO: 25	7567
CII3131	58	284	Rituximab modified at positions V3, A9 and V59	US20150239977 SEQ ID NO: 26	7568
CII3132	58	284	Rituximab modified at positions V3, A9, I10 and V59	US20150239977 SEQ ID NO: 27	7569
CII3133	58	284	Rituximab modified at positions V3, A9, V59 and L153	US20150239977 SEQ ID NO: 28	7570
CII3134	58	284	Rituximab modified at positions V3, A9, I10, V59 and L153	US20150239977 SEQ ID NO: 29	7571
CII3135	58	284	Cetuximab	US20150239977 SEQ ID NO: 34	7572
CII3136	58	284	Cetuximab modified at position L3Q.	US20150239977 SEQ ID NO: 37	7573
CII3137	58	284	Cetuximab modified at position V9S.	US20150239977 SEQ ID NO: 38	7574
CII3138	58	284	Cetuximab modified at position I10S.	US20150239977 SEQ ID NO: 39	7575
CII3139	58	284	Rituximab modified at position V3Q.	US20150239977 SEQ ID NO: 4	7576
CII3140	58	284	Cetuximab modified at position L154D.	US20150239977 SEQ ID NO: 40	7577
CII3141	58	284	Cetuximab modified at positions V9S and I10S.	US20150239977 SEQ ID NO: 42	7578
CII3142	58	284	Cetuximab modified at positions L3Q and V9S.	US20150239977 SEQ ID NO: 43	7579
CII3143	58	284	Cetuximab modified at positions L3Q, V9S and I10S.	US20150239977 SEQ ID NO: 44	7580

CII3144	58	284	Cetuximab modified at positions L3Q, V9S and L154D.	US20150239977 SEQ ID NO: 45	7581
CII3145	58	284	Cetuximab modified at positions L3Q, V9S, I10S and L154D.	US20150239977 SEQ ID NO: 46	7582
CII3146	58	284	Rituximab modified at position A9S.	US20150239977 SEQ ID NO: 5	7583
CII3147	58	284	Cetuximab modified at position L3.	US20150239977 SEQ ID NO: 51	7584
CII3148	58	284	Cetuximab modified at position V9.	US20150239977 SEQ ID NO: 52	7585
CII3149	58	284	Cetuximab modified at position I10.	US20150239977 SEQ ID NO: 53	7586
CII3150	58	284	Cetuximab modified at position L154.	US20150239977 SEQ ID NO: 54	7587
CII3151	58	284	Cetuximab modified at positions V9 and I10.	US20150239977 SEQ ID NO: 56	7588
CII3152	58	284	Cetuximab modified at positions L3 and V9.	US20150239977 SEQ ID NO: 57	7589
CII3153	58	284	Cetuximab modified at positions L3, V9 and I10.	US20150239977 SEQ ID NO: 58	7590
CII3154	58	284	Cetuximab modified at positions L3, V9 and L154.	US20150239977 SEQ ID NO: 59	7591
CII3155	58	284	Rituximab modified at position I10S.	US20150239977 SEQ ID NO: 6	7592
CII3156	58	284	Cetuximab modified at positions L3, V9, I10 and L154.	US20150239977 SEQ ID NO: 60	7593
CII3157	58	284	Rituximab modified at position V59S.	US20150239977 SEQ ID NO: 7	7594
CII3158	58	284	Rituximab modified at position L153D.	US20150239977 SEQ ID NO: 8	7595
CII3159	59	284	Samalizumab, ALXN6000, Anti-CD200, HB7V3V2 G2G4	WO2009014745	7596
CII3160	60	284	Inotuzumab ozogamicin	US8153768 SEQ ID NO: 28	7597
CII3161	60	284	Pinatuzumab vedotin, ACD22-VCMMAE, DCDT2980S, FCU2803, RG-7593, RO5541072-000	US8226945 SEQ ID NO: 87	7598
CII3162	60	284	gL1	US8747857 SEQ ID NO: 19	7599
CII3163	60	284	gL2	US8747857 SEQ ID NO: 20	7600
CII3164	60	284	anti-CD22 antibody	US8747857 SEQ ID NO: 28	7601
CII3165	60	284	Moxetumomab Pasudotox		7602
CII3166	61	284	Teprotumumab,	US8907069 SEQ ID NO: 12; US8227577 SEQ ID NO: 2	7603
CII3167	62	284	Ontuxizumab, MORAb-004	US7807382 SEQ ID NO: 9,11	7604
CII3168	63	284	Varlilumab, 1F5, CDX-1127		7605
CII3169	64	284	Avelumab, MSB-0010718C, MSB0010682, MSB0010718C		7606
CII3170	65	284	TGN1412, CD28-SuperMAB	US8709414 SEQ ID NO: 16	7607
CII3171	75	284		US7973136 SEQ ID NO: 20	7608
CII3172	83	284	A4	US20150266967 SEQ ID NO: 10	7609
CII3173	83	284	B2	US20150266967 SEQ ID NO: 12	7610
CII3174	83	284	B4	US20150266967 SEQ ID NO: 14	7611
CII3175	83	284	A2	US20150266967 SEQ ID NO: 6	7612
CII3176	83	284	Lilotomab (satetraxetan), HH1		7613
CII3177	84	284	huCD37-3	WO2015116729 SEQ ID NO: 44	7614
CII3178	85	284	005 mAb	US20150246123 SEQ ID NO: 13	7615
CII3179	85	284	Isatuximab, SAR-650984, SAR650984, hu38SB19		7616
CII3180	87	284	Daratumumab, HuMax-CD39		7617
CII3181	92	284	Lucatumumab, CHIR-122, HCD122	US8828396 SEQ ID NO: 10	7618
CII3182	92	284	Dacetuzumab, SGN-40, huS2C	US8303955 SEQ ID NO: 21	7619
CII3183	92	284	12.12	US8926979 SEQ ID NO: 2	7620
CII3184	92	284	HCD122	WO2012075111 SEQ ID NO: 2	7621
CII3185	92	284	Dacetuzumab, SGN-40, huS2C	US8303955 SEQ ID NO: 22	7622
CII3186	94	284	Bivatuzumab, DM1, BiWA4	US7361347 SEQ ID NO: 6	7623
CII3187	97	284		US20090220520 SEQ ID NO: 3	7624

CII3188	97	284	2C3	US8617554 SEQ ID NO: 273	7625
CII3189	97	284	7F11	US8617554 SEQ ID NO: 275	7626
CII3190	97	284	9D9	US8617554 SEQ ID NO: 278	7627
CII3191	97	284	12G6	US8617554 SEQ ID NO: 280	7628
CII3192	97	284	4B10	US8617554 SEQ ID NO: 282	7629
CII3193	97	284	Abituzumab, EMD525797, DI17E7	WO2009010290	7630
CII3194	101	284	Vorsetuzumab, SNG-70 (Vorsetumab mafodotina, SNG-75)	US8067546 SEQ ID NO: 26	7631
CII3195	102	284	Milatuzumab, CD74-DOX (ADC), MEDI-115, HLL1, HLL1-DOX (ADC)		7632
CII3196	103	284	Polatuzumab vedotin, ACD79B-VCMMAE, DCDS4501A, FCU2711, RO5541077-000	US8088378 SEQ ID NO: 233	7633
CII3197	104	284	mAb 14.1	US20030082643 SEQ ID NO: 4	7634
CII3198	104	284		US20030082643 SEQ ID NO: 8	7635
CII3199	106	284	Labetuzumab govitecanum, CEA-Cide, IMMU-130, hMN-14-SN-38, hMN-14-SN-38 ADC, HMN14-CL-SN-38, HMN14-SN-38	WO03074569	7636
CII3200	118	284	Emactuzumab, RG7155, RO5509554		7637
CII3201	124	284	Tremelimumab, Ticilimumab, CP-675206	US6682736 SEQ ID NO: 70	7638
CII3202	126	284	Ulocuplumab, BMS-936564, MDX-1338		7639
CII3203	132	284	Rovalpituzumab		7640
CII3204	133	284	Demcizumab, OMP-21M18	US8858941 SEQ ID NO: 4	7641
CII3205	133	284	Enoticumab, REGN-421, SAR153192		7642
CII3206	134	284	(iodinum) DerlotuximabBiotin, (131)I-chTNT-1/B, I-131 ch-TNT-1/B,131I-chTNT (Tumor Necrosis Therapy)		7643
CII3207	139	284	Parsatuzumab, RG7414		7644
CII3208	140	284	Imgatuzumab, GA201, RG7160, RO5083945		7645
CII3209	140	284	Necitumumab		7646
CII3210	142	284	Futuximab, DS 992	US7887805 SEQ ID NO: 72	7647
CII3211	146	284	Modotuximab, Zatuximab	US7887805 SEQ ID NO: 73	7648
CII3212	157	284	Citatuzumab bogatox, VB6-845	US7339031 SEQ ID NO: 20	7649
CII3213	157	284	Adecatumumab, MT201, HD69	WO2010142990	7650
CII3214	160	284	Fibatuzumab, KB-004, KB005	US8664365 SEQ ID NO: 31	7651
CII3215	166	284	Margetuximab, MGAH-22	US8802093 SEQ ID NO: 2	7652
CII3216	166	284	Pertuzumab	WO2013096812 SEQ ID NO: 7	7653
CII3217	167	284	Duligotuzumab (Duligotumab), MEHD7945A, RG-7597, RG7597	US8597652 SEQ ID NO: 13	7654
CII3218	167	284	Elgemtumab, LJM716, NVS201010	US8735551 SEQ ID NO: 108	7655
CII3219	167	284	Seribantumab, MM-121, MM121, SAR256212	US9011863 SEQ ID NO: 18	7656
CII3220	167	284	Lumretuzumab, RG-7116, RG7116, RO5479599		7657
CII3221	175	284	Tisotumab, HuMax-TF		7658
CII3222	178	284	AMF-3a-118	WO2014186878 SEQ ID NO: 91	7659
CII3223	178	284	AMF 3d-19	WO2014186878 SEQ ID NO: 105	7660
CII3224	179	284	3B3.11	US20130078262 SEQ ID NO: 20	7661
CII3225	179	284	31.1	US20130078262 SEQ ID NO: 22	7662
CII3226	180	284	2B6	US20080138349 SEQ ID NO: 30	7663
CII3227	180	284	4d5	US20080138349 SEQ ID NO: 33	7664
CII3228	180	284	humanized 4d5	US20080138349 SEQ ID NO: 35	7665
CII3229	180	284	H2B6 Lc-5	US8697071 SEQ ID NO: 30	7666

CII3230	188	284	Icrucumab, 18F1, IMC-18F1, LY3012212	US7326414 SEQ ID NO: 60	7667
CII3231	190	284	Mirvetuximab soravtansine, IMGN853, M9346A-sulfo-SPDB-DM4	US8557966 SEQ ID NO: 13	7668
CII3232	191	284	Farletuzumab	US20050232919	7669
CII3233	192	284	Vantictumab, OMP-18R5	US7982013 SEQ ID NO: 15	7670
CII3234	194	284	Dinutuximab, Unituxin, ch 14.19	US8470991 SEQ ID NO: 2	7671
CII3235	201	284	Codrituzumab, GC33, RG7686, RO5137382		7672
CII3236	203	284	Glembatumumab vedotin, CDX-011, CR011-vcMMAE		7673
CII3237	205	284	Indusatumab, 5F9, MLN2045 (conjugated Indusatumab vedotin, 5F9vcMMAE, MLN-0264, MLN0264)	US8785600 SEQ ID NO: 233	7674
CII3238	216	284	Patritumab, U3-1287		7675
CII3239	217	284	Ab3	US20140271464 SEQ ID NO: 101	7676
CII3240	217	284	Ab27	US20140271464 SEQ ID NO: 1021	7677
CII3241	217	284	Ab28	US20140271464 SEQ ID NO: 1061	7678
CII3242	217	284	Ab4	US20140271464 SEQ ID NO: 141	7679
CII3243	217	284	Ab5	US20140271464 SEQ ID NO: 181	7680
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CII3245	217	284	Ab6	US20140271464 SEQ ID NO: 221	7682
CII3246	217	284	Ab7	US20140271464 SEQ ID NO: 261	7683
CII3247	217	284	Ab8	US20140271464 SEQ ID NO: 301	7684
CII3248	217	284	Ab9	US20140271464 SEQ ID NO: 341	7685
CII3249	217	284	Ab10	US20140271464 SEQ ID NO: 381	7686
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CII3253	217	284	Ab14	US20140271464 SEQ ID NO: 541	7690
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CII3255	217	284	Ab2	US20140271464 SEQ ID NO: 61	7692
CII3256	217	284	Ab16	US20140271464 SEQ ID NO: 621	7693
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CII3260	217	284	Ab20	US20140271464 SEQ ID NO: 781	7697
CII3261	217	284	Ab21	US20140271464 SEQ ID NO: 821	7698
CII3262	217	284	Ab23	US20140271464 SEQ ID NO: 861	7699
CII3263	217	284	Ab24	US20140271464 SEQ ID NO: 901	7700
CII3264	217	284	Ab25	US20140271464 SEQ ID NO: 941	7701
CII3265	217	284	Ab26	US20140271464 SEQ ID NO: 981	7702
CII3266	217	284	Ficlatuzumab, AV-299, SCH 900105	US7649083 SEQ ID NO: 201	7703
CII3267	217	284	Rilotumumab	US8609090 SEQ ID NO: 38 (21-128)	7704
CII3268	225	284	ATROSAB	WO2012035141 SEQ ID NO: 16	7705
CII3269	229	284	Sifalimumab, MDX-1103, MEDI-545		7706
CII3270	233	284	Figitumumab, CP-751871	US8476409 SEQ ID NO: 322; US7618626 SEQ 47	7707
CII3271	233	284	Robatumumab, 19D12, SCH 717454,		7708
CII3272	233	284	Dalotuzumab, MK-0646		7709
CII3273	232	284	Ganitumab, AMG 479	US8476409 SEQ ID NO: 328	7710
CII3274	237	284	F4-465	EP1810979 SEQ ID NO: 12	7711
CII3275	237	284	4D11	EP1810979 SEQ ID NO: 4	7712

CII3276	237	284	4D11G4	EP1810979 SEQ ID NO: 46	7713
CII3277	237	284	KM281-1-10	EP1810979 SEQ ID NO: 8	7714
CII3278	238	284	Quilizumab, 47H7, Anti-M1 prime, MEMP1972A, RG7449		7715
CII3279	249	284	gL3	WO2006054059 SEQ ID NO: 13	7716
CII3280	249	284	CDP435	WO2006054059 SEQ ID NO: 16	7717
CII3281	241	284	240g1	WO2007066082 SEQ ID NO: 18	7718
CII3282	244	284	Briakinumab, ABT-875	US8168760 SEQ ID NO: 2	7719
CII3283	246	284	Lebrikizumab, TNX-663	WO2013066866 SEQ ID NO: 14	7720
CII3284	246	284	Anrukinzumab	US7390786 SEQ ID NO: 8	7721
CII3285	246	284	Dectrekumab, QAX-576, QAX576	WO 2007045477	7722
CII3286	248	284	Tralokinumab		7723
CII3287	250	284	Ixekizumab	WO2006013107	7724
CII3288	250	284	Perakizumab, RG4934, RO5310074		7725
CII3289	250	284	Secukinumab		7726
CII3290	252	284	Brodalumab	WO2006013107 SEQ ID NO: 429	7727
CII3291	256	284	Gevokizumab	WO 2007002261 SEQ ID NO: 11	7728
CII3292	256	284	AAL 160	WO2001053353 SEQ ID NO: 4	7729
CII3293	259	284	Fezakinumab, ILV-094		7730
CII3294	260	284	Tildrakizumab	US8263748 SEQ ID NO: 17	7731
CII3295	264	284	Nemolizumab, CIM331	US8575317 SEQ ID NO: 238	7732
CII3296	266	284	Dupilumab, CD124, REGN668, SAR231893	US8980273 SEQ ID NO: 72	7733
CII3297	268	284	Benralizumab	WO2008143878 SEQ ID NO: 1	7734
CII3298	268	284	Benralizumab	WO2008143878 SEQ ID NO: 2	7735
CII3299	269	284	Olokizumab, CDP 6038	US8075889 SEQ ID NO: 18, 25	7736
CII3300	269	284	Siltuximab		7737
CII3301	269	284	Ab6	US20100150829 SEQ ID NO: 101	7738
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CII3303	269	284	Ab8	US20100150829 SEQ ID NO: 122	7740
CII3304	269	284	Ab9	US20100150829 SEQ ID NO: 138	7741
CII3305	269	284	Ab10	US20100150829 SEQ ID NO: 154	7742
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CII3307	269	284	Ab12	US20100150829 SEQ ID NO: 186	7744
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CII3323	269	284	Ab24	US20100150829 SEQ ID NO: 378	7760
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C[[334¦	269	284	**Abl**	**US20 100 150829** SEQ ID NO: 651	7778
C¦13342	269	284	Abl	**US20 100 150829** SEQ **ID NO**: 660	7779
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C[13353	269	284	**Abl**	**US20 100 150829** SEQ ID NO: 702	7790
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C[13355	269	284	Ab¦	**US20 100 150829** SEQ ID NO: 709	7792
C[[3356	269	284	Ab5	**US20 100 150829** SEQ ID NO: 85	7793
C¦13357	270	284	**Sarilumab**		7794
C¦13358	272	284		**WO2007066082** SEQ **ID** NO: 4	7795
C¬ 3359	273	284	P3A9	**US8637273** SEQ ID NO: 1	7796
C[13360	273	284	**HAL403b**	**US8637273** SEQ ID NO: 11	7797
C[13361	273	284	**HAL403a**	**US8637273** SEQ ID NO: 18	7798
c[13362	273	284	**P4B3**	**US8637273** SEQ ID NO: 3	7799
C[13363	273	284	C1GM	**US8637273** SEQ ID NO: **4 1**	7800
C[[3364	273	284	**C1GM, ClGM-2**	**US8637273** SEQ ID **NO:** 43	7801
C¦13365	273	284	C2M3	US8637273 SEQ **ID** NO: 44	7802
C¦13366	273	284	P2D2	**US8637273** SEQ **ID NO:** 5	7803
C¬ **3367**	273	284	P2E1 ¦	**US8637273** SEQ ID NO: 7	7804
C¬ **3368**	273	284	**HAL403a**	**US8637273** SEQ ID NO: 9	7805
CII3369	275	284	Enokizuinab, 7F3com-2H2, **MEDI-528**		7806
CII3370	275	284	**gLIO**	**WO2007066082** SEQ ID NO: 13	7807
CII337 ¦	279	284	**Abriluinab**		7808
CII3372	28!	284	**Ustekinutnab**	**WO20 14004436;** SEQ **ID** NO: 25	7809
CII3373	282	284	**Vatelizumab,** GBR500		7810
CII3374	285	284	Etaracizumab, **Abegrin, Vitaxin,** MEDI-522, hLM60		781 1
CII3375	286	284	**Intetumumab,** CNTO 095, CNTO-95	US81383 15 SEQ ID NO: 2	7812
CII3376	287	284	**Ramucirumab**	**Immunogenetics Information** System; CHAIN ID NO: 9098 **L**	7813
CI13377	289	284	**Liriluinab,** BMS-9860 15, EPH2102	**US81 19775** SEQ ID NO: 36	7814
CII3378	290	284	**Monaliziimab, IPH-220 1.TPH220 1, NN-8765, NNC-0 14¦-0000-0 100,** NNC-141-01000, **anti-NKG2A, HumZ271**		7815
CII3379	291	284	BAPOSO-clii	**US20150259420** SEQ ID NO: 26	7816
CII3380	291	284	BAP050-huinO 1, **BAP050-humO** 1-Ser, **BAP050-Clone-F,**	**US20 150259420** SEQ ID NO: 34	7817
CII3381	291	284	BAP050-hiun02, **BAP050-hum09, BAP050-huml3, BAP050-hum02-Ser,**	**US20150259420** SEQ ID NO: 38	7818

			BAP050-hum09-Ser, BAP050-hum13-Ser, BAP050-Clone-G, BAP050-Clone-H, BAP050-Clone-J		
CII3382	291	284	BAP050-hum03, BAP050-hum10, BAP050-hum14, BAP050-hum03-Ser, BAP050-hum10-Ser, BAP050-hum14-Ser	US20150259420 SEQ ID NO: 42	7819
CII3383	291	284	BAP050-hum04, BAP050-hum04-Ser	US20150259420 SEQ ID NO: 46	7820
CII3384	291	284	BAP050-hum05, BAP050-hum05-Ser	US20150259420 SEQ ID NO: 50	7821
CII3385	291	284	BAP050-hum06, BAP050-hum06-Ser	US20150259420 SEQ ID NO: 54	7822
CII3386	291	284	BAP050-hum07, BAP050-hum11, BAP050-hum07-Ser, BAP050-hum11-Ser, BAP050-Clone-I	US20150259420 SEQ ID NO: 58	7823
CII3387	291	284	BAP050-hum08, BAP050-hum12, BAP050-hum15, BAP050-hum16, BAP050-hum08-Ser, BAP050-hum12-Ser, BAP050-hum15-Ser	US20150259420 SEQ ID NO: 62	7824
CII3388	291	284	BAP050-hum17	US20150259420 SEQ ID NO: 86	7825
CII3389	291	284	BAP050-hum18, BAP050-hum18-Ser	US20150259420 SEQ ID NO: 90	7826
CII3390	291	284	BAP050-hum19, BAP050-hum19-Ser	US20150259420 SEQ ID NO: 94	7827
CII3391	291	284	BAP050-hum20, BAP050-hum20-Ser	US20150259420 SEQ ID NO: 98	7828
CII3392	305	284	Opicinumab, BiIB034	US8128926 SEQ ID NO: 434	7829
CII3393	305	284	Li33 Fab'	US8425910 SEQ ID NO: 145	7830
CII3394	306	284	Simtuzumab, AB0024, GS-6624	US8680246 SEQ ID NO: 45	7831
CII3395	310	284	hL243	US20140178294 SEQ ID NO: 39	7832
CII3396	310	284	c208F2	WO2015162293 SEQ ID NO: 28	7833
CII3397	310	284	c212A11	WO2015162293 SEQ ID NO: 29	7834
CII3398	310	284	c214F8	WO2015162293 SEQ ID NO: 30	7835
CII3399	310	284	c219D6	WO2015162293 SEQ ID NO: 31	7836
CII3400	310	284	c213B10	WO2015162293 SEQ ID NO: 32	7837
CII3401	319	284	Amatuximab, MORAb-009		7838
CII3402	320	284	Emibetuzumab, LA480, LY-2875358, LY2875358	US8217148 SEQ ID NO: 29	7839
CII3403	320	284	Onartuzumab		7840
CII3404	323	284	2.00E+04	US20140170168 SEQ ID NO: 13	7841
CII3405	323	284	1F11	US20140170168 SEQ ID NO: 29	7842
CII3406	323	284	3A3	US20140170168 SEQ ID NO: 45	7843
CII3407	323	284	3H5	US20140170168 SEQ ID NO: 61	7844
CII3408	323	284	2C3	US20140170168 SEQ ID NO: 77	7845
CII3409	324	284	Imalumab, BAX069, BAX69		7846
CII3410	328	284	Obinutuzumab, Gazyva	US8883980 SEQ ID NO: 76	7847
CII3411	328	284	Obinutuzumab, Afutuzumab	WO2005044859 Immunogenetics Information System; CHAIN ID NO: 9043_L (http: www:imgt:orgmAb-DBquery Query: obinutuzumab)	7848
CII3412	328	284	Veltuzumab, IMMU-106, HA20		7849
CII3413	328	284	Obinutuzumab, Gazyva		7850
CII3414	328	284	Ublituximab, LFB-R603, TG-1101, TGTX-1101		7851
CII3415	328	284	Ocaratuzumab, AME-133v, LY2469298	US7740847 SEQ ID NO: 29	7852
CII3416	329	284	Anetumab ravtansine,	US8992932 SEQ ID NO: 409	7853
CII3417	330	284	Narnatumab, IMC RON-8, RON8	US7947811 SEQ ID NO: 16, 51	7854
CII3418	336	284	Cantuzumab ravtansine, IMGN242, huC242-DM4	US8815247 SEQ ID NO: 30	7855
CII3419	336	284	Clivatuzumab tetraxetan, hPAM4, hPAM4 IgG-DOTA,	US9005613 SEQ 118	7856
CII3420	338	284	Ensituximab, NOE- 102, NPC-1C		7857

CII3421	339	284	Cantuzumab (Cantuzumab mertansine, SB408075, humanized C242, huC242-DM1 (conjugated))	WO2004004639 SEQ ID NO: 2	7858
CII3422	341	284	Lorvotuzumab mertansine, BB-10901, IMGN901, huN901-DM1		7859
CII3423	342	284	Racotumomab	US6491914	7860
CII3424	343	284		US20140363438 SEQ ID NO: 73	4524
CII3425	343	284		US20140363438 SEQ ID NO: 75	4525
CII3426	350	284	H6L13 FL, H19L13 FL, H20L13 FL, H21L13 FL, H25L13 FL	US20140147435 SEQ ID NO: 35	3257
CII3427	350	284	H16L16 FL, H19L16 FL, H20L16 FL, H21L16 FL, H25L16 FL, H18L16 FL	US20140147435 SEQ ID NO: 38	3258
CII3428	350	284	H16L18 FL, H19L18 FL, H20L18 FL, H21L18 FL, H25L18 FL	US20140147435 SEQ ID NO: 40	3259
CII3429	351	284	7.00E+11	US20090215691 SEQ ID NO: 15	3260
CII3430	351	284	7.00E+11	US20090215691 SEQ ID NO: 17	3261
CII3431	352	284	Tarextumab, OMP-59R5		7861
CII3432	353	284	Brontictuzumab, OMP-52M51	US8435513 SEQ ID NO: 26	7862
CII3433	354	284	Vesencumab, MNRP1685A	US8679767 SEQ ID NO: 25	7863
CII3434	357	284	Oxelumab, R4930, RO4989991, huMAb OX40L	US8962807 SEQ ID NO: 178	7864
CII3435	360	284	BAP049-chi, BAP049-chi-Y	US20150210769 SEQ ID NO: 26	7865
CII3436	360	284	BAP049-chi-Y	US20150210769 SEQ ID NO: 36	7866
CII3437	360	284	BAP049-hum01, BAP049-Clone-A	US20150210769 SEQ ID NO: 44	7867
CII3438	360	284	BAP049-hum02, BAP049-hum03	US20150210769 SEQ ID NO: 48	7868
CII3439	360	284	BAP049-hum04, BAP049-hum05, BAP049-Clone-B	US20150210769 SEQ ID NO: 56	7869
CII3440	360	284	BAP049-hum06	US20150210769 SEQ ID NO: 60	7870
CII3441	360	284	BAP049-hum07	US20150210769 SEQ ID NO: 64	7871
CII3442	360	284	BAP049-hum08, BAP049-hum09, BAP049-hum15, BAP049-hum16, BAP049-Clone-C	US20150210769 SEQ ID NO: 68	7872
CII3443	360	284	BAP049-hum10, BAP049-hum11, BAP049-hum14, BAP049-Clone-D, BAP049-Clone-E	US20150210769 SEQ ID NO: 72	7873
CII3444	360	284	BAP049-hum12	US20150210769 SEQ ID NO: 76	7874
CII3445	360	284	BAP049-hum13	US20150210769 SEQ ID NO: 80	7875
CII3446	360	284	Lambrolizumab, Pembrolizumab, MK-3475, Keytruda	US8354509 SEQ ID NO: 36 (20-237)	7876
CII3447	362	284	Olaratumab, 3G3, LY3012207 IMC-3G3,	EP2100618	7877
CII3448	362	284	Tovetumab, MEDI-575		7878
CII3449	366	284	MEDI-4736, Durvalumab		7879
CII3450	365	284		WO2015095410 SEQ ID NO: 21	7880
CII3451	365	284		WO2015095410 SEQ ID NO: 23	7881
CII3452	365	284		WO2015095410 SEQ ID NO: 27	7882
CII3453	365	284		WO2015095410 SEQ ID NO: 29	7883
CII3454	371	284	Bavituximab, PGN402		7884
CII3455	375	284	Enfortumab vedotin, AGS-22CE, AGS-22M, AGS-22M6E, AGS-22ME, ASG-22M, Eunconjugated : AGS-22C3 or AGSM7	EP2621526	7885
CII3456	381	284		WO2015057939 SEQ ID NO: 41	4420
CII3457	382	284	Indatuximab ravtansine, BT-062, BT062, nBT062-DM4	US8980267 SEQ ID NO: 6	7886
CII3458	390	284	KWAR23 chiFab	WO2015138600 SEQ ID NO: 12	7887
CII3459	390	284	2B8 K23 DVD	WO2015138600 SEQ ID NO: 14	7888
CII3460	390	284	4D5 K23 DVD	WO2015138600 SEQ ID NO: 16	7889
CII3461	390	284	56 K23 DVD	WO2015138600 SEQ ID NO: 18	7890

CII3462	391	284	Elotuzumab; BMS-901608, HuLuc63, PDL-063, PDL063		7891
CII3463	392	284	Lifastuzumab vedotin, DNIB0600A (conjugate), MNIB2126A (non conjugate)	US8871911 SEQ ID NO: 81	7892
CII3464	394	284	Vandortuzumab vedotin, DSTP-3086S, DSTP3086S, MSTP2109A, RG-7450, RG7450		7893
CII3465	413	284	HZD-M RabMAb	WO2009132037 SEQ ID NO: 10	7894
CII3466	413	284	HZD-N-Nterm RabMAb	WO2009132037 SEQ ID NO: 12	7895
CII3467	414	284	Tigatuzumab, CS-1008, TRA-8	US7244429 SEQ ID NO: 72	7896
CII3468	414	284	Drozitumab, PRO95780, anti-DR5, rhuMAb DR5	US8029783 SEQ ID NO: 20	7897
CII3469	414	284	Conatumumab, AMG 655, TRAIL-R2mAb, XG1-048 v w		7898
CII3470	414	284	Tigatuzumab, CS-1008, TRA-8		7899
CII3471	415	284	Enavatuzumab, PDL 192		7900
CII3472	416	284	Brentuximab vedotin, Adcetris		7901
CII3473	417	284	Urelumab		7902
CII3474	419	284	Tabalumab	US7317089 andUS8173124 SEQ ID NO: 19	7903
CII3475	421	284	Lexatumumab, HGS-ETR2		7904
CII3476	422	284	BXhVH5VL1, GBR VH5(K3Q)VL1, GBR VH5(V37A)VL1, GBR VH5(V37A)VL1(*), GBR VH5(G42E)VL1, GBR VH5(V89L)VL1, GBR VH5(R94K)VL1, GBR VH5(K3Q, V37A)VL1, GBR VH5(K3Q, V37A)VL1(*), GBR VH5(K3Q, T40A)VL1, GBR VH5(P60A, T62S)VL1, GBR VH5(K3Q, V37A, R44G)VL1, GBR VH5(K3Q, A49S, Y50A)VL1, GBR VH5(K3Q, P60A, T62S)VL1, GBR VH5(K3Q, T40A, P60A,T62S)VL1, GBR VH5(K3Q, V37A, T40A,P60A, T62S)VL1, GBR VH5(K3Q, T40A, R44G,A49S, Y50A)VL1, GBR VH5(K3Q, A49S, Y50A,P60A, T62S)VL1, GBR VH5(K3Q, T40A, R44G, A49S, Y50A, P60A, T62S)VL1, GBR VH5(K3Q, T40A, R44G, A49S, Y50A, P60A, T62S, R94K)VL1	US20150183885 SEQ ID NO: 29	7905
CII3477	422	284	BXhVL4	WO2009098238 SEQ ID NO: 10	3890
CII3478	422	284	BXhVL5	WO2009098238 SEQ ID NO: 11	3891
CII3479	422	284	BXhVLβ	WO2009098238 SEQ ID NO: 12	3892
CII3480	422	284	BXhVL7	WO2009098238 SEQ ID NO: 13	3893
CII3481	422	284	BXhVL8	WO2009098238 SEQ ID NO: 14	3894
CII3482	422	284	mVLEP	WO2009098238 SEQ ID NO: 16	3895
CII3483	422	284	BXhVLl	WO2009098238 SEQ ID NO: 7	3896
CII3484	422	284	BXhVL2	WO2009098238 SEQ ID NO: 8	3897
CII3485	422	284	BXhVL3	WO2009098238 SEQ ID NO: 9	3898
CII3486	425	284	Pankomab, PankoMab-GEX™	US20120128676 SEQ ID NO: 30	7906
CII3487	426	284	Sacituzumab govitecan, IMMU-132, HRS7-SN-38, HRS7-SN-38-ADC, HRS7-[CL-SN-38], HrS7-SN-38	WO03074566	7907
CII3488	427	284	Flanvotumab, 20D7S, IMC-20D7S, IMC20D7S	US7951370 SEQ ID NO: 32, 32	7908

CII3489	430	284	Bevacizumab	US7060269	7909
CII3490	432	284	Alacizumab pegol,	US7452976 SEQ ID NO: 11	7910
CII3491	433	284	Pritumumab, CLN G11	US8815247 SEQ ID NO: 36	7911
CII3492		284	BD22084	US20100104553 SEQ ID NO: 225	7912
CII3493		284	BD22107	US20100104553 SEQ ID NO: 226	7913
CII3494		284	BD22086	US20100104553 SEQ ID NO: 227	7914
CII3495		284	BD22103	US20100104553 SEQ ID NO: 228	7915
CII3496		284	BD22088	US20100104553 SEQ ID NO: 229	7916
CII3497		284	BD22108	US20100104553 SEQ ID NO: 230	7917
CII3498		284	BD22094	US20100104553 SEQ ID NO: 231	7918
CII3499		284	BD22085	US20100104553 SEQ ID NO: 232	7919
CII3500		284	BD22109	US20100104553 SEQ ID NO: 233	7920
CII3501		284	BD22090	US20100104553 SEQ ID NO: 234	7921
CII3502		284	BD22092	US20100104553 SEQ ID NO: 235	7922
CII3503		284	BD22100	US20100104553 SEQ ID NO: 236	7923
CII3504		284	BD22105	US20100104553 SEQ ID NO: 237	7924
CII3505		284	BD22111	US20100104553 SEQ ID NO: 238	7925
CII3506		284	BD22104	US20100104553 SEQ ID NO: 239	7926
CII3507		284	BD22087	US20100104553 SEQ ID NO: 240	7927
CII3508		284	BD22096	US20100104553 SEQ ID NO: 241	7928
CII3509		284	BD22091	US20100104553 SEQ ID NO: 242	7929
CII3510		284	BD22089	US20100104553 SEQ ID NO: 243	7930
CII3511		284	BD22095	US20100104553 SEQ ID NO: 244	7931
CII3512		284	BD22106	US20100104553 SEQ ID NO: 245	7932
CII3513		284	BD22097	US20100104553 SEQ ID NO: 246	7933
CII3514		284	BD22101	US20100104553 SEQ ID NO: 247	7934
CII3515		284	BD22102	US20100104553 SEQ ID NO: 248	7935
CII3516		284	Alefacept light chain		7936
CII3517		284	Arcitumomab 99tc light chain		7937
CII3518		284	BLONTUVETMAB LIGHT CHAIN		7938
CII3519		284	Enfortumab light chain		7939
CII3520		284	IODINE I 131 DERLOTUXIMABBiOTIN LIGHT CHAIN		7940
CII3521		284	Sarilumab light chain		7941
CII3522		284	Satumomab pendetide light chain		7942
CII3523	56	284	chimeric 2H7.v6.8	US7799900 SEQ ID NO: 17	7943
CII3524	56	284	2H7.v16, 2H7.v31	US7799900 SEQ ID NO: 21	7944
CII3525	56	284		US7799900 SEQ ID NO: 40	7945
CII3526	56	284		US7799900 SEQ ID NO: 43	7946
CII3527	56	284		US7799900 SEQ ID NO: 47	7947
CII3528	60	284	Epratuzumab	WO2011032633 SEQ ID NO: 1	7948
CII3529	288	284		US20120328615 SEQ ID NO: 5	7949
CII3530	238	337	Talizumab, "C21/AL-90, HU-901, Hu901, TNX-901"	US20020173477 SEQ ID NO: 25	7950
CII3531	34	286	Eculizumab	US6074642; WO1995029697; US6355245; US6074642; WO1995029697; US6355245	7951
CII3532	166	287	Trastuzumab, Adotrastuzumab (conjugate)	US5720954; US5770195; US5772997; US6165464; US6387371; US6399063	7952
CII3533	166	287	Trastuzumab, Adotrastuzumab (conjugate), Herceptin	US5720954; US5770195; US5772997; US6165464; US6387371; US6399063	7953
CII3534	80	288	Gemtuzumab ozogamicin, Mylotarg	WO198909622 SEQ ID NO: 2; US5693761 SEQ ID NO: 1	7954

CII3535	97	288	Alemtuzumab, CAMPATH-1H	Crowe JS: et al: 1992: Clin Exp Immunol: 87 105-10; US Patent No: 6120766	7955
CII3536	140	288	Cetuximab	US6217866; US7598350	7956
CII3537	88	289	Muromonab	US8906681 SEQ ID NO: NO 298	7957
CII3538	166	290	Trastuzumab, Adotrastuzumab (conjugate)	US5720954; US5770195; US5772997; US6165464; US6387371; US6399063	7958
CII3539	80	291	Gemtuzumab ozogamicin, Mylotarg	US5693761; US5773001	7959
CII3540	80	292	Gemtuzumab ozogamicin, Mylotarg	US5693761 SEQ ID NO: 3; WO 8909622 SEQ ID NO: 4	7960
CII3541	80	293	Gemtuzumab ozogamicin, Mylotarg	US5693761 SEQ ID NO: 4; US7300655 SEQ ID NO: 38	7961
CII3542	56	294	Ocrelizumab, hu2H7 v16	US20040202658 SEQ ID NO: NO: 3	7962
CII3543	53	297	VL43-F71T	US20140286934 SEQ ID NO: 30	7963
CII3544	53	297	VH16-- R94K heavy chain	US20140286934 SEQ ID NO: 31	7964
CII3545	53	297	VL43-- V3Q/T7S/P44I/N92A light chain	US20140286934 SEQ ID NO: 32	7965
CII3546	263	298	Daclizumab	WO8909622; US5693761; US7521054	7966
CII3547	263	299	Daclizumab	WO8909622; US5693761; US7521054	7967
CII3548	263	300	Daclizumab	WO8909622; US5693761; US7521054	7968
CII3549	267	301	Reslizumab	WO9535375 Fig 5	7969
CII3550	60	302	Moxetumomab Pasudotox	US7982011 SEQ ID NO: 7	7970
CII3551	60	302	Inotuzumab ozogamicin	US8153768 SEQ ID NO: 4	7971
CII3552	123	302	Ipilimumab	WO2001014424 SEQ ID NO: 24	7972
CII3553	140	302	Necitumumab	US7598350 SEQ ID NO: 10	7973
CII3554	217	302	Rilotumumab	US8609090 SEQ ID NO: 67	7974
CII3555	233	302	Cixutumumab, IMC-A12, A12, LY3012217	WO2008067427 SEQ ID NO: 26	7975
CII3556	246	302	Lebrikizumab, TNX-653	WO2013066866 SEQ ID NO: 4	7976
CII3557	250	302	Secukinumab	WO2006013107 SEQ ID NO: 4	7977
CII3558	252	302	Brodalumab	WO2006013107 SEQ ID NO: 224	7978
CII3559	260	302	Tildrakizumab	US8263748 SEQ ID NO: 36	7979
CII3560	266	302	Dupilumab	US8075887SEQ ID NO: 156	7980
CII3561	267	302	Mepolizumab	WO2009120927 SEQ ID NO: 10	7981
CII3562	269	302	Siltuximab	US7955597 SEQ ID NO: 4	7982
CII3563	281	302	Ustekinumab	WO2014004436 SEQ ID NO: 19; US6902734 SEQ ID NO: 4;	7983
CII3564	320	302	Onartuzumab	US13538901 SEQ ID NO: 1; US7476724 SEQ ID NO: 183	7984
CII3565	328	302	Ofatumumab	US8529902 SEQ ID NO: 16	7985
CII3566	336	302	Clivatuzumab tetraxetan	US7282567; US8435529; US8586050 SEQ ID NO: 1	7986
CII3567	360	302	Lambrolizumab, Pembrolizumab, MK-3475, Keytruda	US8354509 SEQ ID NO: 15	7987
CII3568	397	302	Minretumomab, Mab CC-49	US8029788 SEQ ID NO: 1	7988
CII3569	361	302	Nivolumab, ONO-4538, BMS-936558, MDX1106, Opdivo	US8008449 SEQ ID NO: 39	7989
CII3570	34	303	Eculizumab	US6074642; WO1995029697; US6355245; US6074642; WO1995029697; US6355245	7990
CII3571	269	304	Sirukumab	US7833755 SEQ ID NO: 3	7991
CII3572	412	305	Golimumab	WO2013087912, Figure 2G, SEQ ID NO: 7	7992
CII3573	60	306	Moxetumomab Pasudotox	US798201 1 SEQ ID NO: 11	7993

CII3574	60	306	Inotuzumab ozogamicin	US8153768 SEQ ID NO: 5	7994
CII3575	123	306	Ipilimumab	WO2001014424 SEQ ID NO: 29	7995
CII3576	140	306	Necitumumab	US7598350 SEQ ID NO: 12	7996
CII3577	217	306	Rilotumumab	US8609090 SEQ ID NO: 77	7997
CII3578	233	306	Cixutumumab, IMC-A12, A12, LY3012217	WO2008067427 SEQ ID NO: 28	7998
CII3579	246	306	Lebrikizumab, TNX-654	WO2013066866 SEQ ID NO: 5	7999
CII3580	250	306	Secukinumab	WO2006013107 SEQ ID NO: 5	8000
CII3581	252	306	Brodalumab	WO2006013107 SEQ ID NO: 225	8001
CII3582	260	306	Tildrakizumab	US8263748 SEQ ID NO: 41	8002
CII3583	266	306	Dupilumab	US8075887SEQ ID NO: 158	8003
CII3584	267	306	Mepolizumab	WO2009120927 SEQ ID NO: 11	8004
CII3585	269	306	Siltuximab	US7955597 SEQ ID NO: 5	8005
CII3586	281	306	Ustekinumab	WO2014004436 SEQ ID NO: 20; US6902734 SEQ ID NO: 5;	8006
CII3587	320	306	Onartuzumab	US13538901 SEQ ID NO: 2; US7476724 SEQ ID NO: 184	8007
CII3588	328	306	Ofatumumab	US8529902 SEQ ID NO: 17	8008
CII3589	336	306	Clivatuzumab tetraxetan	US7282567; US8435529; US8586050 SEQ ID NO: 2	8009
CII3590	360	306	Lambrolizumab, Pembrolizumab, MK-3475, Keytruda	US8354509 SEQ ID NO: 16	8010
CII3591	397	306	Minretumomab, Mab CC-49	US8029788 SEQ ID NO: 2	8011
CII3592	361	306	Nivolumab, ONO-4538, BMS-936558, MDX1106, Opdivo	US8008449 SEQ ID NO: 46	8012
CII3593	34	307	Eculizumab	US6074642; WO1995029697; US6355245; US6074642; WO1995029697; US6355245	8013
CII3594	269	308	Sirukumab	US7833755 SEQ ID NO: 21	8014
CII3595	412	309	Golimumab	WO2013087912, Figure 2G, SEQ ID NO: 7	8015
CII3596	60	310	Moxetumomab Pasudotox	US7982011 SEQ ID NO: 12	8016
CII3597	60	310	Inotuzumab ozogamicin	US8153768 SEQ ID NO: 6	8017
CII3598	123	310	Ipilimumab	WO2001014424 SEQ ID NO: 35	8018
CII3599	140	310	Necitumumab	US7598350 SEQ ID NO: 14	8019
CII3600	217	310	Rilotumumab	US8609090 SEQ ID NO: 87	8020
CII3601	233	310	Cixutumumab, IMC-A12, A12, LY3012217	WO2008067427 SEQ ID NO: 30	8021
CII3602	246	310	Lebrikizumab, TNX-655	WO2013066866 SEQ ID NO: 6	8022
CII3603	250	310	Secukinumab	WO2006013107SEQ ID NO: 6	8023
CII3604	252	310	Brodalumab	WO2006013107 SEQ ID NO: 226	8024
CII3605	260	310	Tildrakizumab	US8263748 SEQ ID NO: 46	8025
CII3606	266	310	Dupilumab	US8075887SEQ ID NO: 160	8026
CII3607	267	310	Mepolizumab	WO2009120927 SEQ ID NO: 12	8027
CII3608	269	310	Siltuximab	US7955597 SEQ ID NO: 6	8028
CII3609	281	310	Ustekinumab	WO2014004436 SEQ ID NO: 21; US6902734 SEQ ID NO: 6;	8029
CII3610	320	310	Onartuzumab	US13538901 SEQ ID NO: 3; US7476724 SEQ ID NO: 185	8030
CII3611	328	310	Ofatumumab	US8529902 SEQ ID NO: 18	8031
CII3612	336	310	Clivatuzumab tetraxetan	US7282567; US8435529; US8586050 SEQ ID NO: 3	8032
CII3613	360	310	Lambrolizumab, Pembrolizumab, MK-3475, Keytruda	US8354509 SEQ ID NO: 17	8033
CII3614	397	310	Minretumomab, Mab CC-49	US8029788 SEQ ID NO: 3	8034
CII3615	361	310	Nivolumab, ONO-4538, BMS-936558, MDX1106, Opdivo	US8008449 SEQ ID NO: 53	8035

CII3616	34	311	Eculizumab	US6074642; WO1995029697; US6355245; US6074642; WO1995029697; US6355245	8036
CII3617	269	312	Sinikumab	US7833755 SEQ ID NO: 29	8037
CII3618	412	313	Golimumab	WO20 130879 12, Figure 2G, SEQ ID NO: 7	8038
CII3619	328	314	Rituximab	US5736137; US7422739	8039
CI13620	66	3[7		US20 150266966 SEQ ID NO: 28	8040
CII362 1	66	317		US20 150266966 SEQ ID NO: 32	804 S
CII3622	75	3[7		US7973 136 SEQ ID NO: 12	8042
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CII3624	83	317		WO2014 198330 SEQ ID NO: 8	8044
CII3625	176	317	Sibrotuzumab, BiBH !	US20030103968 SEQ ID NO: [8	8045
CII3626	225	317	ATROSAB	WO20 12035 141 SEQ ID NO: 18	8046
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CII3642	233	346		US20100143340 SEQ ID NO: 13	8053
CII3643	233	346		US20100143340 SEQ ID NO: 14	8054
CI13644	233	346		US20100143340 SEQ ID NO: 8	8055
CII3645	233	346		US20 [00143340 SEQ ID NO: 9	8056
CII3646	52	348	Ruplizumab, Antova, BG-9588, Hu5c8	US8784823 SEQ ID NO: 63	8057
CII3647	276	35 i	Dusigiruniab, MEDI-573	US7939637 SEQ ID NO: 8	8058
CII3648	267	353	Mepolizuniab	WO2009 120927 SEQ ID NO: 21	8059
CII3649	267	353	Mepolizumab	WO2009068649 SEQ ID NO: 66	8060
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CII365 1	66	285	mAb l	US20 [400993[8 SEQ ID NO: 10	8062
CII3652	66	285	mAb l LC-2	US201400993 [8 SEQ ID NO: 12	8063
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CII3656	66	285	h-mAb2 VL-4	US201400993 18 SEQ ID NO: 22	8067
CII3657	66	285	h-mAb2 VL-5	US20 1400993 18 SEQ ID NO: 24	8068
CI13658	66	285	h-mAb2 VL-6	US20 1400993[8 SEQ ID NO: 26	8069
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CII3661	66	285	h-mAb2 VL-9	US201400993 18 SEQ ID NO: 32	8072
CII3662	66	285	mAb2	US201400993 18 SEQ ID NO: 5	8073
CII3663	[76	285	Sibrotuzumab, BiBH !	US20030103968 SEQ ID NO: 2	8074
CII3664	176	285	Sibrotuzumab, BiBH [	US20030103968 SEQ ID NO: 4	8075
CII3665	176	285	Sibrotuzumab, BiBHl	US20030103968 SEQ ID NO: 6	8076
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CI13667	78	285		US20150337048 SEQ ID NO: 22	8078
CII3668	78	285		US20 [50337048 SEQ ID NO: 24	8079
CII3669	78	285		US20150337048 SEQ ID NO: 26	8080

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CII3694	66	285	h-mAb2 VL-10	US20140099318 SEQ ID NO: 34	8105
CII3695	191	285	Farletuzumab	US20050232919	8106
CII3696	281	285	Ustekinumab	WO2014004436 SEQ ID NO: 23; US6902734 SEQ ID NO: 8;	8107
CII3697	412	358	Adalimumab	US6090382	8108
CII3698	419	359	Belimumab	US7605236 Light chain variable domain of 2nd scFv	8109
CII3699	140	361	Panitumumab	US6235883 SEQ ID NO: NO 20	8110
CII3700	419	362	Belimumab	US7138501	8111
CII3701	9	285	Nesvacumab, REGN-910	US8980268 SEQ ID NO: 20	8112
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CII3703	12	285		US20150166661 SEQ ID NO: 187	8114
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CII3779	56	285	3B9-10N	US20110081681 SEQ ID NO: 11	8188
CII3780	56	285	3H7-6FGL	US20110081681 SEQ ID NO: 121	8189
CII3781	56	285	5H2-17N	US20110081681 SEQ ID NO: 131	8190
CII3782	56	285	5H2-17FGL	US20110081681 SEQ ID NO: 145	8191

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CII3784	56	285	**6B9-4FGL**	**US201 1008168** 1 SEQ **ID NO**: l69	8193
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CII3786	56	285	6F6-1FGL	**US20 l 1008 1681** SEQ ID NO: 193	8195
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CII3800	56	285	**10F2-13N, "10F2-13"**	**US20 l 1008 168** l SEQ ID NO: 347	8209
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CII3802	56	285	10F2-13FGL	**US201 1008168 1** SEQ ID NO: 361	82 11
CII3803	56	285	**7E1-13N**	**US20 l 10081681** SEQ ID NO: 371	8212
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CII3805	56	285	**9C U-14FGL**	US20 l l **008** !68l SEQ ID NO: 49	82 14
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CII3807	56	285	2B7-7FGL	**US20 l 1008 1681** SEQ ID NO: 73	8216
CII3808	56	285	2C1 1-4N	**US201** 1008168 l SEQ ID NO: 83	82 17
CII3809	56	285	2C1 **1-4FGL**	**US201 1008168** 1 SEQ **ID NO**: 97	82 18
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CII381 1	56	285	**hA20**	**US20 130078 182** SEQ ID NO: 12	8220
CI13812	56	285	**11B8**	**US20 140093454** SEQ **ID** NO: 12	8221
CII38 13	56	285	**7D8**	US20 l40093 **454** SEQ ID NO: 8	8222
CII38 14	56	285	**B-Lyl**	**US201502 10772** SEQ ID NO: 31	8223
CII3815	56	285	**B-KV1**	**US20** l502 **10772** SEQ ID NO: 49	8224
CII3816	56	285	GA101	**US20 1502 10772** SEQ **ID** NO: 57	8225
CII3817	56	285	**2H7**	US7799900 SEQ ID **NO**: l	8226
CII3818	56	285	**humanized 2H7. vl6** variant	**US7799900** SEQ ID NO: 2	8227
CII3819	56	285	2F2	**US7850962** SEQ ID NO: 30	8228
CIO **820**	56	285	**2C6 a**	**US7850962** SEQ ID NO: 4	8229
CIO **82 1**	56	285	2C6 **b**	**US7850962** SEQ ID NO: **5**	8230
CIO 822	56	285	**11B8**	**US7850962** SEQ ID NO: 7	823 1
CII3823	56	285	**hA20Vk**	**US8287864** SEQ ID NO: 12	8232
CII3824	56	285	cA20Vk	**US8287864** SEQ ID **NO**: 8	8233
CII3825	56	285		**US8329181** SEQ ID NO: **107**	8234
CII3826	56	285		**US8329 l8 1** SEQ **ID NO**: l **1**	8235
CII3827	56	285		**US8329181** SEQ ID NO: **117**	8236
CII3828	56	285		**US8329181** SEQ ID NO: 121	8237
CIO **829**	56	285		**US8329181** SEQ ID NO: **13 1**	8238
CIO830	56	285		**US8329181** SEQ ID NO: **141**	8239
CII383 1	56	285		**US8329181** SEQ ID NO: 145	8240
CII3832	56	285		**US8329181** SEQ ID NO: 155	8241
CII3833	56	285		**US8329181** SEQ ID NO: **165**	8242
CII3834	56	285		**US8329 l8 1** SEQ ID **NO**: 169	8243
CII3835	56	285		**US8329181** SEQ ID NO: 179	8244
CII3836	56	285		**US8329181** SEQ ID NO: 189	8245
CI13837	56	285		US8329181 SEQ ID NO: 193	8246
CII3838	56	285		**US8329181** SEQ ID NO: 203	8247
CII3839	56	285		**US8329181** SEQ ID NO: 2 1	8248
CII3840	56	285		**US8329181** SEQ ID NO: 213	8249

CII384 1	56	285		**US8329181** SEQ **ID** NO: 217	8250
CIB842	56	285		**US8329 ¦8 1** SEQ ID NO: **227**	825 1
CII3843	56	285		US832918S SEQ ID NO: 237	8252
CII3844	56	285		**US8329181** SEQ ID NO: 241	8253
CI13845	56	285		ıı S8329181 SEQ ID NO: 25	8254
CII3846	56	285		**US8329181** SEQ ID NO: 25 1	8255
CII3847	56	285		**US8329181** SEQ ID NO: 261	8256
CII3848	56	285		**US8329181** SEQ ID NO: 265	8257
CII3849	56	285		US8329181 SEQ ID **NO:** 275	8258
CII3850	56	285		**US8329181** SEQ ID NO: 285	8259
CII385 !	56	285		**US8329 ¦8 1** SEQ ID **NO:** 289	8260
CII3852	56	285		**US8329181** SEQ ID NO: 299	8261
CII3853	56	285		**US8329181** SEQ ID NO: 309	8262
CI13854	56	285		ıı S8329181 SEQ ID NO: 313	8263
CII3855	56	285		**US8329181** SEQ ID NO: 323	8264
CII3856	56	285		**US8329181** SEQ ID NO: 333	8265
CII3857	56	285		US8329181 SEQ ID **NO:** 337	8266
CII3858	56	285		**US8329181** SEQ ID NO: 347	8267
CII3859	56	285		**US8329 ¦8 1** SEQ ID NO: 35	8268
CII3860	56	285		**US8329181** SEQ ID NO: 357	8269
CII3861	56	285		**US8329181** SEQ ID NO: 361	8270
CI13862	56	285		ıı S8329181 SEQ ID NO: 371	8271
CII3863	56	285		**US8329181** SEQ ID NO: 381	8272
CII3864	56	285		**US8329181** SEQ ID NO: 385	8273
CII3865	56	285		US8329181 SEQ ID **NO:** 45	8274
CII3866	56	285		**US8329181** SEQ ID NO: 49	8275
CII3867	56	285		**US8329 ¦8 1** SEQ ID **NO:** 59	8276
CII3868	56	285		**US8329181** SEQ ID NO: 69	8277
CII3869	56	285		**US8329181** SEQ ID NO: 73	8278
CI13870	56	285		ıı S8329181 SEQ ID NO: 83	8279
CII3871	56	285		**US8329181** SEQ ID NO: 93	8280
CII3872	56	285		**US8329181** SEQ ID NO: 97	8281
CII3873	56	285	Antibody 1534, 1634	US9045543 SEQ ID NO: 34	8282
CII3874	56	285	**Antibody** 1535, 1635	US9045543 SEQ ID NO: 35	8283
CII3875	56	285	Antibody 3637	US9045543 SEQ ID **NO:** 37	8284
CII3876	56	285	**VkZ**	**WO20050 16969** SEQ ID NO: 12	8285
CII3877	56	285	**VhD**	**WO20050 16969** SEQ ID NO: 3	8286
CII3878	56	285	**VkA**	**WO20050 16969** SEQ ID NO: 5	8287
CI13879	56	285	VkC	**WO20050 ¦6969** SEQ **ID** NO: 7	8288
CII3880	56	285	**m2H7**	**WO2006068867** SEQ **ID** NO: 24	8289
CII3881	56	285	**2H7.vl6** (intact)	WO20061 ¦6369 SEQ ID NO: **13**	8290
CII3882	56	285	**2H7.V5 11** (intact)	**WO2006 116369** SEQ ID NO: 15	8291
CII3883	56	285	**2H7.V5 11**	**WO2006 116369** SEQ **ID** NO: 18	8292
CII3884	56	285	**2H7.vl6**	**WO2006 116369** SEQ **ID** NO: 2	8293
CII3885	56	285	3H7-6GSP	**US201 1008168 1** SEQ ID NO: **117**	8294
CII3886	56	285	**5H2-17GSP**	**US201 10081681** SEQ ID NO: 141	8295
CI13887	56	285	**6B9-4GSP**	**US201 1008 1681** SEQ ID NO: 165	8296
CII3888	56	285	**6F6-1GSP**	US20 11008 1681 SEQ ID NO: 189	8297
CII3889	56	285	3B9-¦0GSP	**US201 1008 1681** SEQ ID NO: **2 1**	8298
CII3890	56	285	8G6-5GSP	**US201 10081681** SEQ ID NO: 213	8299
CII389 1	56	285	**9C3-8GSP**	**US201 1008168 1** SEQ **ID** NO: 237	8300
CII3892	56	285	**9D4-7GSP**	**US201 1008168 I** SEQ **ID NO:** 26 1	8301
CII3893	56	285	9E4-20GSP	**US201 1008168 1** SEQ ID NO: 285	8302
CII3894	56	285	9H4-12GSP	**US20 ¦ 1008 1681** SEQ ID NO: 309	8303
CI13895	56	285	**10E3-17GSP**	**US20 11008 1681** SEQ ¦ID NO: 333	8304
CII3896	56	285	**10F2- I3GSP**	US20 11008 1681 SEQ ID NO: 357	8305
CII3897	56	285	**7E1-13GSP**	**US201 1008 1681** SEQ ID NO: 381	8306
CII3898	56	285	**9C1 1-14GSP**	**US201 10081681** SEQ ID NO: 45	8307

CII3899	56	285	**2B7-7GSP**	**US20 l 1008 168** l SEQ ID **NO**: 69	8308
CII3900	56	285	2C11-4GSP	**US201 1008168** l SEQ **ID NO**: 93	8309
CIO 901	56	285	**7**.18.1	**US201 10129412** SEQ ID NO: 100	8310
CII3902	56	285	**7**.2 1.1	US201 10129412 SEQ ID NO: 104	8311
CI13903	56	285	**7**.23. l .1 **k2**	**US20 1101294** l **2** SEQ ID NO: 108	8312
CII3904	56	285	**7**.24. l **.1** k2	US20 110 1294 12 SEQ **ID** NO: 112	8313
CII3905	56	285	**7**.26. 1	US20 1101**294** 12 SEQ **ID** NO: **116**	8314
CII3906	56	285	**1.11.3. 1**	**US20 1**10 1294 l2 SEQ ID NO: 12	8315
CII3907	56	285	**7**.28.1. 1 **k2**	**US201 10129412** SEQ ID NO: 120	8316
CII3908	56	285	**7.7 .1**	**US201 10129412** SEQ **ID NO**: **124**	8317
CII3909	56	285	**7**.8.l	**US201** 10129412 SEQ **ID NO**: 128	8318
CII3910	56	285	**7**.9. 1	**US201 10129412** SEQ **ID** NO: 132	8319
CII391 1	56	285	8.2. 1	**US201 10129412** SEQ **ID** NO: 136	8320
CI139 12	56	285	**1.12. 1**	US20**110** 1294 l**2** SEQ **ID** NO: 16	8321
CII39 13	56	285	**1.**l**3. 1**	US20 1101**294** l2 SEQ ID NO: 20	8322
CII39 14	56	285	1.2. 1.1	**US201** 101294 l2 SEQ ID NO: 24	8323
CII3915	56	285	1.4. 1	**US201 10129412** SEQ ID NO: 28	8324
CII3916	56	285	1.5.3	**US201 10129412** SEQ **ID NO**: **32**	8325
CII3917	56	285	**1.6. 1**	**US201** 10129412 SEQ **ID NO**: **36**	8326
CII3918	56	285	1.1.2	**US201 10129412** SEQ **ID** NO: 4	8327
CII3919	56	285	**1.7 .1**	**US201 10129412** SEQ **ID** NO: **40**	8328
CI13920	56	285	**1.9. 1**	US20**110** 1294 l**2** SEQ **ID** NO: 44	8329
CII392 1	56	285	2. 1. 1	US20 110 1294 12 SEQ **ID** NO: 48	8330
CII3922	56	285	2.2. 1	**US201** 101294 l2 SEQ ID NO: 52	8331
CII3923	56	285	2.4. 1	**US201 10129412** SEQ ID NO: 56	8332
CII3924	56	285	**3.1. 1**	**US201 10129412** SEQ **ID NO**: 60	8333
CII3925	56	285	3.2. 1	**US201** 10129412 SEQ **ID NO**: **64**	8334
CII3926	56	285	**3.3 1**	**US201 10129412** SEQ ID NO: 68	8335
CII3927	56	285	3.4. 1	**US201 10129412** SEQ ID NO: 72	8336
CIO928	56	285	**3.7. 1**	US20**110** 1294 l**2** SEQ **ID** NO: **76**	8337
CIO 929	56	285	1.10.3 **.1**	US20 1101**294** l2 SEQ ID NO: 8	8338
CII3930	56	285	4.2.1. 1	**US201** 101294 l2 SEQ ID NO: 80	8339
CII393 1	56	285	4.6. 1	**US201 10129412** SEQ ID NO: 84	8340
CII3932	56	285	6.3. 1	**US201 10129412** SEQ **ID NO**: 88	8341
CII3933	56	285	**7.1. 1**	**US201** 10129412 SEQ **ID NO**: 92	8342
CII3934	56	285	**7**.17.1	**US201 10129412** SEQ ID NO: 96	8343
CII3935	56	285	**hA20Vk**	**US20 l 10236304** SEQ ID NO: 12	8344
CII3936	60	285	HB22 **-7 VK**	**US20070264260** SEQ ID NO: 23	8345
CI13937	60	285	**HB22-23 VK**	**US20070264260** SEQ **ID** NO: 27	8346
CII3938	60	285	HB22-196 **VK**	**US20070264260** SEQ **ID** NO: 31	8347
CII3939	60	285	HB22 **.7**	**US20130266558** SEQ ID NO: 27	8348
CII3940	60	285	AO 88641	**US20130266558** SEQ ID NO: 29	8349
CII394 1	60	285	**AJ388641**	**US20130266558** SEQ **ID NO**: 31	8350
CII3942	60	285	**HB227-Clone** 47	**US20 130266558** SEQ **ID NO**: 33	8351
CIO 943	60	285	HB227 RKA	**US20 130266558** SEQ **ID** NO: 35	8352
CIO944	60	285	**HB227** RKB	**US20 130266558** SEQ ID NO: 37	8353
CI13945	60	285	**HB227** RKC	**US20130266558** SEQ **ID** NO: 39	8354
CIO 946	60	285	**chHB227**	**US20 130266558** SEQ **ID** NO: **4**	8355
CIO 947	60	285	AJ556657	**US20130266558** SEQ ID NO: 41	8356
CII3948	60	285	**HB227-AJ556657**	**US20130266558** SEQ ID NO: 43	8357
CII3949	60	285	**HB227-AJ5 56657 WITH VH3 -30** LEADER	**US20130266558** SEQ **ID NO**: 45	8358
CI13950	60	285	**HB227RHO - VH3-30** Back **mutated**	**US20130266558** SEQ **ID** NO: **47**	8359
CII395 1	60	285	HB227RH02 **- VH2-V50**	**US20 130266558** SEQ **ID** NO: 49	8360
CII3952	60	285	**HB227RHOV-2A - VH2-V50**	**US20130266558** SEQ ID NO: 51	8361
CII3953	60	285	**HB227RHOv2B - VH2-V50**	**US20130266558** SEQ ID NO: 53	8362
CII3954	60	285	**HB227RHOv2C - VH2-V50**	**US20130266558** SEQ **ID NO**: 55	8363
CII3955	60	285	**HB227RHOv2D - VH2-V50**	**US20130266558** SEQ **ID NO**: **57**	8364

CII3956	60	285	HB227RHOv2ACD - VH2-V50	US20130266558 SEQ ID NO: 59	8365
CII3957	60	285	HB227RHOv2ABCD - VH2-V50	US20 130266558 SEQ ID NO: 61	8366
CII3958	60	285	Inotuzumab ozogamicin	US8153768 SEQ ID NO: 19	8367
CII3959	60	285	Antibody 5/44	US8747857 SEQ ID NO: 7	8368
CIO 960	66	285		US20150266966 SEQ ID NO: 18	8369
CIO 961	75	285		US20060 177442 SEQ ID NO: 12	8370
CII3962	75	285		US20060 177442 SEQ ID NO: 4	8371
CII3963	75	285		US20060 177442 SEQ ID NO: 8	8372
CII3964	75	285	Vk L15	US20120276086 SEQ ID NO: 27	8373
CII3965	75	285	A27	US20 120276086 SEQ ID NO: 28	8374
CII3966	75	285	L6	US20 120276086 SEQ ID NO: 29	8375
CII3967	75	285		US20 120276086 SEQ ID NO: 4	8376
CII3968	75	285		US20 120276086 SEQ ID NO: 5	8377
CI13969	75	285		US20 120276086 SEQ ID NO: 6	8378
CIO970	75	285		US7973 136 SEQ ID NO: 1	8379
CII3971	75	285	Anti-CD30 L3.71 AG10	US7973 136 SEQ ID NO: 10	8380
CII3972	75	285	L3 AC10	US7973 136 SEQ ID NO: 3	8381
CII3973	75	285	L3.71 AC10	US7973 136 SEQ ID NO: 5	8382
CII3974	75	285	L3.72 AC10	US7973 136 SEQ ID NO: 6	8383
CII3975	75	285	5F11	US8207303 SEQ ID NO: 4	8384
CIO 976	75	285	17G1	US8207303 SEQ ID NO: 5	8385
CI13977	75	285	2H9	US8207303 SEQ ID NO: 6	8386
CIO 978	79	285	Antibody 020	US20 110038869 SEQ ID NO: 13	8387
CIO 979	79	285	Antibody 022	US201 10038869 SEQ ID NO: 21	8388
CII3980	79	285	Antibody 024	US201 10038869 SEQ ID NO: 29	8389
CII398 1	79	285	Antibody 026	US201 10038869 SEQ ID NO: 37	8390
CII3982	79	285	Antibody 034	US201 10038869 SEQ ID NO: 49	8391
CIO 983	79	285	Antibody 016	US201 10038869 SEQ ID NO: 5	8392
CIO 984	79	285	Antibody 038	US201 10038869 SEQ ID NO: 57	8393
CIO 985	79	285	Antibody 053	US201 10038869 SEQ ID NO: 65	8394
CII3986	79	285	Antibody 063	US20 110038869 SEQ ID NO: 73	8395
CII3987	80	285	Vk L15	US8207303 SEQ ID NO: 27	8396
CII3988	80	285		US8759494 SEQ ID NO: 14	8397
CII3989	80	285		US8759494 SEQ ID NO: 16	8398
CII3990	80	285		US9079958 SEQ ID NO: 100	8399
CII399 1	80	285		US9079958 SEQ ID NO: 101	8400
CII3992	80	285		US9079958 SEQ ID NO: 102	8401
CII3993	80	285		US9079958 SEQ ID NO: 103	8402
CI13994	80	285		US9079958 SEQ ID NO: 104	8403
CII3995	80	285		US9079958 SEQ ID NO: 105	8404
CII3996	80	285		US9079958 SEQ ID NO: 106	8405
CII3997	80	285		US9079958 SEQ ID NO: 107	8406
CII3998	80	285		US9079958 SEQ ID NO: 108	8407
CII3999	80	285		US9079958 SEQ ID NO: 109	8408
CII4000	80	285		US9079958 SEQ ID NO: 110	8409
CII4001	80	285		US9079958 SEQ ID NO: 111	8410
CI14002	80	285		US9079958 SEQ ID NO: 112	8411
CII4003	80	285		US9079958 SEQ ID NO: 99	8412
CII4004	80	285		WO2004043344 SEQ ID NO: 10	8413
CII4005	80	285		WO2004043344 SEQ ID NO: 8	8414
CII4006	80	285		WO20 15067570 SEQ ID NO: 100	8415
CII4007	80	285		WO20 15067570 SEQ ID NO: 101	8416
CII4008	80	285		WO20 15067570 SEQ ID NO: 102	8417
CII4009	80	285		WO20 15067570 SEQ ID NO: 103	8418
CI140 10	80	285		WO20 15067570 SEQ ID NO: 104	8419
CII40 11	80	285		WO20 15067570 SEQ ID NO: 105	8420
CII40 12	80	285		WO20 15067570 SEQ ID NO: 106	8421
CII4013	80	285		WO20 15067570 SEQ ID NO: 107	8422

CII4014	80	285		WO2015067570 SEQ ID NO: 108	8423
CII4015	80	285		WO2015067570 SEQ ID NO: 109	8424
CII4016	80	285		WO2015067570 SEQ ID NO: 110	8425
CII4017	80	285		WO2015067570 SEQ ID NO: 111	8426
CII4018	80	285		WO2015067570 SEQ ID NO: 112	8427
CII4019	80	285		WO2015067570 SEQ ID NO: 99	8428
CII4020	81	285	A27	US8207303 SEQ ID NO: 28	8429
CII4021	82	285	L6	US8207303 SEQ ID NO: 29	8430
CII4022	83	285		US20150266967 SEQ ID NO: 4	8431
CII4023	83	285	Lilotomab (satetraxetan), HH1	US8628749 SEQ ID NO: 4	8432
CII4024	83	285		WO2014198330 SEQ ID NO: 4	8433
CII4025	84	285	anti-CD37 antibody	WO2015116729 SEQ ID NO: 29	8434
CII4026	84	285	huCD37-3	WO2015116729 SEQ ID NO: 43	8435
CII4027	84	285	TRU-016	WO2015116729 SEQ ID NO: 7	8436
CII4028	83	285	Antibody B	US20140010808 SEQ ID NO: 12	8437
CII4029	83	285	Antibody C	US20140010808 SEQ ID NO: 14	8438
CII4030	83	285	Antibody D	US20140010808 SEQ ID NO: 16	8439
CII4031	83	285	Antibody H, K	US20140010808 SEQ ID NO: 18	8440
CII4032	83	285	Antibody I, L	US20140010808 SEQ ID NO: 20	8441
CII4033	83	285	Antibody J, M	US20140010808 SEQ ID NO: 22	8442
CII4034	83	285		US20140010808 SEQ ID NO: 26	8443
CII4035	83	285	Antibody A4	US20140010808 SEQ ID NO: 30	8444
CII4036	83	285	Antibody B4	US20140010808 SEQ ID NO: 34	8445
CII4037	83	285		US20140010808 SEQ ID NO: 38	8446
CII4038	83	285	Antibody A	US20140010808 SEQ ID NO: 4	8447
CII4039	83	285		US20140010808 SEQ ID NO: 42	8448
CII4040	85	285	003 mAb	US20150246123 SEQ ID NO: 15	8449
CII4041	85	285	024 mAb	US20150246123 SEQ ID NO: 17	8450
CII4042	85	285	MOR202	US20150246123 SEQ ID NO: 19	8451
CII4043	85	285	005 mAb	US20150246123 SEQ ID NO: 5	8452
CII4044	85	285		US7829673 SEQ ID NO: 2	8453
CII4045	85	285		US7829673 SEQ ID NO: 22	8454
CII4046	85	285	38SB13	US8153765 SEQ ID NO: 38	8455
CII4047	85	285	38SB18	US8153765 SEQ ID NO: 40	8456
CII4048	85	285	38SB19	US8153765 SEQ ID NO: 42	8457
CII4049	85	285	38SB30	US8153765 SEQ ID NO: 44	8458
CII4050	85	285	38SB31	US8153765 SEQ ID NO: 46	8459
CII4051	85	285	38SB39	US8153765 SEQ ID NO: 48	8460
CII4052	85	285	humanized 38SB19	US8153765 SEQ ID NO: 62	8461
CII4053	85	285	humanized 38SB19	US8153765 SEQ ID NO: 64	8462
CII4054	85	285	humanized 38SB31	US8153765 SEQ ID NO: 68	8463
CII4055	85	285	humanized 38SB31	US8153765 SEQ ID NO: 70	8464
CII4056	85	285	X355/02	WO2013059885 SEQ ID NO: 390	8465
CII4057	85	285	X355/07	WO2013059885 SEQ ID NO: 392	8466
CII4058	85	285	X910/12	WO2013059885 SEQ ID NO: 394	8467
CII4059	85	285	X913/15	WO2013059885 SEQ ID NO: 396	8468
CII4060	85	285	R5D1	WO2013059885 SEQ ID NO: 398	8469
CII4061	85	285	R5E8	WO2013059885 SEQ ID NO: 400	8470
CII4062	85	285	R10A2	WO2013059885 SEQ ID NO: 402	8471
CII4063	85	285	X355/01	WO2013059885 SEQ ID NO: 420	8472
CII4064	85	285	X355/04	WO2013059885 SEQ ID NO: 422	8473
CII4065	87	285	Daratumumab, HuMax-CD39	US7829673 SEQ ID NO: 12	8474
CII4066	92	285	SGN-14	US20090304687 SEQ ID NO: 12	8475
CII4067	92	285	hu sgn-0, hu sgn-1, hu sgn-2, hu sgn-4, hu sgn-14, hu sgn-15, hu sgn-16, hu sgn-22, hu sgn-23,	US20090304687 SEQ ID NO: 14	8476
CII4068	92	285	hu sgn-17	US20090304687 SEQ ID NO: 15	8477

CII4069	92	285	hu sgn-18, hu sgn-19, hu sgn-26, hu sgn-27,	US20090304687 SEQ ID NO: 16	8478
CII4070	92	285	Teneliximab, chi220	US6051228 SEQ ID NO: 1	8479
CII4071	92	285	HCD122	WO2012075111 SEQ ID NO: 16	8480
CII4072	93	285	BMS2h-157	US8895010 SEQ ID NO: 1000	8481
CII4073	93	285	BMS2h-158	US8895010 SEQ ID NO: 1001	8482
CII4074	93	285	BMS2h-159	US8895010 SEQ ID NO: 1002	8483
CII4075	93	285	BMS2h-160	US8895010 SEQ ID NO: 1003	8484
CII4076	93	285	BMS2h-161	US8895010 SEQ ID NO: 1004	8485
CII4077	93	285	BMS2h-162	US8895010 SEQ ID NO: 1005	8486
CII4078	93	285	BMS2h-163	US8895010 SEQ ID NO: 1006	8487
CII4079	93	285	BMS2h-164	US8895010 SEQ ID NO: 1007	8488
CII4080	93	285	BMS2h-165	US8895010 SEQ ID NO: 1008	8489
CII4081	93	285	BMS2h-166	US8895010 SEQ ID NO: 1009	8490
CII4082	93	285	BMS2h-167	US8895010 SEQ ID NO: 1010	8491
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CII4582	222	285	H4H455B	**WO2014159595** SEQ ID NO: 654	8991
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CII4590	222	285	H4H439B	**WO2014159595** SEQ ID NO: 68	8999
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CII4592	222	285	H4H395B	**WO20 l4** !59595 SEQ ID NO: 687	9001
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CII4597	222	285	H l H1006P	WO20 l4 159595 SEQ ID NO: 707	9006
CII4598	222	285	H l **H1068B**	**WO2014159595** SEQ ID NO: 711	9007
CII4599	222	285	**H4H439P**	**WO2014 159595** SEQ **ID** NO: 72	9008
CII4600	222	285	H l H1025B	**WO20** l4 l59595 SEQ ID NO: 724	9009
CII460 1	222	285	**H 1 M80 1** N	**WO20** l4 **159595** SEQ ID NO: 735	9010
CII4602	222	285	H l M826N	**WO20** l4 **159595** SEQ ID NO: 751	901 l
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CII4616	222	285	**H4H47 1B**	WO2014 159595 SEQ ID NO: 92	9025
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CII4618	225	285	**ATROSAB**	**WO20 12035 141** SEQ ID NO: 17	9027
CII4619	225	285	huTNFRI-antibody	**WO2012035 141** SEQ ID NO: 8	9028
CI14620	226	285	**IZI-06. 1**	**US201001509 16** SEQ ID NO: 8	9029
CII462 1	233	285	**Robatutnumab, 19D 12,** SCH 717454,	**US85867 14** SEQ ID NO: 95	9030
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CII4623	237	285	Feldl	**US20 100267934** SEQ ID NO: 18	9032
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CII4626	239	285	**E26. i l**	**US20 140220020** SEQ ID NO: 201	9035
CII4627	239	285	**E26. 12**	**US20 140220020** SEQ ID NO: 203	9036
CI14628	239	285	E26. 13	**US20 140220020** SEQ ID NO: 205	9037
CII4629	239	285	**E26. 13**	US20 l40220020 SEQ ID NO: 207	9038
CII4630	239	285	E26.35	**US20 140220020** SEQ ID NO: 209	9039
CII463 1	239	285	E26.37	**US20 140220020** SEQ ID NO: 211	9040

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CII4639	245	285	A11	**US20 100 1963** 15 SEQ ID NO: 50	9048
CII4640	245	285	4B4	**US201001963 15** SEQ ID NO: 52	9049
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CII4642	246	285	**Lebrikizumab, TNX-658**	**WO20 13066866** SEQ **ID** NO: 9	905
CII4643	250	285	**Secukinumab**	**WO2006013 107** SEQ ID NO: 10	9052
CII4644	254	285	107C6	**WO2015032932** SEQ ID NO: 10	9053
CI14645	254	285	**108F8**	**WO20** 1503 2932 SEQ ID NO: 12	9054
CII4646	254	285	**109A6**	**WO20 15032932** SEQ **ID** NO: 14	9055
CII4647	254	285	3 **1B4**	WO2015032932 SEQ ID NO: 19	9056
CII4648	254	285	**1.3 1E+10**	**WO2015032932** SEQ ID NO: 22	9057
CII4649	254	285	132H4	WO2015032932 SEQ ID NO: 24	9058
CII4650	254	285	**133** A6	**WO20 15032932** SEQ ID NO: 26	9059
CII465 1	255	285	H3D12VK.1	**US20 10 165063** SEQ ID NO: **4 1**	9060
CII4652	255	285	**H3D12VK.1A**	**US20 10 165063** SEQ ID NO: 42	9061
CI14653	255	285	**H3D12VK.1B**	**US20 110165063** SEQ ID NO: 43	9062
CII4654	255	285	**H3D12VK. C,** h3D 12.8, h3D 12. **16**	US20 110 165063 SEQ ID NO: 44	9063
CII4655	255	285	**h3D12VK.2**	**US201 10165063** SEQ ID NO: 45	9064
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CII4658	255	285	**VL h3D 12-362-10/372-15**	**US201 10165063** SEQ **ID NO:** 49	9067
CII4659	255	285	**VL h3D12.r37**	**US201 10165063** SEQ ID NO: 51	9068
CII4660	255	285	VL h3D 12 -16	**US201 10165063** SEQ ID NO: 53	9069
CI14661	255	285	**VL h3D12 .rlO**	**US20 110165063** SEQ ID NO: 55	9070
CII4662	256	285	B 12. 1, **IB 12.5**	US20 10 0 142761 SEQ ID NO: 36	907 1
CII4663	256	285	**1B12.2, 1B 12.6**	**US201 10142761** SEQ ID NO: 37	9072
CII4664	256	285	1B12.3, IB 12.7	**US201 10142761** SEQ ID NO: 39	9073
CII4665	256	285	**IB 12.4, IB** 12.8	**US201 1014276 1** SEQ **ID** NO: 40	9074
CII4666	266	285	**Dupilumab**	**US8075887SEQ ID NO: 164**	9075
CII4667	269	285	**Siltuximab, Sylvant,** CLB8	**US7291721** SEQ ID NO: 8	9076
CII4668	269	285	**Siltuximab**	**US7955597** SEQ ID NO: 8	9077
CII4669	270	285	Sarilumab	**US201301493 10** SEQ ID NO: 3	9078
CII4670	249	285	Antibody **11**	**WO2007149032** SEQ **ID** NO: **107**	9079
CII4671	249	285	Antibody 12	**WO2007149032** SEQ **ID** NO: **117**	9080
CII4672	249	285	Antibody **13**	**WO2007149032** SEQ ID **NO**: 127	9081
CH4673	249	285	Antibody 14	**WO2007149032** SEQ ID NO: 137	9082
CII4674	249	285	**Antibody** 15	**WO2007 149032** SEQ **ID** NO: 147	9083
CII4675	249	285	Antibody 16	**WO2007 149032** SEQ **ID** NO: **157**	9084
CII4676	249	285	Antibody 02	**WO2007 149032** SEQ ID NO: 17	9085
CII4677	249	285	Antibody 03	**WO2007** 149032 SEQ ID NO: 27	9086
CI14678	249	285	Antibody 04	**WO2007 149032** SEQ **ID** NO: 37	9087
CII4679	249	285	Antibody 05	**WO2007 149032** SEQ **ID** NO: 47	9088
CII4680	249	285	Antibody 06	**WO2007 149032** SEQ ID NO: 57	9089
CII4681	249	285	Antibody 07	**WO2007 149032** SEQ ID NO: 67	9090
CII4682	249	285	Antibody 0 1	**WO2007 149032** SEQ **ID** NO: 7	9091
CII4683	249	285	Antibody 08	**WO2007** 49032 SEQ **ID** NO: 77	9092
CII4684	249	285	Antibody 09	**WO2007 149032** SEQ ID NO: 87	9093
CII4685	249	285	Antibody 10	**WO2007** 149032 SEQ ID NO: 97	9094
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CII4688	280	285	**2G1**	**US8258266** SEQ ID NO: 86	9097
CII4689	280	285	**3C4**	**US8258266** SEQ ID NO: 87	9098

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CII4691	280	285	6A8	US8258266 SEQ ID NO: 89	9100
CII4692	280	285	6B10	US8258266 SEQ ID NO: 90	9101
CII4693	280	285	7C10	US8258266 SEQ ID NO: 91	9102
CII4694	280	285	8F6	US8258266 SEQ ID NO: 92	9103
CII4695	280	285	10A12	US8258266 SEQ ID NO: 93	9104
CII4696	280	285	13C4	US8258266 SEQ ID NO: 94	9105
CII4697	285	285	Etaracizumab, Abegrin, Vitaxin, MEDI-522, hLM60	US7659374 SEQ ID NO: 4	9106
CII4698	287	285	Ramucirumab	US7498414 SEQ ID NO: 53; Immunogenetics Information System; CHAIN ID NO: 9098_L	9107
CII4699	288	285		US20120328615 SEQ ID NO: 1	9108
CII4700	290	285	Monalizumab, IPH-2201.IPH2201, NN-8765, NNC-0141-0000-0100, NNC-141-01000, anti-NKG2A, HumZ271	US8206709 SEQ ID NO: 4	9109
CII4701	291	285	BAP050	US20150259420 SEQ ID NO: 16	9110
CII4702	305	285	Li62	US8425910 SEQ ID NO: 9	9111
CII4703	309	285		WO2013158748 SEQ ID NO: 11	3335
CII4704	309	285		WO2013158748 SEQ ID NO: 27	3336
CII4705	310	285	c208F2	WO2015162293 SEQ ID NO: 18	9112
CII4706	310	285	c212A11	WO2015162293 SEQ ID NO: 19	9113
CII4707	310	285	c214F8	WO2015162293 SEQ ID NO: 20	9114
CII4708	310	285	c219D6	WO2015162293 SEQ ID NO: 21	9115
CII4709	310	285	c213B10	WO2015162293 SEQ ID NO: 22	9116
CII4710	310	285	hz208F2 (var.1)	WO2015162293 SEQ ID NO: 35	9117
CII4711	310	285	hz208F2 (var.3)	WO2015162293 SEQ ID NO: 36	9118
CII4712	310	285	hz208F2 (var.1)	WO2015162293 SEQ ID NO: 39	9119
CII4713	310	285	hz208F2 (var.3)	WO2015162293 SEQ ID NO: 40	9120
CII4714	311	285	Clone 1D4	WO2010020669 SEQ ID NO: 34	9121
CII4715	313	285	Clone 2C9	WO2010020669 SEQ ID NO: 38	9122
CII4716	315	285	Clone 4B8	WO2010020669 SEQ ID NO: 42	9123
CII4717	320	285	Emibetuzumab, LA480, LY-2875358, LY2875358	US8217148 SEQ ID NO: 5	9124
CII4718	324	285	Imalumab, BAX069, BAX69	US8668909 SEQ ID NO: 2	9125
CII4719	328	285	Obinutuzumab, Afutuzumab	WO2005044859 Immunogenetics Information System; CHAIN ID NO: 9043_L (http: www:imgt:orgmAb-DBquery Query: obinutuzumab) See also SEQ ID NO: 76 ofWO2005044859	9126
CII4720	310	285	AB081	WO2012088302 SEQ ID NO: 119	9127
CII4721	310	285	AB082	WO2012088302 SEQ ID NO: 121	9128
CII4722	310	285	AB083	WO2012088302 SEQ ID NO: 123	9129
CII4723	310	285	AB084	WO2012088302 SEQ ID NO: 125	9130
CII4724	310	285	AB085	WO2012088302 SEQ ID NO: 127	9131
CII4725	310	285	AB086	WO2012088302 SEQ ID NO: 129	9132
CII4726	310	285	AB088	WO2012088302 SEQ ID NO: 131	9133
CII4727	310	285	AB089	WO2012088302 SEQ ID NO: 133	9134
CII4728	310	285	AB090	WO2012088302 SEQ ID NO: 135	9135
CII4729	310	285	AB092	WO2012088302 SEQ ID NO: 137	9136
CII4730	310	285	AB093	WO2012088302 SEQ ID NO: 139	9137
CII4731	340	285	MoAb71-110	US8435512 SEQ ID NO: 8	9138
CII4732	349	285		EP2805972 SEQ ID NO: 44	3337
CII4733	350	285	H1L6, H5L6, H6L6, H14L6, H15L6, H16L6, H17L6, H18L6, H19L6,	US20140147435 SEQ ID NO: 19	3338

			H20L6, H21L6, H22L6, H23L6, H24L6, H25L6, H700L6		
CII4734	350	285	H1L13, H5L13, H6L13, H14L13, H15L13, H16L13, H17L13, H18L13, H19L13, H20L13, H21L13, H22L13, H23L13, H24L13, H25L13, H700L13	US20140147435 SEQ ID NO: 20	3339
CII4735	350	285	H1L14, H5L14, H6L14, H14L14, H15L14, H16L14, H17L14, H18L14, H19L14, H20L14, H21L14, H22L14, H23L14, H24L14, H25L14, H700L14	US20140147435 SEQ ID NO: 21	3340
CII4736	350	285	H1L15, H5L15, H6L15, H14L15, H15L15, H16L15, H17L15, H18L15, H19L15, H20L15, H21L15, H22L15, H23L15, H24L15, H25L15, H700L15	US20140147435 SEQ ID NO: 22	3341
CII4737	350	285	H1L16, H5L16, H6L16, H14L16, H15L16, H16L16, H17L16, H18L16, H19L16, H20L16, H21L16, H22L16, H23L16, H24L16, H25L16, H700L16	US20140147435 SEQ ID NO: 23	3342
CII4738	350	285	H1L17, H5L17, H6L17, H14L17, H15L17, H16L17, H17L17, H18L17, H19L17, H20L17, H21L17, H22L17, H23L17, H24L17, H25L17, H700L17	US20140147435 SEQ ID NO: 24	3343
CII4739	350	285	H1L18, H5L18, H6L18, H14L18, H15L18, H16L18, H17L18, H18L18, H19L18, H20L18, H21L18, H22L18, H23L18, H24L18, H25L18, H700L18	US20140147435 SEQ ID NO: 25	3344
CII4740	350	285	H5L11, H6L11, H14L11, H15L11, H16L11, H17L11, H18L11, H19L11, H20L11, H21L11, H22L11, H23L11, H24L11, H25L11, H700L11	US20140147435 SEQ ID NO: 78	3345
CII4741	350	285	15C3	US7988964 SEQ ID NO: 42	9139
CII4742	361	285	Nivolumab, ONO-4538, BMS-936558, MDX1106, Opdivo	US8008449 SEQ ID NO: 11	9140
CII4743	362	285	Tovetumab, MEDI-575	US7754859 SEQ ID NO: 50	9141
CII4744	363	285	3299N	US20140193402 SEQ ID NO: 10	9142
CII4745	363	285	3368N	US20140193402 SEQ ID NO: 106	9143
CII4746	363	285	3373N	US20140193402 SEQ ID NO: 122	9144
CII4747	363	285	3374N	US20140193402 SEQ ID NO: 138	9145
CII4748	363	285	3094P	US20140193402 SEQ ID NO: 154	9146
CII4749	363	285	3095S	US20140193402 SEQ ID NO: 170	9147
CII4750	363	285	3096S	US20140193402 SEQ ID NO: 186	9148
CII4751	363	285	3097S	US20140193402 SEQ ID NO: 202	9149
CII4752	363	285	3098S	US20140193402 SEQ ID NO: 218	9150
CII4753	363	285	3099S	US20140193402 SEQ ID NO: 234	9151
CII4754	363	285	3102S	US20140193402 SEQ ID NO: 250	9152
CII4755	363	285	3305N	US20140193402 SEQ ID NO: 26	9153
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CII4757	363	285	3104S	US20140193402 SEQ ID NO: 282	9155
CII4758	363	285	3105S	US20140193402 SEQ ID NO: 298	9156
CII4759	363	285	3106S	US20140193402 SEQ ID NO: 314	9157
CII4760	363	285	3107S	US20140193402 SEQ ID NO: 330	9158
CII4761	363	285	3310N	US20140193402 SEQ ID NO: 42	9159
CII4762	363	285	3361N	US20140193402 SEQ ID NO: 58	9160
CII4763	363	285	3363N	US20140193402 SEQ ID NO: 74	9161
CII4764	363	285	3365N	US20140193402 SEQ ID NO: 90	9162
CII4765	364	285	Cluster # 600	US20110177074 SEQ ID NO: 10	9163
CII4766	364	285	Cluster # 1323	US20110177074 SEQ ID NO: 102	9164
CII4767	364	285	Cluster # 1330	US20110177074 SEQ ID NO: 106	9165
CII4768	364	285	Cluster # 1334	US20110177074 SEQ ID NO: 110	9166

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CII4770	364	285	Cluster # 1346	US20 110 177074 SEQ ID NO: 118	9168
CII477 1	364	285	Cluster # 1359	US20 110 177074 SEQ ID NO: 122	9169
CII4772	364	285	Cluster * 1365	US20 110 177074 SEQ ID NO: 126	9170
CII4773	364	285	Cluster # 1402	US20 110177074 SEQ ID NO: 130	9 171
CII4774	364	285	Cluster # 15 15	US20 110 177074 SEQ ID NO: 134	9172
CII4775	364	285	Cluster * 153 1	US20 110 177074 SEQ ID NO: 138	9173
CII4776	364	285	Cluster # 607	US20 110177074 SEQ ID NO: 14	9 174
CH4777	364	285	Cluster * 1535	US20 110 177074 SEQ ID NO: 142	9175
CII4778	364	285	Cluster * 154 1	US20 110 177074 SEQ ID NO: 146	9176
CII4779	364	285	Cluster * 1550	US20 110 177074 SEQ ID NO: 150	9177
CII4780	364	285	Cluster * 1564	US20 110 177074 SEQ ID NO: 154	9178
CII4781	364	285	Cluster * 1601	US20 110 177074 SEQ ID NO: 158	9179
CII4782	364	285	Cluster # 1629	US20 110 177074 SEQ ID NO: 162	9180
CII4783	364	285	Cluster # 635	US20 110 177074 SEQ ID NO: 166	918 1
CII4784	364	285	Cluster # 636	US20 110177074 SEQ ID NO: 170	9 182
CII4785	364	285	Cluster # 638	US20 110 177074 SEQ ID NO: 174	9183
CII4786	364	285	Cluster # 656	US20 110 177074 SEQ ID NO: 178	9184
CII4787	364	285	Cluster # 613	US20 110 177074 SEQ ID NO: 18	9185
CII4788	364	285	Cluster # 665	US20 110 177074 SEQ ID NO: 182	9186
CII4789	364	285	Cluster # 668	US20 110 177074 SEQ ID NO: 186	9187
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CII4799	364	285	Cluster # 779	US20 110 177074 SEQ ID NO: 222	9197
CII4800	364	285	Cluster # 799	US20 110177074 SEQ ID NO: 226	9 198
CII4801	364	285	Cluster # 830	US20 110 177074 SEQ ID NO: 230	9199
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CII4803	364	285	Cluster # 847	US20 110 177074 SEQ ID NO: 238	9201
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CII4819	364	285	Cluster # 1064	US20 110 177074 SEQ ID NO: 298	9217
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CII482 1	364	285	Cluster # 1080	US20 110 177074 SEQ ID NO: 302	9219
CII4822	364	285	Cluster # 1092	US20 110 177074 SEQ ID NO: 306	9220
CI14823	364	285	Cluster # 1094	US20 110177074 SEQ ID NO: 310	9221
CII4824	364	285	Cluster # 1096	US20 110 177074 SEQ ID NO: 314	9222
CII4825	364	285	Cluster * 1107	US20 110177074 SEQ ID NO: 318	9223
CH4826	364	285	Cluster * 1111	US20 110 177074 SEQ ID NO: 322	9224

CII4827	364	285	Cluster # 1123	US20110177074 SEQ ID NO: 326	9225
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CII4850	364	285	Cluster # 1428	US20110177074 SEQ ID NO: 410	9248
CII4851	364	285	Cluster # 1437	US20110177074 SEQ ID NO: 414	9249
CII4852	364	285	Cluster # 1449	US20110177074 SEQ ID NO: 418	9250
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CII4854	364	285	Cluster # 1458	US20110177074 SEQ ID NO: 422	9252
CII4855	364	285	Cluster # 1476	US20110177074 SEQ ID NO: 426	9253
CII4856	364	285	Cluster # 1479	US20110177074 SEQ ID NO: 430	9254
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CII4858	364	285	Cluster # 1223	US20110177074 SEQ ID NO: 50	9256
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CII4869	364	285	Cluster # 1312	US20110177074 SEQ ID NO: 86	9266
CII4870	364	285	Cluster # 1314	US20110177074 SEQ ID NO: 90	9267
CII4871	364	285	Cluster # 1317	US20110177074 SEQ ID NO: 94	9268
CII4872	364	285	Cluster # 1322	US20110177074 SEQ ID NO: 98	9269
CII4873	365	285	14A4, BMS 936559, MDX-1105	US8383796 SEQ ID NO: 12	9270
CII4874	378	285	hRFB4	US20150239974 SEQ ID NO: 8	9271
CII4875	381	285		WO2015057939 SEQ ID NO: 9	4431
CII4876	390	285	KWAR23	WO2015138600 SEQ ID NO: 5	9272
CII4877	391	285	Elotuzumab; BMS-901608, HuLuc63, PDL-063, PDL063	US7709610	9273
CII4878	400	285	Tenatumomab, ST2146		9274
CII4879	408	285	ABTIM3-hum23	US20150218274 SEQ ID NO: 104	9275
CII4880	408	285	ABTIM3	US20150218274 SEQ ID NO: 2	9276
CII4881	408	285	ABTIM3-hum01, ABTIM3-hum02, ABTIM3-hum03, ABTIM3-hum07,	US20150218274 SEQ ID NO: 20	9277
CII4882	408	285	ABTIM3-hum04, ABTIM3-hum05, ABTIM3 -humO6, ABTIM3 -hiimOS,	US20150218274 SEQ ID NO: 40	9278

CII4883	408	285	**ABTIM3-hum09, ABTiM3-huml0, ABTIM3-huml5,** ABTIM3-huml6, **ABTIM3-huml7,** ABTIM3-huml8,	**US20150218274** SEQ **ID** NO: 56	9279
CII4884	408	285	**ABTIM3-huml l, ABTTM3-huml2, ABTIM3 -hum**l3, AB'H M **3-hum**l4, ABT i M3-1uml9. AB'H M **3-hum20.**	**US201502 18274** SEQ ID NO: 64	9280
CII4885	408	285	AB'TIM3-1um21	**US20** l502l8274 SEQ ID NO: 88	928l
CII4886	408	285	ABTIM3-hum22	**US20 1502 18274** SEQ ID NO: 96	9282
CII4887	409	285		**WO2006060513** SEQ ID NO: 16	9283
CII4888	409	285		**WO2006060513** SEQ **ID** NO: 33	9284
CII4889	409	285		**WO20060605** l3 SEQ ID NO: 35	9285
CII4890	409	285		**WO2006060513** SEQ ID NO: 37	9286
CII4891	409	285		**WO2006060513** SEQ ID NO: 39	9287
CI14892	**412**	285		**US20030 l5706**l SEQ ID NO: 4	9288
CII4893	**4**l2	285	**Infliximab**	**WO201 308791** l SEQ ID NO: **3**	9289
CII4894	413	285	**MAK195**	**US20 110250130** SEQ ID NO: 23	9290
CII4895	413	285	**hMAK195Vk. l,** AB240, AB244, AB248, AB252, **AB256,** AB260	**US201 10250130** SEQ ID NO: 26	9291
CII4896	413	285	**hMAK195Vk.2z**	US20l10250130 SEQ ID NO: 27	9292
CI14897	413	285	**hMAK 195Vk. la,** AB244, AB245, AB246, AB247, AB241, AB245, AB249, AB253, AB257, **AB261,**	**US201 10250130** SEQ **ID** NO: 34	9293
CII4898	413	285	**hMAK195Vk.2,** AB242, AB246, AB250, **AB254,** AB258, AB262	**US201 10250130** SEQ ID NO: 35	9294
CII4899	413	285	**hMAK195Vk.2a,** AB243, AB247, AB25l, **AB255, AB259,** AB263	**US201 10250130** SEQ ID NO: 36	9295
CII4900	413	285	**EP43min**	**US20 140 193400** SEQ ID NO: 52	9296
CII4901	413	285	**EP43max**	US20 140 193400 SEQ ID NO: 54	9297
CI14902	413	285	**EP43minmaxVL:T22K VL**	**US20 140 193400** SEQ ID NO: 56	9298
CII4903	4 S3	285	EP43**minmaxVL:** V58F VL	US20l40l93400 SEQ ID NO: 57	9299
CII4904	413	285	**EP43minmaxVL:Q79E** VL	**US20 140 193400** SEQ ID NO: 58	9300
CII4905	413	285	EP43miiiiiiaxVL:D81A VL	**US20 140 193400** SEQ ID NO: 59	9301
CII4906	413	285	**EPlmin**	**US20 140 193400** SEQ ID NO: 61	9302
CII4907	413	285	EPlmax	**US20140193400** SEQ ID **NO**: 63	9303
CII4908	413	285	**EP6min**	**US20 140 193400** SEQ ID NO: 65	9304
CII4909	413	285	**EP6max**	US20 140 193400 SEQ ID NO: 67	9305
CI149 10	413	285	EPl Smin	**US20 140 193400** SEQ ID NO: 69	9306
CII49l l	4 S3	285	**EP**i5max	US20l40l93400 SEQ ID NO: **7 1**	9307
CII49 12	413	285	**EP19maxmod**	**US20 140 193400** SEQ ID NO: 74	9308
CII4913	413	285	**EP19minmod**	**US20 140 193400** SEQ ID NO: 76	9309
CII4914	413	285	EP34min	**US20 140 193400** SEQ ID NO: 78	93 10
CII4915	413	285	**EP34max**	**US20140193400** SEQ ID **NO**: 80	93 11
CII4916	413	285	**EP35min**	**US20 140 193400** SEQ ID NO: 82	93 12
CII4917	413	285	**EP35max**	US20 140 193400 SEQ ID NO: 84	93 13
CI149 18	413	285	EP42min	**US20** 140 **193400** SEQ ID NO: 86	93l4
CII49 19	4 S3	285	EP42**max**	US20l40l93400 SEQ ID NO: 88	93 15
CII4920	413	285	Ab8	**US20150337035** SEQ ID NO: **114**	93 16
CII4921	413	285	Ab9	**US20150337035** SEQ ID NO: 130	93 17
CII4922	413	285	**AblO**	US20150337035 SEQ ID NO: 146	93 18
CII4923	413	285	AM !	**US20150337035** SEQ ID **NO**: 162	93 19
CII4924	413	285	**Abl2**	**US20150337035** SEQ ID NO: 178	9320
CII4925	413	285	Ab2	**US20150337035** SEQ ID NO: **18**	9321
CII4926	413	285	Abl3	**US20 15033703 5** SEQ ID NO: 194	9322
CI14927	413	285	Abl	**US20150337035** SEQ ID NO: 2	9323
CII4928	4 S3	285	Ab 14	US20 150337035 SEQ ID NO: 210	9324
CII4929	413	285	Abl5	**US20150337035** SEQ ID NO: 226	9325
CII4930	413	285	Abl6	**US20150337035** SEQ ID NO: 242	9326
CII493 1	413	285	**Abl7**	US20150337035 SEQ ID NO: 258	9327

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CII4934	413	285	Ab20	US20150337035 SEQ ID NO: 306	9330
CII4935	413	285	Ab21	US20150337035 SEQ ID NO: 322	9331
CII4936	413	285	Ab22	US20150337035 SEQ ID NO: 338	9332
CII4937	413	285	Ab3	US20150337035 SEQ ID NO: 34	9333
CII4938	413	285	Ab23	US20150337035 SEQ ID NO: 354	9334
CII4939	413	285	Ab24	US20150337035 SEQ ID NO: 370	9335
CII4940	413	285	Ab25	US20150337035 SEQ ID NO: 386	9336
CII4941	413	285	Ab26	US20150337035 SEQ ID NO: 402	9337
CII4942	413	285	Ab4	US20150337035 SEQ ID NO: 50	9338
CII4943	413	285	Ab5	US20150337035 SEQ ID NO: 66	9339
CII4944	413	285	Ab6	US20150337035 SEQ ID NO: 82	9340
CII4945	413	285	Ab7	US20150337035 SEQ ID NO: 98	9341
CII4946	413	285		WO2009132037 SEQ ID NO: 2	9342
CII4947	414	285	Conatumumab, AMG 655, TRAIL-R2mAb, XG1-048 v w	US8993727 SEQ ID NO: 198	9343
CII4948	416	285	Brentuximab vedotin, Adcetris	US7090843 SEQ ID NO: 10	9344
CII4949	413	285		WO2011127141 SEQ ID NO: 26	9345
CII4950	413	285		WO2011127141 SEQ ID NO: 27	9346
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CII4952	413	285		WO2011127141 SEQ ID NO: 35	9348
CII4953	413	285		WO2011127141 SEQ ID NO: 36	9349
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CII4971	435	285		WO2015037005 SEQ ID NO: 274	9361
CII4972	435	285		WO2015037005 SEQ ID NO: 276	9362
CII4973	166	285	Trastuzumab, Adotrastuzumab (conjugate)	US8557243	9363
CII4974	343	285		US20140363438 SEQ ID NO: 22	4535
CII4975	343	285		US20140363438 SEQ ID NO: 23	4536
CII4976	343	285		US20140363438 SEQ ID NO: 24	4537
CII4977	343	285		US20140363438 SEQ ID NO: 25	4538
CII4978	343	285		US20140363438 SEQ ID NO: 26	4539
CII4979	343	285		US20140363438 SEQ ID NO: 27	4540
CII4980	343	285		US20140363438 SEQ ID NO: 53	4541
CII4981	343	285		US20140363438 SEQ ID NO: 55	4542
CII4982	343	285		US20140363438 SEQ ID NO: 57	4543
CII4983	343	285		US20140363438 SEQ ID NO: 59	4544
CII4984	343	285		US20140363438 SEQ ID NO: 61	4545
CII4985	343	285		US20140363438 SEQ ID NO: 65	4546
CII4986	343	285		US20140363438 SEQ ID NO: 67	4547
CII4987	343	285		US20140363438 SEQ ID NO: 69	4548

CII4988	343	285		US20140363438 SEQ ID NO: 71	4549
CII4989	254	368	111A6	WO2015032932 SEQ ID NO: 16	9364
CII4990	254	369	111A6	WO2015032932 SEQ ID NO: 17	9365
CII4991	256	285	Canakinumab	US7446175US8105587	9366
CII4992	328	373	Ibritumomab	US5736137; US5776456; US6399061; US7744877; US8557247	9367
CII4993	238	374	Omalizumab	US5994511; WO1999001556	9368
CII4994	328	375	Ibritumomab	US5736137; US5776456; US6399061; US7744877; US8557249	9369
CII4995	404	376	Metelimumab, CAT-192, SL15A IgG4	US6492497 SEQ ID NO: 6	9370
CII4996	350	378	2A10 construct	WO2007003421 SEQ ID NO: 78	3375
CII4997	350	379	2A10 construct	WO2007003421 SEQ ID NO: 20	3376
CII4998	350	380	2A10 construct	WO2007003421 SEQ ID NO: 21	3377
CII4999	350	381	2A10 construct	WO2007003421 SEQ ID NO: 22	3378
CII5000	350	382	2A10 construct	WO2007003421 SEQ ID NO: 23	3379
CII5001	350	383	2A10 construct	WO2007003421 SEQ ID NO: 24	3380
CII5002	350	384	2A10 construct	WO2007003421 SEQ ID NO: 25	3381
CII5003	350	385	2A10 construct	WO2007003421 SEQ ID NO: 19	3382
CII5004	221	387	Apolizumab, Remitogen, Hu1D10	US7217797 SEQ ID NO: 8	9371
CII5005	60	285	Moxetumomab Pasudotox	US7982011 SEQ ID NO: 2	9372
CII5006	60	285	Moxetumomab Pasudotox	US7982011 SEQ ID NO: 20	9373
CII5007	140	285	Necitumumab	US7598350 SEQ ID NO: 16	9374
CII5008	320	285	Onartuzumab	US13538901 SEQ ID NO: 20	9375
CII5009	305	388	Li81	US8425910 SEQ ID NO: 221	9376
CII5010	305	388	Li81	US8425910 SEQ ID NO: 222	9377
CII5011	305	388	Li81	US8425910 SEQ ID NO: 223	9378
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CII5023	305	388	Li81	US8425910 SEQ ID NO: 240	9390
CII5024	305	388	Li81	US8425910 SEQ ID NO: 241	9391
CII5025	328	405	Ofatumumab	US8529902 SEQ ID NO: 4	9392
CII5026	91	393	Cedelizumab, ORTHOCLONE OKT4 A	WO1991009966 FIG 2	9393
CII5027	358	392	Orticumab, Bi-204, MLDL-1278A, R7418, RG-7418	US8318161 SEQ ID NO: 4	9394
CII5028	48	394	Efalizumab, Raptiva		9395
CII5029	405	395	Fresolimumab, GC-1008	US7723486 SEQ ID NO: 7	9396
CII5030	418	397	Denosumab, Prolia	US7364736; US8058418; US8409578	9397
CII5031	284	398	Efalizumab, Raptiva	US7396530 SEQ ID NO: 1	9398
CII5032	44	399	Carlumab, CNTO 888	US8114964 SEQ ID NO: 28	9399
CII5033	269	400	Sirukumab	US7833755 SEQ ID NO: 97	9400
CII5034	53	403		US20140271635 SEQ ID NO: 58	9401
CII5035	239	404	E26 #1	US20140220020 SEQ ID NO: 149	9402
CII5036	239	404	E26 #37	US20140220020 SEQ ID NO: 150	9403
CII5037	239	404	J348S2-10	US20140220020 SEQ ID NO: 151	9404

CII5038	239	404	**J348S2-84**	**US20140220020** SEQ ID NO: 152	9405
CII5039	239	404	J348S2-2	**US20 140220020** SEQ **ID NO: 153**	9406
CII5040	239	404	J348S2-73	**US20 140220020** SEQ ID NO: **154**	9407
CII5041	239	404	**J348S2-13**	**US20 140220020** SEQ ID NO: 155	9408
CI15042	239	404	**J348S2-18**	**US20140220020** SEQ ID NO: **156**	9409
CII5043	239	404	**J348S2-24**	US20 140220020 SEQ ID NO: 157	9410
CII5044	239	404	**J348S2-22**	US20 140220020 SEQ ID NO: 158	**941** 1
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CII5046	239	404	**J348S2-44**	**US20 140220020** SEQ ID NO: 160	9413
CII5047	239	404	**J348S2-37**	**US20 140220020** SEQ ID NO: 16 1	9414
CII5048	239	404	J348S2-74	**US20 140220020** SEQ **ID NO:** 162	94 15
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CII5050	239	404	**J348S2-16**	**US20 140220020** SEQ ID NO: 164	9417
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CII5052	239	404	**J348S2-20**	US20 140220020 SEQ ID NO: 166	9419
CII5053	239	404	J348S2-15	**US20 140220020** SEQ ID NO: 167	9420
CII5054	239	404	**J348S2-48**	**US20 140220020** SEQ ID NO: 168	942 1
CII5055	239	404	**J348S2-32**	**US20 140220020** SEQ ID NO: 169	9422
CII5056	239	404	J348S2-49	**US20 140220020** SEQ **ID NO:** 170	9423
CII5057	239	404	J348S2-78	**US20 140220020** SEQ ID NO: 171	9424
CII5058	239	404	**J348S2-96**	**US20 140220020** SEQ ID NO: 172	9425
CI15059	239	404	**J348S2-1**	**US20140220020** SEQ ID NO: 173	9426
CII5060	239	404	**J348S2-25**	US20 140220020 SEQ ID NO: 174	9427
CII5061	239	404	J348S2-34	**US20 140220020** SEQ ID NO: 175	9428
CII5062	239	404	J348S2-65	**US20 140220020** SEQ ID NO: 176	9429
CII5063	239	404	**J348S2-90**	**US20 140220020** SEQ **ID** NO: 177	9430
CII5064	239	404	J348S2-56	**US20 140220020** SEQ **ID NO**: 178	9431
CII5065	239	404	J348S2-61	**US20 140220020** SEQ ID NO: **179**	9432
CII5066	239	404	**J348S2-80**	**US20 140220020** SEQ ID NO: 180	9433
CI15067	239	404	**J348S2-94**	**US20 140220020** SEQ ID NO: 181	9434
CII5068	239	404	**J348S2-14**	US20 140220020 SEQ ID NO: 182	9435
CII5069	239	404	J348S2-58	**US20 140220020** SEQ ID NO: 183	9436
CII5070	239	404	**J348S2-95**	**US20 140220020** SEQ ID NO: 184	9437
CII507 1	239	404	**J348S2-42**	**US20 140220020** SEQ **ID** NO: 185	9438
CII5072	239	404	J348S2-45	**US20 140220020** SEQ **ID NO**: 186	9439
CII5073	239	404	**J348S2-17**	**US20 140220020** SEQ ID NO: 187	9440
CII5074	239	404	J348S2-53	**US20 140220020** SEQ ID NO: 188	9441
CII5075	239	404	**J348S2-47**	**US20 140220020** SEQ ID NO: 189	9442
CI15076	**412**	408	**Golimumab**	**US7250165** SEQ ID NO: 8; **WO2013087912** Figure 2G, SEQ ID NO: 7	9443
CII5077	166	416	**Trastuzumab, Adotrastuzumab** (conjugate)	**US8557243**	9444
CII5078	166	417	**Trastuzumab,** Adotrastuzumab (conjugate)	US8557243	9445
CII5079	166	418	Trastuzumab, Adotrastuzumab (conjugate)	**US8557243**	9446
C**J5080**	52	421	Toralizumab, E6040, **IDEC-13** 1	**US9028826** SEQ ID **NO:** 13	9447
C[I508[	52	421	**Toralizumab,** E6040, **IDEC-13 1**	US9028826 SEQ ID NO: 14	9448
C[**15082**	52	42 i	**Toralizumab,** E6040, IDEC-131	US9028826 SEQ ID **NO:** 15	9449
C[5083	52	42 1	Toralizumab, E6040, IDEC-13 1	**US9028826** SEQ ID NO: **16**	9450
C[I5084	55	419	Siplizumab, **MEDI-507, LO-CD2a**	US5730979 SEQ ID NO: 88	9451
C[**15085**	91	420	**Keliximab,** IDEC **CE9. 1/SB-210396**	**US61363 10** SEQ ID NO: **2**	9452
C[I5086	271	396	**Tocilizumab,** SA237	US7479543 SEQ ID NO: NO 29	9453
C[15087	56	422	L373	**US20080089885** SEQ ID NO: 10	9454
C[I5088	56	422	**L419**	**US20080089885** SEQ ID NO: 11	9455
C[15089	56	422	H1569	**US20080089885** SEQ **ID** NO: 12	9456
C[15090	56	422	H1570	**US20080089885** SEQ **ID** NO: 13	9457

CII5091	305	422	Li33 Fab'	US8425910 SEQ ID NO: 165	9458
CII5092	305	422	Li33 Fab'	US8425910 SEQ ID NO: 166	9459
CII5093	305	422	Li33 Fab'	US8425910 SEQ ID NO: 167	9460
CII5094	305	422	Li33 Fab'	US8425910 SEQ ID NO: 168	9461
CII5095	305	422	Li33 Fab'	US8425910 SEQ ID NO: 169	9462
CII5096	305	422	Li33 Fab'	US8425910 SEQ ID NO: 170	9463
CII5097	305	422	Li33 Fab'	US8425910 SEQ ID NO: 171	9464
CII5098	305	422	Li33 Fab'	US8425910 SEQ ID NO: 172	9465
CII5099	35	425	BNJ364, BNJ367, BNJ366, BNJ369	US20130224187 SEQ ID NO: 16	9466
CII5100	35	425	BNJ371, BNJ381	US20130224187 SEQ ID NO: 35	9467
CII5101	35	425	BNJ378, BNJ383	US20130224187 SEQ ID NO: 39	9468
CII5102	431	427	Vanucizumab, RG-7221, RG7221, RO5520985	US8945552 SEQ ID NO: 6	9469
CII5103	358	428	Orticumab, Bi-204, MLDL-1278A, R7418, RG-7418		9470
CII5104	238	429	Ligelizumab, CL-2C	US8372396 SEQ ID NO: NO 40	9471
CII5105	43	430	CAT-212	US7323311 SEQ ID NO: 4	9472
CII5106	66	431	Visilizumab, Nuvion, HuM291, SMART anti CD3	US20040253237 SEQ ID NO: 2	9473
CII5107	51	432	Gavilimomab, ABX-CBL, CBL-1	WO1999045031 SEQ ID NO: 19	9474
CII5108	119	433	Lenzilumab, KB-oo3, KB003		9475
CII5109	260	435	Risankizumab, Bi 655066, Bi-655066		9476
CII5110	412	434	Certolizumab pegol	US7012,135; US7186820; US7402662, US7012135, US7186820; US7402662	9477
CII5111	69	436	Foralumab, NI-0401, not sure this is foralumab since target of patent is IL1 rather than CD3	US7438910 SEQ ID NO: 38	9478
CII5112	66	437	Otelixizumab, ChAglyCD, TRX4	US20090258001 FIG 1, SEQ ID NO: 2	9479
CII5113	66	438	Teplizumab, MGA031, HOKT3-gamma-1 (Ala-Ala), Humanized OKT3	US8663634 SEQ ID NO: 11	9480
CII5114	255	439	MABp1, Xilonix	US8034337 SEQ ID NO: 11	9481
CII5115	122	440	Panrevlumab, FG-3020	US7405274 SEQ ID NO: 20	9482
CII5116	405	441	Fresolimumab, GC-1008		9483
CII5117	393	442	Romosozumab	US7592429; US7872106; US8003108; US8017120 SEQ ID NO: 141, 143	9484
CII5118	393	442	Blosozumab	US7744874 SEQ ID NO: 6	9485
CII5119	418	442	Denosumab, Prolia	US7364736; US8058418; US8409578	9486
CII5120	418	443	Denosumab, Prolia	US8992925 SEQ ID NO: 8; US7364736 SEQ ID NO: 4	9487
CII5121	34	444	Eculizumab	US6074642; WO1995029697; US6355245; US6074642; WO1995029697; US6355245	9488
CII5122	262	445	Guselkumab		9489
CII5123	66	446	Muromonab-CD3, Orthoclone OKT3	US8906681 SEQ ID NO: 298	9490
CII5124	99	447	Itolizumab		9491
CII5125	99	447	Itolizumab	US6572857 SEQ ID NO: 4	9492
CII5126	99	447	Itolizumab	WO2009113083 SEQ ID NO: 2	9493
CII5127	92	448	Blesehumab, 4D11, ASKP-1240, ASKP1240	US8716451 SEQ ID NO: 62	9494
CII5128	91	449	Tregalizumab, BT-061, HB-F5, HBF5(H37L, L4M)		9495
CII5129	251	450	Bimekizumab, UCB4941	US8580265 SEQ ID NO: 11; US8580265 SEQ ID NO: 12	9496

CII5130	52	451	Ruplizumab, Antova, BG-9588, Hu5c8	US8784823 SEQ ID NO: 62	9497
CII5131	120	452	Mavrilimumab, CAM-3001	US8962804 SEQ ID NO: 167	9498
CII5132	127	452	Eldelumab, BMS-936557, MDX-1100		9499
CII5133	258	452	Fletikumab, 15D2, NN-8226, NNC-0109-0012	US7601818 SEQ ID NO: 44; US8552157 SEQ ID NO: 17; US8048421 SEQ ID NO: 84	9500
CII5134	269	452	Clazakizumab, ALD-518, BMS-945429	US8178101 SEQ ID NO: 702, 706	9501
CII5135	269	452	Sirukumab	US8945560 SEQ ID NO: 107	9502
CII5136	307	453	Pateclizumab, MLTA3698A, PRO283698, RG7416	US7923011 SEQ ID NO: 107	9503
CII5137	119	454	Namilumab, MT203	US8017748 SEQ ID NO: 34	9504
CII5138	412	455	Adalimumab	US6090382	9505
CII5139	93	456	Dapirolizumab pegol, CDP7657	US8293237 SEQ ID NO: 15	9506
CII5140	93	456	Dapirolizumab pegol, CDP7657	US8293237 SEQ ID NO: 68	9507
CII5141	228	456	Anifrolumab, MEDI-547		9508
CII5142	137	456	Rontalizumab, RhuMAB IFNalpha		9509
CII5143	283	457	Vedolizumab	US20120282249 SEQ ID NO: 4; WO2008115504 SEQ ID NO: 11	9510
CII5144	263	462	Daclizumab	WO8909622; US5693761; US7521054	9511
CII5145	135	463	Begelomab		9512
CII5146	38	467	Abagovomab		9513
CII5147	174	467	Racotumomab		9514
CII5148	431	468	Vanucizumab, RG-7221, RG7221, RO5520985	US8268314 SEQ ID NO: 104	9515
CII5149	198	469	Ecromeximab, KM871,	WO2006112556 SEQ ID NO: 4	9516
CII5150	263	470	Basiliximab	US6383487	9517
CII5151	97	471	Alemtuzumab	Crowe JS: et al: 1992: Clin Exp Immunol: 87 105-10; US Patent No: 6120766	9518
CII5152	256	471	Canakinumab	US7446175US8105587	9519
CII5153	157	472	Edrecolomab, PANOREX®, MAb17-1A	US8034338 Figure 6 SEQ ID NO: 2	9520
CII5154	157	473	Edrecolomab, PANOREX®, MAb17-1A	US8034338 Figure 7 SEQ ID NO: 3	9521
CII5155	328	474	Ibritumomab	US5736137; US5776456; US6399061; US7744877; US8557244	9522
CII5156	328	475	Ibritumomab	US5736137; US5776456; US6399061; US7744877; US8557245	9523
CII5157	436	478	Caplacizumab, ALX-0081, PMP12A2h1-linker AAA-PMP12A2h1	US7807162 SEQ ID NO: 98	9524
CII5158	390	479	KWAR23	WO2015138600 SEQ ID NO: 10	9525
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CII5160	53	480	CAR10	US20150283178 SEQ ID NO: 10	9527
CII5161	53	480	CAR11	US20150283178 SEQ ID NO: 11	9528
CII5162	53	480	CAR12	US20150283178 SEQ ID NO: 12	9529
CII5163	53	480	CAR2	US20150283178 SEQ ID NO: 2	9530
CII5164	53	480	CAR3	US20150283178 SEQ ID NO: 3	9531
CII5165	53	480	CAR1 104875	US20150283178 SEQ ID NO: 31	9532
CII5166	53	480	CAR2 104876	US20150283178 SEQ ID NO: 32	9533
CII5167	53	480	CAR3 104877	US20150283178 SEQ ID NO: 33	9534
CII5168	53	480	CAR4 104878	US20150283178 SEQ ID NO: 34	9535
CII5169	53	480	CAR5 104879	US20150283178 SEQ ID NO: 35	9536
CII5170	53	480	CAR6 104880	US20150283178 SEQ ID NO: 36	9537

CII5 17 1	53	480	**CAR7** 104881	US20 15028? 178 SEQ ID NO: 37	9538
CII5 172	53	480	CAR 8 104882	US20 15028? 178 SEQ ID NO: 38	9539
CII5 173	53	480	CAR 9 105974	**US20 15028** ? 178 SEQ ID NO: 39	9540
CII5174	53	480	CAR4	US20 150283 178 SEQ ID NO: 4	9541
CI15175	53	480	**CAR10** 105975	**US20** 150283 **178** SEQ ID NO: 40	9542
CII5176	53	480	**CAR1 1** 105976	US20 150283 178 SEQ ID NO: 4 1	9543
CII5177	53	480	CAR 12 105977	US20 150283 178 SEQ ID NO: 42	9544
CII5178	53	480	CARS	**US20150283 178** SEQ ID NO: 5	9545
CII5179	53	480	CAR6	**US20150283 178** SEQ ID NO: **6**	9546
CII5 180	53	480	CAR7	US20 15028? 178 SEQ ID NO: 7	9547
CII5 18 1	53	480	CAR **i** 103 101	US20 15028? 178 SEQ ID NO: 73	9548
CII5 182	53	480	CAR2 103 102	**US20 15028** ? 178 SEQ ID NO: 74	9549
CII5183	53	480	CAR3 103 104	US20 150283 178 SEQ ID NO: 75	9550
CI15184	53	480	CAR4 103 106	U820150283 178 SEQ ID NO: 76	955 1
CII5185	53	480	CARS 99789	US20 150283 178 SEQ ID NO: 77	9552
CII5186	53	480	CAR6 99790	**US20150283 178** SEQ ID NO: 78	9553
CII5187	53	480	CAR7 100796	**US20150283 178** SEQ ID NO: 79	9554
CII5 188	53	480	CAR 8	US20 15028? 178 SEQ ID NO: 8	9555
CII5 189	53	480	CAR 8 100798	US20 15028? 178 SEQ ID NO: 80	9556
CII5 190	53	480	CAR 9 99789	**US20 15028** ? 178 SEQ ID NO: 8 1	9557
CII5191	53	480	CARIO 100796	US20 150283 178 SEQ ID NO: 82	9558
CI15192	53	480	CAR 11 103 10 1	U820150283 178 SEQ ID NO: 83	9559
CII5193	53	480	CAR 12 103 104	US20 150283 178 SEQ ID NO: 84	9560
CII5194	53	480	CAR 9	**US20150283 178** SEQ ID NO: 9	9561
CII5195	53	480		WO2015 157252 SEQ ID NO: 1	9562
CII5 196	53	480		**WO20 15 157252** SEQ **ID** NO: **10**	9563
CII5 197	53	480		**WO20** 15 **157252** SEQ **ID** NO: 11	9564
CII5 198	53	480		**WO20 15 157252** SEQ ID NO: 12	9565
CII5199	53	480		**WO2015 157252** SEQ ID NO: 2	9566
CI15200	53	480		**WO2015 157252** SEQ **ID** NO: **3**	9567
CII5201	53	480		**WO20 15** 157252 SEQ **ID NO**: 4	9568
CII5202	53	480		**WO2015 157252** SEQ ID NO: 5	9569
CII5203	53	480		**WO2015 157252** SEQ ID NO: 6	9570
CII5204	53	480		**WO2015 157252** SEQ **ID** NO: 7	9571
CII5205	53	480		**WO20** 15 157252 SEQ **ID** NO: 8	9572
CII5206	53	480		**WO2015 157252** SEQ ID NO: 9	9573
CII5207	56	480		**US20050202023** SEQ ID NO: **12**	9574
CII5208	56	480		**US20050202023** SEQ ID NO: 13	9575
CI15209	56	480		U820050202023 SEQ ID NO: 14	9576
CII52 10	56	480	**2H7**	**US20050202023** SEQ ID NO: 15	9577
CII52 11	56	480	**2H7**	**US20050202023** SEQ ID NO: 16	9578
CII5212	56	480	2H7	**US20050202023** SEQ ID NO: 17	9579
CII52 13	56	480		US8 197810 SEQ ID NO: 11	9580
CII52 14	56	480		**US8 197810** SEQ ID **NO**: 12	9581
CII52 15	56	480		**US8197810** SEQ ID NO: 13	9582
CII5216	56	480		**US8197810** SEQ ID NO: 14	9583
CI152 17	226	480	**IZI-06.** 1 **HSA** Fusion protein	**US201001509 16** SEQ ID NO: 10	9584
CII52 18	226	480	**IZI-06.** 1	US20 100 **1509** 16 SEQ ID NO: 9	9585
CII52 19	4 **13**	480	**EP43minmax:** VL:V58F	**US20 140 193400** SEQ ID NO: 100	9586
CII5220	413	480	**EP43minmax** VL:D81A	**US20 140 193400** SEQ ID NO: 101	9587
CII522 1	413	480	**EP43ininmax VL:Q79E** scF	US20 **140 193400** SEQ **ID** NO: 102	9588
CII5222	413	480	**EPlmin**	**US20140193400** SEQ **ID NO**: **103**	9589
CII5223	413	480	**EPlmax**	**US20 140 193400** SEQ ID NO: 104	9590
CII5224	413	480	**EPlminmax**	US20 140 193400 SEQ ID NO: 105	9591
CI15225	413	480	EP6mm	U820 140 193400 SEQ ID NO: 106	9592
CII5226	4 53	480	**EP6tnax**	US20 140 193400 SEQ ID NO: 107	9593
CII5227	413	480	**EP6minmax**	**US20 140 193400** SEQ ID NO: 108	9594
CII5228	413	480	EP15min	**US20 140 193400** SEQ ID NO: 109	9595

CII5229	413	480	EP15max	US20140193400 SEQ ID NO: 110	9596
CII5230	413	480	EP15max	US20140193400 SEQ ID NO: 111	9597
CII5231	413	480	EP19minmod	US20140193400 SEQ ID NO: 112	9598
CII5232	413	480	EP19maxmod	US20140193400 SEQ ID NO: 113	9599
CII5233	413	480	EP43min	US20140193400 SEQ ID NO: 114	9600
CII5234	413	480	EP34max	US20140193400 SEQ ID NO: 115	9601
CII5235	413	480	EP35min	US20140193400 SEQ ID NO: 116	9602
CII5236	413	480	EP35max	US20140193400 SEQ ID NO: 117	9603
CII5237	413	480	EP35minmax	US20140193400 SEQ ID NO: 118	9604
CII5238	413	480	EP42min	US20140193400 SEQ ID NO: 119	9605
CII5239	413	480	EP42max	US20140193400 SEQ ID NO: 120	9606
CII5240	413	480	EP42minmax	US20140193400 SEQ ID NO: 121	9607
CII5241	413	480	EP43min	US20140193400 SEQ ID NO: 94	9608
CII5242	413	480	EP43max	US20140193400 SEQ ID NO: 95	9609
CII5243	413	480	EP43minmax	US20140193400 SEQ ID NO: 96	9610
CII5244	413	480	EP43maxDHP	US20140193400 SEQ ID NO: 97	9611
CII5245	413	480	EP43minmaxDHP	US20140193400 SEQ ID NO: 98	9612
CII5246	413	480	EP43minmax VL:T22K	US20140193400 SEQ ID NO: 99	9613
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CII5248	310	480	J43	WO2014134165 SEQ ID NO: 13	9615
CII5249	310	480	B6H12.2	WO2014134165 SEQ ID NO: 20	9616
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CII5251	430	480	L3H5	US20140086829 SEQ ID NO: 12	9618
CII5252	430	480	L3H7	US20140086829 SEQ ID NO: 14	9619
CII5253	430	480	Fab L3H6	US20140086829 SEQ ID NO: 17	9620
CII5254	430	480	Fab L3H6	US20140086829 SEQ ID NO: 18	9621
CII5255	430	480	Fab L3H5	US20140086829 SEQ ID NO: 21	9622
CII5256	430	480	Fab L3H5	US20140086829 SEQ ID NO: 22	9623
CII5257	430	480	Fab L3H7	US20140086829 SEQ ID NO: 25	9624
CII5258	157	481	Oportuzumab monatox, PROXINIUM™, VICINIUM™	WO2004096271-	9625
CII5259	390	482	KWAR23	WO2015138600 SEQ ID NO: 9	9626
CII5260	419	483	Belimumab	US7605236 1st scFv of claim 1	9627
CII5261	419	483	Belimumab	US7605236 2nd scFv of claim 1	9628
CII5262	419	483	Belimumab	US7138501	9629
CII5263	11	480	B4	WO2014116880 SEQ ID NO: 17	9630
CII5264	11	480	B4	WO2014116880 SEQ ID NO: 18	9631
CII5265	11	480	C2	WO2014116880 SEQ ID NO: 37	9632
CII5266	11	480	C2	WO2014116880 SEQ ID NO: 38	9633
CII5267	238	484	Talizumab, "C21/AL-90, HU-901, Hu901, TNX-901"	US20020173477 SEQ ID NO: 27	9634
CII5268	53	487		US20140271635 SEQ ID NO: 1	9635
CII5269	53	487		US20140271635 SEQ ID NO: 10	9636
CII5270	53	487		US20140271635 SEQ ID NO: 11	9637
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CII5278	53	487		US20140271635 SEQ ID NO: 7	9645
CII5279	53	487		US20140271635 SEQ ID NO: 8	9646
CII5280	53	487		US20140271635 SEQ ID NO: 9	9647
CII5281	187	488	Radretumab, L19-131 I, L19 SIP		9648
CII5282	420	489	Naptumomab estafenatox	US20060057111 SEQ ID NO: 3	9649
CII5283	53	491	B43	WO1996036360 SEQ ID NO: 20	9650
CII5284	53	491	SJ25C1	WO1996036360 SEQ ID NO: 21	9651

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CII5286	53	491	modified B43	WO 1996036360 SEQ ID NO: 26	9653
CII5287	53	491	modified SJ25C1	WO 1996036360 SEQ ID NO: 27	9654
CII5288	344	493	N024C01	US75 14079 SEQ ID NO: 22	4550
CI15289	344	493	N025B07	ıı S75 14079 SEQ ID NO: 23	4551
CII5290	344	493	N0 15E08	US75 14079 SEQ ID NO: 24	4552
CII5291	344	493	N0 15F10	US75 14079 SEQ ID NO: 25	4553
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CII5293	344	493	N015D08	US75 14079 SEQ ID NO: 27	4555
CII5294	344	493	N024B07	US75 14079 SEQ ID NO: 28	4556
CII5295	344	493	N024E07	US75 14079 SEQ ID NO: 29	4557
CII5296	344	493	N023F05	US75 14079 SEQ ID NO: 30	4558
CII5297	344	493	N024D08	US75 14079 SEQ ID NO: 31	4559
CI15298	344	493	N023B03	US75 14079 SEQ ID NO: 32	4560
CII5299	344	493	N023E01	US75 14079 SEQ ID NO: 33	4561
CII5300	344	493	N024C05	US75 14079 SEQ ID NO: 34	4562
CII5301	344	493	N025E05	US75 14079 SEQ ID NO: 35	4563
CII5302	344	493	N025C01	US75 14079 SEQ ID NO: 36	4564
CII5303	344	493	N024F09	US75 14079 SEQ ID NO: 37	4565
CII5304	344	493	N024B01	US75 14079 SEQ ID NO: 38	4566
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CII6034	150	28	pig IgA F	US20 150266960 SEQ ID NO: 82	10382
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CII6036	116	26		US20090226443 SEQ ID NO: 17; US20 110262436 SEQ ID NO: 12; US20 110287003 SEQ ID NO: 3, US20 130004484 SEQ ID NO: 17; US20 140037625 SEQ ID NO: 9; US20 140227258 SEQ ID NO: 195; US20 150050275 SEQ ID NO: 17 '	10384
CII6037	438	35	scFvCD19-FKBP	US20 150266973 SEQ ID NO: 1	10385
CII6038	438	35	scFvCD19-FKBP	US20 150266973 SEQ ID NO: 4	10386
CI16039	438	35	scFvCD19-FRB	US20 150266973 SEQ ID NO: 7	10387
CII6040	438	35	FRB (T2098L)-TM-4 iBB-CD3z	US20 150266973 SEQ ID NO: 15	10388
CII6041	438	35	FKBP (F36V)-TM-4 1BB-CD3z	US20 150266973 SEQ ID NO: 19	10389
CII6042	438	35	FKBP-TM-4 IBB-CD3z	US20 150266973 SEQ ID NO: 23	10390
CII6043	438	35	SS-2xDmrB-DmrC-TM-41BB-CD3z	US20150266973 SEQ ID NO: 37	10391
CII6044	438	35	SS-scFvCD19-DmrA-uP2A-DmrC-TM-41BB-CD3Z	US20 150266973 SEQ ID NO: 41	10392
CI16045	438	35	SS-scFvCD19-DmrA-fuP2A-FRB-TM-41BB- CD3z	US20150266973 SEQ ID NO: 44	10393
CII6046	438	35	SS-scFvCD19-DmrA-fuP2A-2xDmrB-DmrC-TM-4 lBB-CD3z	US20 150266973 SEQ ID NO: 47	10394
CI16047	438	35	SS-CD 19scFv-Dim-A-CD4TM	US20 150266973 SEQ ID NO: 50	10395
CII6048	438	35	SS-CD 19scFv-DmiA-CD8hingeTM	US20 150266973 SEQ ID NO: 53	10396
CII6049	438	35	SS-CD 19scFv-DmrA- Spacer-CD4TM	US20150266973 SEQ ID NO: 56	10397
CII6050	438	35	SS-CD19scFv-DmrA-CD52 GPI anchor	US20 150266973 SEQ ID NO: 59	10398
CII6051	438	35	CD8ss-DmrC-CD8TM-41BB-CD3z-P2A-IgKss-CD 19scFv-DmrA-CD4TM	US20150266973 SEQ ID NO: 64	10399
CII6052	438	35	41BB-CD3 z-P2 A-IgKss-CD 19scFv-DmrA-CD4TM codon optimized protein	US20 150266973 SEQ ID NO: 67	10400
CI16053	438	35	SS-DmrC -CD 8TM-4 IBB -CD 3z-P2 A-SS-CD 123scFv-DmrA-CD4TM protein	US20150266973 SEQ ID NO: 70	10401
CII6054	438	35	CD8ss.DmrC.CD8TM.41BB.Zeta.P2 A.IgKss.CD 19scFv.DmrA.CD154TM	US20 150266973 SEQ ID NO: 78	10402
CII6055	438	35	CD8ss.DmrC.CD8hinge-TM.41BB.Zetaprotein	US20150266973 SEQ ID NO: 80	10403
CII6056	438	35	hScnSS.CD 19scFv.DmiAprotein	US20 150266973 SEQ ID NO: 82	10404
CII6057	438	35	hScnSS.CD20scFv.DmrA	US20 150266973 SEQ ID NO: 84	10405
CI16058	438	35	CDSss.FRB.CD8TM.4 1BB.Zeia.P2 A. IgKss.CD19scFv.DnrrA.CD4TM	US20150266973 SEQ ID NO: 86	10406
CII6059	438	35	CDSss.FRB.CD8TM.4IBB.Zeta.P2A. IgKss.CD19scFv.DmrA.CD 154TM	US20 150266973 SEQ ID NO: 88	10407
CI16060	438	35	CD8ss.FRB.CD8hinge-TM.4 lBB.Zeta.P2A.IgKss.CD 19scFv. DmrA.CD 154TM	US20150266973 SEQ ID NO: 90	10408

CII6061	438	35	CD8ss.FRB.AMN.41BB.Zeta.P2A.IgKss.CD19scFv.DmrA.CD154TM	US20150266973 SEQ ID NO: 92	10409
CII6062	438	35	CD8ss.DmrC.CD8TM.41BB.Zeta.P2A.IgKss.CD19scFv.DmrA.CD71TM	US20150266973 SEQ ID NO: 96	10410
CII6063	438	35	CD8ss.DmrC.CD8TM.41BB.Zeta.P2A.CD71TM.DmrA.CD19scFv	US20150266973 SEQ ID NO: 98	10411
CII6064	438	35	CD8ss.FRB.CD8Hinge.CD8TM.41BB.Zeta.P2A.IgKss.CD19scFv.DmrA	US20150266973 SEQ ID NO: 100	10412
CII6065	167	36	H3×B1D2	US8623592 SEQ ID NO: 41	10413
CII6066	233	39	7C10 VH	US7241444 SEQ ID NO: 69; US7553485 SEQ ID NO: 69	10414
CII6067	19	40	DI17E6	US20140086908 SEQ ID NO: 2	10415
CII6068	23	40	2.9D10	US20130034559 SEQ ID NO: 12	10416
CII6069	23	40	2.14H9; 2.14H9OPT	US20130034559 SEQ ID NO: 22, 72	10417
CII6070	23	40	3.18G1	US20130034559 SEQ ID NO: 52	10418
CII6071	23	40	2.7A4OPT	US20130034559 SEQ ID NO: 62	10419
CII6072	31	40	2A1	US20110223176 SEQ ID NO: 91	10420
CII6073	39	40	H11	US7166286 SEQ ID NO: 5	10421
CII6074	60	40	hRFB4	US20150239974 SEQ ID NO: 7	10422
CII6075	75	40	T427	US20140010814 SEQ ID NO: 23	10423
CII6076	75	40	T427 A104C:Cys218del	US20140010814 SEQ ID NO: 29	10424
CII6077	75	40	T427 T366S:L368A:Y407V:Y349C	US20140010814 SEQ ID NO: 31	10425
CII6078	75	40	T427-PE38	US20140010814 SEQ ID NO: 33	10426
CII6079	75	40	T427 T366W:S354C (knob) and A44C:C222A	US20140010814 SEQ ID NO: 41	10427
CII6080	80	40	T427-PE38 T366S:L368A:Y407V:Y349C	US20140010814 SEQ ID NO: 35	10428
CII6081	109	40	H1	US20130089542 SEQ ID NO: 40	10429
CII6082	109	40	H3	US20130089542 SEQ ID NO: 41	10430
CII6083	109	40	H4	US20130089542 SEQ ID NO: 42	10431
CII6084	109	40	H1	US20130089557 SEQ ID NO: 14	10432
CII6085	109	40	H3	US20130089557 SEQ ID NO: 15	10433
CII6086	109	40	H4	US20130089557 SEQ ID NO: 16	10434
CII6087	109	40		US20140037625 SEQ ID NO: 11	10435
CII6088	109	40		US20150050275 SEQ ID NO: 21	10436
CII6089	109	40	224G11	US20150250780 SEQ ID NO: 18; US20150376292 SEQ ID NO: 43; US20160039935 SEQ ID NO: 46; US9107907 SEQ ID NO: 18	10437
CII6090	109	40	227H1	US9107907 SEQ ID NO: 19; US20150250780 SEQ ID NO: 19	10438
CII6091	109	40	223C4	US20150250780 SEQ ID NO: 20; US9107907 SEQ ID NO: 20	10439
CII6092	109	40	1.10E+02	US20150250780 SEQ ID NO: 53; US9107907 SEQ ID NO: 62	10440
CII6093	109	40		US20160039935 SEQ ID NO: 37	10441
CII6094	109	40		US20160039935 SEQ ID NO: 50	10442
CII6095	109	40		US20160039935 SEQ ID NO: 51	10443
CII6096	109	40		US20160039935 SEQ ID NO: 88	10444
CII6097	109	40		US20160039935 SEQ ID NO: 89	10445
CII6098	109	40		US20160039935 SEQ ID NO: 90	10446
CII6099	109	40		US20160039935 SEQ ID NO: 91	10447
CII6100	109	40		US20160039935 SEQ ID NO: 92	10448
CII6101	109	40		US20160039935 SEQ ID NO: 93	10449
CII6102	109	40		US20160039935 SEQ ID NO: 94	10450
CII6103	109	40		US20160039935 SEQ ID NO: 95	10451
CII6104	109	40		US20160039935 SEQ ID NO: 96	10452

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C[[6 106	**109**	40		**US20160039935** SEQ **ID NO:** 98	10454
C] **6107**	109	40		**US20 160039935** SEQ ID NO: 99	10455
C][**16108**	109	40		**US20 160039935** SEQ ID NO: 100	10456
C][16109	**109**	40		**US20160039935** SEQ ID NO: 101	10457
C][161 10	109	40		**US20 160039935** SEQ ID NO: 102	10458
C][161 11	109	40		**US20** [60083479 SEQ ID NO: 8	10459
C][161 12	109	40	LY2875358	**US20160090635** SEQ ID NO: 111	10460
C[[**6 113**	109	40		US8398974 SEQ ID **NO**: 37	10461
C[[6 114	109	40		US8398974 SEQ ID NO: 38	10462
C[[6 115	[09	40		US8398974 SEQ ID NO: 39	10463
C] **6 116**	109	40		**US8398974** SEQ ID NO: 40	10464
C][161 17	109	40		**US83 98974** SEQ ID NO: 41	10465
C][161 18	**109**	40		u S83 98974 SEQ ID NO: 42	10466
C][161 19	109	40	H1-hea vy	US9101 6 10 SEQ ID NO: 9	**10467**
C][16120	109	40	**H3-heavy**	**US9101610** SEQ ID NO: 10	10468
C **J6121**	109	40	**H4-heavy**	**US9101610** SEQ ID **NO:** 11	10469
C[16122	129	40		**US201 10020218** SEQ **ID** NO: 14	10470
C[[6 123	[29	40		**US201 10020218** SEQ **ID NO**: 51	**10471**
C] 6124	129	40		**US201 10020218** SEQ ID NO: 65	10472
C][16125	129	40		**US201 10020218** SEQ ID NO: 67	10473
C][16126	**140**	40		**US201 10076232** SEQ ID NO: 2	10474
C][16127	140	40		**US20** i 10076232 SEQ ID NO: 22	10475
C][16128	140	40		**US20 110076232** SEQ ID NO: 32	10476
C[[6 129	140	40		**US20 1 10076232** SEQ ID NO: 43	10477
C[[6 130	140	40	8C65AAG **hu806 VH+CH**	**US20 1 10076232** SEQ **ID** NO: 81	10478
C[[6 131	[40	40		**US20 130295086** SEQ ID **NO**: 10	10479
C] 6132	140	40	**Y101 A mutant**	**US20 130295086** SEQ ID NO: 24	10480
C][16133	140	40	Y102A mutant	**US20 130295086** SEQ ID NO: 25	10481
C][16134	**140**	40	**D103N mutant**	**US20130295086** SEQ ID NO: 26	10482
C][16135	140	40	**D58N/D 103N mutant**	**US20 130295086** SEQ **ID** NO: 27	10483
C][16136	140	40	**D58N/D 103N/E105Q** mutant	**US20130295086** SEQ ID NO: 28	10484
C[[6 137	140	40		**US9044460** SEQ ID **NO**: 1	10485
C[16138	140	40		US9044460 SEQ ID NO: 2	10486
C[[6 139	[40	40		US9044460 SEQ ID **NO**: 3	10487
C] **6140**	140	40		**US9044460** SEQ ID NO: 4	10488
C] **6 141**	140	40		**US9044460** SEQ ID NO: 5	10489
C][16142	140	40		**US9044460** SEQ ID NO: 6	10490
C][16143	**140**	40		**US9044460** SEQ ID NO: 7	10491
C][16144	140	40		**US9044460** SEQ ID NO: 8	10492
C][16145	140	40		**US9044460** SEQ ID NO: 9	10493
C[[**6 146**	140	40		**US9044460** SEQ ID **NO**: 10	10494
C[16147	140	40		US9044460 SEQ ID NO: 11	10495
C[[6 148	[40	40		**US20 14027 1477** SEQ ID **NO**: 2	10496
C] **6149**	140	40	**Cetuximab A1** 19 R216 Ins222PKS	**US20 15007 1923** SEQ ID NO: 5	10497
C][16150	140	40	**Cetuximab** S1 **19** K216	**US20150071923** SEQ ID NO: 6	10498
C][16151	**140**	40	**Cetuximab A 119** R216 **E358** M360	**US2015007 1923** SEQ **ID** NO: 12	10499
C][16152	140	40	**HC-Y1 04D/Q I**11P control **heavy** chain **S1 19**	**US20** [5007 1923 SEQ ID NO: 54	10500
CII6 153	[40	40	**DP-h3, 7 heavy chain S119**	**US20150071923** SEQ ID **NO:** 55	**10501**
CII6154	140	40	**D-h3, 7** heavy chain **S119**	**US20150071923** SEQ ID NO: 57	10502
CII6155	140	40	**E-h3,** 7 heavy chain S119	**US20150071923** SEQ ID NO: 59	10503
CI16156	**140**	40	**FDP-h3,** 7, 11, 15 heavy **chain S119**	US2015007 1923 SEQ ID NO: 65	10504
CII6157	140	40	**HC-Y1 04D** control heavy chain S119	**US20** [5007 1923 SEQ ID NO: 67	10505
CII6158	140	40	HC-Y104E heavy **chain** S119	**US2015007 1923** SEQ ID NO: 72	10506
CII6159	140	40	**HC-Y104E/HC-Q1 11P** heavy chain **S119**	**US20 15007 1923** SEQ ID NO: 76	10507

CII6160	140	40	**HC-S25C/HC-Y104E** heavy chain SI 19	**US20** 15007 1923 SEQ ID NO: 79	10508
Gilo 161	**140**	40	**HC-S53G/HC-Y 104E** heavy chain S 119	u S20 15007 1923 SEQ **ID NO:** 82	10509
CII6162	140	40	**HC-S53G/HC-Y104E/HC-Q1 1IP heavy chain** variable	**US20** 15007 1923 SEQ ID NO: 85	10510
CII6163	140	40	**HC-S25V/HC-Y104E** heavy chain **SI 19**	**US20 15007 1923** SEQ ID NO: 88	105 11
CII6164	140	40	**HC-S25V/HC-Y104E/HC-Q1 1**IP heavy **chain**	**US20** 15007 1923 SEQ ID NO: 91	105 12
CII6165	140	40	**HC-S25V/HC-S53G/HC-Y** 104E heavy chain	**US20 15007 1923** SEQ ID NO: 94	105 13
CII6166	140	40	**HC-S25 V/HC-S53 G/HC-Y 104E/HC-Q11 IP** heavy **chain**	**US20** 15007 1923 SEQ ID NO: **97**	105 14
CII6167	140	40	**HC-S25V/HC-S53G/HC-Y 104E/HC-Q 11IP** heavy chain	**US20150071923** SEQ ID NO: 98	10515
CII6168	140	40	**HC-S25 V/HC-S53 G/HC-Y 104E/HC-Q11 IP** heavy **chain**	**US20** 15007 1923 SEQ ID NO: 99	105 16
CII6169	140	40	**HC-T30F/HC-Y104E** heavy **chain SI 19**	**US20 15007 1923** SEQ ID NO: 100	105 17
CII6170	140	40	**HC-T30F/HC-Y 104E/HC-Q1 1**IP heavy **chain**	**US20150071923 SEQ** ID **NO:** 103	105 18
CII6171	140	40	**HC-T30F/HC-S53** G/HC **-Y** 104E heavy chain	**US20150071923** SEQ ID NO: 106	10519
CII6172	140	40	**HC-T30F/HC-S53G/HC-Y104E/HC-Q1 1IP** heavy **chain**	US2015007 1923 SEQ ID NO: 109	10520
CII6 173	140	40	**HC-T30F/HC-S53 G/HC-Y 104E/HC-**Q1 1IP heavy chain	**US20150071923** SEQ ID NO: **110**	10521
CII6174	140	40	**HC-T30F/HC-S53G/HC-Y104E/HC-Q1 1IP** heavy **chain**	US2015007 1923 SEQ ID NO: **111**	10522
CII6175	140	40	**HC-D72L/HC-Y104E** heavy chain SI 19	**US20150071923** SEQ ID NO: **112**	10523
CII6176	140	40	**HC-D72L/HC-Y104E/HC-Q 11**IP heavy **chain**	**US2015007 1923** SEQ ID NO: 115	10524
CII6177	140	40	**HC-S53G/HC-D72L/HC-Y104E** heavy chain SI 19	**US20150071923** SEQ ID NO: **118**	10525
CII6178	140	40	**HC-S53G/HC-D72L/HC-Y104E/HC-Q1 1IP** heavy **chain**	**US2015007 1923** SEQ ID NO: 121	10526
CII6179	140	40	**HC-S53G/HC-D72L/HC-Y104E/HC-Q11IP** heavy chain	**US20150071923** SEQ ID NO: 122	10527
CII6180	140	40	**HC-S53G/HC-D72L/HC-Y104E/HC-Q11 IP** heavy chain	**US20** 15007 1923 SEQ ID NO: 123	10528
CII6181	140	**40**	**EP-hl,** 2, **4,** 5, 6, 8 heavy **chain** S 119	**US20 15007 1923 SEQ** ID **NO:** 129	10529
C 6182	140	40	EP~h3, **7** heavy chain **SI 19**	US20150071923 SEQ ID NO: 135	10530
C[16183	140	40	**EP-h9,** 12, 14 heavy **chain** SI 19	**US20150071923** SEQ ID NO: 141	1053 1
C[16184	**140**	**40**	**EP-hl 0, 13** heavy **chain SI 19**	**US2015007 1923** SEQ ID NO: 147	10532
C[16185	140	40	**FEP-hl,** 19, 20, 21 heavy chain S 119	**US20** 15007 1923 SEQ ID NO: 209	10533
C[16186	140	40	FEP-h2 heavy chain **SI 19**	**US20 15007 1923** SEQ ID NO: 215	10534
CII6187	140	40	FEP-h3, 7, 11, 15 heavy **chain** SI 19	**US20150071923** SEQ ID NO: 221	10535
CII6188	140	40	FEP-h4, 8, 12, **16** heavy **chain SI 19**	**US20** 15007 1923 SEQ ID NO: 227	10536
CII6189	140	40	**FEP-h5,** 9, 13, 17 heavy chain SI 19	**US20 15007 1923** SEQ ID **NO:** 233	10537
C 6190	140	40	**FEP-h6** heavy chain **SI 19**	US20150071923 SEQ ID NO: 239	10538
C[16191	140	40	FEP-hlO, 14, 18 heavy chain **S 119**	**US20150071923** SEQ ID NO: 245	10539
C[16192	**140**	40	**HC-F27G/HC-Y 104E** heavy chain **S 119**	u S20 15007 1923 SEQ **ID** NO: **315**	10540
CII6193	140	40	**HC-F27G/HC-Y104E/HC-Q1 1IP** heavy **chain**	**US20** 15007 1923 SEQ ID NO: 318	10541
Gilo 194	**140**	40	**HC-F27G/HC-S53G/HC-Y 104E** heavy chain	u S20 15007 1923 SEQ **ID** NO: **321**	10542

CII6195	140	40	HC-F27G/HC -S53G/HC-Y 104E/HC-Q111P heavy chain	US20150071923 SEQ ID NO: 324	10543
Gilo196	140	40	HC-F27G/HC-S53G/HC-Y 104E/HC-Q111P heavy chain	US2015007 1923 SEQ ID NO: 325	10544
CII6197	140	40	HC-F27G/HC -S53G/HC-Y 104E/HC-Q111P heavy chain	US20150071923 SEQ ID NO: 326	10545
CII6198	140	40	HC-S25C/HC-Y104D heavy chain SI19	US20150071923 SEQ ID NO: 352	10546
CII6199	140	40	HC-S53G/HC-Y104D heavy chain SI19	US20150071923 SEQ ID NO: 353	10547
CII6200	140	40	HC-S53G/HC-Y 104D/HC-Q1 11P heavy chain	US20150071923 SEQ ID NO: 354	10548
CII6201	140	40	HC-S25V/HC-Y104D heavy chain SI19	US20150071923 SEQ ID NO: 355	10549
CII6202	140	40	HC-S25V/HC-Y 104D/HC-Q1 11P heavy chain	US20150071923 SEQ ID NO: 356	10550
CII6203	140	40	HC-S25 V/HC-S53 G/HC-Y 104D heavy chain	US20150071923 SEQ ID NO: 357	10551
CII6204	140	40	HC-S25V/HC-S53G/HC-Y 104D/HC-Q11IP heavy chain	US20150071923 SEQ ID NO: 358	10552
CII6205	140	40	HC-T30F/HC-Y 104D heavy chain S119	US20150071923 SEQ ID NO: 359	10553
CII6206	140	40	HC-T30F/HC-Y 104D/HC-Q111P heavy chain	US20 15007 1923 SEQ ID NO: 360	10554
CII6207	140	40	HC-T30F/HC-S53G/HC-Y104D heavy chain	US2015007 1923 SEQ ID NO: 361	10555
CII6208	140	40	HC-T30F/HC-S53 G/HC-Y 104D/HC-Q1 !IP heavy chain	US20 15007 1923 SEQ ID NO: 362	10556
CII6209	140	40	HC-D72L/HC-Y104D heavy cliain SI19	US2015007 1923 SEQ ID NO: 363	10557
CII62 10	140	40	HC-D72L/HC-Y104D/HC-Q1 1IP heavy chain	US20 15007 1923 SEQ ID NO: 364	10558
CII62 11	140	40	HC-S53G/HC-D72L/HC-Y104D heavy chain	US2015007 1923 SEQ ID NO: 365	10559
CII62 12	140	40	HC-F27G/HC-Y104D heavy chain SI19	US20150071923 SEQ ID NO: 366	10560
CII62 13	140	40	HC-F27G/HC-Y 104D/HC-Q 111P heavy chain	US2015007 1923 SEQ ID NO: 367	10561
CII62 14	140	40	HC-F27G/HC-S53 G/HC-Y 104D heavy chain	US20 15007 1923 SEQ ID NO: 368	10562
CII62 15	140	40	HC-F27G/HC-S53G/HC-Y 104D/HC-Q11IP heavy chain	US20 15007 1923 SEQ ID NO: 369	10563
CII62 16	140	40	DP-hl , 2, 4, 5, 6, 8 heavy chain SI19	US20150071923 SEQ ID NO: 370	10564
CI 62 17	140	40	DP-h9, 12, 14 heavy chain SI19	US20150071923 SEQ ID NO: 372	10565
C[16218	140	40	DP-h9, 12, 14 heavy chain S119	US20150071923 SEQ ID NO: 374	10566
C[16219	140	40	DP-hlO. 13 heavy chain SI19	US20 15007 1923 SEQ ID NO: 376	10567
C[16220	140	40	FDP-hl, 19, 20, 21 heavy chain SI19	US20 15007 1923 SEQ ID NO: 378	10568
C[1622 1	140	40	FDP-h2 heavy chain SI 19	US20 15007 1923 SEQ ID NO: 380	10569
CII6222	140	40	FDP-h4, 8, 12, 16 heavy chain SI 19	US20150071923 SEQ ID NO: 382	10570
C[16223	140	40	FDP-h5, 9, 13. 17 heavy chain SI19	US20 15007 1923 SEQ ID NO: 384	10571
C[16224	140	40	FDP-h6 heavy chain SI 19	US20150071923 SEQ ID NO: 386	10572
CI 6225	140	40	FDP-hlO, 14, 18 heavy cliain SI19	US20 15007 1923 SEQ ID NO: 388	10573
C[16226	140	40	C225v5 Activatable Antibody	US201501 18254 SEQ ID NO: 2	10574
C[16227	140	40	C225v4 Activatable Antibody	US201501 18254 SEQ ID NO: 34	10575
C[16228	140	40	C225v6 Activatable Antibody	US20 [50 118254 SEQ ID NO: 36	10576
C[16229	140	40	Ame55	US20150274828 SEQ ID NO: 21	10577
CII6230	140	40		US20160017028 SEQ ID NO: 58	10578
CII6231	140	40	L4-H3	US9028832 SEQ ID NO: 3	10579
C[16232	140	40	huEGFR-7 HC	US9 125896 SEQ ID NO: 31	10580

CII6233	**140**	40	**huEGFR-7** HC CDR **grafted**	**US9125896** SEQ **ID** NO: 32	10581
CII6234	**140**	40	**huEGFR-7** LCv!.0	**US9** [25896 SEQ ID NO: 33	10582
CII6235	140	40	**huEGFR-7 LCvl.01**	**US9125896** SEQ ID NO: 34	10583
CII6236	140	40	**huEGFR-7** LC_CDR grafted	US9125896 SEQ ID NO: 35	10584
CI16237	**140**	40	**huEGFR-12** HC	**US9125896** SEQ ID NO: 36	10585
CII6238	140	40	**hiiEGFR-12** HC	**US9125896** SEQ ID NO: 37	10586
CII6239	140	40	**hiiEGFR-12 LCv. 1.01**	**US9125896** SEQ ID NO: 38	10587
CII6240	140	40	**ImE GFR -6 HCvl.O**	**US9 125896** SEQ ID NO: 74	10588
CII6241	140	40	hiiEGFR-6 **HCvl. 11**	US9125896 SEQ ID **NO:** 75	10589
CII6242	140	40	ImEGFR-7 HCv1.11	**US9 125896** SEQ ID NO: 76	10590
CII6243	**140**	40	siiisEGFRSHC	**US9 125896** SEQ ID NO: 89	10591
CII6244	140	40	**muEGFR9HC** and **muEGFR 17HC**	**US9125896** SEQ ID NO: 91	10592
CII6245	140	40	**muEGFR13HC**	**US9 125896** SEQ ID NO: 92	10593
CI16246	144	40	C6.5; **ML3-9**	u S8329873 SEQ ID NO: 38, 40; US8580263 SEQ ID **NO:** 2, 15; **US8580263** SEQ ID NO: 4, 36, 38	10594
CII6247	144	40	G98A	**US8329873** SEQ ID NO: 39; **US8580263** SEQ ID NO: 3, **37**	10595
CII6248	144	40	H3B1	**US8329873** SEQ ID **NO:** 41; **US8580263** SEQ ID NO: 5, 39	10596
CII6249	144	40	B1D2	**US8329873** SEQ ID NO: 42; **US8580263** SEQ ID NO: 6, 14, 40	10597
CII6250	153	40	13.1.2	**US7736644** SEQ ID **NO:** 138	10598
CII625 1	153	40	**13 1**	US7736644 SEQ ID NO: 2	10599
CII6252	[53	40	**170**	**US7736644** SEQ ID **NO:** 4	10600
CII6253	153	40	150	US7736644 SEQ ID NO: 5	10601
CII6254	153	40	95	US7736644 SEQ ID NO: **7**	10602
CII6255	153	40	250	US7736644 SEQ ID NO: **9**	10603
CI16256	153	40	139	u S7736644 SEQ ID NO: 10	10604
CII6257	153	40	21!	US7736644 SEQ ID NO: 12	10605
CII6258	153	40	124	US7736644 SEQ ID NO: 13	10606
CII6259	153	40	318	**US7736644** SEQ ID **NO:** 15	10607
CII6260	153	40	342	US7736644 SEQ ID NO: 16	10608
CII626 1	[53	40	333	**US7736644** SEQ ID **NO:** 17	10609
CII6262	153	40	13.1.2	US7736644 SEQ ID NO: **14 1**	10610
CII6263	153	40	13.1.2	US7736644 SEQ ID NO: 142	1061 l
CI16264	155	40	KS49	**US20 140234308** SEQ ID NO: 3	10612
CII6265	155	40	KS83	US20 [40234308 SEQ ID NO: 5	106 13
CII6266	155	40	**KS4L KS89**	**US20 140234308** SEQ ID NO: **7**, 9	10614
CII6267	160	40		**US201401201 14** SEQ ID NO: 26	10615
CII6268	160	40		**US20 140 120 11**4 SEQ ID NO: 28	10616
CII6269	[60	40		**US20 140 120 114** SEQ ID NO: **30**	10617
CII6270	160	40		**US20 140 120 11**4 SEQ ID NO: 32	10618
CII6271	160	40		**US201401201 14** SEQ ID NO: 34	10619
CI16272	160	40		**US20 140 1201** 14 SEQ ID NO: 36	10620
CII6273	166	40		**US20 130089544** SEQ ID NO: **54**	10621
CII6274	166	40		**US20130089544** SEQ ID NO: 56	10622
CII6275	166	40		**US20 130089544** SEQ ID NO: 57	10623
CII6276	166	40		**US20 130089544** SEQ **ID** NO: 58	10624
CII6277	[66	40		**US20 130089544** SEQ **ID NO**: 59	10625
CII6278	166	40		**US20 130266564** SEQ ID NO: **10**	10626
CII6279	166	40		US20 130266564 SEQ ID NO: 20	10627
CI16280	166	40	Y57A	**US20130266564** SEQ **ID** NO: **25**	10628
CII6281	166	40	**R59E**	**US20 130266564** SEQ ID NO: 26	10629
CII6282	166	40	FRP5	**US201400108 14** SEQ ID NO: 25	10630
CII6283	166	40	FRP5 T366W:S354C	**US20140010814** SEQ ID NO: 37	1063 1
CII6284	166	40	FRP5 **T366S :L368**A :Y407 V:Y349C	**US20140010814** SEQ **ID** NO: **39**	10632
CII6285	183	40	K**M 1334**	US7241568 SEQ **ID** NO: 4	10633

CII6286	184	40	human chimeric FR2-10	US20 150 125454 SEQ ID NO: 36	10634
CII6287	184	40	human chimeric FR2-13	US20 150 125454 SEQ ID NO: 44	10635
CII6288	184	40	human chimeric FR2-14	US20 150 125454 SEQ ID NO: 51	10636
CII6289	184	40	hFR2-14_HI.	US20 150 125454 SEQ ID NO: 75	10637
CI16290	184	40	liFR2-14_H2.	US20150125454 SEQ ID NO: 77	10638
CII6291	184	40	hFR.2-14_H3.	US20 150 125454 SEQ ID NO: 79	10639
CII6292	184	40	hFR.2-14_H4.	US20 150 125454 SEQ ID NO: 81	10640
CII6293	184	40	hFR2-14_H5.	US20150125454 SEQ ID NO: 83	10641
CII6294	184	40	hFR2-14_H6.	US20 150 125454 SEQ ID NO: 85	10642
CII6295	184	40	hFR2-14_H7.	US20 150 125454 SEQ ID NO: 87	10643
CII6296	184	40	hFR2-14_H8.	US20 150 125454 SEQ ID NO: 89	10644
CII6297	184	40	hFR2-14_H9.	US20 150 125454 SEQ ID NO: 91	10645
CII6298	184	40	hFR2-14_H10.	US20 150 125454 SEQ ID NO: 93	10646
CI16299	184	40	hFR2-I4_H11.	US20150125454 SEQ ID NO: 95	10647
CII6300	184	40	hFR.2-14_H12 or hFR2-14_H19.	US20 150 125454 SEQ ID NO: 97	10648
CII6301	184	40	hFR2-14_H13.	US20150125454 SEQ ID NO: 99	10649
CII6302	184	40	hFR2-14_H14.	US20 150 125454 SEQ ID NO: 101	10650
CII6303	184	40	WFR2-14_H15.	US20 150 125454 SEQ ID NO: 103	10651
CII6304	184	40	hFR2-14_H16.	US20 150 125454 SEQ ID NO: 105	10652
CII6305	184	40	hFR2-14_H17.	US20 150 125454 SEQ ID NO: 107	10653
CII6306	184	40	hFR2-14_HIS.	US20 150 125454 SEQ ID NO: 109	10654
CI16307	207	40		US20150037336 SEQ ID NO: 2	10655
CII6308	209	40		US20 140 3934 14 SEQ ID NO: 2	10656
CII6309	209	40		US201401934 14 SEQ ID NO: 12	10657
CII63 10	209	40		US20140193414 SEQ ID NO: 14	10658
CII63 11	209	40		US20140193414 SEQ ID NO: 16	10659
CII63 12	209	40		US20140193414 SEQ ID NO: 17	10660
CII63 13	209	40		US20 140193414 SEQ ID NO: 19	10661
CII63 14	209	40		US20 140193414 SEQ ID NO: 20	10662
CI163 15	210	40	BHA10 scFv NH-Hercules	US20090048122 SEQ ID NO: 31	10663
CII63 16	210	40	BHA10 scFv (Gly4Ser)4 NH-Hercules	US20090048122 SEQ ID NO: 33	10664
CII63 17	210	40	BHA 10 scFv VH44:VL100 NH-Hercules	US20090048 I22 SEQ ID NO: 35	10665
CI163 18	210	40	BHA10 scFv VH44: VL 100/(Gly4Ser)4 NH-Hercules	US20090048122 SEQ ID NO: 37	10666
CII63 19	210	40	BHA10 scFv C-Hercules	US20090048122 SEQ ID NO: 45	10667
CI16320	210	40	BHA 10 scFv (Gly4Ser)4 C-Hercnies	US20090048122 SEQ ID NO: 47	10668
CII632 1	210	40	BHA10 scFv VH44:VL I00 C-Hercules	US20090048122 SEQ ID NO: 49	10669
CII6322	210	40	BHA10scFv VH44: VL100/(Gly4Ser)4 C-Hercules	US20090048 I22 SEQ ID NO: 51	10670
CII6323	210	40	C-Hercules BHA 10 scFv VH S16E+VL S46L bispeciiic antibody	US20090048122 SEQ ID NO: 53	10671
CII6324	210	40	C-Hercules BHA 10 scFv VH44-VL100/VH S16E+VL S46L bispeciiic	US20090048 I22 SEQ ID NO: 55	10672
CII6325	211	40		US20 100 136033 SEQ ID NO: 3; US20 110 129464 SEQ ID NO: 6	10673
CII6326	217	40	Abl	US20 150322 145 SEQ ID NO: 1	10674
CII6327	217	40	Ab2	US20 150322 145 SEQ ID NO: 41	10675
CII6328	217	40	Ab3	US20 150322 145 SEQ ID NO: 81	10676
CII6329	217	40	Ab4	US20 150322 145 SEQ ID NO: 121	10677
CI16330	217	40	Ab5	US20150322 145 SEQ ID NO: 161	10678
CII633 1	217	40	Ab6	US20 150322 145 SEQ ID NO: 201	10679
CII6332	217	40	Ab7	US20150322 145 SEQ ID NO: 241	10680
CII6333	217	40	Ab8	US20 150322 145 SEQ ID NO: 281	10681
CII6334	217	40	Ab9	US20 150322 145 SEQ ID NO: 321	10682

CII6335	217	40	Ab10	US20150322145 SEQ ID NO: 361	10683
CII6336	217	40	Ab11	US20150322145 SEQ ID NO: 401	10684
CII6337	217	40	Ab12	US20150322145 SEQ ID NO: 441	10685
CII6338	217	40	Ab13	US20150322145 SEQ ID NO: 481	10686
CII6339	217	40	Ab14	US20150322145 SEQ ID NO: 521	10687
CII6340	217	40	Ab15	US20150322145 SEQ ID NO: 561	10688
CII6341	217	40	Ab16	US20150322145 SEQ ID NO: 601	10689
CII6342	217	40	Ab17	US20150322145 SEQ ID NO: 641	10690
CII6343	217	40	Ab18	US20150322145 SEQ ID NO: 681	10691
CII6344	217	40	Ab19	US20150322145 SEQ ID NO: 721	10692
CII6345	217	40	Ab20	US20150322145 SEQ ID NO: 761	10693
CII6346	217	40	Ab21	US20150322145 SEQ ID NO: 801	10694
CII6347	217	40	Ab23	US20150322145 SEQ ID NO: 841	10695
CII6348	217	40	Ab24	US20150322145 SEQ ID NO: 881	10696
CII6349	217	40	Ab25	US20150322145 SEQ ID NO: 921	10697
CII6350	217	40	Ab26	US20150322145 SEQ ID NO: 961	10698
CII6351	217	40	Ab27	US20150322145 SEQ ID NO: 1001	10699
CII6352	217	40	Ab28	US20150322145 SEQ ID NO: 1041	10700
CII6353	217	40		US6468529 SEQ ID NO: 2	10701
CII6354	217	40		US8609090 SEQ ID NO: 25	10702
CII6355	217	40		US8609090 SEQ ID NO: 27	10703
CII6356	217	40		US8609090 SEQ ID NO: 29	10704
CII6357	217	40		US8609090 SEQ ID NO: 31	10705
CII6358	217	40		US8609090 SEQ ID NO: 33	10706
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CII6360	217	40		US8609090 SEQ ID NO: 37	10708
CII6361	217	40		US8609090 SEQ ID NO: 39	10709
CII6362	217	40		US8609090 SEQ ID NO: 41	10710
CII6363	217	40		US8609090 SEQ ID NO: 43	10711
CII6364	217	40		US8609090 SEQ ID NO: 46	10712
CII6365	217	40	HuL2G7	US8628778 SEQ ID NO: 10	10713
CII6366	230	40	Consensus	US20050186203 SEQ ID NO: 81; US20130295050 SEQ ID NO: 81	10714
CII6367	230	40	CamHV0	US20060240015 SEQ ID NO: 12	10715
CII6368	230	40	HV0(3)	US20060240015 SEQ ID NO: 54	10716
CII6369	230	40		US8580254 SEQ ID NO: 25	10717
CII6370	231	40	1fbi	US20050186203 SEQ ID NO: 73; US20130295050 SEQ ID NO: 73	10718
CII6371	231	40	1yuh	US20050186203 SEQ ID NO: 75; US20110091524 SEQ ID NO: 59; US20110262525 SEQ ID NO: 59; US20130295050 SEQ ID NO: 75; US7811562 SEQ ID NO: 59	10719
CII6372	231	40	3hfl	US20050186203 SEQ ID NO: 80; US20060233810 SEQ ID NO: 71; US20110091524 SEQ ID NO: 71; US20110262525 SEQ ID NO: 71; US20130295050 SEQ ID NO: 80	10720
CII6373	233	40	19D12/15H12	US20140079665 SEQ ID NO: 10	10721
CII6374	233	40	2C6	US20110104256 SEQ ID NO: 22	10722
CII6375	233	40	9H2	US20110104256 SEQ ID NO: 30	10723
CII6376	233	40	6E11c	US20110262430 SEQ ID NO: 24	10724
CII6377	233	40	anti-IGF-1R H0 IgG1	US20110262430 SEQ ID NO: 38	10725
CII6378	233	40	H0 IgG1m	US20110262430 SEQ ID NO: 54	10726
CII6379	233	40	H1 IgG1m	US20110262430 SEQ ID NO: 56	10727
CII6380	233	40	S239D, I332E	US20110262430 SEQ ID NO: 68	10728

CII6381	233	40		US20150078996 SEQ ID NO: 8	10729
CII6382	233	40	7C10 VH	US7241444 SEQ ID NO: 77; US7553485 SEQ ID NO: 77	10730
CII6383	233	40	7C10 VH version 2	US7241444 SEQ ID NO: 81; US7553485 SEQ ID NO: 81	10731
CII6384	233	40	7C10 VH, version 3 humanized	US7241444 SEQ ID NO: 83; US7553485 SEQ ID NO: 83	10732
CII6385	233	40	7C10 VH version 3	US7241444 SEQ ID NO: 85	10733
CII6386	233	40		US8361461 SEQ ID NO: 8	10734
CII6387	233	40		US8361461 SEQ ID NO: 18	10735
CII6388	246	40	Anti-human IL13 mAb	US20110008345 SEQ ID NO: 12	10736
CII6389	246	40	Anti IL13 humanised variant A1 Y100B Val	US20120070439 SEQ ID NO: 93	10737
CII6390	253	40	Anti-human IL-18 mAb	US20110008345 SEQ ID NO: 67	10738
CII6391	265	40	3B9	US20100297110 SEQ ID NO: 10	10739
CII6392	265	40	humanized 3B9	US20100297110 SEQ ID NO: 12	10740
CII6393	265	40	anti-IL-4 mAb	US20120070439 SEQ ID NO: 2	10741
CII6394	267	40	IL-5 mAb	US20120070439 SEQ ID NO: 91	10742
CII6395	269	40	Ab7	US20100143294 SEQ ID NO: 102	10743
CII6396	269	40	Ab7	US20100143294 SEQ ID NO: 117	10744
CII6397	269	40	Ab7	US20100143294 SEQ ID NO: 118	10745
CII6398	269	40	Ab8	US20100143294 SEQ ID NO: 123	10746
CII6399	269	40	Ab9	US20100143294 SEQ ID NO: 139	10747
CII6400	269	40	Ab10	US20100143294 SEQ ID NO: 155	10748
CII6401	269	40	Ab11	US20100143294 SEQ ID NO: 171	10749
CII6402	269	40	Ab1	US20100143294 SEQ ID NO: 18	10750
CII6403	269	40	Ab12	US20100143294 SEQ ID NO: 187	10751
CII6404	269	40	Ab1	US20100143294 SEQ ID NO: 19	10752
CII6405	269	40	Ab13	US20100143294 SEQ ID NO: 203	10753
CII6406	269	40	Ab14	US20100143294 SEQ ID NO: 219	10754
CII6407	269	40	Ab2	US20100143294 SEQ ID NO: 22	10755
CII6408	269	40	Ab15	US20100143294 SEQ ID NO: 235	10756
CII6409	269	40	Ab16	US20100143294 SEQ ID NO: 251	10757
CII6410	269	40	Ab17	US20100143294 SEQ ID NO: 267	10758
CII6411	269	40	Ab18	US20100143294 SEQ ID NO: 283	10759
CII6412	269	40	Ab19	US20100143294 SEQ ID NO: 299	10760
CII6413	269	40	Ab1	US20100143294 SEQ ID NO: 3	10761
CII6414	269	40	Ab20	US20100143294 SEQ ID NO: 315	10762
CII6415	269	40	Ab21	US20100143294 SEQ ID NO: 331	10763
CII6416	269	40	Ab22	US20100143294 SEQ ID NO: 347	10764
CII6417	269	40	Ab23	US20100143294 SEQ ID NO: 363	10765
CII6418	269	40	Ab24	US20100143294 SEQ ID NO: 379	10766
CII6419	269	40	Ab3	US20100143294 SEQ ID NO: 38	10767
CII6420	269	40	Ab25	US20100143294 SEQ ID NO: 395	10768
CII6421	269	40	Ab26	US20100143294 SEQ ID NO: 411	10769
CII6422	269	40	Ab27	US20100143294 SEQ ID NO: 427	10770
CII6423	269	40	Ab28	US20100143294 SEQ ID NO: 443	10771
CII6424	269	40	Ab29	US20100143294 SEQ ID NO: 459	10772
CII6425	269	40	Ab30; Ab31	US20100143294 SEQ ID NO: 475, 491	10773
CII6426	269	40	Ab32	US20100143294 SEQ ID NO: 507	10774
CII6427	269	40	Ab33	US20100143294 SEQ ID NO: 523	10775
CII6428	269	40	Ab34	US20100143294 SEQ ID NO: 539	10776
CII6429	269	40	Ab4	US20100143294 SEQ ID NO: 54	10777
CII6430	269	40	Ab35	US20100143294 SEQ ID NO: 555	10778
CII6431	269	40	Ab36	US20100143294 SEQ ID NO: 571	10779
CII6432	269	40	Ab1	US20100143294 SEQ ID NO: 652	10780
CII6433	269	40	Ab1	US20100143294 SEQ ID NO: 656	10781

CII6434	269	40	Ab1	US20100143294 SEQ ID NO: 657	10782
CII6435	269	40	Ab1	US20100143294 SEQ ID NO: 658	10783
CII6436	269	40	Ab1	US20100143294 SEQ ID NO: 661	10784
CII6437	269	40	Ab1	US20100143294 SEQ ID NO: 664	10785
CII6438	269	40	Ab1	US20100143294 SEQ ID NO: 665	10786
CII6439	269	40	Ab2	US20100143294 SEQ ID NO: 668	10787
CII6440	269	40	Ab3	US20100143294 SEQ ID NO: 672	10788
CII6441	269	40	Ab4	US20100143294 SEQ ID NO: 676	10789
CII6442	269	40	Ab5	US20100143294 SEQ ID NO: 680	10790
CII6443	269	40	Ab6	US20100143294 SEQ ID NO: 684	10791
CII6444	269	40	Ab7	US20100143294 SEQ ID NO: 688	10792
CII6445	269	40	Ab7	US20100143294 SEQ ID NO: 691	10793
CII6446	269	40	Ab7	US20100143294 SEQ ID NO: 692	10794
CII6447	269	40	Ab5	US20100143294 SEQ ID NO: 70	10795
CII6448	269	40	Ab1	US20100143294 SEQ ID NO: 704	10796
CII6449	269	40	Ab1	US20100143294 SEQ ID NO: 708	10797
CII6450	269	40	Ab6	US20100143294 SEQ ID NO: 86	10798
CII6451	274	40	6G4.2.5	US20070048219 SEQ ID NO: 44	10799
CII6452	277	40	Chimeric (anti-alpha2-VH-IGHG4-CH1) mAb	US20130156786 SEQ ID NO: 10	10800
CII6453	318	40	Antibody A	US8961970 SEQ ID NO: 1	10801
CII6454	320	40		US20090297439 SEQ ID NO: 6	10802
CII6455	346	40	4D4 (IgG3)	US20050074821 SEQ ID NO: 43	10803
CII6456	356	40		US8409578 SEQ ID NO: 2	10804
CII6457	356	40		US8409578 SEQ ID NO: 13	10805
CII6458	365	40		US20160108123 SEQ ID NO: 74	10806
CII6459	365	40	BAP058-hum13-HC; BAP058-Clone O HC	US20160108123 SEQ ID NO: 78	10807
CII6460	365	40		US20160108123 SEQ ID NO: 91	10808
CII6461	365	40	BAP058-Clone N HC	US20160108123 SEQ ID NO: 96	10809
CII6462	365	40		US20160108123 SEQ ID NO: 197	10810
CII6463	365	40		US20160108123 SEQ ID NO: 247	10811
CII6464	365	40		US20160108123 SEQ ID NO: 248	10812
CII6465	365	40		US20160108123 SEQ ID NO: 249	10813
CII6466	365	40	BAP058-Clone M HC	US20160108123 SEQ ID NO: 260	10814
CII6467	365	40		US20160108123 SEQ ID NO: 308	10815
CII6468	365	40	CYP0150	US20160108123 SEQ ID NO: 310	10816
CII6469	372	40		US20110256133 SEQ ID NO: 27	10817
CII6470	372	40		US20110256133 SEQ ID NO: 28	10818
CII6471	372	40		US20110256133 SEQ ID NO: 29	10819
CII6472	372	40		US20110256133 SEQ ID NO: 30	10820
CII6473	372	40		US20110256133 SEQ ID NO: 31	10821
CII6474	372	40		US20110256133 SEQ ID NO: 32	10822
CII6475	372	40		US20110256133 SEQ ID NO: 70	10823
CII6476	372	40		US20110256133 SEQ ID NO: 71	10824
CII6477	372	40		US20110256133 SEQ ID NO: 72	10825
CII6478	396	40	anti-Tac antibody	US20140010814 SEQ ID NO: 27	10826
CII6479	428	40	XPA.10.072	US20110097340 SEQ ID NO: 2	10827
CII6480	428	40	XPA.10.064	US20110097340 SEQ ID NO: 4	10828
CII6481	428	40	XPA.10.064.03	US20110097340 SEQ ID NO: 20	10829
CII6482	428	40	XPA.10.064.04	US20110097340 SEQ ID NO: 21	10830
CII6483	428	40	XPA.10.064.06	US20110097340 SEQ ID NO: 22	10831
CII6484	428	40	XPA.10.064.07	US20110097340 SEQ ID NO: 23	10832
CII6485	428	40	XPA.10.064.10	US20110097340 SEQ ID NO: 24	10833
CII6486	233	40	anti-IGF-1R HO IgG1	US20110262430 SEQ ID NO: 37	10834
CII6487	365	40	BAP058-hum03-HC; BAP058-humII-HC; BAP058-Clone K HC; BAP058-Clone N HC	US20160108123 SEQ ID NO: 30	10835

CII6488	365	40	BAP058-hum03-HC; BAP058-humII-HC; BAP058-Clone K HC	US20160108123 SEQ ID NO: 32	10836
CII6489	365	40	BAP058-hum04-HC; BAP058-hum12-HC; BAP058-Clone L HC	US20160108123 SEQ ID NO: 38	10837
CII6490	365	40	BAP058-hum04-HC; BAP058-hum12-HC; BAP058-Clone L HC	US20160108123 SEQ ID NO: 40	10838
CII6491	365	40	BAP058-hum05-HC	US20160108123 SEQ ID NO: 46	10839
CII6492	365	40	BAP058-hum05-HC	US20160108123 SEQ ID NO: 48	10840
CII6493	365	40	BAP058-hum06-HC; BAP058-hum09-HC; BAP058-hum15-HC; BAP058-Clone M HC	US20160108123 SEQ ID NO: 50	10841
CII6494	365	40	BAP058-hum06-HC; BAP058-hum09-HC; BAP058-hum15-HC	US20160108123 SEQ ID NO: 52	10842
CII6495	365	40	BAP058-hum07-HC; BAP058-hum16-HC	US20160108123 SEQ ID NO: 54	10843
CII6496	365	40	BAP058-hum07-HC; BAP058-hum16-HC	US20160108123 SEQ ID NO: 56	10844
CII6497	365	40	BAP058-hum08-HC; BAP058-hum17-HC	US20160108123 SEQ ID NO: 62	10845
CII6498	365	40	BAP058-hum08-HC; BAP058-hum17-HC	US20160108123 SEQ ID NO: 64	10846
CII6499	365	40	BAP058-hum10-HC	US20160108123 SEQ ID NO: 70	10847
CII6500	365	40	BAP058-hum10-HC	US20160108123 SEQ ID NO: 72	10848
CII6501	233	47	19D12/15H12	US20140079665 SEQ ID NO: 15; US20110104256 SEQ ID NO: 17	10849
CII6502	233	47	19D12/15H12	US20060233810 SEQ ID NO: 10; US20110262525 SEQ ID NO: 10; US7811562 SEQ ID NO: 10	10850
CII6503	233	50	19D12/15H12	US20140079665 SEQ ID NO: 16; US20110104256 SEQ ID NO: 19	10851
CII6504	233	50	19D12/15H12	US20060233810 SEQ ID NO: 12; US20110262525 SEQ ID NO: 12; US7811562 SEQ ID NO: 12	10852
CII6505	140	51	EGFR-1.4	US20060228355 SEQ ID NO: 1	10853
CII6506	140	51	EGFR-1.9	US20060228355 SEQ ID NO: 2	10854
CII6507	140	51	EGFR-1.33	US20060228355 SEQ ID NO: 3	10855
CII6508	140	51	EGFR-1.34	US20060228355 SEQ ID NO: 4	10856
CII6509	140	51	EGFR-1.38	US20060228355 SEQ ID NO: 5	10857
CII6510	140	51	EGFR-Ia1	US20060228355 SEQ ID NO: 6	10858
CII6511	140	51	EGFR-Ia7	US20060228355 SEQ ID NO: 7	10859
CII6512	140	51	EGFR-Ia15	US20060228355 SEQ ID NO: 8	10860
CII6513	140	51	EGFR-Ia26	US20060228355 SEQ ID NO: 9	10861
CII6514	140	51	EGFR-2.6	US20060228355 SEQ ID NO: 10	10862
CII6515	140	51	EGFR-2.20	US20060228355 SEQ ID NO: 11	10863
CII6516	140	51	EGFR-IIa5	US20060228355 SEQ ID NO: 12	10864
CII6517	140	51	EGFR-3.18	US20060228355 SEQ ID NO: 13	10865
CII6518	140	51	EGFR-3.32	US20060228355 SEQ ID NO: 14	10866
CII6519	140	51	EGFR-3.34	US20060228355 SEQ ID NO: 15	10867
CII6520	140	51	EGFR-3.39	US20060228355 SEQ ID NO: 16	10868
CII6521	140	51	EGFR-3.40	US20060228355 SEQ ID NO: 17	10869
CII6522	140	51	EGFR-4.11	US20060228355 SEQ ID NO: 18	10870
CII6523	140	51	EGFR-4.21	US20060228355 SEQ ID NO: 19	10871
CII6524	140	51	EGFR-4.22	US20060228355 SEQ ID NO: 20	10872
CII6525	140	51	EGFR-B11	US20060228355 SEQ ID NO: 21	10873
CII6526	140	51	EGFR-F11	US20060228355 SEQ ID NO: 22	10874
CII6527	140	51	MSA21	US20060228355 SEQ ID NO: 23	10875
CII6528	140	51	MSA24	US20060228355 SEQ ID NO: 24	10876
CII6529	140	51	MSA210	US20060228355 SEQ ID NO: 25	10877

CII6530	140	51	MSA212	US20060228355 SEQ ID NO: 26	10878
CII6531	140	51	MSA21/EGFR-1.4	US20060228355 SEQ ID NO: 27	10879
CII6532	140	51	MSA24/EGFR-1.9	US20060228355 SEQ ID NO: 28	10880
CII6533	140	51	MSA21/EGFR-1.33	US20060228355 SEQ ID NO: 29	10881
CII6534	140	51	MSA24/EGFR-1.33	US20060228355 SEQ ID NO: 30	10882
CII6535	140	51	MSA210/EGFR-1.33	US20060228355 SEQ ID NO: 31	10883
CII6536	140	51	MSA212/EGFR-1.33	US20060228355 SEQ ID NO: 32	10884
CII6537	140	51	MSA21/EGFR-Ia1	US20060228355 SEQ ID NO: 33	10885
CII6538	140	51	MSA21/EGFR-Ia7	US20060228355 SEQ ID NO: 34	10886
CII6539	140	51	MSA21/EGFR-IA15	US20060228355 SEQ ID NO: 35	10887
CII6540	140	51	MSA21/EGFR-Ia26	US20060228355 SEQ ID NO: 36	10888
CII6541	140	51	MSA21/EGFR-2.6	US20060228355 SEQ ID NO: 37	10889
CII6542	140	51	MSA21/EGFR-4.22	US20060228355 SEQ ID NO: 38	10890
CII6543	140	51	MSA21/EGFR-B11	US20060228355 SEQ ID NO: 39	10891
CII6544	140	51	MSA21/EGFR-F11	US20060228355 SEQ ID NO: 40	10892
CII6545	140	51	MSAc16	US20060228355 SEQ ID NO: 41	10893
CII6546	140	51	MSAc112	US20060228355 SEQ ID NO: 42	10894
CII6547	140	51	MSAc110	US20060228355 SEQ ID NO: 43	10895
CII6548	140	51	MSAc114	US20060228355 SEQ ID NO: 44	10896
CII6549	140	51	MSAc116	US20060228355 SEQ ID NO: 45	10897
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CII6555	140	51	MSAc17	US20060228355 SEQ ID NO: 51	10903
CII6556	140	51	MSAc120	US20060228355 SEQ ID NO: 52	10904
CII6557	140	51	MSAc14	US20060228355 SEQ ID NO: 53	10905
CII6558	233	70		US7241444 SEQ ID NO: 71; US7553485 SEQ ID NO: 71	10906
CII6559	140	71	IgG1	US20130266579 SEQ ID NO: 22	10907
CII6560	140	71	hIgG2	US20130266579 SEQ ID NO: 23	10908
CII6561	140	71	IgG3	US20130266579 SEQ ID NO: 24	10909
CII6562	140	71	IgG4	US20130266579 SEQ ID NO: 25	10910
CII6563	217	71	Ab1	US20150322145 SEQ ID NO: 10	10911
CII6564	217	71	Ab2	US20150322145 SEQ ID NO: 50	10912
CII6565	217	71	Ab3	US20150322145 SEQ ID NO: 90	10913
CII6566	217	71	Ab4	US20150322145 SEQ ID NO: 130	10914
CII6567	217	71	Ab5	US20150322145 SEQ ID NO: 170	10915
CII6568	217	71	Ab6	US20150322145 SEQ ID NO: 210	10916
CII6569	217	71	Ab7	US20150322145 SEQ ID NO: 250	10917
CII6570	217	71	Ab8	US20150322145 SEQ ID NO: 290	10918
CII6571	217	71	Ab9	US20150322145 SEQ ID NO: 330	10919
CII6572	217	71	Ab10	US20150322145 SEQ ID NO: 370	10920
CII6573	217	71	Ab11	US20150322145 SEQ ID NO: 410	10921
CII6574	217	71	Ab12	US20150322145 SEQ ID NO: 450	10922
CII6575	217	71	Ab13	US20150322145 SEQ ID NO: 490	10923
CII6576	217	71	Ab14	US20150322145 SEQ ID NO: 530	10924
CII6577	217	71	Ab15	US20150322145 SEQ ID NO: 570	10925
CII6578	217	71	Ab16	US20150322145 SEQ ID NO: 610	10926
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CII6580	217	71	Ab18	US20150322145 SEQ ID NO: 690	10928
CII6581	217	71	Ab19	US20150322145 SEQ ID NO: 730	10929
CII6582	217	71	Ab20	US20150322145 SEQ ID NO: 770	10930
CII6583	217	71	Ab21	US20150322145 SEQ ID NO: 810	10931
CII6584	217	71	Ab23	US20150322145 SEQ ID NO: 850	10932
CII6585	217	71	Ab24	US20150322145 SEQ ID NO: 890	10933
CII6586	217	71	Ab25	US20150322145 SEQ ID NO: 930	10934

CII6587	217	71	Ab26	US20 150322145 SEQ ID NO: 970	10935
CII6588	217	71	Ab27	US20150322145 SEQ ID NO: 1010	10936
CI16589	217	71	Ab28	US20150322 145 SEQ ID NO: 1050	10937
CII6590	150	71		US20 150266960 SEQ ID NO: 9	10938
CII659 1	[50	71	IgGl CH3	US20 150266960 SEQ ID NO: 10	10939
CII6592	269	73		US20 100 143294 SEQ ID NO: 588	10940
CII6593	140	74		US20 110200595 SEQ ID NO: 40	10941
CI16594	150	75	Mutant C	US20 150266960 SEQ ID NO: 11	10942
CII6595	150	75	Mutant D	US20 150266960 SEQ ID NO: 12	10943
CII6596	150	75		US20150266960 SEQ ID NO: 13	10944
CII6597	110	41	CHI	US20090226443 SEQ ID NO: 16; US20 130004484 SEQ ID NO: 16; US20 [40227258 SEQ ID NO: 194; US20 150050275 SEQ ID NO: 16	10945
CII6598	[40	41	CH3	US20150071923 SEQ ID NO: I	10946
CII6599	140	41	Cetuximab R216	US20150071923 SEQ ID NO: 20	10947
CII6600	140	41	Cetuximab R216 Ins222PKS	US20 15007 1923 SEQ ID NO: 21	10948
CI16601	140	41	Cetuximab K21	US20 15007 1923 SEQ ID NO: 22	10949
CII6602	140	41	Cetuximab R216 E358 M360	US20 15007 1923 SEQ ID NO: 23	10950
CII6603	140	41		US8748175 SEQ ID NO: 43	1095 1
CII6604	140	41	pMPlOKJgGl	US20 1402343 14 SEQ ID NO: 26	10952
CII6605	160	41		US20 140 120 114 SEQ ID NO: 24	10953
CII6606	230	41		US8580254 SEQ ID NO: 22	10954
CII6607	233	41	S239D, 1332E	US20 110262430 SEQ ID NO: 64	10955
CII6608	233	41	S239D, 1332E, A330L	US20 110262430 SEQ ID NO: 66	10956
CII6609	346	41	4D4 (IgGl)	US20050074821 SEQ ID NO: 2	10957
CI166 10	346	41	4D4(IgG2)	US20050074821 SEQ ID NO: 4	10958
CII66 11	346	41	4D4 (IgGl)	US2005007482 1 SEQ ID NO: 6	10959
CII66 12	346	41	4D4 (IgG3)	US20050074821 SEQ ID NO: 26	10960
CII6613	365	41		US20160108123 SEQ ID NO: 188	10961
CII6614	365	41		US20160108 123 SEQ ID NO: 190	10962
CII6615	365	41		US20160108 123 SEQ ID NO: 191	10963
CII6616	365	41		US20160108123 SEQ ID NO: 193	10964
CII6617	365	41		US20160108123 SEQ ID NO: 194	10965
CI166 18	310	77		US20 110293607 SEQ ID NO: 4	10966
CII66 19	310	78		US20 110293607 SEQ ID NO: 2	10967
CII6620	211	82		US20 1600530 11 SEQ ID NO: 14	10968
CII6621	429	83		US20 100325744 SEQ ID NO: 14	10969
CII6622	429	84		US20 100325744 SEQ ID NO: 16	10970
CII6623	274	85	6G4V1 1N3SA	US20070048219 SEQ ID NO: 70	1097 1
CII6624	277	86		US20 130 156786 SEQ ID NO: 11	10972
CII6625	217	87		US8609090 SEQ ID NO: 194	10973
CI16626	217	88		US8609090 SEQ ID NO: 184	10974
CII6627	217	88		US8609090 SEQ ID NO: 185	10975
CII6628	217	88		US8609090 SEQ ID NO: 186	10976
CII6629	217	88		US8609090 SEQ ID NO: 187	10977
CII6630	217	88		US8609090 SEQ ID NO: 188	10978
CII663 !	217	88		US8609090 SEQ ID NO: 189	10979
CII6632	217	88		US8609090 SEQ ID NO: 190	10980
CII6633	217	88		US8609090 SEQ ID NO: 191	10981
CI16634	217	88		US8609090 SEQ ID NO: 192	10982
CII6635	217	88		US8609090 SEQ ID NO: 193	10983
CII6636	231	106	em 164 HC	US20050 186203 SEQ ID NO: 7, 70; US200602338 10 SEQ ID NO: 65, 69; US201 10091524 SEQ ID NO: 65, 69; US20 110262525 SEQ	10984

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CII6637	231	106	1afv	US20050186203 SEQ ID NO: 74; US20060233810 SEQ ID NO: 62; US20110091524 SEQ ID NO: 62; US20110262525 SEQ ID NO: 62; US20130295050 SEQ ID NO: 74; US7811562 SEQ ID NO: 62	10985
CII6638	231	106	1plg	US20050186203 SEQ ID NO: 76; US20060233810 SEQ ID NO: 68; US20110091524 SEQ ID NO: 68; US20110262525 SEQ ID NO: 68; US20130295050 SEQ ID NO: 76; US7811562 SEQ ID NO: 68	10986
CII6639	231	106	1ae6	US20050186203 SEQ ID NO: 78; US20060233810 SEQ ID NO: 70; US20110091524 SEQ ID NO: 70; US20110262525 SEQ ID NO: 70; US20130295050 SEQ ID NO: 78; US7811562 SEQ ID NO: 70	10987
CII6640	231	106	1axs	US20050186203 SEQ ID NO: 79; US20060233810 SEQ ID NO: 72; US20110091524 SEQ ID NO: 72; US20110262525 SEQ ID NO: 72; US20130295050 SEQ ID NO: 79	10988
CII6641	231	106	1nqb	US20050186203 SEQ ID NO: 71; US20060233810 SEQ ID NO: 67; US20110091524 SEQ ID NO: 67; US20110262525 SEQ ID NO: 67; US20130295050 SEQ ID NO: 71; US7811562 SEQ ID NO: 67	10989
CII6642	231	106	1ngp	US20050186203 SEQ ID NO: 72; US20060233810 SEQ ID NO: 63; US20110091524 SEQ ID NO: 63; US20110262525 SEQ ID NO: 63; US20130295050 SEQ ID NO: 72; US7811562 SEQ ID NO: 63	10990
CII6643	231	106	1d5b	US20050186203 SEQ ID NO: 77; US20060233810 SEQ ID NO: 61; US20110091524 SEQ ID NO: 61; US20110262525 SEQ ID NO: 61; US20130295050 SEQ ID NO: 77; US7811562 SEQ ID NO: 61; US20050186203 SEQ ID NO: 77	10991
CII6644	233	106		US20140079665 SEQ ID NO: 2	10992
CII6645	233	107		US20110262525 SEQ ID NO: 29	10993
CII6646	233	107		US20110262525 SEQ ID NO: 30	10994
CII6647	233	107		US20110262525 SEQ ID NO: 31	10995
CII6648	233	107		US20110262525 SEQ ID NO: 32	10996
CII6649	233	108	EM164	US20050186203 SEQ ID NO: 52; US20130295050 SEQ ID NO: 52	10997
CII6650	217	109	L2G7	US8628778 SEQ ID NO: 2, 4	10998
CII6651	233	111		US20110104256 SEQ ID NO: 20	10999
CII6652	217	112	HuL2G7	US8628778 SEQ ID NO: 5	11000
CII6653	217	112	AAC18323	US8628778 SEQ ID NO: 6	11001
CII6654	109	114	huAbF46-H4-A1	US20140154251 SEQ ID NO: 64	11002
CII6655	109	115	huAbF46-H4-A1	US20140154251 SEQ ID NO: 66	11003
CII6656	109	116	huAbF46-H4-A1	US20140154251 SEQ ID NO: 62	11004

CII6657	140	118	DP-h1, 2, 4, 5, 6, 8	US20130266579 SEQ ID NO: 1134	11005
CII6658	140	118	DP-h3, 7	US20130266579 SEQ ID NO: 1135	11006
CII6659	140	118	DP-h9, 12, 14	US20130266579 SEQ ID NO: 1136	11007
CII6660	140	118	FDP-h1, 7*, 19, 20, 21; FDP-h5, 9, 13, 17	US20130266579 SEQ ID NO: 1146, 1150	11008
CII6661	140	118	FDP-h2	US20130266579 SEQ ID NO: 1147	11009
CII6662	140	118	FDP-h3, 7, 11, 15	US20130266579 SEQ ID NO: 1148	11010
CII6663	140	118	FDP-h4, 8, 12, 16	US20130266579 SEQ ID NO: 1149	11011
CII6664	140	118	FDP-h6	US20130266579 SEQ ID NO: 1151	11012
CII6665	140	118	FDP-h10, 14, 18	US20130266579 SEQ ID NO: 1152	11013
CII6666	269	120	Ab1	US20100143294 SEQ ID NO: 653	11014
CII6667	269	120	Ab1	US20100143294 SEQ ID NO: 654	11015
CII6668	269	120	Ab1	US20100143294 SEQ ID NO: 655	11016
CII6669	109	122	A12 antibody	US20150299326 SEQ ID NO: 1	11017
CII6670	109	122	C2 antibody	US20150299326 SEQ ID NO: 2	11018
CII6671	109	122	E9 antibody	US20150299326 SEQ ID NO: 3	11019
CII6672	109	122	F1 antibody	US20150299326 SEQ ID NO: 4	11020
CII6673	109	122	F11 antibody	US20150299326 SEQ ID NO: 5	11021
CII6674	109	122	G1 antibody	US20150299326 SEQ ID NO: 6	11022
CII6675	109	122	H2 antibody	US20150299326 SEQ ID NO: 7	11023
CII6676	109	122	H5 antibody	US20150299326 SEQ ID NO: 8	11024
CII6677	140	122	P2/1; P2/2	US20100009390 SEQ ID NO: 12, 13, 30, 34; US8580263 SEQ ID NO: 34, 35, 57	11025
CII6678	140	122	P2/4; P3/5	US20100009390 SEQ ID NO: 14, 15, 31, 35	11026
CII6679	140	122	2124	US20100009390 SEQ ID NO: 16	11027
CII6680	140	122	2224; 3524; P2/1; P2/2; P2/4; P3/5	US20100009390 SEQ ID NO: 17; US20100009390 SEQ ID NO: 18; US20100009390 SEQ ID NO: 19; US20100009390 SEQ ID NO: 20; US20100009390 SEQ ID NO: 21; US20100009390 SEQ ID NO: 22; US20100009390 SEQ ID NO: 33; US20100009390 SEQ ID NO: 36	11028
CII6681	140	122		US20150274828 SEQ ID NO: 8	11029
CII6682	159	122	37.3D7	US20150274824 SEQ ID NO: 20	11030
CII6683	159	122	37.1F5	US20150274824 SEQ ID NO: 22	11031
CII6684	159	122	53.2H11	US20150274824 SEQ ID NO: 24	11032
CII6685	159	122	37.1 D7	US20150274824 SEQ ID NO: 32	11033
CII6686	159	122	37.1 D7	US20150274824 SEQ ID NO: 34	11034
CII6687	159	122	37.1 D7	US20150274824 SEQ ID NO: 36	11035
CII6688	159	122	37.1F5	US20150274824 SEQ ID NO: 37	11036
CII6689	159	122	37.1F5	US20150274824 SEQ ID NO: 38	11037
CII6690	159	122	53.2H11	US20150274824 SEQ ID NO: 40	11038
CII6691	159	122	53.2H11	US20150274824 SEQ ID NO: 42	11039
CII6692	159	122	53.2H11	US20150274824 SEQ ID NO: 43	11040
CII6693	159	122	53.2H11	US20150274824 SEQ ID NO: 45	11041
CII6694	159	122	EphA2-N1	US20150274824 SEQ ID NO: 74	11042
CII6695	159	122	EphA2-N2	US20150274824 SEQ ID NO: 76	11043
CII6696	233	122	6.00E+11	US20110262430 SEQ ID NO: 8	11044

CII6697	233	122	2B9	US20 110262430 SEQ ID NO: 10	11045
CII6698	233	122	6E! 1 chimera	US201 10262430 SEQ ID NO: 12	11046
CII6699	233	122	HO	US20 110262430 SEQ ID NO: 14	11047
CII6700	233	122	HI	US20 110262430 SEQ ID NO: 15	11048
CI16701	233	122	9C7	US20 110262430 SEQ ID NO: 18	11049
CII6702	233	122	5G4	US20 110262430 SEQ ID NO: 20	11050
CII6703	233	122	15D9	US20 110262430 SEQ ID NO: 22	11051
CII6704	277	129	HC1	US20130156786 SEQ ID NO: 38	11052
CII6705	277	129	HC2	US20 130 156786 SEQ ID NO: 39	11053
CII6706	277	129	HC3	US20 130 156786 SEQ ID NO: 40	11054
CII6707	277	129	HC4	US20130156786 SEQ ID NO: 41	11055
CII6708	277	129	HC5	US20 130 156786 SEQ ID NO: 42	11056
CII6709	277	129	HC6	US20 130 156786 SEQ ID NO: 43	11057
CI167 10	277	129	HC7	US20130156786 SEQ ID NO: 44	11058
CII67 ! 1	277	130		US20 130 156786 SEQ ID NO: 2	11059
CII67 12	274	133	6G425	US200700482 19 SEQ ID NO: 48	11060
CII6713	20	42		US20 130243753 SEQ ID NO: 103	11061
CII6714	20	42		US20130243753 SEQ ID NO: 105	11062
CII6715	20	42		US20130243753 SEQ ID NO: 107	11063
CII6716	20	42		US20130243753 SEQ ID NO: 109	11064
CII6717	20	42		US20 130243753 SEQ ID NO: 111	11065
CI167 18	21	42	B7	u S6433148 SEQ ID NO: 1	11066
CII67 19	23	42	2.7A4	US20 130034559 SEQ ID NO: 2	11067
CII6720	23	42	2.20A8	US20130034559 SEQ ID NO: 32	11068
CII6721	23	42	3.15G8	US20 130034559 SEQ ID NO: 42	11069
CII6722	30	42	6D10-1-1 VH	US8969040 SEQ ID NO: 33	11070
CII6723	30	42	10D5-2-3 VH	US8969040 SEQ ID NO: 34	11071
CII6724	30	42	3B7-3-3 VH	US8969040 SEQ ID NO: 35	11072
CII6725	30	42	6D10-1-1 VH	US8969040 SEQ ID NO: 48	11073
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CII6727	30	42	3B7-3-3 VH	US8969040 SEQ ID NO: 50	11075
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CII673 !	30	42	HV7a	US8969040 SEQ ID NO: 126	11079
CII6732	30	42	HVTb	US8969040 SEQ ID NO: 128	11080
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CII6734	31	42	VH3-73	US20 110223 176 SEQ ID NO: 23	11082
CI16735	31	42	VH3-73	US20 110223176 SEQ ID NO: 25	11083
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CII6752	52	42		US8647625 SEQ ID NO: 56	11100
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CII6754	53	42	Anti-CD 19 VL	US20160039942 SEQ ID NO: 20	11102

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CII6757	60	42	humanized anti-CD22 LL2	US20150239974 SEQ ID NO: 11	11105
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CII6765	109	42	AbF24	US20110129481 SEQ ID NO: 4	11113
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CII6767	109	42		US20110262436 SEQ ID NO: 10; US20110287003 SEQ ID NO: 1; US20130004484 SEQ ID NO: 19; US20140037625 SEQ ID NO: 7; US20150050275 SEQ ID NO: 19	11115
CII6768	109	42		US20110262436 SEQ ID NO: 14	11116
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CII6785	109	42	VH 064	US20150329642 SEQ ID No: 85	11133
CII6786	109	42	VH 068	US20150329642 SEQ ID No: 93	11134
CII6787	109	42	VH 069; VH 082; VH 089	US20150329642 SEQ ID No: 101, 142, 144	11135
CII6788	109	42	VH 096; VH 093	US20150329642 SEQ ID NO: 109, 176	11136
CII6789	109	42	VH 098	US20150329642 SEQ ID No: 117	11137
CII6790	109	42	VH 101	US20150329642 SEQ ID No: 125	11138
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CII6802	109	42	VH 084	US20150329642 SEQ ID No: 162	11150
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CII6809	109	42	VH 104	US20150329642 SEQ ID NO: 178	11157
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CII6811	109	42	53E2-54E_VH	US20150376292 SEQ ID NO: 94	11159
CII6812	109	42	53E3_VH	US20150376292 SEQ ID NO: 96	11160
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CII6819	109	42	56E1_VH	US20150376292 SEQ ID NO: 118	11167
CII6820	109	42	56G5_VH	US20150376292 SEQ ID NO: 120	11168
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CII6822	109	42		US8039598 SEQ ID NO: 4	11170
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CII6824	109	42	05174 VH = 05078 VH	US8101727 SEQ ID NO: 56, 69, 70	11172
CII6825	109	42	05079 VH	US8101727 SEQ ID NO: 57	11173
CII6826	109	42	05097 VH = 04687 VH	US8101727 SEQ ID NO: 58, 67, 68	11174
CII6827	109	42	05185 VH = 05081 VH	US8101727 SEQ ID NO: 59	11175
CII6828	109	42	05082 VH	US8101727 SEQ ID NO: 60	11176
CII6829	109	42	05093 VH = 04541 VH	US8101727 SEQ ID NO: 61	11177
CII6830	109	42	05102 VH = 04537 VH	US8101727 SEQ ID NO: 62	11178
CII6831	109	42	05106 VH = 04690 VH	US8101727 SEQ ID NO: 63	11179
CII6832	109	42	04682 VH	US8101727 SEQ ID NO: 64	11180
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CII6841	109	42		US9120852 SEQ ID NO: 8	11189
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CII6845	109	42	AT-VH4	US20140356366 SEQ ID NO: 93; US8900582 SEQ ID NO: 4	11193
CII6846	109	42	AT-VH5	US20140356366 SEQ ID NO: 94; US8900582 SEQ ID NO: 5	11194
CII6847	110	42		US20090226443 SEQ ID NO: 19	11195
CII6848	114	42	hum III	US20090226455 SEQ ID NO: 6	11196
CII6849	117	42	cMu-9VH	US7553953 SEQ ID NO: 34	11197
CII6850	117	42	hMu-9VH	US7553953 SEQ ID NO: 38	11198
CII6851	118	42		US20140079706 SEQ ID NO: 7	11199
CII6852	118	42		US20140079706 SEQ ID NO: 15	11200
CII6853	118	42		US20140079706 SEQ ID NO: 23	11201
CII6854	118	42		US20140079706 SEQ ID NO: 31	11202
CII6855	118	42	hMab 2F11-e7	US20140079706 SEQ ID NO: 39	11203

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CII6858	118	42	Mab 1G10	US20140079706 SEQ ID NO: 75	11206
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CII6860	118	42	CP-870,893	US20140079706 SEQ ID NO: 88	11208
CII6861	118	42	humanized S2C6	US20140079706 SEQ ID NO: 90	11209
CII6862	129	42	Hz515H7 VH1 VL1	US20110020218 SEQ ID NO: 72	11210
CII6863	129	42	Hz515H7 VH1 D76N VL2; Hz515H7 VH1 D76N VL2.1; Hz515H7 VH1 D76N VL2.2; Hz515H7 VH1 D76N VL2.3	US20110020218 SEQ ID NO: 73	11211
CII6864	129	42	Hz515H7 VH1 V48L D76N VL1; Hz515H7 VH1 V48L D76N VL1 T59A E61D	US20110020218 SEQ ID NO: 74	11212
CII6865	129	42		US20110020218 SEQ ID NO: 75	11213
CII6866	129	42		US20110020218 SEQ ID NO: 82	11214
CII6867	129	42	Hz515H7 VH1 VL1	US20110020218 SEQ ID NO: 83	11215
CII6868	129	42	Hz515H7 VH1 D76N VL2; Hz515H7 VH1 D76N VL2.1; Hz515H7 VH1 D76N VL2.2; Hz515H7 VH1 D76N VL2.3	US20110020218 SEQ ID NO: 84	11216
CII6869	129	42	Hz515H7 VH1 V48L D76N VL1; Hz515H7 VH1 V48L D76N VL1 T59A E61D	US20110020218 SEQ ID NO: 85	11217
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CII6874	138	42	225	US20070274991 SEQ ID NO: 10	11222
CII6875	138	42	Cur6	US20070274991 SEQ ID NO: 11	11223
CII6876	138	42	Cur63	US20070274991 SEQ ID NO: 12	11224
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CII6878	140	42	hCGbeta	US20090130712 SEQ ID NO: 38	11226
CII6879	140	42	IGF-1RVHalpha(1-87)	US20090130712 SEQ ID NO: 52	11227
CII6880	140	42	IGF-1RVHhCGbeta	US20090130712 SEQ ID NO: 54	11228
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CII6888	140	42	I-HHD	US20110200595 SEQ ID NO: 38; US20130273032 SEQ ID NO: 8; US20140356366 SEQ ID NO: 109; US8273328 SEQ ID NO: 15	11236
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CII6891	140	42	Hu225; Cetuximab	US20130266579 SEQ ID NO: 28; US20150071923 SEQ ID NO: 16; US8658175 SEQ ID NO: 9	11239
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CII6906	140	42	T023L	US20130266579 SEQ ID NO: 44	11254
CII6907	140	42	V024R	US20 130266579 SEQ ID NO: 45	I 1255
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CII7511	140	42		US20140356366 SEQ ID NO: 113	11859
CII7512	140	42	Cetuximab A119	US20150071923 SEQ ID NO: 2; US8658175 SEQ ID NO: 1; US9051370 SEQ ID NO: 4	11860
CII7513	140	42	Cetuximab S119	US20150071923 SEQ ID NO: 7	11861
CII7514	140	42	Humanized Cetuximab (H225)	US20150071923 SEQ ID NO: 14	11862
CII7515	140	42	E-h3, 7 heavy chain variable domain	US20150071923 SEQ ID NO: 61	11863
CII7516	140	42	E-h3, 7 heavy chain variable domain	US20150071923 SEQ ID NO: 63	11864
CII7517	140	42	HC-Y104D control heavy chain variable domain	US20150071923 SEQ ID NO: 69	11865
CII7518	140	42	HC-Y104E heavy chain variable domain	US20150071923 SEQ ID NO: 74	11866
CII7519	140	42	HC-Y104E heavy chain variable domain	US20150071923 SEQ ID NO: 75	11867
CII7520	140	42	HC-Y104E/HC-Q111P heavy chain variable domain	US20150071923 SEQ ID NO: 77	11868
CII7521	140	42	HC-Y104E/HC-Q111P heavy chain variable domain	US20150071923 SEQ ID NO: 78	11869
CII7522	140	42	HC-S25C/HC-Y104E heavy chain variable domain	US20150071923 SEQ ID NO: 80	11870
CII7523	140	42	HC-S25C/HC-Y104E heavy chain variable domain	US20150071923 SEQ ID NO: 81	11871
CII7524	140	42	HC-S53G/HC-Y104E heavy chain variable domain	US20150071923 SEQ ID NO: 83	11872
CII7525	140	42	HC-S53G/HC-Y104E heavy chain variable domain	US20150071923 SEQ ID NO: 84	11873
CII7526	140	42	HC-S53G/HC-Y104E/HC-Q111P heavy chain variable	US20150071923 SEQ ID NO: 86	11874
CII7527	140	42	HC-S53G/HC-Y104E/HC-Q111P heavy chain variable	US20150071923 SEQ ID NO: 87	11875
CII7528	140	42	HC-S25V/HC-Y104E heavy chain variable domain	US20150071923 SEQ ID NO: 89	11876
CII7529	140	42	HC-S25V/HC-Y104E heavy chain variable domain	US20150071923 SEQ ID NO: 90	11877
CII7530	140	42	HC-S25V/HC-Y104E/HC-Q111P heavy chain variable	US20150071923 SEQ ID NO: 92	11878
CII7531	140	42	HC-S25V/HC-Y104E/HC-Q111P heavy chain variable	US20150071923 SEQ ID NO: 93	11879
CII7532	140	42	HC-S25V/HC-S53G/HC-Y104E heavy chain variable	US20150071923 SEQ ID NO: 95	11880

CII7533	140	42	HC-S25V/HC-S53G/HC-Y104E heavy chain variable	US20 15007 1923 SEQ ID NO: 96	I 1881
CI17534	140	42	HC-T30F/HC-Y104E heavy chain variable domain	US2015007 1923 SEQ ID NO: 101	11882
CII7535	140	42	HC-T30F/HC-Y 104E heavy chain variable domain	US20 15007 1923 SEQ ID NO: 102	I 1883
CII7536	140	42	HC-T30F/HC-Y104E/HC-Q1 1IP heavy chain variable	US20 15007 1923 SEQ ID NO: 104	11884
CII7537	140	42	HC-T30F/HC-Y 104E/HC-Q1 1IP heavy chain variable	US20150071923 SEQ ID NO: 105	11885
CII7538	140	42	HC-T30F/HC-S53G/HC-Y104E heavy chain variable	US20 15007 1923 SEQ ID NO: 107	11886
CII7539	140	42	HC-T30F/HC-S53G/HC-Y104E heavy chain variable	US20150071923 SEQ ID NO: 108	11887
CII7540	140	42	HC-D72L/HC-Y104E heavy chain variable domain	US20 15007 1923 SEQ ID NO: 113	11888
CII7541	140	42	HC-D72L/HC-Y104E heavy chain variable domain	US20150071923 SEQ ID NO: 114	11889
CII7542	140	42	HC-D72L/HC-Y104E/HC-Q1 1IP heavy chain variable	US20 15007 1923 SEQ ID NO: 116	11890
CII7543	140	42	HC-D72L/HC-Y104E/HC-Q1 1IP heavy chain variable	US20150071923 SEQ ID NO: 117	11891
CII7544	140	42	HC-S53G/HC-D72L/HC-Y104E heavy chain variable	US20150071923 SEQ ID NO: 119	I 1892
CII7545	140	42	HC-S53G/HC-D72L/HC-Y104E heavy cliain variable	US2015007 1923 SEQ ID NO: 120	11893
CII7546	140	42	EP-hl, 2, 4, 5, 6, 8 heavy chain variable domain	US20150071923 SEQ ID NO: 131	I 1894
CII7547	140	42	EP-hl, 2, 4, 5, 6, 8 heavy chain variable domain	US2015007 1923 SEQ ID NO: 133	11895
CII7548	140	42	EP-h3, 7 heavy chain variable domain	US20150071923 SEQ ID NO: 137	I 1896
CII7549	140	42	EP-h3, 7 heavy chain variable domain	US20150071923 SEQ ID NO: 139	11897
CI17550	140	42	EP-h9, 12, 14 heavy chain variable domain	US2015007 1923 SEQ ID NO: 143	11898
CII755 1	140	42	EP-h9, 12, 14 heavy chain variable domain	US20150071923 SEQ ID NO: 145	I 1899
CI17552	140	42	EP-hl 0, 13 heavy chain variable domain	US2015007 1923 SEQ ID NO: 149	11900
CII7553	140	42	EP-hlO, 13 heavy chain variable domain	US20150071923 SEQ ID NO: 151	I 1901
CII7554	140	42	FEP-hl, 19, 20, 21; FEP-h5, 9, 13, 17	US20 15007 1923 SEQ ID NO: 211	11902
CI17555	140	42	FEP-hl, 19. 20, 21; FEP-h5, 9, 13, 17	US2015007 1923 SEQ ID NO: 213, 237	11903
CII7556	140	42	FEP-h2 heavy chain variable dosnain SI 19	US20 15007 1923 SEQ ID NO: 217	I 1904
CI17557	140	42	FEP-h2 heavy chain variable domain A 119	US2015007 1923 SEQ ID NO: 219	11905
CII7558	140	42	FEP-h3, 7, 11, 15 heavy chain variable domain	US20 15007 1923 SEQ ID NO: 223	I 1906
CI17559	140	42	FEP-h3, 7, 11, 15 heavy chain variable domain	US2015007 1923 SEQ ID NO: 225	11907
CII7560	140	42	FEP-h4, 8. 12, 16 heavy chain variable domain	US20 15007 1923 SEQ ID NO: 229	I 1908
CI17561	140	42	FEP-h4, 8, 12, 16 heavy chain variable domain	US2015007 1923 SEQ ID NO: 231	11909
CII7562	140	42	FEP-h6 heavy chain variable dosnain SI 19	US20 15007 1923 SEQ ID NO: 241	I 1910
CI17563	140	42	FEP-h6 heavy chain variable domain A 119	US2015007 1923 SEQ ID NO: 243	11911

CII7564	140	42	FEP-h10, 14, 18 heavy chain variable domain	US20150071923 SEQ ID NO: 247	11912
CII7565	140	42	FEP-h10, 14, 18 heavy chain variable domain	US20150071923 SEQ ID NO: 249	11913
CII7566	140	42	HC-F27G/HC-Y104E heavy chain variable domain	US20150071923 SEQ ID NO: 316	11914
CII7567	140	42	HC-F27G/HC-Y104E heavy chain variable domain	US20150071923 SEQ ID NO: 317	11915
CII7568	140	42	HC-F27G/HC-Y104E/HC-Q111P heavy chain variable	US20150071923 SEQ ID NO: 319	11916
CII7569	140	42	HC-F27G/HC-Y104E/HC-Q111P heavy chain variable	US20150071923 SEQ ID NO: 320	11917
CII7570	140	42	HC-F27G/HC-S53G/HC-Y104E heavy chain variable	US20150071923 SEQ ID NO: 322	11918
CII7571	140	42	HC-F27G/HC-S53G/HC-Y104E heavy chain variable	US20150071923 SEQ ID NO: 323	11919
CII7572	140	42	AbA VH	US20150337042 SEQ ID NO: 9	11920
CII7573	140	42	AbB VH	US20150337042 SEQ ID NO: 64	11921
CII7574	140	42	AbE VH; AbC VH; AbD VH	US20150337042 SEQ ID NO: 50, 66, 68	11922
CII7575	140	42	AbF VH	US20150337042 SEQ ID NO: 52	11923
CII7576	140	42	AbG VH	US20150337042 SEQ ID NO: 72	11924
CII7577	140	42	AbH VH	US20150337042 SEQ ID NO: 54, 58	11925
CII7578	140	42	AbJ VH	US20150337042 SEQ ID NO: 56	11926
CII7579	140	42	AbK VH	US20150337042 SEQ ID NO: 74	11927
CII7580	140	42	AbM VH	US20150337042 SEQ ID NO: 76	11928
CII7581	140	42	AbN VH	US20150337042 SEQ ID NO: 60	11929
CII7582	140	42	AbO VH	US20150337042 SEQ ID NO: 62	11930
CII7583	140	42	AbQ VH	US20150337042 SEQ ID NO: 70	11931
CII7584	140	42	AbP VH	US20150337042 SEQ ID NO: 78	11932
CII7585	140	42		US20160008466 SEQ ID NO: 7	11933
CII7586	140	42		US20160017028 SEQ ID NO: 44	11934
CII7587	140	42	hVH3	US20160068609 SEQ ID NO: 7; US9051370 SEQ ID NO: 20	11935
CII7588	140	42		US20160068609 SEQ ID NO: 9	11936
CII7589	140	42	2.38	US7723484 SEQ ID NO: 49	11937
CII7590	140	42	2.69	US7723484 SEQ ID NO: 50	11938
CII7591	140	42	2.87	US7723484 SEQ ID NO: 51	11939
CII7592	140	42	2.88	US7723484 SEQ ID NO: 52	11940
CII7593	140	42	2.11.3	US7723484 SEQ ID NO: 53	11941
CII7594	140	42	4.14	US7723484 SEQ ID NO: 54	11942
CII7595	140	42	4.15	US7723484 SEQ ID NO: 55	11943
CII7596	140	42	4.21	US7723484 SEQ ID NO: 56	11944
CII7597	140	42	I-HHD-1	US8273328 SEQ ID NO: 128	11945
CII7598	140	42	I-HHD-2	US8273328 SEQ ID NO: 129	11946
CII7599	140	42	I-HHD-3	US8273328 SEQ ID NO: 130	11947
CII7600	140	42	I-HHD-4	US8273328 SEQ ID NO: 131	11948
CII7601	140	42	I-HHD-5	US8273328 SEQ ID NO: 132	11949
CII7602	140	42	I-HHD-6	US8273328 SEQ ID NO: 133	11950
CII7603	140	42	I-HHD-7	US8273328 SEQ ID NO: 134	11951
CII7604	140	42	I-HHD-8	US8273328 SEQ ID NO: 135	11952
CII7605	140	42	I-HHD-9	US8273328 SEQ ID NO: 136	11953
CII7606	140	42	I-HHD-10	US8273328 SEQ ID NO: 137	11954
CII7607	140	42	992VH	US8414896 SEQ ID NO: 40; US8663640 SEQ ID NO: 40	11955
CII7608	140	42	Chimeric 1024 VH	US8414896 SEQ ID NO: 41; US8663640 SEQ ID NO: 41	11956

CII7609	140	42	1030VH	US8414896 SEQ ID NO: 42; US8663640 SEQ ID NO: 42	11957
CII7610	140	42	1042VH	US8414896 SEQ ID NO: 43; US8663640 SEQ ID NO: 43	11958
CII7611	140	42	1208VH	US8414896 SEQ ID NO: 44; US8663640 SEQ ID NO: 44	11959
CII7612	140	42	1229VH	US8414896 SEQ ID NO: 45; US8663640 SEQ ID NO: 45	11960
CII7613	140	42	1254VH	US8414896 SEQ ID NO: 46; US8663640 SEQ ID NO: 46	11961
CII7614	140	42	1257VH	US8414896 SEQ ID NO: 47; US8663640 SEQ ID NO: 47	11962
CII7615	140	42	1260VH	US8414896 SEQ ID NO: 48; US8663640 SEQ ID NO: 48	11963
CII7616	140	42	1261VH	US8414896 SEQ ID NO: 49; US8663640 SEQ ID NO: 49	11964
CII7617	140	42	1277VH	US8414896 SEQ ID NO: 50; US8663640 SEQ ID NO: 50	11965
CII7618	140	42	1284VH	US8414896 SEQ ID NO: 51; US8663640 SEQ ID NO: 51	11966
CII7619	140	42	1308VH	US8414896 SEQ ID NO: 52; US8663640 SEQ ID NO: 52	11967
CII7620	140	42	1320VH	US8414896 SEQ ID NO: 53; US8663640 SEQ ID NO: 53	11968
CII7621	140	42	1344VH	US8414896 SEQ ID NO: 54; US8663640 SEQ ID NO: 54	11969
CII7622	140	42	1347VH	US8414896 SEQ ID NO: 55; US8663640 SEQ ID NO: 55	11970
CII7623	140	42	992L1024\IGHV	US8414896 SEQ ID NO: 96	11971
CII7624	140	42	1024L992\IGHV	US8414896 SEQ ID NO: 98	11972
CII7625	140	42	Humanized 992 VH	US8414896 SEQ ID NO: 104	11973
CII7626	140	42	Humanized 1024 VH	US8414896 SEQ ID NO: 106	11974
CII7627	140	42	Chimeric 992 VH	US8414896 SEQ ID NO: 108	11975
CII7628	140	42		US8586041 SEQ ID NO: 2	11976
CII7629	140	42		US8748175 SEQ ID NO: 7	11977
CII7630	140	42		US9051370 SEQ ID NO: 17	11978
CII7631	140	42	hVH1	US9051370 SEQ ID NO: 18	11979
CII7632	140	42	hVH2	US9051370 SEQ ID NO: 19	11980
CII7633	140	42	hVH4	US9051370 SEQ ID NO: 21	11981
CII7634	140	42	hVH5	US9051370 SEQ ID NO: 22	11982
CII7635	140	42	hVH6	US9051370 SEQ ID NO: 23	11983
CII7636	140	42	hVH7	US9051370 SEQ ID NO: 24	11984
CII7637	140	42	hVH8	US9051370 SEQ ID NO: 25	11985
CII7638	140	42		US9051370 SEQ ID NO: 31	11986
CII7639	140	42	muEGFR-7 VH	US9125896 SEQ ID NO: 19	11987
CII7640	140	42	muEGFR-12 VH	US9125896 SEQ ID NO: 20, 93	11988
CII7641	140	42	huEGFR-7 VH	US9125896 SEQ ID NO: 21	11989
CII7642	140	42	huEGFR-7 VH	US9125896 SEQ ID NO: 22	11990
CII7643	140	42	huEGFR-12 VH	US9125896 SEQ ID NO: 23	11991
CII7644	140	42	muEGFR-6 VH; muEGFR6HC and muEGFR10HC	US9125896 SEQ ID NO: 69, 90	11992
CII7645	140	42	huEGFR-6 VH v1.0	US9125896 SEQ ID NO: 71	11993
CII7646	140	42	huEGFR-6 VH v1.11	US9125896 SEQ ID NO: 72	11994
CII7647	140	42	huEGFR-7 VH v1.11	US9125896 SEQ ID NO: 73	11995
CII7648	140	42	huEGFR-6 VH v1.11	US9125896 SEQ ID NO: 79	11996
CII7649	140	42	huEGFR-7 VH v1.11	US9125896 SEQ ID NO: 80	11997
CII7650	140	42	AT-VH2	US20140356366 SEQ ID NO: 91; US8900582 SEQ ID NO: 2	11998

CII7651	141	42	H1H2194P	US20150259423 SEQ ID NO: 2	11999
CII7652	141	42	H1H2195P	US20150259423 SEQ ID NO: 18	12000
CII7653	141	42	H2M1863N2	US20150259423 SEQ ID NO: 34	12001
CII7654	141	42	H2M1911N	US20150259423 SEQ ID NO: 50	12002
CII7655	141	42	H2M1912N	US20150259423 SEQ ID NO: 66	12003
CII7656	141	42	H2M1915N	US20150259423 SEQ ID NO: 82	12004
CII7657	141	42	H2M1917N	US20150259423 SEQ ID NO: 98	12005
CII7658	141	42	H2M1918N	US20150259423 SEQ ID NO: 114	12006
CII7659	141	42	H3M1913N	US20150259423 SEQ ID NO: 130	12007
CII7660	144	42	C6.5	US8329873 SEQ ID NO: 48	12008
CII7661	144	42	G98A	US8329873 SEQ ID NO: 49	12009
CII7662	144	42	ML3-9	US8329873 SEQ ID NO: 50	12010
CII7663	144	42	H3B1	US8329873 SEQ ID NO: 51	12011
CII7664	144	42	B1D2	US8329873 SEQ ID NO: 52	12012
CII7665	140	42	P1X	US20140234314 SEQ ID NO: 19	12013
CII7666	140	42	P2X	US20140234314 SEQ ID NO: 21	12014
CII7667	140	42	P3X	US20140234314 SEQ ID NO: 23	12015
CII7668	147	42	992	US20160089435 SEQ ID NO: 2	12016
CII7669	147	42	1024	US20160089435 SEQ ID NO: 6	12017
CII7670	147	42	1030	US20160089435 SEQ ID NO: 10	12018
CII7671	147	42	1254	US20160089435 SEQ ID NO: 14	12019
CII7672	147	42	1277	US20160089435 SEQ ID NO: 18	12020
CII7673	147	42	1565	US20160089435 SEQ ID NO: 22	12021
CII7674	147	42	Ab 4385 VH; 4385	US20160089435 SEQ ID NO: 34; US8609095 SEQ ID NO: 26	12022
CII7675	147	42	4785	US20160089435 SEQ ID NO: 46	12023
CII7676	147	42	5038	US20160089435 SEQ ID NO: 50	12024
CII7677	147	42	5082	US20160089435 SEQ ID NO: 54	12025
CII7678	147	42	5096	US20160089435 SEQ ID NO: 58	12026
CII7679	147	42	Ab 4384 VH	US8609095 SEQ ID NO: 22; US20160089435 SEQ ID NO: 30	12027
CII7680	149	42		US20150322165 SEQ ID NO: 115	12028
CII7681	151	42	AT-VH1	US20140356366 SEQ ID NO: 90; US8900582 SEQ ID NO: 1	12029
CII7682	160	42		US20140120114 SEQ ID NO: 1	12030
CII7683	160	42		US20140120114 SEQ ID NO: 2	12031
CII7684	160	42		US20140120114 SEQ ID NO: 3	12032
CII7685	160	42		US20140120114 SEQ ID NO: 4	12033
CII7686	160	42		US20140120114 SEQ ID NO: 5	12034
CII7687	160	42		US20140120114 SEQ ID NO: 6	12035
CII7688	160	42		US20140120114 SEQ ID NO: 7	12036
CII7689	160	42		US20140120114 SEQ ID NO: 8	12037
CII7690	160	42		US20140120114 SEQ ID NO: 9	12038
CII7691	160	42		US20140120114 SEQ ID NO: 10	12039
CII7692	160	42	mIIIA4 and FA4	US20140120114 SEQ ID NO: 78	12040
CII7693	160	42	FA106	US20140120114 SEQ ID NO: 80	12041
CII7694	166	42	2C4	US20110129464 SEQ ID NO: 2	12042
CII7695	166	42	1.44.1	US20130089544 SEQ ID NO: 2	12043
CII7696	166	42	1.140.1	US20130089544 SEQ ID NO: 6	12044
CII7697	166	42	1.4-3.1	US20130089544 SEQ ID NO: 10	12045
CII7698	166	42	1.1-4.1; 1.100.1; 1.9-6.2; 1.3-9.1; 1.2-4.3	US20130089544 SEQ ID NO: 14, 18, 22, 34, 38	12046
CII7699	166	42	1.1-8.1	US20130089544 SEQ ID NO: 26	12047
CII7700	166	42	1.2-0.1	US20130089544 SEQ ID NO: 30	12048
CII7701	166	42	1.7-1.3	US20130089544 SEQ ID NO: 42	12049
CII7702	166	42	1.44.1	US20130089544 SEQ ID NO: 4	12050
CII7703	166	42		US20130266564 SEQ ID NO: 8	12051
CII7704	167	42	A01	US20140120092 SEQ ID NO: 1	12052

CII7705	167	42	A02	US20140120092 SEQ ID NO: 3	12053
CII7706	167	42	A08	US20140120092 SEQ ID NO: 7	12054
CII7707	167	42	A12	US20140120092 SEQ ID NO: 11	12055
CII7708	167	42	B01; D10	US20140120092 SEQ ID NO: 13, 45	12056
CII7709	167	42	B03	US20140120092 SEQ ID NO: 15	12057
CII7710	167	42	B04	US20140120092 SEQ ID NO: 17	12058
CII7711	167	42	B05	US20140120092 SEQ ID NO: 19	12059
CII7712	167	42	B08	US20140120092 SEQ ID NO: 21	12060
CII7713	167	42	B10	US20140120092 SEQ ID NO: 23	12061
CII7714	167	42	B11; A11	US20140120092 SEQ ID NO: 9, 25	12062
CII7715	167	42	C03	US20140120092 SEQ ID NO: 27	12063
CII7716	167	42	C07; A04	US20140120092 SEQ ID NO: 5, 29	12064
CII7717	167	42	C10	US20140120092 SEQ ID NO: 31	12065
CII7718	167	42	C12	US20140120092 SEQ ID NO: 33	12066
CII7719	167	42	D01	US20140120092 SEQ ID NO: 35	12067
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CII7721	167	42	D04	US20140120092 SEQ ID NO: 39	12069
CII7722	167	42	D07	US20140120092 SEQ ID NO: 41	12070
CII7723	167	42	D08	US20140120092 SEQ ID NO: 43	12071
CII7724	167	42	D11	US20140120092 SEQ ID NO: 47	12072
CII7725	167	42	E04	US20140120092 SEQ ID NO: 49	12073
CII7726	167	42	E05	US20140120092 SEQ ID NO: 51	12074
CII7727	167	42	E08	US20140120092 SEQ ID NO: 53	12075
CII7728	167	42	F10	US20140120092 SEQ ID NO: 55	12076
CII7729	167	42	G01	US20140120092 SEQ ID NO: 57	12077
CII7730	167	42	H06	US20140120092 SEQ ID NO: 59	12078
CII7731	167	42		US7846440 SEQ ID NO: 1; US8623592 SEQ ID NO: 1; US8691225 SEQ ID NO: 1	12079
CII7732	167	42		US7846440 SEQ ID NO: 3; US8623592 SEQ ID NO: 3; US8691225 SEQ ID NO: 3	12080
CII7733	167	42		US7846440 SEQ ID NO: 5; US8623592 SEQ ID NO: 5; US8691225 SEQ ID NO: 5	12081
CII7734	167	42		US7846440 SEQ ID NO: 35; US8691225 SEQ ID NO: 35; US8623592 SEQ ID NO: 25	12082
CII7735	167	42		US7846440 SEQ ID NO: 37; US8623592 SEQ ID NO: 33; US8691225 SEQ ID NO: 37	12083
CII7736	169	42		US20150104443 SEQ ID NO: 3	12084
CII7737	170	42		US20150104443 SEQ ID NO: 4	12085
CII7738	171	42		US20150104443 SEQ ID NO: 5	12086
CII7739	172	42		US20150104443 SEQ ID NO: 6	12087
CII7740	183	42		US7241568 SEQ ID NO: 18	12088
CII7741	183	42		US7241568 SEQ ID NO: 20	12089
CII7742	183	42		US7241568 SEQ ID NO: 42	12090
CII7743	184	42	FR2-10	US20150125454 SEQ ID NO: 12	12091
CII7744	184	42	FR2-13	US20150125454 SEQ ID NO: 14	12092
CII7745	184	42	FR2-14	US20150125454 SEQ ID NO: 16	12093
CII7746	202	42		US20090028877 SEQ ID NO: 20	12094
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CII7748	202	42		US20090028877 SEQ ID NO: 23	12096
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CI17804	209	42		**US201401934 14** SEQ ID NO: 34	12152

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CII7806	209	42		**US20140193414** SEQ **ID NO: 41**	12154
CII7807	209	42		**US20 140193414** SEQ ID NO: 42	12155
CII7808	209	42		**US20 140193414** SEQ ID NO: 43	12156
CI17809	209	42		**US201401934 14** SEQ ID NO: 44	12157
CII78 10	209	42		US20 140 1934 14 SEQ ID NO: 45	12158
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CII78 12	**211**	42	4518	**US20160089435** SEQ ID NO: 42	12160
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CII7818	211	42	VH 060	**US20130171 148** SEQ ID NO: 22	12166
CI17819	**211**	42	**VH** 106	**US2013017 1**148 SEQ ID NO: 29	12167
CII7820	**211**	42	**VH** 111	US20 130 17 1148 SEQ ID NO: 36	12168
CII782 1	211	42	**VH 041**	**US2013017 1148** SEQ ID NO: 43	12169
CII7822	**211**	42	**VH 150**	**US20130171 148** SEQ ID NO: 45	12170
CII7823	**211**	42	VH 067	**US20130171 148** SEQ **ID** NO: 47	12171
CII7824	211	42	**VH** 072	**US20130171** 148 SEQ **ID NO:** 49	12172
CII7825	211	42	**VH** 163	US20130171 148 SEQ ID NO: 51	12173
CII7826	211	42	VH 093	**US20130171 148** SEQ ID NO: 53	12174
CII7827	211	42	VH 044	**US20130171 148** SEQ ID NO: 55	12175
CI17828	**211**	42	**VH** 169; **VH** 161	**US20130189271** SEQ ID NO: **1,** 85	12176
CII7829	**211**	42	**VH** 050	**US20 130 18927**1 SEQ ID NO: 8	12177
CII7830	211	42	**VH** 084	**US2013018927** 1 SEQ **ID NO**: 15	12178
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CI17833	**211**	42	VH 127	**US20130189271** SEQ ID NO: 42	**12181**
CII7834	**211**	42	VH 159	US20 130 189271 SEQ ID NO: 49	12182
CII7835	211	42	**VH** 153	**US20130189271** SEQ ID NO: 63	12183
CII7836	**211**	42	**VH** 132	**US20 130 189271** SEQ ID NO: 70	12184
CII7837	**211**	42	**VH 049; VH 051**	**US20 130 18927**1 SEQ **ID** NO: 79, 79	12185
CI17838	**211**	42	VH 055	**US20130189271** SEQ ID NO: 81	12186
CII7839	**211**	42	VH 123	US20 130 189271 SEQ ID NO: 83	**12187**
CII7840	211	42	**VH** 124	**US20130189271** SEQ ID NO: 87	12188
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CII7842	**211**	42	**VH** 143	**US2013018927 1** SEQ ID NO: 91	12190
CII7843	211	42	**VH** 019	**US2013018927** 1 SEQ **ID NO:** 93	12191
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CI17858	2 11	42	VH 152	US20130189271 SEQ ID NO: 123	12206
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CJ7872	2 11	42	Ab 4386 VH	US8609095 SEQ ID NO: 30	12220
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CI17880	215	42	Clone 151) 12. 1 VH	US20 140363429 SEQ ID NO: 12	12228
CI l7881	2 15	42	Clone 151)12.2 VH	US20 140363429 SEQ ID NO: 13	12229
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CI17901	217	42	Ab23	US20150322 145 SEQ ID NO: 842	12249
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CII7916	223	42	hVh 8b	US8900588 SEQ ID NO: 77	12264
CII7917	223	42	hVh 8c	US8900588 SEQ ID NO: 79	12265
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CII7919	223	42	hVL.13b	US8900588 SEQ ID NO: 83	12267
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CII7930	230	42		US8580254 SEQ ID NO: 14	12278
CII7931	230	42		US8580254 SEQ ID NO: 18	12279
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CII7936	233	42	GFA6	US20130344069 SEQ ID NO: 7	12284
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CII7958	232	42	7.251.3	US8410058 SEQ ID NO: 52	12306
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CII7960	233	42	7C10 VH	US7241444 SEQ ID NO: 52; US7553485 SEQ ID NO: 52	12308
CII7961	274	42	5.12.14	US20070048219 SEQ ID NO: 19	12309
CII7962	274	42	variant 6G4.2.5	US20070048219 SEQ ID NO: 37	12310
CII7963	274	42	humanized 6G425 F(ab)-1	US20070048219 SEQ ID NO: 49	12311
CII7964	295	42	BIIB71F10	US20100119511 SEQ ID NO: 11	12312
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CII7980	321	42		US8455623 SEQ ID NO: 22	12328
CII7981	331	42		US20150232572 SEQ ID NO: 26	12329
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CII7983	337	42	PAM4 chimeric	US8574854 SEQ ID NO: 14	12331
CII7984	337	42	Wil2 (FR1-3)	US8574854 SEQ ID NO: 17	12332
CII7985	337	42	NEWM (FR4)	US8574854 SEQ ID NO: 18	12333
CII7986	337	42	hPAM4	US8574854 SEQ ID NO: 19	12334
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CII7990	346	42	4D4 (IgG4)	US20050074821 SEQ ID NO: 42	12338
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CII8004	346	42		US20090041717 SEQ ID NO: 116	12352

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CI18006	346	42		US2009004 17 17 SEQ ID NO: 136	12354
CI18007	346	42		U82009004 17 17 SEQ ID NO: 140	12355
CII8008	346	42		US2009004 !7 17 SEQ ID NO: 156	12356
CII8009	346	42		US2009004 17 17 SEQ ID NO: 160	12357
CII8010	346	42		US20090041717 SEQ ID NO: 176	12358
CII801 1	346	42		US20090041717 SEQ ID NO: 180	12359
CII8012	346	42		US20090041717 SEQ ID NO: 184	12360
CII8013	346	42		US20090041717 SEQ ID NO: 200	12361
CII8014	346	42		US20090041717 SEQ ID NO: 204	12362
CI18015	346	42		U82009004 17 17 SEQ ID NO: 208	12363
CII80 16	346	42		US2009004 !7 17 SEQ ID NO: 224	12364
CII8017	346	42		US2009004 17 17 SEQ ID NO: 228	12365
CII8018	346	42		US20090041717 SEQ ID NO: 232	12366
CII8019	346	42		US20090041717 SEQ ID NO: 236	12367
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CII802 1	346	42		US20090041717 SEQ ID NO: 256	12369
CII8022	346	42		US20090041717 SEQ ID NO: 260	12370
CI18023	346	42		US2009004 17 17 SEQ ID NO: 264	12371
CII8024	346	42		US2009004 !7 17 SEQ ID NO: 284	12372
CII8025	346	42		US2009004 17 17 SEQ ID NO: 288	12373
CII8026	346	42		US20090041717 SEQ ID NO: 304	12374
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CII8028	346	42		US20090041717 SEQ ID NO: 312	12376
CII8029	346	42		US20090041717 SEQ ID NO: 328	12377
CII8030	346	42		US20090041717 SEQ ID NO: 332	12378
CI1803 1	346	42		U82009004 17 17 SEQ ID NO: 336	12379
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CII8033	346	42		US20090041717 SEQ ID NO: 356	12381
CII8034	346	42		US20090041717 SEQ ID NO: 360	12382
CII8035	346	42		US20090041717 SEQ ID NO: 376	12383
CII8036	346	42		US20090041717 SEQ ID NO: 380, 400	12384
CII8037	346	42		US20090041717 SEQ ID NO: 384	12385
CII8038	346	42		US20090041717 SEQ ID NO: 404	12386
CII8039	346	42		US20090041717 SEQ ID NO: 420	12387
CII8040	346	42		US20090041717 SEQ ID NO: 424	12388
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CII8046	346	42		US20090041717 SEQ ID NO: 488	12394
CII8047	346	42		US20090041717 SEQ ID NO: 504	12395
CII8048	346	42		US20090041717 SEQ ID NO: 508	12396
CII8049	346	42		US20090041717 SEQ ID NO: 512	12397
CI18050	346	42		U82009004 17 17 SEQ ID NO: 532	12398
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CII8053	353	42	90	US20 16000233 1 SEQ ID NO: 53	12401
CII8054	353	42	132; 132_A12	US2016000233 1 SEQ ID NO: 57, 61	12402
CII8055	353	42	137	US20 16000233 1 SEQ ID NO: 65	12403
CI18056	353	42	438 VH1.0	US20 16000233 1 SEQ ID NO: 69	12404
CII8057	353	42	438 VH1.1	US20 16000233 1 SEQ ID NO: 71	12405
CII8058	353	42	438 (VHl._l)-hIgGl_-3M	US2016000233 1 SEQ ID NO: 111	12406

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CII8061	362	42		US20090110678 SEQ ID NO: 8	12409
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CII8063	365	42	BAP058HC	US20160108123 SEQ ID NO: 6	12411
CII8064	365	42	BAP058-chi HC	US20160108123 SEQ ID NO: 16	12412
CII8065	365	42	BAP058-hum01-HC; BAP058-hum02-HC; BAP058-hum14-HC	US20160108123 SEQ ID NO: 18	12413
CII8066	365	42		US20160108123 SEQ ID NO: 250	12414
CII8067	365	42		US20160108123 SEQ ID NO: 251	12415
CII8068	365	42		US20160108123 SEQ ID NO: 252	12416
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CII8076	365	42	ADC-1013	US20160108123 SEQ ID NO: 312	12424
CII8077	365	42		US20160108123 SEQ ID NO: 319	12425
CII8078	365	42	hCD27.15	US20160108123 SEQ ID NO: 324	12426
CII8079	365	42	CJM112	US20160108123 SEQ ID NO: 339	12427
CII8080	365	42	VAY73	US20160108123 SEQ ID NO: 356	12428
CII8081	365	42	VAY736	US20160108123 SEQ ID NO: 358	12429
CII8082	369	42		US8093362 SEQ ID NO: 21	12430
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CII8088	369	42		US8093362 SEQ ID NO: 35	12436
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CII8090	394	42	M2/X92.30 VH clone #2	US8008442 SEQ ID NO: 50, 57	12438
CII8091	397	42		US8119132 SEQ ID NO: 1	12439
CII8092	397	42		US8119132 SEQ ID NO: 2	12440
CII8093	397	42		US8119132 SEQ ID NO: 3	12441
CII8094	397	42		US8119132 SEQ ID NO: 4	12442
CII8095	397	42		US8119132 SEQ ID NO: 5	12443
CII8096	397	42		US8119132 SEQ ID NO: 6	12444
CII8097	406	42	144-1 VH; MBL352-34 VL	US8980257 SEQ ID NO: 10, 156, 157	12445
CII8098	406	42	MBL184-6 VH	US8980257 SEQ ID NO: 12	12446
CII8099	406	42	MBL259-3 VH	US8980257 SEQ ID NO: 14	12447
CII8100	406	42	MBL292-1 VH	US8980257 SEQ ID NO: 16	12448
CII8101	406	42	MBL352-34 VH	US8980257 SEQ ID NO: 18	12449
CII8102	406	42	MBL009-15 VH	US8980257 SEQ ID NO: 143	12450
CII8103	406	42	MBL144-1 VH	US8980257 SEQ ID NO: 6, 149	12451
CII8104	406	42	MBL184-6 VH	US8980257 SEQ ID NO: 151	12452
CII8105	406	42	MBL259-3 VH; MBL018-1 VH	US8980257 SEQ ID NO: 8, 153	12453
CII8106	413	42	15	US20080187531 SEQ ID NO: 6	12454
CII8107	413	42	25; 2; 131	US20080187531 SEQ ID NO: 2, 10, 30	12455
CII8108	413	42	28	US20080187531 SEQ ID NO: 14	12456
CII8109	413	42	70k/69g	US20080187531 SEQ ID NO: 18	12457
CII8110	413	42	95	US20080187531 SEQ ID NO: 22	12458
CII8111	413	42	123	US20080187531 SEQ ID NO: 26	12459
CII8112	413	42	145k/140g	US20080187531 SEQ ID NO: 34	12460
CII8113	413	42	148	US20080187531 SEQ ID NO: 38	12461

CII8114	413	42	234	US20080187531 SEQ ID NO: 42	12462
CII8115	413	42	250	US20080187531 SEQ ID NO: 46	12463
CII8116	413	42	263	US20080187531 SEQ ID NO: 50	12464
CII8117	413	42	269	US20080187531 SEQ ID NO: 54	12465
CII8118	413	42	280; 282	US20080187531 SEQ ID NO: 58, 62	12466
CII8119	413	42	291	US20080187531 SEQ ID NO: 66	12467
CII8120	413	42	299v1	US20080187531 SEQ ID NO: 70	12468
CII8121	413	42	299v2	US20080187531 SEQ ID NO: 74	12469
CII8122	413	42	313	US20080187531 SEQ ID NO: 78	12470
CII8123	413	42	R014	US20080187531 SEQ ID NO: 82	12471
CII8124	413	42	1.1	US20080187531 SEQ ID NO: 86	12472
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CII8130	413	42	2.7	US20080187531 SEQ ID NO: 114	12478
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CII8134	413	42	2.13	US20080187531 SEQ ID NO: 130	12482
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CII8139	413	42	2.18	US20080187531 SEQ ID NO: 150	12487
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CII8141	413	42	2.21	US20080187531 SEQ ID NO: 158	12489
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CII8144	413	42	3.4	US20080187531 SEQ ID NO: 170	12492
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CII8146	413	42	3.8	US20080187531 SEQ ID NO: 182	12494
CII8147	413	42	3.9	US20080187531 SEQ ID NO: 186	12495
CII8148	413	42	4.3	US20080187531 SEQ ID NO: 190	12496
CII8149	413	42	4.4; 4.8	US20080187531 SEQ ID NO: 194, 202	12497
CII8150	413	42	4.7; 4.11	US20080187531 SEQ ID NO: 198, 214	12498
CII8151	413	42	4.9; 4.12	US20080187531 SEQ ID NO: 206, 218	12499
CII8152	413	42	4.1	US20080187531 SEQ ID NO: 210	12500
CII8153	413	42	4.13	US20080187531 SEQ ID NO: 222	12501
CII8154	413	42	4.14; 4.15; 4.16; 4.17	US20080187531 SEQ ID NO: 226, 230, 234, 238	12502
CII8155	413	42	4.21	US20080187531 SEQ ID NO: 254	12503
CII8156	413	42	4.22	US20080187531 SEQ ID NO: 258	12504
CII8157	413	42	4.23	US20080187531 SEQ ID NO: 262	12505
CII8158	413	42	2.4; 3.5	US20080187531 SEQ ID NO: 104, 174	12506
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CII8160	154	42	KM4097	US20120237518 SEQ ID NO: 10	12508
CII8161	154	42	KM4097 HV0	US20120237518 SEQ ID NO: 24	12509
CII8162	154	42	KM4097 HV3a	US20120237518 SEQ ID NO: 28	12510
CII8163	154	42	KM4097 HV4	US20120237518 SEQ ID NO: 30	12511
CII8164	154	42	KM4097 HV5	US20120237518 SEQ ID NO: 32	12512

CII8165	154	42	KM4097 HV10	US20120237518 SEQ ID NO: 34	12513
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CII8171	428	42		US20160090427 SEQ ID NO: 154	12519
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CII8200	133	169	H2	US20110165162 SEQ ID NO: 12	12548
CII8201	133	169	H9	US20110165162 SEQ ID NO: 13	12549
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CII8212	369	180		US8093362 SEQ ID NO: 15	12560
CII8213	369	180		US8093362 SEQ ID NO: 16	12561
CII8214	369	180		US8093362 SEQ ID NO: 17	12562
CII8215	369	180		US8093362 SEQ ID NO: 18	12563
CII8216	369	180		US8093362 SEQ ID NO: 19	12564
CII8217	274	182		US20070048219 SEQ ID NO: 50	12565
CII8218	233	183	7C10	US20060233810 SEQ ID NO: 39; US20110091524 SEQ ID NO: 39; US20120058112 SEQ ID NO: 9; US7241444 SEQ ID NO: 75; US7553485 SEQ ID NO: 75	12566

CII8219	233	183	A12	US20060233810 SEQ ID NO: 42; US20110091524 SEQ ID NO: 42	12567
CII8220	233	183	1A	US20060233810 SEQ ID NO: 44; US20110091524 SEQ ID NO: 44	12568
CII8221	236	183	7C10	US20060233810 SEQ ID NO: 40; US20110091524 SEQ ID NO: 40; US20120058112 SEQ ID NO: 10; US7241444 SEQ ID NO: 79; US7553485 SEQ ID NO: 79	12569
CII8222	236	183	7C10	US20060233810 SEQ ID NO: 41; US20110091524 SEQ ID NO: 41; US20120058112 SEQ ID NO: 11	12570
CII8223	233	185		US20060233810 SEQ ID NO: 13; US20110091524 SEQ ID NO: 13; US20110262525 SEQ ID NO: 13; US7811562 SEQ ID NO: 13	12571
CII8224	233	185		US20060233810 SEQ ID NO: 14; US20110091524 SEQ ID NO: 14; US20110262525 SEQ ID NO: 14; US7811562 SEQ ID NO: 14	12572
CII8225	233	185		US20060233810 SEQ ID NO: 15; US20110091524 SEQ ID NO: 15; US20110262525 SEQ ID NO: 15; US7811562 SEQ ID NO: 15	12573
CII8226	233	185		US20060233810 SEQ ID NO: 17; US20110091524 SEQ ID NO: 17; US20110262525 SEQ ID NO: 17; US7811562 SEQ ID NO: 17	12574
CII8227	233	185		US20060233810 SEQ ID NO: 18; US20110091524 SEQ ID NO: 18; US20110262525 SEQ ID NO: 18; US7811562 SEQ ID NO: 18	12575
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CII8231	233	185		US20060233810 SEQ ID NO: 32	12579
CII8232	233	185		US20060233810 SEQ ID NO: 33	12580
CII8233	233	185		US20060233810 SEQ ID NO: 34; US20110091524 SEQ ID NO: 34	12581
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CII8235	233	185		US20060233810 SEQ ID NO: 60; US20110091524 SEQ ID NO: 60; US20110262525 SEQ ID NO: 60; US7811562 SEQ ID NO: 60	12583
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CII8238	233	186		US20110091524 SEQ ID NO: 31	12586
CII8239	233	186		US20110091524 SEQ ID NO: 32	12587
CII8240	233	186	2.12.1 fx	US20110091524 SEQ ID NO: 33	12588
CII8241	233	188	7C10 VH, version 3 humanized	US7553485 SEQ ID NO: 85	12589
CII8242	140	198		US20120093837 SEQ ID NO: 37	12590
CII8243	140	198		US20120093837 SEQ ID NO: 42	12591
CII8244	140	199		US20130295086 SEQ ID NO: 23	12592
CII8245	140	200	Cetuximab S119 K216	US20150071923 SEQ ID NO: 18	12593
CII8246	302	236		US20100119511 SEQ ID NO: 163	12594
CII8247	303	236		US20100119511 SEQ ID NO: 168	12595
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CII8249	140	237		US20160017028 SEQ ID NO: 54	12597
CII8250	295	238	71F10 Fab-hLIGHT	US20100119511 SEQ ID NO: 2	12598

CII8251	295	238	71F10 Fab-hLIGHT	US20100119511 SEQ ID NO: 3	12599
CII8252	295	238	pBIIB71F10-132	US20100119511 SEQ ID NO: 4	12600
CII8253	295	238	pBIIB CD23-204	US20100119511 SEQ ID NO: 101	12601
CII8254	296	238	pBIIB CD23-204	US20100119511 SEQ ID NO: 174	12602
CII8255	301	238	pBIIB71F10-137	US20100119511 SEQ ID NO: 154	12603
CII8256	304	238	pBIIB71F10-255	US20100119511 SEQ ID NO: 179	12604
CII8257	233	239		US7241444 SEQ ID NO: 72; US7553485 SEQ ID NO: 72	12605
CII8258	233	240		US7811562 SEQ ID NO: 29	12606
CII8259	233	240		US7811562 SEQ ID NO: 30	12607
CII8260	233	240		US7811562 SEQ ID NO: 31	12608
CII8261	233	240		US7811562 SEQ ID NO: 32	12609
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CII8263	118	266		US20140079706 SEQ ID NO: 59	12611
CII8264	118	266		US20140079706 SEQ ID NO: 60	12612
CII8265	118	266		US20140079706 SEQ ID NO: 61	12613
CII8266	217	364	4D5, huMAb4D5-8, HERCEPTIN®	US20090047291 SEQ ID NO: 45	12614
CII8267	217	364	huMAb4D5-8 (modified)	US20090047291 SEQ ID NO: 54	12615
CII8268	19	284	DI17E6	US20140086908 SEQ ID NO: 1	12616
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CII8270	23	284	2.14H9	US20130034559 SEQ ID NO: 27	12618
CII8271	23	284	3.18G1	US20130034559 SEQ ID NO: 57	12619
CII8272	23	284	2.7A4OPT	US20130034559 SEQ ID NO: 67	12620
CII8273	23	284	2.14H9OPT	US20130034559 SEQ ID NO: 77	12621
CII8274	31	284	2A1	US20110223176 SEQ ID NO: 93	12622
CII8275	39	284	H11	US7166286 SEQ ID NO: 2	12623
CII8276	60	284	hRFB4	US20150239974 SEQ ID NO: 8	12624
CII8277	75	284	T427	US20140010814 SEQ ID NO: 15	12625
CII8278	75	284	T427 A104C:Cys218del	US20140010814 SEQ ID NO: 21	12626
CII8279	109	284	H1	US9101610 SEQ ID NO: 12; US20130089542 SEQ ID NO: 43; US20130089557 SEQ ID NO: 17	12627
CII8280	109	284	H3	US20130089542 SEQ ID NO: 45; US20130089557 SEQ ID NO: 19; US9101610 SEQ ID NO: 14	12628
CII8281	109	284	H4	US9101610 SEQ ID NO: 15; US20130089542 SEQ ID NO: 20, 46	12629
CII8282	109	284	L3-11Y	US20130089542 SEQ ID NO: 72	12630
CII8283	109	284	224G11	US9107907 SEQ ID NO: 21; US20150250780 SEQ ID NO: 21; US20150376292 SEQ ID NO: 44	12631
CII8284	109	284	227H1	US20150250780 SEQ ID NO: 22; US9107907 SEQ ID NO: 22	12632
CII8285	109	284		US9107907 SEQ ID NO: 23; US20150250780 SEQ ID NO: 23	12633
CII8286	109	284	1.10E+02	US20150250780 SEQ ID NO: 54; US9107907 SEQ ID NO: 63	12634
CII8287	109	284		US20160039935 SEQ ID NO: 38	12635
CII8288	109	284		US20160039935 SEQ ID NO: 39	12636
CII8289	109	284		US20160039935 SEQ ID NO: 40	12637
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CII8291	109	284		US20160083479 SEQ ID NO: 9	12639
CII8292	109	284	LY2875358	US20160090635 SEQ ID NO: 112	12640
CII8293	109	284		US8398974 SEQ ID NO: 25, 26	12641
CII8294	109	284		US8398974 SEQ ID NO: 27	12642
CII8295	109	284		US8398974 SEQ ID NO: 28	12643
CII8296	109	284		US8398974 SEQ ID NO: 29	12644

CII8297	109	284		US8398974 SEQ ID NO: 30	12645
CII8298	109	284	**H2-liglrt**	**US9** 10161 0 SEQ **ID NO:** S3; **US20130089557** SEQ **ID NO:** 18; **US20 130089542** SEQ ID NO: 44	12646
CII8299	129	284		**US201 10020218** SEQ **ID** NO: **13**	12647
CII8300	129	**284**		**US201 10020218** SEQ **ID NO:** 50	12648
CII830!	129	284		**US201 10020218** SEQ **ID NO:** 64	12649
C1 **8302**	129	284		**US201 10020218** SEQ ID NO: 66	12650
C118303	140	284	**muEGFR6 VL**	US9125896 SEQ ID NO: 70, 86	1265 1
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C[18305	140	284		US20 110076232 SEQ ID NO: 27	12653
C[18306	140	284		**US20 110076232** SEQ ID NO: 77	12654
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C!18308	140	284	8C65AAG **hu806** signal+VL+CL	**US20** 1 **10076232** SEQ **ID** NO: 83	12656
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CII8313	140	284		US9044460 SEQ **ID** NO: **12**	12661
C**183 14**	140	284		**US9044460** SEQ ID NO: 13	12662
C1 **8315**	140	284		**US9044460** SEQ ID NO: 14	12663
C[183 16	140	284		**US9044460** SEQ ID NO: 15	12664
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C[183 18	140	284		US9044460 SEQ ID NO: **17**	12666
C[183!9	140	284		**US9044460** SEQ ID NO: 18	12667
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CII8321	140	284		**US9044460** SEQ ID **NO**: 20	12669
C!18322	140	284		US9044460 SEQ **ID** NO: **2 1**	12670
C!18323	140	284		**US9044460** SEQ ID NO: 22	12671
C[18324	140	284		**US20 14027 1477** SEQ ID NO: 1	12672
C[18325	**140**	284	**Cetuximab** A **100 LELK104-107 A2 13**	**US2015007 1923** SEQ **ID** NO: 3	12673
C[18326	140	284	**Cetuximab** QlOO **VE1K104-107 EC213-214**	US20 15007!923 SEQ ID NO: 8	12674
CII8327	140	284	Cetisximab QlOO **LELK 104- 107** A2!3	**US20150071923** SEQ **ID** NO: **10**	12675
CII8328	140	284	**Cetuximab A 100** LELK **104- 107 EC213-214**	**US20 15007 1923** SEQ **ID NO: 13**	12676
CII8329	140	284	**LC-I29S** light chain Q lOO **VEIK104-** 107	US20 15007!923 SEQ ID NO: 124	**12677**
CII8330	140	284	EP-hl, **3** light **chain** QlOO VEIK	**US20150071923** SEQ ID **NO: 153**	12678
CII833 1	140	284	**EP-h2** light cliain QlOO **VEIK**	**US20150071923** SEQ ID NO: **160**	12679
CII8332	140	284	**EP-h4** light chain QlOO **VEIK**	**US20150071923** SEQ ID NO: 167	12680
CI18333	**140**	284	**EP-h5** light chain QlOO VEIK	**US2015007 1923** SEQ ID NO: 174	12681
CII8334	140	284	EP-is8 light chain QlOO VEIK	US20 15007!923 SEQ ID NO: 188	12682
CII8335	140	284	EP-hl 3, 14 light **chain Q lOO VEIK;** FEP-hl, 2 light chain QlOO VEIK	**US2015007 1923** SEQ ID NO: 202, 251	12683
CII8336	140	284	FEP~h3, 4 light chain QlOO **VEIK; FEP-hl 8,** 19 **light** chain variable domain: EP-h6, 7, 9 **light** chain variable domain	**US20 15007 1923** SEQ ID NO: 258, 303, 184	12684
CII8337	140	284	**FEP-h5** light chain QlOO VEIK; EP-hlO, 12 light chain variable domain	**US20150071923** SEQ ID NO: 198, 265	12685
CII8338	140	284	**FEP-h6,** 7, 8 light ckiin QlOO **VEIK**	**US20 15007 1923** SEQ ID NO: 272	12686
C!18339	140	284	FEP-h9, **10,** 11, 12, 20 light chain	**US20** 1**500**7 **1923** SEQ **ID** NO: 279	12687
C!18340	140	284	FEP-hl 3, 14, 15, 16, 2 1 light chain	**US20 15007 1923** SEQ ID **NO:** 286	12688
C1 **834 1**	140	284	FEP-hl7 light **chain Q lOO VEIK**	**US20150071923** SEQ ID NO: 293	12689
CII8342	140	284	**Des-l-3954-1204-C225** Activatable Antibody	**US201501 18254** SEQ ID NO: 4	12690

CII8343	140	284	Des-2-3954-1204-C225 Activatable Antibody	US20150118254 SEQ ID NO: 6	12691
CII8344	140	284	Des-3-3954-1204-C225 Activatable Antibody	US20150118254 SEQ ID NO: 8	12692
CII8345	140	284	Des-4-3954-1204-C225 Activatable Antibody	US20150118254 SEQ ID NO: 10	12693
CII8346	140	284	Des-5-3954-1204-C225 Activatable Antibody	US20150118254 SEQ ID NO: 12	12694
CII8347	140	284	Ame55	US20150274828 SEQ ID NO: 20	12695
CII8348	140	284		US20160017028 SEQ ID NO: 60	12696
CII8349	140	284	L4-H3	US9028832 SEQ ID NO: 1	12697
CII8350	140	284	muEGFR17LC	US9125896 SEQ ID NO: 87	12698
CII8351	140	284	muEGFR2HC	US9125896 SEQ ID NO: 88	12699
CII8352	140	284	DP-h5; EP-h5 light chain variable domain Q100	US20130266579 SEQ ID NO: 1141; US20150071923 SEQ ID NO: 179	12700
CII8353	140	284	DP-h13, 14; FDP-h1, 2; EP-h13, 14	US20130266579 SEQ ID NO: 1145, 1153; US20150071923 SEQ ID NO: 207	12701
CII8354	144	284	G98A	US8329873 SEQ ID NO: 44	12702
CII8355	144	284	ML3-9	US8329873 SEQ ID NO: 45	12703
CII8356	144	284	H3B1; B1D2	US8329873 SEQ ID NO: 46, 47	12704
CII8357	153	284	13.1.2	US7736644 SEQ ID NO: 140	12705
CII8358	153	284	131	US7736644 SEQ ID NO: 19	12706
CII8359	153	284	170	US7736644 SEQ ID NO: 20	12707
CII8360	153	284	150	US7736644 SEQ ID NO: 21	12708
CII8361	153	284	95	US7736644 SEQ ID NO: 29	12709
CII8362	153	284	250	US7736644 SEQ ID NO: 23	12710
CII8363	153	284	139	US7736644 SEQ ID NO: 25	12711
CII8364	153	284	211	US7736644 SEQ ID NO: 26	12712
CII8365	153	284	124; 342; 333; 318	US7736644 SEQ ID NO: 28, 31, 32, 33	12713
CII8366	153	284	13.1.2	US7736644 SEQ ID NO: 143	12714
CII8367	153	284	13.1.2	US7736644 SEQ ID NO: 144	12715
CII8368	155	284	KS49	US20140234308 SEQ ID NO: 4	12716
CII8369	155	284	KS83	US20140234308 SEQ ID NO: 6	12717
CII8370	155	284	KS89; KS41	US20140234308 SEQ ID NO: 8, 10	12718
CII8371	160	284		US20140120114 SEQ ID NO: 27, 33	12719
CII8372	160	284		US20140120114 SEQ ID NO: 29	12720
CII8373	160	284		US20140120114 SEQ ID NO: 31	12721
CII8374	160	284		US20140120114 SEQ ID NO: 35	12722
CII8375	160	284		US20140120114 SEQ ID NO: 37	12723
CII8376	166	284		US20130089544 SEQ ID NO: 50	12724
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CII8380	166	284		US20130266564 SEQ ID NO: 9	12728
CII8381	166	284		US20130266564 SEQ ID NO: 19	12729
CII8382	166	284	F53N	US20130266564 SEQ ID NO: 21	12730
CII8383	166	284	Y92A	US20130266564 SEQ ID NO: 22	12731
CII8384	166	284	F53N, Y92A	US20130266564 SEQ ID NO: 23	12732
CII8385	166	284	N30D	US20130266564 SEQ ID NO: 24	12733
CII8386	166	284	FRP5	US20140010814 SEQ ID NO: 17	12734
CII8387	183	284	KM1334	US7241568 SEQ ID NO: 6	12735
CII8388	184	284	anti-EGFR activatable	US20150118254 SEQ ID NO: 74	12736
CII8389	184	284	human chimeric FR2-10	US20150125454 SEQ ID NO: 32	12737

CII8390	**184**	284	**human** chimeric **FR2-13**	**US20150125454** SEQ ID NO: 40	12738
CII839 1	**184**	284	**human** chimeric **FR2-14**	**US20150125454** SEQ ID **NO:** 48	12739
CII8392	184	284	**hFR2-14** LI.	**US20** 150 **125454** SEQ ID NO: 73	12740
CII8393	207	284		**US20 150037336** SEQ ID NO: 1	12741
CI18394	209	284		**US201401934 14** SEQ ID NO: 18	12742
CII8395	2 [0	284	**14A2**	**US20090048122** SEQ ID NO: 29	12743
CII8396	2 [0	284	**PRIMATXZED© p5E8**	**US20090048122** SEQ ID NO: 64	12744
CII8397	2 10	284	PRIM ATIZED ® **p5E8**	**US20090048122** SEQ ID NO: 66	12745
CII8398	**2 11**	284	**Ab 4518 LC**	US8609095 SEQ ID **NO:** 8; **US20 160089435** SEQ ID NO: 44	12746
CII8399	2 11	284	Ab 4517 LC	US8609095 SEQ ID NO: 4; **US20160089435** SEQ ID NO: 40	12747
CII8400	**2 11**	284	**Ab 4380/4381 LC**	US8609095 SEQ ID **NO:** 12	12748
CII840 1	**2 11**	284	**Ab** 4382 LC	US8609095 SEQ ID NO: **16;** **US20 16008943 5** SEQ ID NO: 28	12749
CI18402	**2 11**	284	Ab 4383 LC	**US8609095** SEQ ID NO: 20	12750
CII8403	2 11	284	Ab 4385 LC	US8609095 SEQ ID NO: 28; **US20160089435** SEQ **ID** NO: 36	1275 1
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CII8405	2 11	284	Ab 4387 LC	**US8609095** SEQ ID NO: 36	12753
CII8406	2 11	284	Ab 4519 LC	US8609095 SEQ ID NO: 40	12754
CI18407	217	284	**Abl**	**US20150322 145** SEQ ID NO: **2 1**	12755
CII8408	**2 17**	284	**Ab2**	**US20 150322 145** SEQ ID NO: **6 1**	12756
CII8409	2 17	284	Ab3	**US20150322 145** SEQ ID NO: 101	12757
CII8410	2 17	284	Ab4	**US20 150322 145** SEQ ID NO: 141	12758
CII841 1	**217**	284	**Ab5**	**US20 150322 145** SEQ ID NO: **18 1**	12759
CII8412	217	284	Ab6	**US20 150322 145** SEQ ID **NO**: 22 1	12760
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CII8414	217	284	Ab9	**US20** 150322 **145** SEQ ID NO: 341	12762
CI184 15	217	284	**AblO**	**US20150322 145** SEQ ID NO: 381	12763
CI184 16	217	284	**Abl l**	**US20150322 145** SEQ ID NO: 421	12764
CII84 17	**2 17**	284	Ab 12	**US20 150322 145** SEQ ID NO: 461	12765
CII84 18	2 17	284	Ab 13	**US20150322 145** SEQ ID NO: 501	12766
CII8419	2 17	284	Ab14	**US20 150322 145** SEQ ID NO: 541	12767
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CII842 1	217	284	Abl 6	**US20 150322 145** SEQ ID **NO**: 62 1	12769
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CII8423	217	284	Abl 8	**US20** 150322 **145** SEQ ID NO: 701	12771
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CII843 1	217	284	**Ab27**	**US20** 150322 **145** SEQ ID NO: 1021	12779
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CII8435	**2 17**	284		**US8609090** SEQ ID NO: 26	12783
CII8436	2 17	284		**US8609090** SEQ ID NO: 28	12784
CII8437	2 17	284		US8609090 SEQ ID NO: 30	12785
CII8438	2 17	284		US8609090 SEQ ID NO: 32	12786
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CII8440	217	284		US8609090 SEQ ID **NO**: 36	12788
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CII8444	217	284	HuL2G7	US8628778 SEQ ID NO: 11	12792
CII8445	230	284	LV0	US20060240015 SEQ ID NO: 14	12793
CII8446	230	284	LV0	US20060240015 SEQ ID NO: 15	12794
CII8447	230	284		US8580254 SEQ ID NO: 26	12795
CII8448	233	284	em164 LC	US20050186203 SEQ ID NO: 8, 58; US20060233810 SEQ ID NO: 84, 92, 94; US20110091524 SEQ ID NO: 84, 92, 94; US20110262525 SEQ ID NO: 84, 92, 94; US20130295050 SEQ ID NO: 8, 58; US7811562 SEQ ID NO: 84, 92, 94	12796
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CII8459	233	284	9H2	US20110104256 SEQ ID NO: 34	12807
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CII8464	233	284		US7241444 SEQ ID NO: 65; US7553485 SEQ ID NO: 65	12812
CII8465	233	284		US8361461 SEQ ID NO: 7	12813
CII8466	233	284		US8361461 SEQ ID NO: 17	12814
CII8467	246	284	Anti-IL-13	US20120070439 SEQ ID NO: 27; US20110008345 SEQ ID NO: 13	12815
CII8468	246	284	Anti-IL-13	US20120070439 SEQ ID NO: 28	12816
CII8469	253	284	Anti-human IL-18 mAb	US20110008345 SEQ ID NO: 68	12817
CII8470	265	284	3B9	US20100297110 SEQ ID NO: 8	12818
CII8471	265	284	humanized 3B9	US20100297110 SEQ ID NO: 14	12819
CII8472	265	284	anti-IL-4 mAb	US20120070439 SEQ ID NO: 3	12820
CII8473	267	284	IL-5 mAb	US20120070439 SEQ ID NO: 92	12821
CII8474	269	284	Ab1	US20100143294 SEQ ID NO: 2	12822
CII8475	269	284	Ab7	US20100143294 SEQ ID NO: 101	12823
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CII8544	140	284	FDP-h17; FEP-h17	US20130266579 SEQ ID NO: 1158; US20150071923 SEQ ID NO: 295, 298	12892
CII8545	209	284		US20140193414 SEQ ID NO: 1	12893
CII8546	209	284		US20140193414 SEQ ID NO: 3	12894
CII8547	209	284		US20140193414 SEQ ID NO: 5	12895
CII8548	209	284		US20140193414 SEQ ID NO: 6	12896
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CII8553	209	284		US20140193414 SEQ ID NO: 4, 11, 15	12901
CII8554	209	284		US20140193414 SEQ ID NO: 13	12902
CII8555	209	284		US20140193414 SEQ ID NO: 21	12903
CII8556	209	284		US20140193414 SEQ ID NO: 22	12904
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CII8559	365	284	BAP058-hum01-LC; BAP058-hum09-LC	US20160108123 SEQ ID NO: 24	12907
CII8560	365	284	BAP058-hum02-LC	US20160108123 SEQ ID NO: 26	12908
CII8561	365	284	BAP058-hum02-LC	US20160108123 SEQ ID NO: 28	12909
CII8562	365	284	BAP058-hum03-LC; BAP058-Clone K LC	US20160108123 SEQ ID NO: 34	12910
CII8563	365	284	BAP058-hum03-LC; BAP058-Clone K LC	US20160108123 SEQ ID NO: 36	12911
CII8564	365	284	BAP058-hum04-LC; BAP058-hum05-LC; BAP058-hum06-LC; BAP058-Clone L LC; BAP058-Clone M LC	US20160108123 SEQ ID NO: 42	12912
CII8565	365	284	BAP058-hum04-LC; BAP058-hum05-LC; BAP058-hum06-LC; BAP058-Clone L LC; BAP058-Clone M LC	US20160108123 SEQ ID NO: 44	12913
CII8566	365	284	BAP058-hum07-LC	US20160108123 SEQ ID NO: 58	12914
CII8567	365	284	BAP058-hum07-LC	US20160108123 SEQ ID NO: 60	12915
CII8568	365	284	BAP058-hum08-LC; BAP058-hum10-LC; BAP058-hum11-LC; BAP058-Clone N LC	US20160108123 SEQ ID NO: 66	12916
CII8569	365	284	BAP058-hum08-LC; BAP058-hum10-LC; BAP058-hum11-LC; SEQ ID NO: 68	US20160108123 SEQ ID NO: 68	12917
CII8570	365	284	BAP058-hum12-LC	US20160108123 SEQ ID NO: 76	12918
CII8571	365	284	BAP058-hum13-LC; BAP058-Clone O LC	US20160108123 SEQ ID NO: 82	12919
CII8572	365	284	BAP058-hum13-LC; BAP058-Clone O LC	US20160108123 SEQ ID NO: 84	12920
CII8573	365	284	BAP058-hum14-LC; BAP058-hum15-LC; BAP058-hum16-LC; BAP058-hum17-LC	US20160108123 SEQ ID NO: 86	12921
CII8574	365	284	BAP058-hum14-LC; BAP058-hum15-LC; BAP058-hum16-LC; BAP058-hum17-LC	US20160108123 SEQ ID NO: 88	12922
CII8575	66	295		US20040006216 SEQ ID NO: 18	12923
CII8576	233	315	anti-IGF-1R L0	US20110262430 SEQ ID NO: 39	12924
CII8577	166	316		US20110129464 SEQ ID NO: 5	12925
CII8578	112	317	CL1; Ab27; Ab28; Ab3; Ab4; Ab5; Ab6; Ab7; Ab7; Ab1; Ab8; Ab9; Ab10; Ab11; Ab12; Ab13; Ab14; Ab15; Ab16; Ab17; Ab2; Ab18; Ab19; Ab20; Ab21; Ab23; Ab24; Ab25; Ab26	US20090226443 SEQ ID NO: 8; US20110076232 SEQ ID NO: 48; US20130004484 SEQ ID NO: 15; US20140227258 SEQ ID NO: 186; US20150050275 SEQ ID NO: 15; US20150322145 SEQ ID NO: 30, 70, 110, 150, 190, 230, 262, 270, 310, 350, 390, 430, 470, 510, 550, 590, 630, 670, 710, 750, 790, 830, 870, 910, 950, 990, 1030, 1070; US8748175 SEQ ID NO: 44	12926
CII8579	140	317	8C65AAG hu806 Vl+Cl	US20110076232 SEQ ID NO: 188	12927
CII8580	230	317		US8580254 SEQ ID NO: 24	12928
CII8581	233	317	Modified 19D12/15H12 Light Chain-C	US20060233810 SEQ ID NO: 2; US7811562 SEQ ID NO: 2; US20110262525 SEQ ID NO: 2	12929
CII8582	233	317	C94-5B11′ CL	US7241444 SEQ ID NO: 56; US7553485 SEQ ID NO: 56	12930

CII8583	233	317	AN03'CL	US7241444 SEQ ID NO: 70; US7553485 SEQ ID NO: 70	12931
CII8584	233	317	VH FUR1'CL	US7241444 SEQ ID NO: 73; US7553485 SEQ ID NO: 73	12932
CII8585	346	317	4D4	US20050074821 SEQ ID NO: 8; US20100325744 SEQ ID NO: 2; US20130266579 SEQ ID NO: 1072; US20140079706 SEQ ID NO: 57	12933
CII8586	140	318	Cetuximab A213	US20150071923 SEQ ID NO: 33	12934
CII8587	161	320	pMP10K_IgG1; Cetuximab EC213-214	US20140120114 SEQ ID NO: 25; US20140234314 SEQ ID NO: 25; US20150071923 SEQ ID NO: 34; US20160053011 SEQ ID NO: 12; US20160108123 SEQ ID NO: 189; US8609090 SEQ ID NO: 44	12935
CII8588	140	321		US20130266579 SEQ ID NO: 1073	12936
CII8589	233	322	Modified 19D12/15H12 Light Chain-D	US20060233810 SEQ ID NO: 4; US7811562 SEQ ID NO: 4; US20110262525 SEQ ID NO: 4	12937
CII8590	233	323	Modified 19D12/15H12	US20060233810 SEQ ID NO: 6; US7811562 SEQ ID NO: 6; US20110262525 SEQ ID NO: 6	12938
CII8591	233	324	Modified 19D12/15H12	US20060233810 SEQ ID NO: 8; US7811562 SEQ ID NO: 8; US20110262525 SEQ ID NO: 8	12939
CII8592	233	334	1clz; 1cly	US20050186203 SEQ ID NO: 66, 68; US20060233810 SEQ ID NO: 73, 82; US20110091524 SEQ ID NO: 73, 82; US20110262525 SEQ ID NO: 73, 82; US20130295050 SEQ ID NO: 66, 68; US7811562 SEQ ID NO: 73, 82	12940
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CII8594	233	335	2.12.1 fx	US20060233810 SEQ ID NO: 35; US20110091524 SEQ ID NO: 35	12942
CII8595	233	336		US7241444 SEQ ID NO: 57; US7553485 SEQ ID NO: 57	12943
CII8596	233	336	DPK15/A19	US7241444 SEQ ID NO: 59	12944
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CII8598	217	339		US8609090 SEQ ID NO: 183	12946
CII8599	269	340		US20100143294 SEQ ID NO: 586	12947
CII8600	365	341		US20160108123 SEQ ID NO: 192	12948
CII8601	217	342		US8609090 SEQ ID NO: 173	12949
CII8602	217	342		US8609090 SEQ ID NO: 174	12950
CII8603	217	342		US8609090 SEQ ID NO: 175	12951
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CII8605	217	342		US8609090 SEQ ID NO: 177	12953
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CII8609	217	342		US8609090 SEQ ID NO: 181	12957
CII8610	217	342		US8609090 SEQ ID NO: 182	12958
CII8611	105	343	hMN-15	US8287865 SEQ ID NO: 7	12959
CII8612	233	343	hR1 VK	US8883162 SEQ ID NO: 95	12960
CII8613	233	344	EM164	US20050186203 SEQ ID NO: 50; US20130295050 SEQ ID NO: 50	12961
CII8614	217	345	L2G7	US8628778 SEQ ID NO: 3, 7	12962

CII8615	233	347		US20110104256 SEQ ID NO: 21	12963
CII8616	217	349	HuL2G7	US8628778 SEQ ID NO: 8	12964
CII8617	217	349	BAC01726	US8628778 SEQ ID NO: 9	12965
CII8618	109	350	huAbF46-H4-A1	US20140154251 SEQ ID NO: 68	12966
CII8619	109	350	huAbF46-H4-A1	US20140154251 SEQ ID NO: 70	12967
CII8620	274	351	6G4.2.5v11	US20070048219 SEQ ID NO: 62	12968
CII8621	140	352	DP-h10, 13	US20130266579 SEQ ID NO: 1137	12969
CII8622	140	352	DP-h10, 12; FDP-h5; EP-h10, 12, FEP-h5; FEP-h3	US20130266579 SEQ ID NO: 1144, 1155; US20150071923 SEQ ID NO: 197, 200, 263, 267	12970
CII8623	269	354	Ab1	US20100143294 SEQ ID NO: 648	12971
CII8624	269	354	Ab1	US20100143294 SEQ ID NO: 649	12972
CII8625	269	354	Ab1	US20100143294 SEQ ID NO: 650	12973
CII8626	109	285		US20110262436 SEQ ID NO: 15; US20110287003 SEQ ID NO: 22; US20130004484 SEQ ID NO: 22; US20140037625 SEQ ID NO: 12; US20150050275 SEQ ID NO: 22	12974
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CII8628	140	285	3524	US20100009390 SEQ ID NO: 25	12976
CII8629	233	285	6.00E+11	US20110262430 SEQ ID NO: 9	12977
CII8630	233	285	2B9	US20110262430 SEQ ID NO: 11	12978
CII8631	233	285	6E11 chimera	US20110262430 SEQ ID NO: 13	12979
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CII8633	233	285	9C7	US20110262430 SEQ ID NO: 19	12981
CII8634	233	285	5G4	US20110262430 SEQ ID NO: 21	12982
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CII8638	277	356	LC3	US20130156786 SEQ ID NO: 35	12986
CII8639	277	356	LC4	US20130156786 SEQ ID NO: 36	12987
CII8640	277	356	LC5	US20130156786 SEQ ID NO: 37	12988
CII8641	277	357		US20130156786 SEQ ID NO: 1	12989
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CII8643	60	360	murine anti-CD22 LL2 antibody	US20150239974 SEQ ID NO: 15	12991
CII8644	60	360	humanized anti-CD22 LL2 antibody	US20150239974 SEQ ID NO: 16	12992
CII8645	60	360	murine anti-CD22 RFB4 antibody	US20150239974 SEQ ID NO: 17	12993
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CII8647	109	363		US8398974 SEQ ID NO: 95	12995
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CII8649	20	285		US20130243753 SEQ ID NO: 108	12997
CII8650	20	285		US20130243753 SEQ ID NO: 110	12998
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CII8652	30	285	10D5-2-3 VL	US8969040 SEQ ID NO: 40	13000
CII8653	30	285	3B7-3-3 VL	US8969040 SEQ ID NO: 41	13001
CII8654	30	285	6D10-1-1 VL	US8969040 SEQ ID NO: 51	13002
CII8655	30	285	10D5-2-3 VL	US8969040 SEQ ID NO: 52	13003
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CII8658	30	285	HV4b	US8969040 SEQ ID NO: 124	13006
CII8659	30	285	HV9	US8969040 SEQ ID NO: 130	13007
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CII8662	30	285	LV4	US8969040 SEQ ID NO: 136	13010
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CII8694	109	285	AbF24	US20 110 129481 SEQ ID NO: 8	13042
CII8695	109	285	Staii34	US20 110 12948 I SEQ ID NO: 16	13043
CII8696	109	285		US201 10262436 SEQ ID NO: 11; US20 110287003 SEQ ID NO: 2; US20130004484 SEQ ID NO: 20; US20 140037625 SEQ ID NO: 8; ıı S20 140227258 SEQ ID NO: 12; US20 150050275 SEQ ID NO: 20	13044
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CII8706	109	285	A12 antibody	US20 150299326 SEQ ID NO: 9	13054
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CII8708	109	285	E9 antibody; F1 antibody	US20150299326 SEQ ID NO: 11, 12	13056
CII8709	109	285	F 11 antibody	US20 150299326 SEQ ID NO: 13	13057
CII8710	109	285	G1 antibody	US20150299326 SEQ ID NO: 14	13058

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CII8721	109	285	VL 101	US20150329642 SEQ ID No: 129	13069
CII8722	109	285	VL 005; VL 031	US20150329642 SEQ ID No: 5, 147	13070
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CII8724	109	285	VL 025	US20150329642 SEQ ID No: 155	13072
CII8725	109	285	VL 040; VL 039; VL 045	US20150329642 SEQ ID No: 53, 157, 159	13073
CII8726	109	285	VL 078; VL084; VL 068	US20150329642 SEQ ID No: 161, 163, 97	13074
CII8727	109	285	VL 063; VL 087; VL 061; VL 062; VL 064	US20150329642 SEQ ID No: 165, 167, 69, 81, 89	13075
CII8728	109	285	VL 012; VL 008	US20150329642 SEQ ID No: 173; US20150329642 SEQ ID No: 21	13076
CII8729	109	285	VL 104	US20150329642 SEQ ID No: 178	13077
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CII8750	109	285		US20150376292 SEQ ID NO: 55, 158	13098
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CII8772	109	285	04541 VL	US8101727 SEQ ID NO: 41	13120
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CII8790	109	285	AT-Vk2	US20140356366 SEQ ID NO: 97; US8900582 SEQ ID NO: 7	13138
CII8791	109	285	AT-Vk3	US8900582 SEQ ID NO: 8; US20140356366 SEQ ID NO: 98	13139
CII8792	109	285	AT-Vk4	US8900582 SEQ ID NO: 9; US20140356366 SEQ ID NO: 99	13140
CII8793	110	285		US20090226443 SEQ ID NO: 20	13141
CII8794	114	285	hum III	US20090226455 SEQ ID NO: 5	13142
CII8795	115	285	547; 2C4 version 574	US20090226455 SEQ ID NO: 3; US20110129464 SEQ ID NO: 3	13143
CII8796	117	285	cMU-9Vk	US7553953 SEQ ID NO: 36	13144
CII8797	117	285	hMu-9VK	US7553953 SEQ ID NO: 40	13145
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CII8799	118	285		US20140079706 SEQ ID NO: 16	13147
CII8800	118	285		US20140079706 SEQ ID NO: 24	13148
CII8801	118	285		US20140079706 SEQ ID NO: 32	13149
CII8802	118	285	hMab 2F11-e7	US20140079706 SEQ ID NO: 40	13150
CII8803	118	285	hMab 2F11-f12	US20140079706 SEQ ID NO: 48	13151
CII8804	118	285	hMab 2F11-g1	US20140079706 SEQ ID NO: 56	13152
CII8805	118	285	Mab 1G10	US20140079706 SEQ ID NO: 76	13153
CII8806	118	285	Mab 2H7	US20140079706 SEQ ID NO: 84	13154
CII8807	118	285	CP-870,893	US20140079706 SEQ ID NO: 89	13155
CII8808	118	285	humanized S2C6	US20140079706 SEQ ID NO: 91	13156
CII8809	129	285	Hz515H7 VH1 V48L D76N VL1; Hz515H7 VH1 VL1	US20110020218 SEQ ID NO: 76	13157

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CII8811	129	285	**Hz5 15H7** VH1 D76N **VL2**	US20 1100202 18 SEQ **ID NO**: 78	13159
CII8812	129	285	**Hz5 15H7** VI-Il D76N VL2.1	US20 1100202 18 SEQ **ID** NO: 79	13160
CII8813	129	285	Hz5 15H7 VH1 D76N **VL2.2**	US20 [100202 18 SEQ **ID** NO: 80	**13161**
CII8814	129	285	Hz5 15H7 **VHl** D76N **VL2.3**	**US20 1**100202 18 SEQ ID NO: **81**	13162
CII8815	129	285	**Hz5 15H7 VHl V48L D76N VLl; Hz5 15H7 VH1 VLl**	**US201 10020218** SEQ ID NO: 87	13163
CII8816	129	285	Hz5 15H7 VH1 **V48L** D76N **VLl** T59A E61D	**US201 10020218** SEQ ID NO: 88	13164
CII8817	129	285	**Hz5 15H7 VHl** D76N **VL2**	**US201 10020218** SEQ ID NO: 89	13165
cII8818	129	285	**Hz5 15H7** VH1 D76N **VL2. 1**	**US201 10020218** SEQ **ID** NO: 90	13166
cII8819	*129*	285	**Hz5** [5H7 **VH** 1D76N VL2.2	**US201 100202 18** SEQ **ID NO**: 91	13167
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c[18824	138	285	**EMD72000**	**US20070274991** SEQ ID NO: 3	13172
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c[18826	138	285	**Curt**	**US2007027499 1** SEQ ID NO: 5	13174
c[18827	**138**	285	**Cur63**	US2007027499 1 SEQ ID NO: 6	13175
c 8828	140	285		**US20 140348833** SEQ ID NO: **11,** 15	13176
CII8829	140	285		**US20140348833** SEQ ID NO: 8, **13**	13177
CII8830	140	285	**DP-hl,** 3; **EP-hl,** 3 light **cliain** variable **domain**	**US20 130266579** SEQ ID NO: **1138; US20150071923** SEQ **ID** NO: 158	13178
CII8831	140	285	**DP-ii2; EP-h2 light** chain variable **domain Q100**	U S20 130266579 SEQ **ID** NO: 1139; US20150071923 SEQ ID NO: 165	13179
CII8832	140	285	DP-h4; EP-h4 light chain variable **domain Q100**	**US20 130266579** SEQ ID NO: **1140; US20 15007 1923** SEQ ID **NO:** 172	13180
CII8833	140	285	DP~h6, 7, 9; FDP-ii3, 4; FDP-hl8, hi9; **FEP-h3,** 4 light chain variable **domain; FEP-I11 8, 19** light chain variable domain; EP-I16, 7, 9 light **chain variable domain**	**US20130266579** SEQ ID NO: 1142, 1[54, 1159; **US20 15007 1923** SEQ **ID** NO: 260, 305, 186	13181
CII8834	140	285	DP-I18; EP-h8 light **chain variable domain Q100**	**US20 130266579** SEQ ID NO: 1143; **US20150071923** SEQ ID NO: 193	13182
CII8835	**140**	285	**FDP-h9,** 10, [1, 12, 20; **FEP-h9,** 10, 11, 12, 20 **light** chain variable	**US20 130266579** SEQ **ID NO: 1157; US20150071923** SEQ **ID** NO: 281	13183
CII8836	140	285	FDP-M3, 14, 15, 16, 21; FEP~hl3, 14, 15, 16, 21 light cliain variable	U S20 130266579 SEQ **ID** NO: 1186; US20150071923 SEQ ID NO: 288	13184
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c[18842	**140**	285	mAb175	**US201 10076232** SEQ ID NO: 134	13190
c[18843	140	285	hu806	US20 [10076232 SEQ ID NO: 166	**13191**
c[18844	140	285	mAb806	**US201 10076232** SEQ ID NO: 12	13192
cII8845	140	285		**US201 10076232** SEQ ID NO: 180	13193
c[18846	140	285	**mAb806**	**US20 10076232** SEQ **ID** NO: 179	13194
c[18847	**140**	285	ICR62	**US201** [0200595 SEQ **ID NO: 37**	13195

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CH8850	140	285		US20110200595 SEQ ID NO: 44	13198
CH8851	140	285	Hu225	US20130266579 SEQ ID NO: 29; US20150071923 SEQ ID NO: 17	13199
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CH8853	140	285	I002C	US20130266579 SEQ ID NO: 559	13201
CH8854	140	285	I002V	US20130266579 SEQ ID NO: 560	13202
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CH8857	140	285	L003F	US20130266579 SEQ ID NO: 563	13205
CH8858	140	285	L003G	US20130266579 SEQ ID NO: 564	13206
CH8859	140	285	L003S	US20130266579 SEQ ID NO: 565	13207
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CII9324	140	285	G099K	US20130266579 SEQ ID NO: 1045	13672
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CII9326	140	285	Q100C; AIOOC	US20 130266579 SEQ ID NO: 795, 1047	13674
CII9327	140	285	Q100D; A100D	US20 130266579 SEQ ID NO: 796, 1048	13675
CII9328	140	285	Q100E; A100E	US20 130266579 SEQ ID NO: 797, 1049	13676
CII9329	140	285	Q100F; A100F	US20 130266579 SEQ ID NO: 798, 1050	13677
CII9330	140	285	Q100I; A100I	US20 130266579 SEQ ID NO: 799, 1051	13678
CII933 1	140	285	Q100M; A100M	US20 130266579 SEQ ID NO: 800, 1052	13679
CII9332	140	285	Q100N; A100N	US20130266579 SEQ ID NO: 801, 1053	13680
CII9333	140	285	QIOOP; A100P	US20 130266579 SEQ ID NO: 802, 1054	13681
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CII9335	140	285	Q100V; AIOOV	US20 130266579 SEQ ID NO: 804, 1056	13683
CII9336	140	285	Q100W; A100W	US20130266579 SEQ ID NO: 805, 1057	13684
CII9337	140	285	QIOOY; AIOOY	US20 130266579 SEQ ID NO: 806, 1058	13685
CII9338	140	285	QlOOK; A100K	US20130266579 SEQ ID NO: 807, 1059	13686
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CII934 1	140	285	T5P	US20 130266579 SEQ ID NO: 1065	13689
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CII9344	140	285		US20130309233 SEQ ID NO: 2	13692
CII9345	140	285		US20130309233 SEQ ID NO: 4, 60	13693
CJ9346	140	285		US20130309233 SEQ ID NO: 6	13694
CII9347	140	285		US20130309233 SEQ ID NO: 8	13695
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CI 9349	140	285		US20130309233 SEQ ID NO: 12	13697
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CI19356	140	285		US20130309233 SEQ ID NO: 28	13704
CI 9357	140	285		US20130309233 SEQ ID NO: 30	13705
CII9358	140	285		US20130309233 SEQ ID NO: 32	13706

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CII9360	140	285		US20130309233 SEQ ID NO: 36	13708
CII9361	140	285		US20130309233 SEQ ID NO: 38	13709
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CII9380	140	285		US20130309233 SEQ ID NO: 80	13728
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CII9382	140	285		US20130309233 SEQ ID NO: 86	13730
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CII9396	140	285		US20130309233 SEQ ID NO: 22, 78, 114	13744
CII9397	140	285		US20130309233 SEQ ID NO: 82, 116, 124, 128	13745
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CII9400	140	285		US20130309233 SEQ ID NO: 126	13748
CII9401	140	285		US20140348833 SEQ ID NO: 10, 16	13749
CII9402	140	285		US20140348833 SEQ ID NO: 12	13750
CII9403	140	285		US20140348833 SEQ ID NO: 14	13751
CII9404	140	285		US20140348833 SEQ ID NO: 18	13752
CII9405	140	285	Cetuximab A100 LELK104-107	US20150071923 SEQ ID NO: 4	13753
CII9406	140	285	Cetuximab Q100 VEIK104-107	US20150071923 SEQ ID NO: 9	13754
CII9407	140	285	Cetuximab Q100 LELK104-107	US20150071923 SEQ ID NO: 11	13755
CII9408	140	285	Humanized Cetuximab (H225)	US20150071923 SEQ ID NO: 15	13756
CII9409	140	285	LC-I29S light chain variable domain	US20150071923 SEQ ID NO: 125	13757
CII9410	140	285	LC-I29S light chain variable domain	US20150071923 SEQ ID NO: 126	13758
CII9411	140	285	LC-I29S light chain variable domain	US20150071923 SEQ ID NO: 127	13759
CII9412	140	285	EP-h1, 3 light chain variable domain	US20150071923 SEQ ID NO: 155	13760

CII9413	140	285	EP-h1, 3 light chain variable domain	US20150071923 SEQ ID NO: 156	13761
CII9414	140	285	EP-h2 light chain variable domain	US20150071923 SEQ ID NO: 162	13762
CII9415	140	285	EP-h2 light chain variable domain A100	US20150071923 SEQ ID NO: 163	13763
CII9416	140	285	EP-h4 light chain variable domain Q100	US20150071923 SEQ ID NO: 169	13764
CII9417	140	285	EP-h4 light chain variable domain	US20150071923 SEQ ID NO: 170	13765
CII9418	140	285	EP-h5 light chain variable domain Q100	US20150071923 SEQ ID NO: 176	13766
CII9419	140	285	EP-h5 light chain variable domain A100	US20150071923 SEQ ID NO: 177	13767
CII9420	140	285	EP-h8 light chain variable domain Q100	US20150071923 SEQ ID NO: 190	13768
CII9421	140	285	EP-h8 light chain variable domain A100	US20150071923 SEQ ID NO: 191	13769
CII9422	140	285	EP-h13, 14 light chain variable domain	US20150071923 SEQ ID NO: 204	13770
CII9423	140	285	EP-h13, 14; FEP-h1, 2	US20150071923 SEQ ID NO: 205, 253	13771
CII9424	140	285	FEP-h1, 2 light chain variable domain; FEP-h17 light chain variable domain; FEP-h18, 19 light chain Q100 VEIK; EP-h6, 7, 9 light chain Q100 VEIK	US20150071923 SEQ ID NO: 254, 296, 300, 181	13772
CII9425	140	285	FEP-h1, 2 light chain variable domain; FEP-h18, 19 light chain variable domain; EP-h6, 7, 9 light chain variable domain	US20150071923 SEQ ID NO: 256, 302, 183	13773
CII9426	140	285	FEP-h3, 4 light chain variable domain; EP-h10, 12 light chain Q100 VEIK	US20150071923 SEQ ID NO: 195, 261	13774
CII9427	140	285	FEP-h5 light chain variable domain A100	US20150071923 SEQ ID NO: 268	13775
CII9428	140	285	FEP-h5 light chain variable domain Q100	US20150071923 SEQ ID NO: 270	13776
CII9429	140	285	FEP-h6, 7, 8 light chain variable domain	US20150071923 SEQ ID NO: 275	13777
CII9430	140	285	FEP-h6, 7, 8 light chain variable domain	US20150071923 SEQ ID NO: 277	13778
CII9431	140	285	FEP-h9, 10, 11, 12, 20 light chain variable	US20150071923 SEQ ID NO: 282	13779
CII9432	140	285	FEP-h9, 10, 11, 12, 20 light chain variable	US20150071923 SEQ ID NO: 284	13780
CII9433	140	285	FEP-h13, 14, 15, 16, 21 light chain variable	US20150071923 SEQ ID NO: 289	13781
CII9434	140	285	FEP-h13, 14, 15, 16, 21 light chain variable	US20150071923 SEQ ID NO: 291	13782
CII9435	140	285		US20150274828 SEQ ID NO: 7	13783
CII9436	140	285	AbA VL; AbF VL; AbB VL	US20150337042 SEQ ID NO: 5, 53, 65	13784
CII9437	140	285	AbC VL	US20150337042 SEQ ID NO: 67	13785
CII9438	140	285	AbD VL	US20150337042 SEQ ID NO: 69	13786
CII9439	140	285	AbE VL	US20150337042 SEQ ID NO: 51	13787
CII9440	140	285	AbH VL; AbJ VL; AbG VL	US20150337042 SEQ ID NO: 55, 57, 73	13788
CII9441	140	285	AbL VL; AbN VL; AbO VL; AbK VL; AbM VL	US20150337042 SEQ ID NO: 59, 61, 63, 75, 77	13789
CII9442	140	285	AbQ VL; AbP VL	US20150337042 SEQ ID NO: 71, 79	13790

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CII9444	140	285		US20160017028 SEQ ID NO: 46	13792
CII9445	140	285	hVL3	US9051370 SEQ ID NO: 29; US20160068609 SEQ ID NO: 8	13793
CII9446	140	285		US20160068609 SEQ ID NO: 10; US8658175 SEQ ID NO: 2; US9051370 SEQ ID NO: 8	13794
CII9447	140	285	2.38; 2.88; 4.15	US7723484 SEQ ID NO: 66, 69, 72	13795
CII9448	140	285	2.69	US7723484 SEQ ID NO: 67	13796
CII9449	140	285	2.87	US7723484 SEQ ID NO: 68	13797
CII9450	140	285	2.11.3; 4.14	US7723484 SEQ ID NO: 70, 71	13798
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CII9453	140	285	I-KB	US8273328 SEQ ID NO: 51	13801
CII9454	140	285	I-HHD-11	US8273328 SEQ ID NO: 138	13802
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CII9459	140	285	I-KC6	US8273328 SEQ ID NO: 144	13807
CII9460	140	285	I-KC7	US8273328 SEQ ID NO: 145	13808
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CII9462	140	285	I-KC9	US8273328 SEQ ID NO: 147	13810
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CII9464	140	285	Chimeric 1024 VL	US8414896 SEQ ID NO: 73; US8663640 SEQ ID NO: 73	13812
CII9465	140	285	1030VL	US8414896 SEQ ID NO: 74; US8663640 SEQ ID NO: 74	13813
CII9466	140	285	1042VL	US8414896 SEQ ID NO: 75; US8663640 SEQ ID NO: 75	13814
CII9467	140	285	1208VL; 1277VL	US8414896 SEQ ID NO: 76, 82; US8663640 SEQ ID NO: 76, 82	13815
CII9468	140	285	1229VL	US8414896 SEQ ID NO: 77; US8663640 SEQ ID NO: 77	13816
CII9469	140	285	1254VL	US8414896 SEQ ID NO: 78; US8663640 SEQ ID NO: 78	13817
CII9470	140	285	1257VL	US8414896 SEQ ID NO: 79; US8663640 SEQ ID NO: 79	13818
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CII9472	140	285	1261VL	US8414896 SEQ ID NO: 81; US8663640 SEQ ID NO: 81	13820
CII9473	140	285	1284VL	US8414896 SEQ ID NO: 83; US8663640 SEQ ID NO: 83	13821
CII9474	140	285	1308VL	US8414896 SEQ ID NO: 84; US8663640 SEQ ID NO: 84	13822
CII9475	140	285	1320VL	US8414896 SEQ ID NO: 85; US8663640 SEQ ID NO: 85	13823
CII9476	140	285	1344VL	US8414896 SEQ ID NO: 86; US8663640 SEQ ID NO: 86	13824
CII9477	140	285	1347VL	US8414896 SEQ ID NO: 87; US8663640 SEQ ID NO: 87	13825
CII9478	140	285		US8586041 SEQ ID NO: 4	13826
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CII9484	140	285	hVL4	US9051370 SEQ ID NO: 30	13832
CII9485	140	285		US9051370 SEQ ID NO: 33	13833
CII9486	140	285	muEGFR-7 VL and muEGFR13LC	US9125896 SEQ ID NO: 24	13834
CII9487	140	285	muEGFR-12 VL	US9125896 SEQ ID NO: 25	13835
CII9488	140	285	huEGFR-7 VL v1.0	US9125896 SEQ ID NO: 26	13836
CII9489	140	285	huEGFR-7 VL v1.01	US9125896 SEQ ID NO: 27	13837
CII9490	140	285	huEGFR-7 VL_CDR grafted	US9125896 SEQ ID NO: 28	13838
CII9491	140	285	huEGFR-12 VL v1.0	US9125896 SEQ ID NO: 29	13839
CII9492	140	285	huEGFR-12 VL v1.01	US9125896 SEQ ID NO: 30	13840
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CII9496	141	285	H2M1911N	US20150259423 SEQ ID NO: 58	13844
CII9497	141	285	H2M1912N	US20150259423 SEQ ID NO: 74	13845
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CII9775	230	285		US20060240015 SEQ ID NO: 29	14123
CII9776	230	285	LV0(1)	US20060240015 SEQ ID NO: 55	14124
CII9777	230	285		US8580254 SEQ ID NO: 16	14125
CII9778	230	285		US8580254 SEQ ID NO: 20	14126
CII9779	233	285	EM164 v1.1	US20050186203 SEQ ID NO: 10, 84, 94; US20060233810 SEQ ID NO: 74, 76, 87; US20110091524 SEQ ID NO: 74, 76, 87; US20110262525 SEQ ID NO: 74, 76, 87; US20130295050 SEQ ID NO: 10, 84, 94; US7811562 SEQ ID NO: 74, 76, 87	14127
CII9780	233	285	EM164 V1.2	US20050186203 SEQ ID NO: 11, 85; US20060233810 SEQ ID NO: 75, 77, 81; US20110091524 SEQ ID NO: 75, 77, 81; US20110262525 SEQ ID NO: 75, 77, 81; US20130295050 SEQ ID NO: 85, 96; US7811562 SEQ ID NO: 75, 77, 81	14128
CII9781	233	285	EM164 V1.3	US20050186203 SEQ ID NO: 12, 86; US20060233810 SEQ ID NO: 79, 85, 95; US20110091524 SEQ ID NO: 79, 85, 95;	14129

				US20110262525 SEQ ID NO: 79, 85, 95; US20130295050 SEQ ID NO: 12, 86, 98; US7811562 SEQ ID NO: 79, 85, 95	
CII9782	233	285	muEM164	US20050186203 SEQ ID NO: 82; US20130295050 SEQ ID NO: 82	14130
CII9783	233	285	EM164 V1.0	US20050186203 SEQ ID NO: 9, 83, 90; US20060233810 SEQ ID NO: 80, 88, 93; US20110091524 SEQ ID NO: 80, 88, 93; US20110262525 SEQ ID NO: 80, 88, 93; US20130295050 SEQ ID NO: 9, 83, 90; US7811562 SEQ ID NO: 80, 88, 93	14131
CII9784	233	285	GFA1	US20130344069 SEQ ID NO: 2	14132
CII9785	233	285	GFA3	US20130344069 SEQ ID NO: 4	14133
CII9786	233	285	GFA5	US20130344069 SEQ ID NO: 6	14134
CII9787	233	285	GFA6	US20130344069 SEQ ID NO: 8	14135
CII9788	233	285	GFA12	US20130344069 SEQ ID NO: 10	14136
CII9789	233	285	GFC2	US20130344069 SEQ ID NO: 12	14137
CII9790	233	285	A2	US20130344069 SEQ ID NO: 14	14138
CII9791	233	285	A11	US20130344069 SEQ ID NO: 16	14139
CII9792	233	285	B9	US20130344069 SEQ ID NO: 18	14140
CII9793	233	285	B10	US20130344069 SEQ ID NO: 20	14141
CII9794	233	285	A6	US20130344069 SEQ ID NO: 22	14142
CII9795	233	285	C8	US20130344069 SEQ ID NO: 24	14143
CII9796	233	285	C4	US20130344069 SEQ ID NO: 26	14144
CII9797	233	285	E2	US20130344069 SEQ ID NO: 28	14145
CII9798	233	285	B3	US20130344069 SEQ ID NO: 30	14146
CII9799	233	285	D12	US20130344069 SEQ ID NO: 32	14147
CII9800	233	285	7C10; 2.12.1 fx	US20060233810 SEQ ID NO: 37; US20110091524 SEQ ID NO: 37; US20120058112 SEQ ID NO: 7	14148
CII9801	232	285	7.158.1	US8410058 SEQ ID NO: 4	14149
CII9802	232	285	7.159.2	US8410058 SEQ ID NO: 8	14150
CII9803	232	285	7.34.1	US8410058 SEQ ID NO: 12	14151
CII9804	232	285	7.251.3	US8410058 SEQ ID NO: 16	14152
CII9805	232	285	7.234.1	US8410058 SEQ ID NO: 20	14153
CII9806	232	285	7.158.1	US8410058 SEQ ID NO: 42	14154
CII9807	232	285	7.159.2	US8410058 SEQ ID NO: 46	14155
CII9808	232	285	7.34.1	US8410058 SEQ ID NO: 50	14156
CII9809	232	285	7.251.3	US8410058 SEQ ID NO: 54	14157
CII9810	232	285	7.234.1	US8410058 SEQ ID NO: 58	14158
CII9811	233	285	7C10 VL	US7241444 SEQ ID NO: 49; US7553485 SEQ ID NO: 49	14159
CII9812	233	285	7C10 VL	US7241444 SEQ ID NO: 54; US7553485 SEQ ID NO: 54	14160
CII9813	233	285	GM607	US7241444 SEQ ID NO: 58; US7553485 SEQ ID NO: 58	14161
CII9814	233	285	7C10 VL	US7241444 SEQ ID NO: 61; US7553485 SEQ ID NO: 61	14162
CII9815	233	285	7C10 VL	US7241444 SEQ ID NO: 63; US7553485 SEQ ID NO: 63	14163
CII9816	233	285	7C10 VL; GM607	US7241444 SEQ ID NO: 67; US7553485 SEQ ID NO: 67	14164
CII9817	274	285	5.12.14	US20070048219 SEQ ID NO: 17	14165
CII9818	274	285	variant 6G4.2.5	US20070048219 SEQ ID NO: 35	14166
CII9819	274	285	6G4.2.5	US20070048219 SEQ ID NO: 42	14167
CII9820	274	285	6G425	US20070048219 SEQ ID NO: 45	14168

CII982 1	274	285	**humanized 6G425 F(ab)-1**	US20070048219 SEQ ID NO: 46	14169
CII9822	295	285	**BIIB7 IF10**	**US201001** 1951 SEQ **ID NO: S3**	14 170
CII9823	295	285	BIIB69A09	**US201001 1951 1** SEQ ID NO: **17**	**14 171**
CII9824	295	285	**BIIB67F10**	US201001 1951 1 SEQ ID NO: 21	14172
CI19825	295	285	**BIIB67F1 1**	**US201001 1951 1** SEQ ID NO: 25	14173
CII9826	295	285	BIIB66A12	US20 **100**1195 SEQ ID NO: 29	14174
CII9827	295	285	**BIIB66C01**	US20 [00 1195 SEQ ID NO: 33	14175
CII9828	295	285	**BIIB65C10**	**US201001 195 11** SEQ ID NO: 37	14176
CII9829	295	285	BIIB65H09	US201001 1951 1 SEQ ID NO: 41	14177
CII9830	295	285	**BI1B65B03**	**US201001 1951 1** SEQ ID NO: 45	14 178
CII983 !	308	285	**1B1**	**US20 130 123472** SEQ **ID NO: 41**	14179
CII9832	308	285	16G7	**US20 130 123472** SEQ ID NO: 45	14180
CII9833	308	285	23D2	**US20 130 123472** SEQ ID NO: 49	14181
CI19834	**318**	285	Antibody **B**	**US8961970** SEQ ID NO: 4	14182
CII9835	321	285		**US8455623** SEQ ID NO: 7	14183
CII9836	321	285		US8455623 SEQ ID NO: 17	14184
CII9837	321	285		US8455623 SEQ ID NO: 27	14185
CII9838	322	285	**B2M-aTacYL**	US8449889 SEQ ID NO: **5**	14186
CII9839	**331**	285		US20150232572 SEQ ID **NO:** 27	14187
CII9840	337	285	**PAM4** murine	**US8574854** SEQ ID NO: 10	14188
CII9841	337	285	**PAM4** chimeric	**US8574854** SEQ ID NO: **13**	14189
CI19842	337	285	Walker	**US8 574854** SEQ ID NO: **15**	14190
CII9843	337	285	**hPAM4**	**US8574854** SEQ ID NO: 16	**1419 1**
CII9844	346	285	**4G6d**	**US20050074821** SEQ ID NO: **9 1**	14192
CII9845	346	285	14D1 1	**US20050074821** SEQ ID NO: 80	14193
CII9846	346	285	**14D 10**	**US2005007482 1** SEQ ID NO: 82	14194
CII9847	346	285	**6H9**	US2005007482 1 SEQ ID **NO:** 84	14195
CII9848	346	285	7H2	**US2005007482 1** SEQ ID NO: 86	14196
CII9849	346	285	**4G6a**	**US20050074821** SEQ ID NO: 88	14197
CI19850	346	285	4G6c	**US20050074821** SEQ ID NO: 90	14198
CII985 1	346	285	**4G6e**	**US2005007482 1** SEQ ID NO: **13 1**	14199
CII9852	346	285		**US2009004 1717** SEQ ID NO: 12	14200
CII9853	346	285		**US20090041717** SEQ ID NO: 28	14201
CII9854	346	285		**US20090041717** SEQ **ID** NO: 44	14202
CII9855	346	285		**US20090041717** SEQ **ID NO:** 60	14203
CII9856	346	285		**US20090041717** SEQ ID NO: 76	14204
CII9857	346	285		**US20090041717** SEQ ID NO: 92	14205
CII9858	346	285		**US20090041717** SEQ ID NO: 102	14206
CI19859	346	285		US2009004 1717 SEQ ID NO: 106	14207
CII9860	346	285		**US2009004 1717** SEQ ID NO: 110	14208
CII9861	346	285		**US2009004 1717** SEQ ID NO: 1**14**	14209
CII9862	346	285		**US20090041717** SEQ ID NO: 124	14210
CII9863	346	285		**US20090041717** SEQ **ID** NO: **134**	**1421 1**
CII9864	346	285		**US20090041717** SEQ **ID NO:** 138	14212
CII9865	346	285		**US20090041717** SEQ ID NO: 148	14213
CII9866	346	285		**US20090041717** SEQ ID NO: 158, 422	14214
CII9867	346	285		**US20090041717** SEQ ID NO: 168, 182	14215
CII9868	346	285		**US20090041717** SEQ ID NO: 178	14216
CI19869	346	285		US2009004 1717 SEQ ID NO: 192	14217
CII9870	346	285		**US2009004 1717** SEQ ID NO: 202, 206	14218
CII987 !	346	285		**US20090041717** SEQ ID **NO:** 216	14219
CII9872	346	285		**US20090041717** SEQ ID NO: 226	14220
CII9873	346	285		**US20090041717** SEQ ID NO: 230	14221
CI19874	346	285		**US2009004 1717** SEQ ID NO: 234	14222
CI19875	346	285		**US2009004 1717** SEQ ID NO: 238	14223

CII9876	346	285		**US20090041717** SEQ ID NO: 248	14224
CII9877	346	285		**US20090041717** SEQ ID NO: 258	14225
CII9878	346	285		**US20090041717** SEQ ID NO: 262	14226
CII9879	346	285		**US20090041717** SEQ ID NO: 272	14227
CI19880	346	285		U82009004 17 17 SEQ ID NO: 282	14228
CII9881	346	285		**US2009004** 17 17 SEQ ID NO: 286	14229
CII9882	346	285		**US2009004** 17 17 SEQ ID NO: 296	14230
CII9883	346	285		**US2009004 17 17** SEQ ID NO: 306, 378	1423 1
CII9884	346	285		**US20090041717** SEQ ID NO: 3 10	14232
CII9885	346	285		**US20090041717** SEQ ID NO: 320	14233
CI19886	346	285		U82009004 17 17 SEQ ID NO: 330	14234
CII9887	346	285		**US2009004** 17 17 SEQ ID NO: 334	14235
CII9888	346	285		**US2009004 17 17** SEQ ID NO: 344	14236
CII9889	346	285		**US20090041717** SEQ ID NO: 354	**14237**
CII9890	346	285		**US20090041717** SEQ ID NO: 358	14238
CII989 1	346	285		**US20090041717** SEQ ID NO: 368	14239
CII9892	346	285		**US20090041717** SEQ ID NO: 382, 402	14240
CII9893	346	285		**US2009004 17 17** SEQ ID NO: 392	14241
CII**9894**	346	285		**US20090041717** SEQ ID NO: 412	14242
c II9895	346	285		**US20090041717** SEQ ID NO: 432	14243
c I19896	346	285		**US20090041717** SEQ ID NO: 448	14244
c I **9897**	346	285		**US20090041717** SEQ ID NO: 458	14245
c I;i9898	346	285		**US20090041717** SEQ ID NO: 462	14246
c I[19899	346	285		U82009004 17 17 SEQ ID NO: 472	14247
CII9900	346	285		**US2009004 17 17** SEQ ID NO: 482	14248
c I**[19901**	346	285		**US2009004 17 17** SEQ ID NO: 486	14249
c J**9902**	346	285		**US20090041717** SEQ ID NO: 496	14250
c I19903	346	285		**US20090041717** SEQ **ID** NO: 506	1425 1
c I19904	346	285		**US20090041717** SEQ **ID** NO: 5 10	14252
c II9905	346	285		**US20090041717** SEQ **ID** NO: 520	14253
c I **9906**	346	285		**US20090041717** SEQ ID NO: 530	14254
c I[19907	346	285		**US20090041717** SEQ ID NO: 534	14255
c I[19908	347	285	**4D4;** VL016; **VL** 028; **VL** 095	1JS20050074821 SEQ **ID** NO: 12; US20150329642 SEQ ID No: 169; US20150329642 SEQ ID No: **17 1;** US20 150329642 SEQ ID No: **175**	14256
CII9909	353	285	438	**US2016000233 1** SEQ ID NO: 25	14257
CII9910	353	285	351	**US20 16000233 1** SEQ ID NO: 45	14258
CII991 1	353	285	90	**US20 16000233** 1 SEQ **ID** NO: 55	14259
CII9912	353	285	132; 132_A I2	**US2016000233** I SEQ ID NO: 59, 63	14260
CII9913	353	285	137	US20 16000233 I SEQ ID NO: **67**	14261
c I19914	353	285	**438 VI1.0**	**US2016000233 1** SEQ ID NO: 83	14262
c J9915	353	285	438 VI **1.1**	**US20 16000233 1** SEQ ID NO: 85	14263
c II9916	353	285	438 VI **1.3**	**US20 16000233** 1 SEQ **ID** NO: 87	14264
c II9917	353	285	438 VI 1.4	**US20 16000233** 1 SEQ **ID** NO: 89	14265
c I **9918**	353	285	438 VI 1.5	**US20 16000233** 1 SEQ ID NO: 9 1	14266
c I[19919	353	285	**438 VI1.6**	**US20 16000233 1** SEQ ID NO: 93	14267
c I[19920	353	285	438 **VI1.7**	**US20 16000233 1** SEQ ID NO: 95	14268
CII9921	353	285	438 **VI1.8**	US20 16000233 I SEQ ID NO: 97	14269
c I[19922	353	285	**438 VI1.9**	**US2016000233 1** SEQ ID NO: 105	14270
c J**9923**	353	285	438 VI **1.10**	**US20 16000233 1** SEQ ID NO: 107	14271
c J**9924**	353	285	438 VI **1.1 1**	**US20 16000233 1** SEQ ID NO: 109	14272
c I19925	353	285	**438 (VL1.8**)-hkappa	**US20 16000233** 1 SEQ **ID** NO: **113**	14273
c II9926	353	285	351 (VL1.O)	**US20 16000233** 1 SEQ **ID** NO: 127	14274
c I **9927**	353	285	351 (VL1.1)	**US20 16000233** 1 SEQ ID NO: **129**	14275

CII9928	353	285	351 **(VL1.2)**	**US2016000233** 1 SEQ **ID** NO: 137	14276
CII9929	353	285	351 (VL1.3)	**US20 16000233 1** SEQ **ID NO: 139**	14277
CII9930	353	285	351 (VL1.4)	**US20 16000233** 1 SEQ ID NO: 141	14278
CII993 1	353	285	352 (VL1.5)	**US20 16000233 1** SEQ ID NO: 143	14279
CI19932	353	285	351 **(VL1 .6)**	US20 16000233 1 SEQ ID NO: 145	14280
CII9933	353	285	35 1 **(VL1 .7)**	**US20 16000233 1** SEQ ID NO: **147**	14281
CII9934	353	285	35 1 **(VL1 .l)-hkappa**	**US20 16000233 1** SEQ ID NO: 151	14282
CII9935	362	285		**US20090 110678** SEQ ID NO: 16	14283
CII9936	362	285		**US20090 110678** SEQ ID NO: 51	14284
CII9937	362	285		**US20090 110678** SEQ **ID** NO: 61	14285
CII9938	365	285	BAP058 **LC**	**US20160108 123** SEQ **ID NO:** 8	14286
CII9939	365	285	**BAP058-chi** LC	**US20160108 123** SEQ ID NO: **17**	14287
CII9940	365	285	**BAP058-hiim01-HC; BAP058-hum02-HC; BAP058-huml4-HC**	**US20 160108123** SEQ ID NO: 20	14288
CII9941	365	285	ADC-1013	**US20160108123** SEQ ID NO: 313	14289
CII9942	365	285		**US20160108 123** SEQ **ID** NO: 320	14290
CII9943	365	285	hCD27.15	**US20160108 123** SEQ **ID NO**: 325	1429 1
CII9944	365	285	**CJM1 12**	**US20160108 123** SEQ ID NO: 340	14292
CII9945	365	285	**VAY73**	**US20160108123** SEQ ID NO: 357	14293
CI19946	365	285	**VAY736**	**US20160108123** SEQ ID NO: 359	14294
CII9947	369	285		**US8093362** SEQ ID NO: 36	14295
CII9948	369	285	**KM34** 11	**US8093362** SEQ ID NO: 38	14296
CII9949	394	285	**M2/X92.30 VL clone #2**	US8008442 SEQ ID **NO:** 52, 58, 61	14297
CII9950	394	285	**M2/X92.30** VL clone #6	**US8008442** SEQ ID NO: 54, 60, 62	14298
CII995 1	394	285	M2/X120.545 VL clone #8	**US8008442** SEQ ID **NO**: 56, 63	14299
CII9952	397	285		US81 19132 SEQ ID NO: 21	14300
CII9953	397	285		**US81 19132** SEQ ID NO: 22	14301
CII9954	406	285	MBL009-S 5 VL	US8980257 SEQ ID **NO**: 3, 142	14302
CII9955	406	285	**MBL016-8** VL	**US8980257** SEQ ID NO: 5, 147	14303
CI19956	406	285	**MBL 144-1** VL	**US8980257** SEQ ID NO: 9, 155	14304
CII9957	406	285	**MBL 184-6 VL**	**US8980257** SEQ ID NO: 11	14305
CII9958	406	285	**MBL259-3 VL**	**US8980257** SEQ ID NO: 13	14306
CII9959	406	285	**MBL292-1** VL	**US8980257** SEQ ID NO: 15	14307
CII9960	406	285	**MBL352-34** VL	US8980257 SEQ ID NO: 17	14308
CII996 1	406	285	**MBL016-8 VH**	US8980257 SEQ ID NO: 4, 144, 145	14309
CI19962	406	285	**MBL018-1** VL	**US8980257** SEQ ID NO: 146	143 10
CII9963	406	285	MBL **144-1 VL**	**US8980257** SEQ ID NO: 148	143 11
CII9964	406	285	**MBL 184-6** VL; **MBL018-1 VL**	**US8980257** SEQ ID NO: 7, 150	143 12
CII9965	406	285	MBL259-3 VL	US8980257 SEQ ID NO: 152	143 13
CII9966	413	285	2.5; 3.4	**US2008018753** 1 SEQ ID NO: 106, 172	14314
CI19967	413	285	**15**	US20080 18753 1 SEQ ID NO: 8	143 15
CII9968	4 S3	285	25	**US20080 18753** 1 SEQ ID NO: 12	143 16
CII9969	413	285	28	**US2008018753 1** SEQ ID NO: 16	143 17
CII9970	413	285	**70k/69g**	**US2008018753 1** SEQ ID NO: 20	143 18
CII997 1	**413**	285	95	**US2008018753** 1 SEQ **ID** NO: 24	14319
CII9972	**413**	285	2; 123	**US2008018753** 1 SEQ **ID NO:** 4, 28	14320
CII9973	4 S3	285	S31	**US20080 18753** 1 SEQ ID NO: 32	14321
CII9974	413	285	**145k/140g**	**US2008018753 1** SEQ ID NO: 36	14322
CII9975	413	285	148	**US2008018753 1** SEQ ID NO: 40	14323
CII9976	413	285	234	**US2008018753 1** SEQ ID NO: 44	14324
CI19977	**413**	285	250	**US2008018753** 1 SEQ **ID** NO: 48	14325
CI19978	**413**	285	263; 269	**US2008018753** 1 SEQ **ID NO:** 52, 56	14326

CII9979	413	285	280	US20080187531 SEQ ID NO: 60	14327
CII9980	413	285	282	US20080187531 SEQ ID NO: 64	14328
CII9981	413	285	291	US20080187531 SEQ ID NO: 68	14329
CII9982	413	285	299v1	US20080187531 SEQ ID NO: 72	14330
CII9983	413	285	299v2	US20080187531 SEQ ID NO: 76	14331
CII9984	413	285	313	US20080187531 SEQ ID NO: 80	14332
CII9985	413	285	1.1	US20080187531 SEQ ID NO: 88	14333
CII9986	413	285	2.1	US20080187531 SEQ ID NO: 92	14334
CII9987	413	285	2.2	US20080187531 SEQ ID NO: 96	14335
CII9988	413	285	2.3	US20080187531 SEQ ID NO: 100	14336
CII9989	413	285	2.5	US20080187531 SEQ ID NO: 108	14337
CII9990	413	285	2.8	US20080187531 SEQ ID NO: 120	14338
CII9991	413	285	2.9	US20080187531 SEQ ID NO: 124	14339
CII9992	413	285	2.1	US20080187531 SEQ ID NO: 128	14340
CII9993	413	285	2.13	US20080187531 SEQ ID NO: 132	14341
CII9994	413	285	2.14; 2.18	US20080187531 SEQ ID NO: 136, 152	14342
CII9995	413	285	2.15; 2.17; R014	US20080187531 SEQ ID NO: 84, 140, 148	14343
CII9996	413	285	2.16	US20080187531 SEQ ID NO: 144	14344
CII9997	413	285	2.19	US20080187531 SEQ ID NO: 156	14345
CII9998	413	285	2.21	US20080187531 SEQ ID NO: 160	14346
CII9999	413	285	3.1	US20080187531 SEQ ID NO: 164	14347
CII10000	413	285	3.2	US20080187531 SEQ ID NO: 168	14348
CII10001	413	285	3.5; 3.6	US20080187531 SEQ ID NO: 176, 180	14349
CII10002	413	285	3.8	US20080187531 SEQ ID NO: 184	14350
CII10003	413	285	3.9	US20080187531 SEQ ID NO: 188	14351
CII10004	413	285	4.3	US20080187531 SEQ ID NO: 192	14352
CII10005	413	285	4.4	US20080187531 SEQ ID NO: 196	14353
CII10006	413	285	4.7	US20080187531 SEQ ID NO: 200	14354
CII10007	413	285	4.8	US20080187531 SEQ ID NO: 204	14355
CII10008	413	285	4.9; 4.12	US20080187531 SEQ ID NO: 208, 220	14356
CII10009	413	285	4.1	US20080187531 SEQ ID NO: 212	14357
CII10010	413	285	4.11	US20080187531 SEQ ID NO: 216	14358
CII10011	413	285	4.13	US20080187531 SEQ ID NO: 224	14359
CII10012	413	285	4.14; 4.15; 4.16; 4.17	US20080187531 SEQ ID NO: 228, 232, 236, 240	14360
CII10013	413	285	4.18	US20080187531 SEQ ID NO: 244	14361
CII10014	413	285	4.19	US20080187531 SEQ ID NO: 248	14362
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CII10255	144	480		US8329873 SEQ ID NO: 8	14603
CI110256	144	480		US8329873 SEQ ID NO: 9	14604
CII_10257	144	480		US8329873 SEQ ID NO: 10	14605
CII10258	144	480		US8329873 SEQ ID NO: 19	14606
CII10259	144	480		US8329873 SEQ ID NO: 21	14607
CII10260	39	480	H11	US7166286 SEQ ID NO: 14	14608
CII10261	[07	480	(+2)GFPa-His6	US2016003_1985 SEQ ID NO: 1	14609
CII10262	107	480	(+2)GFPb-His6	US20_16003_1985 SEQ ID NO: 2	14610
CII10263	107	480	(+6)GFPa-His6	US2016003_1985 SEQ ID NO: 3	14611
CII10264	107	480	(+6)GFPb-His6	US20_16003_1985 SEQ ID NO: 4	14612
CII_10265	107	480	(+9)GFP-His6	US20_16003_1985 SEQ ID NO: 5	14613
CII10266	107	480	(+12)GFPa-His6	US20_16003_1985 SEQ ID NO: 6	14614
CII10267	107	480	(+12)GiPb-His6	US2016003_1985 SEQ ID NO: 7	14615

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CI110269	107	480	(+ 15)GFP-His6	US20 16003 1985 SEQ ID NO: 9	I4617
CI 10270	107	480	sfGFP-His6	US20 16003 1985 SEQ ID NO: 10	I46 18
C[110271	107	480	His6-C6.5	US20 16003 1985 SEQ ID NO: 11	14619
C[110272	107	480	C6.5-His6	US20 16003 1985 SEQ ID NO: 12	14620
c[110273	107	480	sfGFP-(S4G)6-C6.5-His6	US20 16003 1985 SEQ ID NO: 13	14621
c[110274	107	480	(+15)GFP-(S4G)6-C6.5-His6	US20 16003 1985 SEQ ID NO: 14	14622
C[110275	107	480	C6.5-(S4G)6-sfGFP-His6	US20 16003 1985 SEQ ID NO: 15	14623
CII10276	107	480	C6.5-(S4G)6-(+15)GFP-His6	US20 16003 1985 SEQ ID NO: 16	14624
CI110277	107	480	(+2)GFPa-(S4G)6-C6.5 sCFv-His6	US2016003 1985 SEQ ID NO: 17	14625
CI110278	107	480	(+2)GFPb-(S4G)6-C6.5 scFv-His6	US2016003 1985 SEQ ID NO: 18	I4626
CI 10279	107	480	(+6)GFPa-(S4G)6-C6.5 scFv-His6	US2016003 1985 SEQ ID NO: 19	I4627
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C[11028I	107	480	(+9)GFP-(S4G)6-C6.5-His6	US2016003 1985 SEQ ID NO: 21	14629
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CII10284	107	480	(+12)GFPc-(S4G)6-C6.5-His6	US2016003 1985 SEQ ID NO: 24	14632
CI110285	107	480	His6-C6.5-(S4G)6-(+6)GFPa	US2016003 1985 SEQ ID NO: 25	14633
CI110286	I07	480	His6-C6.5-(S4G)6-(+6)GFPb	US2016003 1985 SEQ ID NO: 26	I4634
CI 10287	107	480	His6-C6.5-(S4G)6-(+9)GFP	US2016003 1985 SEQ ID NO: 27	14635
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C[110289	107	480	His6-C6.5-(S4G)6-(+12)GFPb	US2016003 1985 SEQ ID NO: 29	14637
c[110290	107	480	His6-C6.5-(S4G)6-(+ 12)GFPc	US20 16003 1985 SEQ ID NO: 30	14638
C[11029I	107	480	His6-C6.5-(S4G)6-(+15)GFP	US20 16003 1985 SEQ ID NO: 31	14639
CII10292	107	480	His6-C6.5-(S4G)6-sfGFP	US2016003 1985 SEQ ID NO: 32	14640
CI110293	107	480	His6-C6.5-(S4G)6-(+6)GFPa-Myc	US2016003 1985 SEQ ID NO: 33	14641
CI110294	107	480	His6-C6.5-(S4G)6-(+6)GFPb-Myc	US2016003 1985 SEQ ID NO: 34	I4642
CI 10295	107	480	His6-C6.5-(S4G)6-(+9)GFP-Myc	US2016003 1985 SEQ ID NO: 35	I4643
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c[110298	107	480	His6-C6.5-(S4G)6-(+12)GFPc-Myc	US20 16003 1985 SEQ ID NO: 38	14646
C[110299	107	480	His6-C6.5-(S4G)6-(+15)GFP-Myc	US20 16003 1985 SEQ ID NO: 39	14647
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CI110301	107	480	Myc-(+36)GFP-His6	US20 16003 1985 SEQ ID NO: 41	I4649
CI110302	107	480	(+36)GFP-His6	US20 16003 1985 SEQ ID NO: 42	I4650
CI 10303	109	480	A12 ScFv antibody	US20 150299326 SEQ ID NO: 25	I4651
CI 10304	109	480	C2 ScFv antibody	US20 150299326 SEQ ID NO: 26	I4652
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C[110306	109	480	F1 ScFv antibody	US20150299326 SEQ ID NO: 28	14654
c[110307	109	480	F 1I ScFv antibody	US20 150299326 SEQ ID NO: 29	14655
C[110308	109	480	G1 ScFv antibody	US20150299326 SEQ ID NO: 30	14656
CJ10309	109	480	H2 ScFv antibody	US20 150299326 SEQ ID NO: 31	14657
CII10310	109	480	H5 ScFv antibody	US20150299326 SEQ ID NO: 32	I4658
CI1103 11	109	480	anti-Met scFv-Sl	US8039598 SEQ ID NO: 6	I4659
CI 103 12	140	480	alpha(l-87)	US20090130712 SEQ ID NO: 42	I4660
C[1103 13	140	480	hCGbeta	US20090130712 SEQ ID NO: 44	14661
C[1103I4	140	480	IGF-lRScFv hCGalpha (1-87)	US200901307 12 SEQ ID NO: 60	14662
c[1103 15	140	480	IGF-lRScFv hCGbeta	US20090 1307 I2 SEQ ID NO: 62	14663
C[1103 16	140	480	(l-87)-ScFvEGFR	US200901307 12 SEQ ID NO: 64	14664
CII10317	140	480	hCGalpha (1-87)GFASPAFF-ScFvEGFR	US20090130712 SEQ ID NO: 66	14665
CII103 18	140	480	hCGbeta-ScFvEGFR	US20090130712 SEQ ID NO: 70	14666
CI1103 19	140	480	Fabl2 scFvHL	US200901307 12 SEQ ID NO: 73	14667
CII10320	140	480	Fab 12 scFvHL	US20090 1307 i2 SEQ ID NO: 74	14668
CII1032 1	140	480	VEGF scFvLH	US200901307 12 SEQ ID NO: 77	14669
CII10322	140	480	P2/1; 2124	US20 1000093 90 SEQ ID NO: 2, 23	14670
CII10323	140	480	P2/2; P2/3	US20 100009390 SEQ ID NO: 3, 4	14671

CH10324	140	480	P2/4; C10	US20100009390 SEQ ID NO: 1, 5	14672
CH10325	140	480	P3/1	US20100009390 SEQ ID NO: 7	14673
CH10326	140	480	P3/4; P3/5; P2/5; P3/2; P3/3	US20100009390 SEQ ID NO: 6, 8, 9, 10, 11, 26	14674
CH10327	140	480		US20100009390 SEQ ID NO: 32	14675
CH10328	149	480		US20150322165 SEQ ID NO: 119	14676
CH10329	167	480		US8691225 SEQ ID NO: 72	14677
CH10330	210	480	BHA10 scFv	US20090048122 SEQ ID NO: 4	14678
CH10331	210	480	VH44/VL100 disulfide-stabilized BHA10 scFv	US20090048122 SEQ ID NO: 10	14679
CH10332	210	480	(Gly4Ser)4 BHA10 scFv construct	US20090048122 SEQ ID NO: 15	14680
CH10333	210	480	(Gly4Ser)5 BHA10 scFv construct	US20090048122 SEQ ID NO: 17	14681
CH10334	210	480	VH44/VL100 disulfide+(Gly4Ser)4-stabilized BHA10 scFv	US20090048122 SEQ ID NO: 19	14682
CH10335	210	480	PRIMATIZED® p5E8 (VL/VH)	US20090048122 SEQ ID NO: 68	14683
CH10336	210	480	PRIMATIZED® p5E8 (VH/VL)	US20090048122 SEQ ID NO: 70	14684
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CH10338	233	480	9A2	US20060233810 SEQ ID NO: 47; US20110091524 SEQ ID NO: 47	14686
CH10339	233	480	11A4	US20060233810 SEQ ID NO: 48; US20110091524 SEQ ID NO: 48	14687
CH10340	233	480	7A4	US20060233810 SEQ ID NO: 49; US20110091524 SEQ ID NO: 49	14688
CH10341	233	480	11A1	US20060233810 SEQ ID NO: 50; US20110091524 SEQ ID NO: 50	14689
CH10342	233	480	7A6	US20060233810 SEQ ID NO: 51; US20110091524 SEQ ID NO: 51	14690
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CH10349	428	480		US20160090427 SEQ ID NO: 173	14697
CH10350	428	480		US20160090427 SEQ ID NO: 174	14698
CH10351	428	480		US20160090427 SEQ ID NO: 175	14699
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CH10369	109	480	PGIA-2-A3	US20040166544 SEQ ID NO: 17	14717
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CH10371	109	480	PGIA-2-A5	US20040166544 SEQ ID NO: 19	14719

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CH10401	109	480	PGIA-4-A3	US20040166544 SEQ ID NO: 50	14749
CH10402	109	480	PGIA-4-A4	US20040166544 SEQ ID NO: 51	14750
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CH10414	144	492		US8580263 SEQ ID NO: 12, 50	14762
CH10415	144	492		US8580263 SEQ ID NO: 13, 51	14763
CH10416	144	492		US8580263 SEQ ID NO: 16, 53	14764
CH10417	144	492		US8580263 SEQ ID NO: 17, 42	14765
CH10418	144	492		US8580263 SEQ ID NO: 18, 54	14766
CH10419	144	492		US8580263 SEQ ID NO: 19, 55	14767
CH10420	144	492		US8580263 SEQ ID NO: 20, 56	14768
CH10421	144	492		US8580263 SEQ ID NO: 23, 58	14769
CH10422	144	492		US8580263 SEQ ID NO: 24, 49	14770
CH10423	144	492		US8580263 SEQ ID NO: 25, 59	14771
CH10424	144	492		US8580263 SEQ ID NO: 27	14772
CH10425	144	492		US8580263 SEQ ID NO: 29	14773
CH10426	144	492		US8580263 SEQ ID NO: 31	14774

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CII10430	144	492		US8580263 SEQ ID NO: 48	14778
CII10431	144	492		US8580263 SEQ ID NO: 52	14779
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CII10438	140	497	DOM16-39-211	US20130041136 SEQ ID NO: 542	14786
CII10439	140	497	DOM16-39-212	US20130041136 SEQ ID NO: 543	14787
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CII10444	140	497	DOM16-39-217	US2013004 1136 SEQ ID NO: 548	14792
CII10445	140	497	DOM16-39-218	US20130041136 SEQ ID NO: 549	14793
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CII10459	140	497	DOM16-39-232	US20130041136 SEQ ID NO: 563	14807
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CII10462	140	497	DOM16-39-503	US20130041136 SEQ ID NO: 567	14810
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CII10467	140	497	DOM16-39-508	US20130041136 SEQ ID NO: 572	14815
CII10468	140	497	DOM16-39-509; DOM16-39-521	US20130041136 SEQ ID NO: 573, 577	14816
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CII10470	140	497	DOM16-39-511	US20130041136 SEQ ID NO: 575	14818
CII10471	140	497	DOM16-39-512	US2013004 1136 SEQ ID NO: 576	14819
CII10472	140	497	DOM16-39-522	US20130041136 SEQ ID NO: 578	14820
CII10473	140	497	DOM16-39-523	US20130041136 SEQ ID NO: 579	14821
CII10474	140	497	DOM16-39-524	US20130041136 SEQ ID NO: 580	14822
CII10475	140	497	DOM16-39-527	US20130041136 SEQ ID NO: 581	14823
CII10476	140	497	DOM16-39-525	US20130041136 SEQ ID NO: 582	14824
CII10477	140	497	DOM16-39-526	US20130041136 SEQ ID NO: 583	14825
CII10478	140	497	DOM16-39-540	US20130041136 SEQ ID NO: 584	14826
CII10479	140	497	DOM16-39-541	US20130041136 SEQ ID NO: 585	14827
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CII 10485	140	497	DOM16-39-552	US2013004 1136 SEQ ID NO: 592	14833
CII 10486	140	497	DOM16-39-553	US20 13004 136 SEQ ID NO: 593	14834
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CII 10489	140	497	DOM16-39-561	US20130041 136 SEQ ID NO: 596	14837
CII10490	140	497	DOM16-:'9-562	US20 130041 136 SEQ ID NO: 597	14838
CII10491	140	497	DOM 16-?'9-563	US20 130041 136 SEQ ID NO: 598	14839
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CIII 1030	109	40	224G1 1	US946969 1B2 SEQ ID NO: 90	15378
CIII 1031	109	40	224G1 1	US946969 1B2 SEQ ID NO: 91	15379
CIII 1032	109	40	224G1 1	US9469691B2 SEQ ID NO: 92	15380
CIII 1033	109	40	224G 11	US9469691B2 SEQ ID NO: 93	15381
CII 1034	109	40	224G 11	US9469691B2 SEQ ID NO: 94	15382
CIII 1035	109	40	224G11	US9469691B2 SEQ ID NO: 95	15383
CIII 1036	109	40	224G 11	US9469691B2 SEQ ID NO: 96	15384
CIII 1037	109	40	224G 11	US946969 1B2 SEQ ID NO: 97	15385
CIII 1038	109	40	224G11	US946969 1B2 SEQ ID NO: 98	15386
CIII 1039	109	40	224G1 1	US946969 1B2 SEQ ID NO: 99	15387
cm 1040	109	40	224G1 1	US9469691B2 SEQ ID NO: 100	15388
cm 1041	109	40	224G 11	US9469691B2 SEQ ID NO: 101	15389
CII 11042	109	40	224G 11	US9469691B2 SEQ ID NO: 102	15390
CIII 1043	109	40	8.70.2	US8821869B2 SEQ ID NO: 10	15391
CIII 1044	109	40	8.70.2	US8821869B2 SEQ ID NO: 23	15392
CIII 1045	109	40	8.90.3	US8821869B2 SEQ ID NO: 14	15393
CIII 1046	109	40	8.90.3	US8821869B2 SEQ ID NO: 24	15394
CIII 1047	109	40	9.1.2	US8821869B2 SEQ ID NO: 6	15395
CIII 1048	109	40	9.1.2	US8821869B2 SEQ ID NO: 22	15396
CIII 1049	109	40	C8-H24 1	US926053 1B2 SEQ ID NO: 21	15397
CII 1050	109	40	C8-H24 1	US920 1074B2 SEQ ID NO: 31	15398
cm 1051	109	40	C8-H24 1	US9201074B2 SEQ ID NO: 32	15399

CH11052	109	40	C8-H241 (Chemical Abstracts Service (CAS) #1365287-97-3)	US9260531B2 SEQ ID NO: 22	15400
CH11053	109	40	E2 mAb	US9580508B2 SEQ ID NO: 236	15401
CH11054	109	40	EM-1 mAb	US9580508B2 SEQ ID NO: 201	15402
CH11055	109	40	MetMAb (humanized one-armed 5D5 (OA-5D5; onartuzumab, CAS #1133766-06-9))	US9260531B2 SEQ ID NO: 28	15403
CH11056	109	40	OptD11	US9201074B2 SEQ ID NO: 13	15404
CH11057	109	40		WO2010045344; SEQ ID NO: 14	15405
CH11058	109	40		US9260531B2 SEQ ID NO: 12	15406
CH11059	109	40		US9260531B2 SEQ ID NO: 13	15407
CH11060	113	40		US9192666 SEQ ID NO: 109	15408
CH11061	140	40	cetuximab	US9562110 SEQ ID NO: 51	15409
CH11062	140	40	E2 mAb	US9580508B2 SEQ ID NO: 234	15410
CH11063	140	40	EM1-mAb	US9580508B2 SEQ ID NO: 199	15411
CH11064	140	40	huEGFR-8	US9238690B2 SEQ ID NO: 27	15412
CH11065	140	40	huML66	US9238690B2 SEQ ID NO: 25	15413
CH11066	140	40	nimotuzumab	US20150044216 SEQ ID NO: 6	15414
CH11067	140	40	pMP10K_IgG1	US9226964B2 SEQ ID NO: 26	15415
CH11068	140	40		US20120328623 SEQ ID NO: 69	15416
CH11069	140	40		US20120328623 SEQ ID NO: 81	15417
CH11070	140	40		US20120328623 SEQ ID NO: 93	15418
CH11071	140	40	3954-1204-C225v4 Activatable Antibody	US9120853B2 SEQ ID NO: 6	15419
CH11072	140	40	3954-1204-C225v4 Activatable Antibody	US9120853B2 SEQ ID NO: 30	15420
CH11073	140	40	3954-1204-C225v5 Activatable Antibody	US9120853B2 SEQ ID NO: 2	15421
CH11074	140	40	3954-1204-C225v5 Activatable Antibody	US9120853B2 SEQ ID NO: 26	15422
CH11075	140	40	3954-1204-C225v6 Activatable Antibody	US9120853B2 SEQ ID NO: 34	15423
CH11076	166	40		US20100158926 SEQ ID NO: 2	15424
CH11077	166	40		US20100158926 SEQ ID NO: 6	15425
CH11078	166	40		US20100158926 SEQ ID NO: 10	15426
CH11079	166	40		US20100158926 SEQ ID NO: 14	15427
CH11080	166	40		US20100158926 SEQ ID NO: 26	15428
CH11081	166	40		US20100158926 SEQ ID NO: 30	15429
CH11082	166	40		US20100158926 SEQ ID NO: 42	15430
CH11083	167	40	04D01	US9228021B2 SEQ ID NO: 109	15431
CH11084	167	40	09D03	US9228021B2 SEQ ID NO: 113	15432
CH11085	167	40	11G01	US9228021B2 SEQ ID NO: 117	15433
CH11086	167	40	12A07	US9228021B2 SEQ ID NO: 121	15434
CH11087	167	40	18H02	US9228021B2 SEQ ID NO: 125	15435
CH11088	167	40	22A07	US9228021B2 SEQ ID NO: 129	15436
CH11089	167	40	24C05	US9228021B2 SEQ ID NO: 133	15437
CH11090	167	40	B60 anti-ErbB3 monoclonal antibody	US8476409B2 SEQ ID NO: 366	15438
CH11091	167	40	B72 anti-ErbB3 monoclonal antibody	US8476409B2 SEQ ID NO: 365	15439
CH11092	167	40	M27 anti-ErbB3 monoclonal antibody	US8476409B2 SEQ ID NO: 363	15440
CH11093	167	40	M7 anti-ErbB3 monoclonal antibody	US8476409B2 SEQ ID NO: 364	15441
CH11094	167	40	Murine IgG1	US9228021B2 SEQ ID NO: 103	15442
CH11095	167	40	Murine IgG2b	US9228021B2 SEQ ID NO: 105	15443
CH11096	167	40	P1 anti-ErbB3 monoclonal antibody	US8476409B2 SEQ ID NO: 362	15444
CH11097	167	40	P1-G1-M76	US8476409B2 SEQ ID NO: 391	15445
CH11098	167	40	Sh24C05 Hv3-11 N62S IgG1	US9228021B2 SEQ ID NO: 190	15446
CH11099	167	40	Sh24C05 Hv3-11 N62S IgG2	US9228021B2 SEQ ID NO: 192	15447
CH11100	167	40		US9346889B2 SEQ ID NO: 3	15448
CH11101	167	40		US9346889B2 SEQ ID NO: 4	15449

cm 1102	167	40		US9346889B2 SEQ ID NO: 5	15450
cm 1103	167	40		US9346889B2 SEQ ID NO: 8	15451
cm 1104	167	40		US9346889B2 SEQ ID NO: 9	15452
cm 1105	167	40		US9346889B2 SEQ ID NO: 10	15453
cm 1106	167	40		US9346889B2 SEQ ID NO: 11	15454
CIII 1107	168	40	B60-IgG2-M78 polyvalent bispecific antibody	US8476409B2 SEQ ID NO: 355	15455
cm 1108	168	40	M57-G1-C8	US8476409B2 SEQ ID NO: 407	15456
cm U09	168	40	M7-G1-M78	US8476409B2 SEQ ID NO: 408	15457
cIII 1110	168	40	M7-IgG2~M78 polyvalent bispecific antibody	US8476409B2 SEQ ID NO: 357	15458
CIII 1111	168	40	P33M-G1-C8	US8476409B2 SEQ ID NO: 379	15459
cm 1112	168	40	P33M-G1-M1.3	US8476409B2 SEQ ID NO: 378	15460
cm 1113	168	40	P4M-G1-C8	US8476409B2 SEQ ID NO: 377	15461
cm u 14	168	40	P4M-G1-M1 .3	US8476409B2 SEQ ID NO: 376	15462
cm 1115	168	40	SF-G1-M27	US8476409B2 SEQ ID NO: 406	15463
cm 1116	168	40	SF-G1-P1	US8476409B2 SEQ ID NO: 405	15464
cm 1117	168	40	16F	US8476409B2 SEQ ID NO: 300	15465
cIII iii18	168	40	anti-ErbB3/anti-IGF-lR IgG2 ietravalent bispecific protein ELI-7	US8476409B2 SEQ ID NO: 316	15466
cm u 19	168	40	anti-IGF- 1R/anti-ErbB3 ietravalent bispecific protein lLE-10	US8476409B2 SEQ ID NO: 318	15467
CIII 1120	168	40	anti-IGF-lR/anti-ErbB3 ietravalent bispecific protein ILE-12	US8476409B2 SEQ ID NO: 319	15468
cm 1121	168	40		US8476409B2 SEQ ID NO: 268	15469
CIII 1122	168	40		US8476409B2 SEQ ID NO: 270	15470
cm 1123	168	40		US8476409B2 SEQ ID NO: 272	15471
cm 1124	168	40		US8476409B2 SEQ ID NO: 274	15472
cm 1125	168	40		US8476409B2 SEQ ID NO: 276	15473
CIII 1126	168	40		US8476409B2 SEQ ID NO: 278	15474
CIII 1127	168	40		US8476409B2 SEQ ID NO: 280	15475
CIII 1128	168	40		US8476409B2 SEQ ID NO: 282	15476
CIII 1129	168	40		US8476409B2 SEQ ID NO: 284	15477
cm 1130	168	40		US8476409B2 SEQ ID NO: 286	15478
cm 1131	168	40		US8476409B2 SEQ ID NO: 288	15479
CIII 1132	168	40		US8476409B2 SEQ ID NO: 290	15480
cm 1133	168	40		US8476409B2 SEQ ID NO: 292	15481
CIII 1134	168	40		US8476409B2 SEQ ID NO: 294	15482
CII1 1135	168	40		US8476409B2 SEQ ID NO: 296	15483
CIII 1136	176	40	hu36	US20 1700077 16 SEQ ID NO: 1	15484
CIII 1137	177	40	chF19HC	US64 55677 SEQ ID NO: 18	15485
CIII 1138	177	40	F19 chimeric antibody	US6455677 SEQ ID NO: 30	15486
CIII 1139	177	40	F19Ha	US6455677 SEQ ID NO: 43	15487
cm 1140	177	40		US8568727 SEQ ID NO: 3	15488
cm 1141	180	40		WO2014184545 SEQ ID NO: 1	15489
CIII 1142	180	40		WO20 14184545 SEQ ID NO: 2	15490
CIII 1143	194	40	anti-GD2 antibody -cytokine fusion protein	US20150139942; SEQ ID NO: 8	15491
CIII 1144	194	40	from 3F8	US20160032009; SEQ ID NO: 4	15492
CIII 1145	194	40	from 3F8	US20 160032009; SEQ ID NO: 5	15493
cm 1146	194	40	from 3F8	US20 160032009; SEQ ID NO: 10	15494
CIII 1147	194	40	hu3F8V5 heavy chain with G54I structural feature	US20 160032009; SEQ ID NO: 4	15495
CIII 1148	194	40	hu3F8V5 heavy chain gamma 1	US20160032009; SEQ ID NO: 5	15496
CIII 1149	194	40	hu3F8V5 heavy chain with G54I structural feature	US20160032009; SEQ ID NO: 10	15497
cm 1150	194	40	human 14.18 IgGl mature heavy chain	US8835606; SEQ ID NO: 1	15498

CM1151	194	40	human 14.18 IgG1 mature heavy chain with a K322A mutation	US8835606; SEQ ID NO: 5	15499
CIII1152	194	40		US20130216528; SEQ ID NO: 1	15500
CIII1153	194	40		US20130216528; SEQ ID NO: 4	15501
CIII1154	194	40		US20160304620; SEQ ID NO: 4	15502
CIII1155	194	40		US20150139942; SEQ ID NO: 4	15503
CIII1156	194	40		US9315585; SEQ ID NO: 4	15504
CIII1157	194	40		US9315585; SEQ ID NO: 6	15505
CIII1158	194	40		US9315585; SEQ ID NO: 8	15506
CIII1159	194	40		US9315585; SEQ ID NO: 9	15507
CM1160	211	40	anti-Her2/neu-anti-CD3 bispecific antibody	US9562110 SEQ ID NO: 3	15508
CII11161	213	40		US8907069B2 SEQ ID NO: 7	15509
CI111162	213	40		US8907069B2 SEQ ID NO: 8	15510
CI111163	220	40	gp120-F405L	US9580508B2 SEQ ID NO: 198	15511
CIII1164	220	40	gp120-K409R	US9580508B2 SEQ ID NO: 197	15512
CI111165	233	40	ANTIBODY A	US8980259B2 SEQ ID NO: 1	15513
CI111166	233	40	M57 anti-IGF-1R monoclonal antibody	US8476409B2 SEQ ID NO: 361	15514
CIII1167	233	40	M78 anti-IGF-1R monocional antibody	US8476409B2 SEQ ID NO: 360	15515
CM1168	233	40	P33M-G1-P6L	US8476409B2 SEQ ID NO: 390	15516
CII11169	233	40	P4 anti-IGF-IR monoclonal antibody	US8476409B2 SEQ ID NO: 359	15517
CM1170	233	40	P4M-G1-P6L	US8476409B2 SEQ ID NO: 389	15518
CII11171	233	40	SF anti-IGF-IR monoclonal aniibody	US8476409B2 SEQ ID NO: 358	15519
CIII1172	234	40		US8907069B2 SEQ ID NO: 10	15520
CIII1173	234	40		US8907069B2 SEQ ID NO: 11	15521
CIII1174	235	40		US8476409B2 SEQ ID NO: 210	15522
CM1175	235	40		US8476409B2 SEQ ID NO: 212	15523
CIII1176	235	40		US8476409B2 SEQ ID NO: 214	15524
CIII1177	235	40		US8476409B2 SEQ ID NO: 216	15525
CIII1178	235	40		US8476409B2 SEQ ID NO: 218	15526
CIII1179	235	40		US8476409B2 SEQ ID NO: 220	15527
CM1180	235	40		US8476409B2 SEQ ID NO: 222	15528
CM1181	235	40		US8476409B2 SEQ ID NO: 224	15529
CIII1182	235	40		US8476409B2 SEQ ID NO: 226	15530
CIII1183	235	40		US8476409B2 SEQ ID NO: 228	15531
CIII1184	235	40		US8476409B2 SEQ ID NO: 230	15532
CM1185	235	40		US8476409B2 SEQ ID NO: 232	15533
CIII1186	235	40		US8476409B2 SEQ ID NO: 234	15534
CIII1187	235	40		US8476409B2 SEQ ID NO: 236	15535
CIII1188	235	40		US8476409B2 SEQ ID NO: 238	15536
CIII1189	235	40		US8476409B2 SEQ ID NO: 240	15537
CM1190	235	40		US8476409B2 SEQ ID NO: 242	15538
CM1191	235	40		US8476409B2 SEQ ID NO: 244	15539
CIII1192	235	40		US8476409B2 SEQ ID NO: 246	15540
CM1193	235	40		US8476409B2 SEQ ID NO: 248	15541
CIII1194	235	40		US8476409B2 SEQ ID NO: 250	15542
CIII1195	235	40		US8476409B2 SEQ ID NO: 252	15543
CIII1196	235	40		US8476409B2 SEQ ID NO: 254	15544
CIII1197	235	40		US8476409B2 SEQ ID NO: 256	15545
CIII1198	292	40		US20160264652; SEQ ID NO: 1	15546
CIII1199	292	40		US20160264652; SEQ ID NO: 5	15547
CM1200	292	40		US20160264652; SEQ ID NO: 9	15548
CM1201	292	40		US20160264652; SEQ ID NO: 13	15549
CIII1202	294	40	G193 (mutated hu3S193)	US20060002942; SEQ ID NO: 6	15550
CIII1203	317	40		US20160130347 SEQ ID NO: 177	15551
CM1204	320	40	73R009	US9168300B2 SEQ ID NO: 9	15552

CHI 1205	320	40	73R009 (13A **variant)**	**US9168300B2** SEQ ID **NO:** 10	15553
CH 1206	320	40	**"73R009** (13A variant), without	US9 **168300B2** SEQ **ID NO:** 13	15554
C 1 **1207**	320	40	predicted **signal** sequence"	**US9168300B2** SEQ **ID NO:** 88	15555
CH **1208**	320	40	**73R009 (13B variant)**	**US9168300B2** SEQ **ID NO:** 12	15556
CH 1209	320	40	"73R009 (without predicted signal	**US8729043B2** SEQ ID **NO:** 6	15557
CH 1210	327	40	**sequence)"**	US7781569; SEQ **ID NO:** 22	15558
CH 1211	338	40	**AntiMET-R**	US9238084 SEQ **ID NO: 11**7	15559
CH 1212	346	40	chimeric antibody	**US9580496B2** SEQ **ID NO:** 1	15560
CH 1213	346	40	**hPAM4**	**US9580496B2** SEQ **ID NO:** 2	15561
CH **1214**	346	40		US9580496B2 SEQ ID **NO: 3**	15562
CH 1215	346	40		**US9580496B2** SEQ ID **NO:** 4	15563
C 1 **1216**	346	40		**US9580496B2** SEQ **ID NO:** 6	15564
CH 1217	346	40		**US9580496B2** SEQ **ID NO:** 7	15565
CH 1218	376	40		**US20160333 101** SEQ ID **NO:** 46	15566
CH 1219	376	40		US20 160333101 SEQ **ID NO:** 49	**15567**
CH 1220	376	40	**G1**	**US20160333 101** SEQ **ID NO:** 50	15568
CH 1221	376	40	G10, G11, G12, G13	**US20160333 101** SEQ **ID NO:** 47	15569
CHI 1222	376	40	**G14,** G15	**US20 160333**10 1 SEQ ID **NO:** 48	15570
CH 1223	376	40	G2, G3, **G4, G5**	**US20160333 10**1 SEQ ID **NO: 41**	1557 1
C 1 **1224**	376	40	G6, **G7,** G8, G9	**US8992925B2** SEQ **ID NO:** 2	15572
CH 1225	377	40	IgG2	US8992925B2 SEQ **ID NO:** 10	15573
CH 1226	395	40	**aRANKL- 1** (also called **aOPGL-1)**	**WO2016201240;** SEQ ID **NO:** 5	15574
CHI 1227	410	40	**synPTH-aRANKL- 1** (also called **synPTH-aRANKL-1 IgG2)**	US20 1002788 18; SEQ **ID NO:** 6	15575
CH 1228	428	**40**		**US20 1500442 16** SEQ ID **NO: 10**	15576
C 1 **1229**	428	40		**US20150044216** SEQ **ID NO: 12**	15577
CH 1230	428	40		US20150044216 SEQ **ID NO:** 14	15578
CH 1231		40		**WO2016166301** ; SEQ ID **NO: 110**	15579
CHI 1232		40		**WO201616630** 1; SEQ ID **NO:** 120	15580
CH 1233		40		**WO2016166301** ; SEQ **ID NO:** 130	15581
CH 1234		40		**WO2016166301** ; SEQ **ID NO:** 140	15582
CHI 1235		40		**WO20 16 166301**; SEQ **ID NO: 11 1**	15583
CH 1236		40		**WO20 16 166301** ; **SEQ** ID **NO:** 112	15584
CH 1237		40		**WO20 16 166301** ; **SEQ** ID **NO:** 113	15585
C 1 1238		40		**WO2016166301** ; SEQ **ID NO: 114**	15586
CH 1239		40		**WO2016166301** ; SEQ **ID NO:** 115	15587
CH 1240		40		**WO2016166301** ; SEQ ID **NO: 116**	15588
CHI 1241		40		**WO201616630** 1; SEQ ID **NO: 1101**	15589
CIII **1242**		40		**WO20 16 166301;** SEQ **ID NO: 1102**	15590
CHI **1243**		40		**WO201616630** 1**;** SEQ ID **NO:** 1103	15591
CIII **1244**		40		**WO20 16 166301;** SEQ **ID NO: 1104**	15592
CIII **1245**		40		**WO201616630** 1**;** SEQ ID **NO:** 1105	15593
CIII 1246		40		**WO20 16 166301;** SEQ **ID NO: 1106**	15594
CIII **1247**		40		**WO201616630** 1; SEQ ID **NO: 131**	15595
CIII 1248		40		**WO2016166301** ; SEQ **ID NO:** 132	15596
CIII 1249		40		**WO2016166301** ; SEQ **ID NO:** 133	15597
CIII 1250		40		**WO2016166301** ; SEQ **ID NO:** 134	15598
CIII **125 1**		40		**WO20 16 166301**; SEQ **ID NO: 135**	15599
CIII 1252		40		**WO20 16 166301** ; **SEQ** ID **NO:** 136	15600
CIII 1253		40		**WO20 16 166301**; SEQ **ID NO: 141**	15601
CIII 1254		40		**WO2016166301** ; SEQ **ID NO:** 142	15602
CHI 1255		40		**WO2016166301** ; SEQ ID **NO: 143**	15603

CIII 1256		40		WO2016166301; SEQ ID NO: 144	15604
Cm 1257		40		WO2016166301; SEQ ID NO: 11	15605
CIII 1258		40		WO2016166301; SEQ ID NO: 112	15606
CIII 1259		40		WO2016166301; SEQ ID NO: 1113	15607
Cill 1260		40		WO2016166301; SEQ ID NO: 1114	15608
CIII 1261		40		WO2016166301; SEQ ID NO: 1115	15609
Cill 1262		40		WO2016166301; SEQ ID NO: 1116	15610
CIII 1263		40		WO2016166301; SEQ ID NO: 1121	15611
Cill 1264		40		WO2016166301; SEQ ID NO: 1122	15612
CIII 1265		40		WO2016166301; SEQ ID NO: 1123	15613
Cill 1266		40		WO2016166301; SEQ ID NO: 1124	15614
CIII 1267		40		WO2016166301; SEQ ID NO: 125	15615
CIII 1268		40		WO2016166301; SEQ ID NO: 1126	15616
CIII 1269		40		WO2016166301; SEQ ID NO: 131	15617
cm 1270		40		WO2016166301; SEQ ID NO: 1132	15618
CIII 1271		40		WO2016166301; SEQ ID NO: 133	15619
CIII 1272		40		WO2016166301; SEQ ID NO: 1134	15620
CIII 1273		40		WO2016166301; SEQ ID NO: 135	15621
CIII 1274		40		WO2016166301; SEQ ID NO: 1136	15622
CIII 1275		40		WO2016166301; SEQ ID NO: 1141	15623
CIII 1276		40		WO2016166301; SEQ ID NO: 1142	15624
CIII 1277		40		WO2016166301; SEQ ID NO: 1143	15625
CIII 1278		40		WO2016166301; SEQ ID NO: 1144	15626
CIII 1279		40		WO2016166301; SEQ ID NO: 1145	15627
CIII 1280		40		WO2016166301; SEQ ID NO: 1146	15628
CIII 1281		40		WO2016166301; SEQ ID NO: 1151	15629
CIII 1282		40		WO2016166301; SEQ ID NO: 1152	15630
CIII 1283		40		WO2016166301; SEQ ID NO: 1153	15631
CIII 1284		40		WO2016166301; SEQ ID NO: 1154	15632
CIII 1285		40		WO2016166301; SEQ ID NO: 155	15633

CH11286		40		WO2016166301; SEQ ID NO: 1156	15634
CH11287		40		WO2016166301; SEQ ID NO: 1161	15635
CH11288		40		WO2016166301; SEQ ID NO: 1162	15636
CH11289		40		WO2016166301; SEQ ID NO: 1163	15637
CH11290		40		WO2016166301; SEQ ID NO: 1164	15638
CH11291		40		WO2016166301; SEQ ID NO: 1165	15639
CH11292		40		WO2016166301; SEQ ID NO: 1166	15640
CH11293	109	40		WO2014150819; SEQ ID NO: 11	15641
CH11294	167	40		WO2013023043; SEQ ID NO: 12	15642
CH11295	194	40		Cheung et al:, Oncoimmunology, 2012, 1(4): 477-486	15643
CH11296	194	40	Antibody A	Cheung et al:, Oncoimmunology, 2012, 1(4): 477-486	15644
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CH11327	167	49	ANTI-ErbB3 Ab# A	US8476409B2 SEQ ID NO: 345	15675
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CH11329	167	49	MM Ab#14	US8476409B2 SEQ ID NO: 342	15677
CH11330	167	49	MM Ab#17	US8476409B2 SEQ ID NO: 351	15678
CH11331	233	49	MM Ab#3	US8476409B2 SEQ ID NO: 333	15679
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CIIl 1335	233	49	cixutumumab (Ab#B)	US8476409B2 SEQ ID NO: 327	15683
CIIl 1336	346	72	figitumumab (Ab#C)	US9580496B2 SEQ ID NO: 8	15684
CIIl 1337	346	72	ganitumab (AM A)	US9580496B2 SEQ ID NO: 9	15685
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CIl1 1346	177	41		US6455677 SEQ ID NO: 22	15694
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CIIl 1349	320	41	Human IgGl Heavy chain constant region	US9 168300 SEQ ID NO: 76	15697
CIIl 1350	320	41	Human IgG2 Heavy chain constant region	US9 168300 SEQ ID NO: 77	15698
CII1 1351		41	Human IgG3 Heavy chain constant region	US9360481B2 SEQ ID NO: 1	15699
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CIIl 1374	10	42	hlnunu3 1	US9556275B2 SEQ ID NO: 162	15722
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CII! 1376	10	42		US9556275B2 SEQ ID NO: 164	15724
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CIIl 1382	10	42		US9556275B2 SEQ ID NO: 204	15730
CIIl 1383	10	42		US9556275B2 SEQ ID NO: 206	15731
CIl1 1384	10	42		US9556275B2 SEQ ID NO: 208	15732
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cIII 1440	113	42		US9 192666 SEQ ID NO: 90	15788
cIII 1441	113	42		US9192666 SEQ ID NO: 91	15789
cIII 1442	113	42	AT-VH1	US9 192666 SEQ ID NO: 92	15790
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CIII 1459	136	42	TAA-0013	US20140370019 SEQ ID NO: 74	15807
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CIII 1462	140	42	174-VH17	US9139650B2 SEQ ID NO: 4	15810
CIII 1463	140	42	TAA-0005	US9155802B2 SEQ ID NO: 2; US8663640B2 SEQ ID NO: 40	158 11
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CH11488	140	42	10F8	US9492564B2 SEQ ID NO: 1	15836
CH11489	140	42	C2 Domain-Binding Anti-EGFR Antibody	US9580508B2 SEQ ID NO: 189; US9428582B2 SEQ ID NO: 3	15837
CH11490	140	42	D2C7 hybridoma	US9580508B2 SEQ ID NO: 191	15838
CH11491	140	42	E1-K409R; E1-F405L	US9238690B2 SEQ ID NO: 20	15839
CH11492	140	42	E2-K409R; E2-F405L	US9238690B2 SEQ ID NO: 18	15840
CH11493	140	42	huEGFR-8	US8614065B2 SEQ ID NO: 1	15841
CH11494	140	42	huML66	US8614065B2 SEQ ID NO: 3	15842
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CH11497	140	42	I-HHB	US8614065B2 SEQ ID NO: 17	15845
CH11498	140	42	I-HHC	US8614065B2 SEQ ID NO: 19	15846
CH11499	140	42	I-HHE	US8614065B2 SEQ ID NO: 21	15847
CH11500	140	42	I-HHF	US8614065B2 SEQ ID NO: 9	15848
CH11501	140	42	I-HHG	US8614065B2 SEQ ID NO: 23	15849
CH11502	140	42	I-HLA	US8614065B2 SEQ ID NO: 121	15850
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CH11504	140	42	I-HLA10	US8614065B2 SEQ ID NO: 27	15852
CH11505	140	42	I-HLA2	US8614065B2 SEQ ID NO: 29	15853
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CH11509	140	42	I-HLA6	US8614065B2 SEQ ID NO: 37	15857
CH11510	140	42	I-HLA7	US8614065B2 SEQ ID NO: 39	15858
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CH11512	140	42	I-HLA9	US8614065B2 SEQ ID NO: 13	15860
CH11513	140	42	I-HLB	US9029513B2 SEQ ID NO: 3	15861
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CH11515	140	42	L1 Domain-Binding Anti-EGFR Antibody	US9072798B2 SEQ ID NO: 168	15863
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CH11517	140	42	mAb806	US9226964B2 SEQ ID NO: 19; US8691231B2 SEQ ID NO: 1	15865
CH11518	140	42	muEGFR-8	US9226964B2 SEQ ID NO: 21; US8691231B2 SEQ ID NO: 3	15866
CH11519	140	42	P1X	US9226964B2 SEQ ID NO: 23; US8691231B2 SEQ ID NO: 5	15867
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CH11526	140	42		US9029513B2 SEQ ID NO: 7	15874
CH11527	153	42		US8506963B2 SEQ ID NO: 2	15875
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CIII 1546	167	42	**Sh24C05 Hv3-l l**	**US9228021B2** SEQ ID NO: 156	15894
CIII 1547	167	42	**Sli24C05 Hv3-l l** N62S	**US922802 1B2** SEQ **ID** NO: 158	15895
CII 1548	167	42	**Sh24C05 Hv3-2 1**	**US922802 1B2** SEQ **ID** NO: **160**	15896
C'l 1549	167	42	**Sh24C05 Hv3-23**	**US922802 1B2** SEQ ID **NO**: 150	15897
C111 1550	167	42	Sh24C05 **Hv3-30**	**US9284380B2** SEQ ID NO: 2	15898
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C111 1552	**167**	42		**US9284380B2** SEQ **ID NO**: **34**	15900
C111 1553	167	42		**US9284380B2** SEQ ID NO: 50	15901
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CH11840	376	42	Clone 210	US20160032001 SEQ ID NO: 28	16188
CH11841	376	42	Clone 220; Clone 256; Clone 327	US20160032001 SEQ ID NO: 1	16189
CH11842	376	42	Clone 227	US20160032001 SEQ ID NO: 29	16190
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CH12121	53	284	8B8-2B03	US20160200833 SEQ ID NO: 291	16469
CH12122	53	284	8B8-2B11	US20160200833 SEQ ID NO: 299	16470
CH12123	53	284	8B8-5A07	US20160200833 SEQ ID NO: 295	16471
CH12124	53	284	8B8-5B08	US20160200833 SEQ ID NO: 303	16472
CH12125	53	284	8B8-5D08	US20160200833 SEQ ID NO: 283	16473
CH12126	56	284	8B8-5H09	US20130017598 SEQ ID NO: 6	16474
CH12127	56	284	8B8-7H07	US20130017598 SEQ ID NO: 9	16475
CH12128	66	284	2H7	WO2016087245 SEQ ID NO: 3	16476
CH12129	66	284	2H7	WO2016087245 SEQ ID NO: 1	16477
CH12130	66	284	OKT1	US20160130347 SEQ ID NO: 168	16478
CH12131	80	284	UCHT-1	US20150274845 SEQ ID NO: 151	16479
CH12132	105	284		US20160208017 SEQ ID NO: 323	16480
CH12133	105	284		US20160340399 SEQ ID NO: 148	16481
CH12134	105	284	CH1A1A	US20160200833 SEQ ID NO: 334	16482
CH12135	105	284	sm9b	US20160200833 SEQ ID NO: 346	16483
CH12136	109	284	T84.66	US8821869B2 SEQ ID NO: 4	16484
CH12137	109	284	T84.66	US8821869B2 SEQ ID NO: 17	16485
CH12138	109	284	13.3.2	US9469691B2 SEQ ID NO: 38	16486
CH12139	109	284	13.3.2	US9469691B2 SEQ ID NO: 39	16487
CH12140	109	284	224G11	US9469691B2 SEQ ID NO: 40	16488
CH12141	109	284	224G11	US9469691B2 SEQ ID NO: 52	16489
CH12142	109	284	224G11	US8821869B2 SEQ ID NO: 12	16490
CH12143	109	284	224G11	US8821869B2 SEQ ID NO: 19	16491
CH12144	109	284	8.70.2	US8821869B2 SEQ ID NO: 16	16492
CH12145	109	284	8.70.2	US8821869B2 SEQ ID NO: 20	16493
CH12146	109	284	8.90.3	US8821869B2 SEQ ID NO: 8	16494
CH12147	109	284	8.90.3	US8821869B2 SEQ ID NO: 18	16495
CH12148	109	284	9.1.2	US9260531B2 SEQ ID NO: 20; US9201074B2 SEQ ID NO: 30	16496
CH12149	109	284	9.1.2	US9580508B2 SEQ ID NO: 237	16497
CH12150	109	284	C8-H241 (Chemical Abstracts Service (CAS) #1365287-97-3)	US9580508B2 SEQ ID NO: 202	16498
CH12151	109	284	E2 mAb	US9572878B2 SEQ ID NO: 108; US9192666 SEQ ID NO: 108	16499

CH12152	109	284	EM-1 mAb	US9260531B2 SEQ ID NO: 27	16500
CH12153	109	284	L3-11Y	US9201074B2 SEQ ID NO: 11	16501
CH12154	109	284	MetMAb (humanized one-armed 5D5 (OA-5D5; onartuzumab, CAS #1133766-06-9))	WO2014150819; SEQ ID NO: 12	16502
CH12155	109	284	OptD11	WO2010045344; SEQ ID NO: 15	16503
CH12156	109	284		US9260531B2 SEQ ID NO: 11	16504
CH12157	113	284		US9192666 SEQ ID NO: 110	16505
CH12158	121	284		US20150119555 SEQ ID NO: 3	16506
CH12159	140	284		US9155802B2 SEQ ID NO: 4; US8663640B2 SEQ ID NO: 72	16507
CH12160	140	284	9.2.27	US9155802B2 SEQ ID NO: 8; US8663640B2 SEQ ID NO: 73	16508
CH12161	140	284	992	US9155802B2 SEQ ID NO: 12; US8663640B2 SEQ ID NO: 74	16509
CH12162	140	284	1024	US9155802B2 SEQ ID NO: 16; US8663640B2 SEQ ID NO: 78 (Homo sapiens)	16510
CH12163	140	284	1030	US9527913B2 SEQ ID NO: 17	16511
CH12164	140	284	1254	US9527913B2 SEQ ID NO: 21	16512
CH12165	140	284	1277	US20150119555 SEQ ID NO: 5	16513
CH12166	140	284	1565	US9580508B2 SEQ ID NO: 235	16514
CH12167	140	284	C225	US9580508B2 SEQ ID NO: 200	16515
CH12168	140	284	E2 mAb	US9238690B2 SEQ ID NO: 28	16516
CH12169	140	284	EM-1 mAb	US9238690B2 SEQ ID NO: 26	16517
CH12170	140	284	huEGFR-8	US20150044216 SEQ ID NO: 5	16518
CH12171	140	284	huML66	US9226964B2 SEQ ID NO: 25; US6455677 SEQ ID NO: 20	16519
CH12172	140	284	nimotuzumab	US20150044216 SEQ ID NO: 1	16520
CH12173	140	284	pMP10K_IgG1	US20120328623 SEQ ID NO: 70	16521
CH12174	140	284		US20120328623 SEQ ID NO: 82	16522
CH12175	140	284		US20120328623 SEQ ID NO: 94	16523
CH12176	140	284		US9120853B2 SEQ ID NO: 10	16524
CH12177	140	284		US9120853B2 SEQ ID NO: 4	16525
CH12178	140	284	3954-1204-C225v4 and 3954-1204-C225v6 Activatable Antibody	US9120853B2 SEQ ID NO: 28	16526
CH12179	140	284	3954-1204-C225v5 and 3954-1204-C225v6 Activatable Antibody	US9120853B2 SEQ ID NO: 68	16527
CH12180	140	284	3954-1204-C225v5; 3954-1204-C225v4; 3954-1204-C225v6 Activatable Antibody	US9120853B2 SEQ ID NO: 69	16528
CH12181	140	284	"Activated Form of 3954-1204-C225v5, 3954-1204-C225v4	US9120853B2 SEQ ID NO: 70	16529
CH12182	167	284	and/or 3954-1204-C225v6"	US9228021B2 SEQ ID NO: 111	16530
CH12183	167	284	"Activated Form of 3954-1204-C225v5, 3954-1204-C225v4	US9228021B2 SEQ ID NO: 115	16531
CH12184	167	284	and/or 3954-1204-C225v6"	US9228021B2 SEQ ID NO: 119	16532
CH12185	167	284	"Activated Form of 3954-1204-C225v5, 3954-1204-C225v4	US9228021B2 SEQ ID NO: 123	16533
CH12186	167	284	and/or 3954-1204-C225v6"	US9228021B2 SEQ ID NO: 127	16534
CH12187	167	284	04D01	US9228021B2 SEQ ID NO: 131	16535
CH12188	167	284	09D03	US9228021B2 SEQ ID NO: 135	16536
CH12189	167	284	11G01	US9228021B2 SEQ ID NO: 108	16537
CH12190	167	284	12A07	US9228021B2 SEQ ID NO: 204	16538
CH12191	167	284	18H02	US9228021B2 SEQ ID NO: 206	16539
CH12192	167	284	22A07	US9346889B2 SEQ ID NO: 6	16540
CH12193	167	284	24C05	US9346889B2 SEQ ID NO: 7	16541
CH12194	167	284	Murine Kappa Chain	US9346889B2 SEQ ID NO: 12	16542

CH12195	167	284	Sh24C05 Kv1-16 kappa	US9346889B2 SEQ ID NO: 13	16543
CH12196	167	284	Sh24C05 Kv1-17 kappa	US9346889B2 SEQ ID NO: 14	16544
CH12197	167	284		US9346889B2 SEQ ID NO: 15	16545
CH12198	168	284		US8476409B2 SEQ ID NO: 298	16546
CH12199	168	284		US8476409B2 SEQ ID NO: 317	16547
CH12200	168	284		US8476409B2 SEQ ID NO: 320	16548
CH12201	176	284		US20170007716 SEQ ID NO: 2	16549
CH12202	177	284		US6455677 SEQ ID NO: 17	16550
CH12203	177	284	16F	US6455677 SEQ ID NO: 28	16551
CH12204	177	284	anti-ErbB3/anti-IGF-1R IgG2 tetravalent bispecific protein ELI-7	US6455677 SEQ ID NO: 36	16552
CH12205	177	284	anti-IGF-1R/anti-ErbB3 tetravalent bispecific protein ILE-10 and ILE-12	US8568727 SEQ ID NO: 4	16553
CH12206	194	284	hu36	US20150139942; SEQ ID NO: 7	16554
CH12207	194	284	chF19LC	US20160032009; SEQ ID NO: 1	16555
CH12208	194	284	F19 chimeric antibody	US20160032009; SEQ ID NO: 2	16556
CH12209	194	284	F19La	US20160032009; SEQ ID NO: 3	16557
CH12210	194	284		US20160032009; SEQ ID NO: 6	16558
CH12211	194	284	anti-GD2 antibody-cytokine fusion protein	US20160032009; SEQ ID NO: 7	16559
CH12212	194	284	from 3F8	US20160032009; SEQ ID NO: 8	16560
CH12213	194	284	from 3F8	US20160032009; SEQ ID NO: 9	16561
CH12214	194	284	from 3F8	US8835606; SEQ ID NO: 2	16562
CH12215	194	284	from 3F8	US20130287691; SEQ ID NO: 42	16563
CH12216	194	284	from 3F8	US9315585; SEQ ID NO: 5; US20130216528; SEQ ID NO: 5; Cheung et al:, Oncoimmunology, 2012, 1(4): 477-486	16564
CH12217	194	284	from 3F8	US9315585; SEQ ID NO: 7; US20130216528; SEQ ID NO: 7	16565
CH12218	194	284	from 3F8	US9315585; SEQ ID NO: 10; US20130216528; SEQ ID NO: 10	16566
CH12219	211	284	mature human 14.18 IgG1 light chain	US9155802B2 SEQ ID NO: 28	16567
CH12220	211	284		US9527913B2 SEQ ID NO: 25	16568
CH12221	211	284		US9155802B2 SEQ ID NO: 36	16569
CH12222	211	284		US9527913B2 SEQ ID NO: 29	16570
CH12223	211	284		US9155802B2 SEQ ID NO: 44	16571
CH12224	213	284	4382	US8907069B2 SEQ ID NO: 9	16572
CH12225	215	284	4384	US9217039B2 SEQ ID NO: 4	16573
CH12226	215	284	4385	US9155802B2 SEQ ID NO: 48	16574
CH12227	215	284	4517	US9217039B2 SEQ ID NO: 8	16575
CH12228	215	284	4518	US9217039B2 SEQ ID NO: 12	16576
CH12229	215	284		US9527913B2 SEQ ID NO: 33	16577
CH12230	215	284	4785	US9217039B2 SEQ ID NO: 16	16578
CH12231	215	284	4785	US9527913B2 SEQ ID NO: 37	16579
CH12232	215	284	4889	US9217039B2 SEQ ID NO: 20	16580
CH12233	215	284	4935	US9155802B2 SEQ ID NO: 60	16581
CH12234	215	284	5038	US9217039B2 SEQ ID NO: 24	16582
CH12235	215	284	5038	US9217039B2 SEQ ID NO: 28	16583
CH12236	215	284	5082	US9217039B2 SEQ ID NO: 32	16584
CH12237	215	284	5082	US9217039B2 SEQ ID NO: 36	16585
CH12238	215	284	5096	US9217039B2 SEQ ID NO: 40	16586
CH12239	220	284	5101	US9580508B2 SEQ ID NO: 209	16587
CH12240	233	284	5106	US8980259B2 SEQ ID NO: 2; US8476409B2 SEQ ID NO: 328	16588
CH12241	234	284	5143	US8907069B2 SEQ ID NO: 12	16589
CH12242	292	284	5144	US20160264652; SEQ ID NO: 3	16590

CH12243	292	284	5259	US20160264652; SEQ ID NO: 7, 15	16591
CH12244	292	284	gp120-K409R; gp120-F405L	US20160264652; SEQ ID NO: 11	16592
CH12245	294	284	ANTIBODY A	US20060002942; SEQ ID NO: 8	16593
CH12246	317	284		US8945571 SEQ ID NO: 263	16594
CH12247	317	284		US8945571 SEQ ID NO: 265	16595
CH12248	317	284		US20160130347 SEQ ID NO: 178	16596
CH12249	320	284		US8729043B2 SEQ ID NO: 7	16597
CH12250	327	284	G193 (mutated hn3S193)	US7781569; SEQ ID NO: 21; US20040115204; SEQ ID NO: 21	16598
CH12251	338	284	KV1	US9238084 SEQ ID NO: 118	16599
CH12252	346	284	KV7	US9580496B2 SEQ ID NO: 5	16600
CH12253	376	284		US20160333101 SEQ ID NO: 51	16601
CH12254	376	284	AntiMET-R	US20160333101 SEQ ID NO: 56	16602
CH12255	376	284	chimeric antibody	US20160333101 SEQ ID NO: 52	16603
CH12256	376	284	hPAM4	US20160333101 SEQ ID NO: 53	16604
CH12257	376	284		US20160333101 SEQ ID NO: 54	16605
CH12258	376	284	G1	US20160333101 SEQ ID NO: 55	16606
CH12259	376	284	G14	US20160333101 SEQ ID NO: 42	16607
CH12260	376	284	G2, G6, G10, G15	US8992925B2 SEQ ID NO: 4	16608
CH12261	377	284	G3, G7, G11	US8992925B2 SEQ ID NO: 8	16609
CH12262	395	284	G4, G8, G12	WO2016201240; SEQ ID NO: 6	16610
CH12263	410	284	G5, G9, G13	US20100278818; SEQ ID NO: 8	16611
CH12264	423	284	Kappa		16612
CH12265	428	284	αRANKL-1 (also called αOPGL-1)	US20150044216 SEQ ID NO: 9	16613
CH12266	428	284	synPTH-αRANKL-1 (also called synPTH-αRANKL-1 kappa)	US20150044216 SEQ ID NO: 11	16614
CH12267	428	284		US20150044216 SEQ ID NO: 13	16615
CH12268	167	284		WO2013023043; SEQ ID NO: 13	16616
CH12269	194	284	Tezepelumab, AMG 157, AMG-157, MEDI-9929, MEDI9929,	US9315585; SEQ ID NO: 2; US20130216528; SEQ ID NO: 2; Cheung et al:, Oncoimmunology, 2012, 1(4): 477-486	16617
CH12270	194	284		US20160304620; SEQ ID NO: 3; US20150139942; SEQ ID NO: 3	16618
CH12271	197	284		US9205157; SEQ ID NO: 16	16619
CH12272	197	284		US9205157; SEQ ID NO: 14	16620
CH12273	233	284	Antibody A	WO2011057064; SEQ ID NO: 25	16621
CH12274	355	284	3F8	US20160272722; SEQ ID NO: 9	16622
CH12275	376	284		WO2015030701; SEQ ID NO: 154	16623
CH12276	376	284	LD47	WO2015030701; SEQ ID NO: 163	16624
CH12277	376	284	LD49	WO2015030701; SEQ ID NO: 155, 164	16625
CH12278	376	284		WO2015030701; SEQ ID NO: 165, 166	16626
CH12279	376	284		WO2015030701; SEQ ID NO: 167	16627
CH12280	376	284	RL1	WO2015030701; SEQ ID NO: 168	16628
CH12281	376	284	RL12	WO2015030701; SEQ ID NO: 156	16629
CH12282	376	284	RL13	WO2015030701; SEQ ID NO: 157, 158, 161, 162	16630
CH12283	376	284	RL19	WO2015030701; SEQ ID NO: 159	16631
CH12284	376	284	RL21	WO2015030701; SEQ ID NO: 160	16632
CH12285	167	296	RL22	US8476409B2 SEQ ID NO: 337	16633
CH12286	167	296	RL3	US8476409B2 SEQ ID NO: 340	16634
CH12287	167	296	RL4	US8476409B2 SEQ ID NO: 346	16635
CH12288	167	296	RL8	US8476409B2 SEQ ID NO: 349	16636
CH12289	167	296	RL9	US8476409B2 SEQ ID NO: 343	16637
CH12290	167	296	ANTI-ErbB3 Ab# A	US8476409B2 SEQ ID NO: 352	16638

CH12291	233	296	H3	US8476409B2 SEQ ID NO: 334	16639
CH12292	233	296	MM Ab#14	US8476409B2 SEQ ID NO: 331	16640
CH12293	233	296	MM Ab#17	US8476409B2 SEQ ID NO: 325	16641
CH12294	233	296	MM Ab#3	US8476409B2 SEQ ID NO: 322	16642
CH12295	424	285	XMM Ab#19	US20170029526, SEQ ID NO: 4, 14, 22	16643
CH12296	424	285	BIIB-C06	US20170029526, SEQ ID NO: 30, 38	16644
CH12297	109	285	BIIB-G11	US20130156772 SEQ ID NO: 6	16645
CH12298	165	285	cixutumumab (Ab#B)	US20130156772 SEQ ID NO: 2	16646
CH12299	200	285	figitumumab (Ab#C)	US20160264684; SEQ ID NO: 3	16647
CH12300	200	285		US20160264684; SEQ ID NO: 9	16648
CH12301		285		US20110091372 SEQ ID NO: 67	16649
CH12302		285		US20110091372 SEQ ID NO: 97	16650
CH12303		285		US20110091372 SEQ ID NO: 99	16651
CH12304		285		US20110091372 SEQ ID NO: 101	16652
CH12305	109	285		WO2010045344; SEQ ID NO: 11	16653
CH12306	200	285		US20160264684; SEQ ID NO: 2	16654
CH12307	200	285		US20160264684; SEQ ID NO: 5	16655
CH12308	200	285		US20160264684; SEQ ID NO: 7	16656
CH12309	200	285		US20160264684; SEQ ID NO: 11	16657
CH12310	200	285		US20160264684; SEQ ID NO: 14	16658
CH12311	4	285		WO2013109829; SEQ ID NO: 23	16659
CH12312	4	285		WO2013109829; SEQ ID NO: 25	16660
CH12313	4	285		WO2013109829; SEQ ID NO: 27	16661
CH12314	5	285		US8268312 SEQ ID NO: 37	16662
CH12315	5	285		US8268312 SEQ ID NO: 42, 45	16663
CH12316	5	285	7C7.1H1	US8268312 SEQ ID NO: 46	16664
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CH12318	10	285	7G4.1D6	US9556275B2 SEQ ID NO: 170	16666
CH12319	10	285	cImmu31	US9556275B2 SEQ ID NO: 171	16667
CH12320	10	285	hImmu31	US9556275B2 SEQ ID NO: 172	16668
CH12321	10	285	hImmu31VkT39	US9556275B2 SEQ ID NO: 173	16669
CH12322	10	285	Immu31	US9556275B2 SEQ ID NO: 174	16670
CH12323	10	285		US9556275B2 SEQ ID NO: 175	16671
CH12324	10	285		US9556275B2 SEQ ID NO: 176	16672
CH12325	10	285		US9556275B2 SEQ ID NO: 177	16673
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CH12327	10	285		US9556275B2 SEQ ID NO: 207	16675
CH12328	10	285		US9556275B2 SEQ ID NO: 209	16676
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CH12330	40	285		US5552293; SEQ ID NO: 7	16678
CH12331	49	285		US20130017598 SEQ ID NO: 26	16679
CH12332	53	285		US20160200833 SEQ ID NO: 368	16680
CH12333	53	285		WO2016142314 SEQ ID NO: 6	16681
CH12334	53	285		US20160200833 SEQ ID NO: 202	16682
CH12335	53	285		US20160200833 SEQ ID NO: 362	16683
CH12336	53	285	HuMHM24	US20160200833 SEQ ID NO: 358	16684
CH12337	53	285	(8B8-5B08	US20160200833 SEQ ID NO: 364	16685
CH12338	53	285	4G7	US20160200833 SEQ ID NO: 366	16686
CH12339	53	285	8B8-018	US20160200833 SEQ ID NO: 370	16687
CH12340	53	285	8B8-2B03	US20160200833 SEQ ID NO: 360	16688
CH12341	53	285	8B8-2B11	US7902338 SEQ ID NO: 2	16689
CH12342	53	285	8B8-5A07	US7902338 SEQ ID NO: 6	16690
CH12343	53	285	8B8-5D08	US7902338 SEQ ID NO: 7, 13	16691
CH12344	53	285	8B8-5H09	US20080213256 SEQ ID NO: 18	16692
CH12345	56	285	8B8-7H07	US20130017598 SEQ ID NO: 1	16693
CH12346	56	285	cA19	US20130017598 SEQ ID NO: 3	16694

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CH12348	66	285	hA19	WO2013158856 SEQ ID NO: 48	16696
CH12349	66	285		WO2013158856 SEQ ID NO: 72	16697
CH12350	66	285	2H7	US9139650B2 SEQ ID NO: 6	16698
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CH12352	66	285	CRIS7	US20080213256 SEQ ID NO: 10	16700
CH12353	66	285	DRA161	WO2016179003 SEQ ID NO: 9	16701
CH12354	66	285	HuM291	WO2016179003 SEQ ID NO: 19	16702
CH12355	66	285	OKT3	WO2016179003 SEQ ID NO: 27	16703
CH12356	66	285	OKT3	WO2016179003 SEQ ID NO: 108	16704
CH12357	66	285		WO2016179003 SEQ ID NO: 110	16705
CH12358	66	285		WO2016179003 SEQ ID NO: 112	16706
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CH12360	67	285		US20160130347 SEQ ID NO: 185	16708
CH12361	102	285		US20100015048 SEQ ID NO: 8	16709
CH12362	102	285		US20100015048 SEQ ID NO: 12	16710
CH12363	102	285		US20100015048 SEQ ID NO: 14	16711
CH12364	102	285		US20100015048 SEQ ID NO: 4	16712
CH12365	105	285		US20160208017 SEQ ID NO: 311	16713
CH12366	105	285	cLL1	US20100221175 SEQ ID NO: 19	16714
CH12367	105	285	HF-21/28	US20100221175 SEQ ID NO: 4	16715
CH12368	105	285	hLL1	US20160340399 SEQ ID NO: 119	16716
CH12369	105	285	LL1	US20160200833 SEQ ID NO: 318	16717
CH12370	105	285	CH1A1A	US20160200833 SEQ ID NO: 328	16718
CH12371	105	285	humanized MN-14	US20160200833 SEQ ID NO: 330	16719
CH12372	109	285	MN-14	US9150663B2 SEQ ID NO: 13	16720
CH12373	109	285	sm9b	US9296817B2 SEQ ID NO: 20	16721
CH12374	109	285	T84.66	US9469691B2 SEQ ID NO: 8	16722
CH12375	109	285	T84.66-LCHA	US9469691B2 SEQ ID NO: 9	16723
CH12376	109	285	T84.66-LCHA	US9469691B2 SEQ ID NO: 10	16724
CH12377	109	285	58	US9469691B2 SEQ ID NO: 47	16725
CH12378	109	285	1F12	US9296817B2 SEQ ID NO: 22	16726
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CH12380	109	285	224G11	US9572878B2 SEQ ID NO: 75	16728
CH12381	109	285	224G11	US9572878B2 SEQ ID NO: 107; US9192666 SEQ ID NO: 107	16729
CH12382	109	285	224G11	US9169329B2 SEQ ID NO: 14; US9169329 SEQ ID NO: 14	16730
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CH12386	109	285	L3-11Y	US9580508B2 SEQ ID NO: 194; US9150663B2 SEQ ID NO: 15 (Artificial Sequence; Synthetic peptide)	16734
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CH12409	136	285	DR5	US20140370019 SEQ ID NO: 85	16757
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CH12413	136	285	TAA-0013	US20140370019 SEQ ID NO: 29	16761
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CII 12600	202	285	human **chimeric** antibody **KM871**	**US5939532;** SEQ ID NO: 92	16948
CII 12601	202	285	**humanized** CDR-grafted antibody	**US6872392;** SEQ ID NO: 111	16949
CII12602	202	285		US6872392; SEQ ID NO: **113**	16950
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CII12938	140	285	1A7	WO2011156617; SEQ ID NO: 14	17286
CII12939	140	285	BR55-2	WO2011041319; SEQ ID NO: 27; US9072798B2 SEQ ID NO: 27	17287
CII12940	140	285	BR55-2	WO2011041319; SEQ ID NO: 37; US9072798B2 SEQ ID NO: 37	17288
CII12941	140	285	BR55-2	WO2011041319; SEQ ID NO: 134; US9072798B2 SEQ ID NO: 134	17289
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CII12943	194	285	12D03	WO2016134284; SEQ ID NO: 18	17291
CII12944	194	285		WO2015132604; SEQ ID NO: 11	17292
CII12945	197	285		US20020132983 SEQ ID NO: 4	17293
CII12946	197	285		US9205157; SEQ ID NO: 2	17294
CII12947	197	285	antibody secreted by the L612 human B-lymphoblastoid cell line	US9205157; SEQ ID NO: 4	17295
CII12948	197	285		US7045129; SEQ ID NO: 19; US20050260206; SEQ ID NO: 2; US7253263; SEQ ID NO: 2	17296
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CH12957	233	285	R24	WO2011057064; SEQ ID NO: 2	17305
CH12958	233	285	KM796	WO2011057064; SEQ ID NO: 4	17306
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CH12963	233	285		WO2011057064; SEQ ID NO: 21	17311
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CH12969	294	285		US20120276104; SEQ ID NO: 8	17317
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CH12971	348	285		EP1623997 Fig: 6	17319
CH12972	348	285		EP1623997 Fig: 6	17320
CH12973	348	285	BR96	EP1623997 Fig: 6	17321
CH12974	348	285	BW835	EP1623997 Fig: 6	17322
CH12975	348	285	mouse mAb 14F7	EP1623997 Fig: 6	17323
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CH12983	388	285		US9475874; SEQ ID NO: 12	17331
CH12984	388	285		US9475874; SEQ ID NO: 16	17332
CH12985	167	365		US8476409B2 SEQ ID NO: 7	17333
CH12986	233	366		US8476409B2 SEQ ID NO: 3	17334
CH12987	140	371		US9072798B2 SEQ ID NO: 83	17335
CH12988	140	371		US9072798B2 SEQ ID NO: 188	17336
CH12989	140	371		US9072798B2 SEQ ID NO: 82	17337
CH12990	140	377		US8663640B2 SEQ ID NO: 99	17338
CH12991	140	377		US8663640B2 SEQ ID NO: 97	17339
CH12992	320	389	8C65AAG hu806 signal+VL+CL	US9168300 SEQ ID NO: 11	17340
CH12993	320	390	8C65AAG hu806 Vl+Cl	US9168300 SEQ ID NO: 14	17341
CH12994	164	411	r2vkl hu806 signal+VL+CL	WO2015157634; SEQ ID NO: 101, 106	17342
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CIII3021	53	480	vl381	WO2014012085; SEQ ID NO: 126	17369
CII13022	53	480	vl653	WO2014012085; SEQ ID NO: 130	17370
CII13023	53	480	vl655	WO2014012085; SEQ ID NO: 38	17371
CII13024	53	480	vl657	WO2014012085; SEQ ID NO: 42	17372
CII13025	53	480	v-1658	WO2014012085; SEQ ID NO: 133	17373
CII13026	53	480	vl659	WO2014012085; SEQ ID NO: 142	17374
CII13027	53	480	vl660	WO2014012085; SEQ ID NO: 2	17375
CII13028	53	480	vl661	WO2014012085; SEQ ID NO: 10	17376
CIII3029	53	480	vl662	WO2014012085; SEQ ID NO: 26	17377
CII13030	53	480	vl663	WO2014012085; SEQ ID NO: 30	17378
CII13031	53	480	vl665	WO2014012085; SEQ ID NO: 34	17379
CII13032	53	480	v865	WO2014012085; SEQ ID NO: 90	17380
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CII13034	56	480	v873	US20160017047 SEQ ID NO: 12	17382
CII13035	56	480	V874	US20160017047 SEQ ID NO: 14	17383
CII13036	56	480	V875	US20160017047 SEQ ID NO: 16	17384
CIII3037	66	480	v891	WO2014012085; SEQ ID NO: 98	17385
CIII3038	66	480		WO2014012085; SEQ ID NO: 113	17386
CII13039	66	480		WO2014012085; SEQ ID NO: 117	17387
CII13040	66	480		WO2014012085; SEQ ID NO: 121	17388
CII13041	66	480		WO2014012085; SEQ ID NO: 125	17389
CII13042	66	480	v-1381	WO2014012085; SEQ ID NO: 129	17390
CII13043	66	480	vl656	WO2014012085; SEQ ID NO: 40	17391
CII13044	66	480	vl657	WO2014012085; SEQ ID NO: 134	17392
CII13045	66	480	vl658	WO2014012085; SEQ ID NO: 138	17393
CIII3046	66	480	vl659	WO2014012085; SEQ ID NO: 141	17394
CII13047	66	480	vl660	WO2014012085; SEQ ID NO: 46	17395
CII13048	66	480	vl661	WO2014012085; SEQ ID NO: 146	17396
CII13049	66	480	vl663	WO2014012085; SEQ ID NO: 150	17397
CII13050	66	480	v-1664	WO2014012085; SEQ ID NO: 154	17398
CII13051	66	480	vl665	WO2014012085; SEQ ID NO: 158	17399
CII13052	66	480	vl666	WO2014012085; SEQ ID NO: 165	17400
CII13053	66	480	vl667	WO2014012085; SEQ ID NO: 169	17401
CIII3054	66	480	vl668	WO2014012085; SEQ ID NO: 173	17402
CII13055	66	480	vl669	WO2014012085; SEQ ID NO: 177	17403
CII13056	66	480	vl670	WO2014012085; SEQ ID NO: 181	17404
CII13057	66	480	vl672	WO2014012085; SEQ ID NO: 6	17405
CII13058	66	480	vl673	WO2014012085; SEQ ID NO: 8	17406

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CII13060	66	480	**v1798**	**WO20 140 12085**; **SEQ ID NO:** l8	17408
CIII3061	66	480	**vl799**	**WO20 140 12085**; SEQ ID NO: 22	17409
GIIl3062	66	480	**v867**	**WO20 140 12085**; SEQ ID NO: 28	17410
CI113063	66	480	**v868**	**WO20 140 12085**; SEQ ID NO: 32	**1741**l
CIl!**3064**	66	480	**v870**	**WO20 140 12085**; SEQ ID **NO: 36**	**174**l2
GIIl3065	72	480	**v871**	US20 l60 130347 SEQ ID NO: **149**	**174**l3
CIIl 3066	140	480	**v872**	**WO2013 156054;** SEQ ID NO: 4	17414
CIIl3067	194	480	**v873**	US8835606; SEQ ID NO: **9**	17415
CII13068	194	480	**V874**	**WO2016134284; SEQ ID NO: 19**	17416
CII13069	l**94**	480	**V875**	**WO20 l6 134284;** SEQ **ID** NO: 20	17417
CIIl 3070	194	480		**WO2016134284;** SEQ ID NO: 21	17418
CII13071	194	480		**WO2015132604;** SEQ ID NO: 7	17419
CIl13072	194	480	mature fusion protein human 14.l8 **sFv**	**WO20 15** 132604: SEQ ID **NO:** 8; **US20 170066838;** SEQ ID NO: 8	17420
CII13073	194	480		**US20170066838;** SEQ ID **NO:** 7	17421
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CII13075	294	480		**US5981726;** SEQ ID NO: 34	17423
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Cil 13077	386	480		ıı S20 110034676 ; SEQ ID NO: 3l	17425
CIIl3078	386	480		**US20** l l0034676 ; SEQ ID NO: 32	17426
CIIl 3079	386	480		**US20 110034676** ; SEQ ID NO: 33	17427
CIIl 3080	424	480		WO20 l l145085; SEQ ID NO: 7	17428
CII13081	424	480		W**O20 11145085**; SEQ ID NO: 8	17429
CII13082	424	480		WO20 11145085; SEQ ID NO: 9, l2	17430
CIl!3083	424	480		**WO20 11145085**; SEQ ID **NO: 10**	1743l
CIIl3084	424	480		**WO20 11145085**; SEQ ID NO: l1	17432
CIIl 3085	53	480		**WO20** l40 **12085**; SEQ ID **NO:** 105	17433
CII13086	53	480		**WO2014012085** ; SEQ ID NO: **137**	17434
CII13087	53	480		**WO20 140 12085**; SEQ ID NO: 48	17435
CII13088	53	480		**WO20 140 12085**; **SEQ ID NO: 145**	17436
CII13089	53	480		**WO20 140 12085**; SEQ ID NO: 149	17437
CIl13090	53	480	**vl654**	**WO20 140 12085**; SEQ ID NO: 153	17438
Gill 3091	53	480	**vl664**	**WO20 140 12085**; SEQ ID NO: **157**	17439
CIl!3092	53	480	**vl666**	**WO20 140 12085**; SEQ ID **NO:** 162	17440
CII13093	53	480	**vl667**	**WO20 140 12085**; SEQ ID NO: 166	17441
CIIl3094	53	480	v**l668**	**WO20 140 12085**; SEQ ID **NO:** 185	17442
CII13095	53	480	vl669	**WO2014012085** ; SEQ ID NO: 189	17443
CII13096	53	480	v**1670**	**WO20 140 12085**; **SEQ ID NO:** l**94**	17444
CIIl 3097	53	480	**vl671**	**WO20 140 12085**; SEQ ID NO: 52	17445
CII13098	53	480	**vl672**	**WO20 140 12085**; SEQ ID NO: 56	17446
CI113099	53	480	**vlSOO**	**WO20 140 12085**; SEQ ID NO: 60	17447
cm3loo	53	480	vl8Ol	**WO20 140 12085**; SEQ ID **NO:** 64	17448
CIIl**3**loi	53	480	**vl802**	**WO20 140 12085**; SEQ ID NO: 68	17449
CII13 102	53	480	**v4541**	**WO20 140 12085**; SEQ ID NO: 72	17450
CII13 103	53	480	**v4542**	**WO2014012085** ; SEQ ID NO: 76	1745 1
CII13 104	53	480	v-4543	**WO20 140 12085**; SEQ ID NO: 80	17452
CII13 105	53	480	**v4544**	**WO20 140 12085**; SEQ ID NO: 84	17453
CII13 106	66	480	v4545	**WO20 140 12085**; SEQ ID NO: 44	17454
cms 107	66	480	**v4546**	**WO20 140 12085**; SEQ ID **NO: 161**	17455
CIl!3108	66	480	**v4547**	**WO20 140 12085**; SEQ ID **NO: 193**	17456
CIIl3 109	66	480	**v4548**	**WO20 140 12085**; SEQ ID NO: 50	17457
CII**13 110**	66	480	**v4549**	**WO20 140 12085**; SEQ ID **NO:** 54	17458
C!**113 1**l**1**	66	480	vl662	**WO2014012085** ; SEQ ID NO: 58	17459
C!**113 1**l2	66	480	v**1671**	**WO20 140 12085**; SEQ **ID** NO: 62	17460
C!**13 113**	66	480	**vl802**	**WO20 140 12085**; SEQ ID NO: 66	17461
CII13 114	66	480	**v4541**	**WO20 140 12085**; SEQ ID NO: 70	17462

CII13 115	66	480	v4542	**WO2014012085** ; SEQ ID NO: 74	17463
CII13 116	66	480	v-4543	**WO20 14012085;** SEQ **ID** NO: 78	17464
CII13 117	66	480	**v4544**	**WO20 140 12085** ; SEQ ID NO: 82	17465
CII13 118	66	480	v4545	**WO20 140 12085** ; SEQ ID NO: 4	17466
CI113 119	70	480	**v4546**	**WO20 16087245** SEQ **ID** NO: 5	17467
CII13120	**177**	480	**v4547**	**US20020099180** SEQ ID NO: 15	17468
CII13 12 I	**177**	480	**v4548**	**US20020099180** SEQ ID NO: 16	17469
CII13 122	177	480	**v4549**	**US20020099180** SEQ ID NO: 17	17470
CII13 123	177	480	**v866**	**US20020099180** SEQ ID NO: 18	17471
CII13 124	177	480	**Blinatumumab (Bite)**	**US20020099 180** SEQ **ID** NO: **19**	17472
CII13 125		480		**WO20 140 12085** ; SEQ ID NO: 268	17473
CII13 126	**14**	480		**WO20 140 12085** ; SEQ ID NO: 258	17474
CII13 127	197	490		**US20050260206** ; SEQ ID NO: 1	17475
CI113 128	**195**	494		ıı S20 160032.009; SEQ ID NO: 31	17476
CII13129	196	494		US20 [60032009 ; SEQ ID NO: 29	17477
CII13 130	196	494	**unknown**	**US20 160032009** ; SEQ ID NO: 30	17478
CII13 13 1	194	495	Variant 1087	**US20 160032009** ; SEQ ID NO: 11	17479
CII13 132	194	495	**KM641**	**US20160032009** ; SEQ ID NO: 12	17480
CII13 133	**194**	495	**bispecific** antibody; **hu3F8Vl scFv-C825 scFv**	**US20160032009** ; SEQ **ID** NO: 13	17481
CII13134	194	495	bispecific antibody; hu3F8VS **scFv-linker-huOKT3 scFv with** ADTKGP spacer	US20 [60032009; SEQ ID NO: **14**	17482
CI113 135	194	495	bispecific antibody; **hu3F8Vl scFv-linker-huOKT3 scFv** without spacer	**US20 160032009;** SEQ ID NO: 15	17483
CII13 136	194	495	**from** 3F8	**US20160032009:** SEQ **ID** NO: 16	17484
CII13 137	**194**	495	from 3F8	US20 160032009 ; SEQ II) NO: 17	17485
CII13 138	194	495	from 3F8	**US20160032009;** SEQ ID NO: 18	17486
CII13 139	194	495	from 3F8	US20 160032009 ; SEQ ID NO: 19	17487
CI113 140	194	495	from 3F8	**US20 160032009** ; SEQ ID NO: 20	17488
CI113 14 1	194	495	from 3F8	**US20 160032009** ; SEQ ID NO: 21	17489
CII13142	194	495	from **3F8**	US20 [60032009 ; SEQ ID NO: 22	17490
CII13 143	194	495	from 3F8	**US20 160032009** ; SEQ ID **NO:** 23	17491
CII13 144	194	495	from 3F8	**US20 160032009** ; SEQ ID NO: 24	17492
CII13 145	194	495	**from** 3F8	**US20 16003 2009** ; SEQ **ID** NO: 25	17493
CII13 146	**140**	496	from 3F8	**US9 139650B2** SEQ **ID** NO: **10**	17494
CII13 147	140	496	from 3F8	**US9492564B2** SEQ ID **NO**: 13	17495
CII13 148	167	496	from 3F8	**US8476409B2** SEQ ID NO: 338	17496
CII13 149	167	496	from 3F8	**US8476409B2** SEQ **ID** NO: 375	17497
CII13150	**167**	496	from **3F8**	**US8476409B2** SEQ **ID** NO: 370	17498
CII13 15 1	167	496	528	**US8476409B2** SEQ ID NO: 341	17499
CII13 152	167	496	F2A2	US8476409B2 SEQ ID NO: 372	17500
CII13 153	167	496	**ANTI-ErbB3 Ab#** A	US8476409B2 SEQ **ID** NO: 373	17501
CII13 154	[67	496	B69 **anti-ErbB3** monoclonal antibody	**US8476409B2** SEQ **ID** NO: 347	17502
CII13 155	167	496	**C8 anti-ErbB3 monoclonal** antibody	**US8476409B2** SEQ ID **NO:** 350	**17503**
CII13 156	167	496	H3	**US8476409B2** SEQ ID NO: 344	17504
CI113 157	167	496	**Ml.** 3 **anti-ErbB3** monoclonal antibody	**US8476409B2** SEQ **ID** NO: **3**71	17505
CII13 158	167	496	M27 **anti-ErbB3 monoclonal** antibody	**US8476409B2** SEQ **ID** NO: 374	17506
CII13 159	[67	496	**MM** Ab# 14	**US8476409B2** SEQ **ID** NO: 383	17507
CII13 160	167	496	**MM Ab#17**	**US8476409B2** SEQ ID NO: 353	**17508**
CII13 161	167	496	**MM** Ab#3	**US9487588B2** SEQ ID NO: 72	17509
CII13 162	233	496	P1 **anti-ErbB3 monoclonal antibody**	**US8476409B2** SEQ **ID** NO: 335	175 10
CII13163	233	496	P6 **anti-ErbB3** monoclonal antibody	**US8476409B2** SEQ **ID** NO: 332	**175**11
CII13 164	233	496	P6L	**US8476409B2** SEQ ID NO: 326	17512
CII13 165	233	496	**XMM Ab#19**	US8476409B2 SEQ ID NO: 323	17513
CII13 166	233	496		US8476409B2 SEQ **ID** NO: 329	17514
CII13 167	233	496	**BIIB-C06**	US8476409B2 SEQ **ID** NO: 368	17515

CH13168	233	496	BIIB-G11	US8476409B2 SEQ ID NO: 382	17516
CH13169	233	496	cixutumumab (Ab#B)	US8476409B2 SEQ ID NO: 369	17517
CH13170	233	496	figitumumab (Ab#C)	US8476409B2 SEQ ID NO: 367	17518
CH13171	376	496	ganitumab (Ab# A)	US20160333101 SEQ ID NO: 21	17519
CH13172	66	499	M57 anti-IGF-1R monoclonal antibody	US9562110 SEQ ID NO: 1	17520
CH13173	413	501	M76	US20100081792; SEQ ID NO: 93	17521
CH13174	413	501	M78 anti-IGF-1R monoclonal antibody	US20100081792; SEQ ID NO: 95	17522
CH13175	413	501	P4 anti-IGF-1R monoclonal antibody	US20100081792; SEQ ID NO: 97	17523
CH13176	413	501	114-7.19.12	US20100081792; SEQ ID NO: 99	17524
CH13177	413	501	anti-Her2/neu-anti-CD3 bispecific antibody	US20100081792; SEQ ID NO: 141, 184	17525
CH13178	413	501		US20100081792; SEQ ID NO: 142, 180	17526
CH13179	413	501		US20100081792; SEQ ID NO: 143	17527
CH13180	413	501		US20100081792; SEQ ID NO: 144, 178	17528
CH13181	413	501		US20100081792; SEQ ID NO: 145	17529
CH13182	413	501		US20100081792; SEQ ID NO: 146	17530
CH13183	413	501		US20100081792; SEQ ID NO: 147	17531
CH13184	413	501		US20100081792; SEQ ID NO: 148	17532
CH13185	413	501		US20100081792; SEQ ID NO: 149	17533
CH13186	413	501		US20100081792; SEQ ID NO: 150	17534
CH13187	413	501		US20100081792; SEQ ID NO: 151	17535
CH13188	413	501		US20100081792; SEQ ID NO: 152	17536
CH13189	413	501		US20100081792; SEQ ID NO: 153	17537
CH13190	413	501		US20100081792; SEQ ID NO: 154	17538
CH13191	413	501		US20100081792; SEQ ID NO: 155	17539
CH13192	413	501		US20100081792; SEQ ID NO: 156	17540
CH13193	413	501		US20100081792; SEQ ID NO: 157	17541
CH13194	413	501		US20100081792; SEQ ID NO: 158	17542
CH13195	413	501		US20100081792; SEQ ID NO: 159	17543
CH13196	413	501		US20100081792; SEQ ID NO: 160	17544
CH13197	413	501		US20100081792; SEQ ID NO: 161	17545
CH13198	413	501		US20100081792; SEQ ID NO: 162	17546
CH13199	413	501		US20100081792; SEQ ID NO: 163	17547
CH13200	413	501		US20100081792; SEQ ID NO: 164	17548
CH13201	413	501		US20100081792; SEQ ID NO: 165	17549
CH13202	413	501		US20100081792; SEQ ID NO: 166	17550
CH13203	413	501		US20100081792; SEQ ID NO: 167	17551
CH13204	413	501		US20100081792; SEQ ID NO: 168	17552
CH13205	413	501		US20100081792; SEQ ID NO: 169	17553
CH13206	413	501		US20100081792; SEQ ID NO: 170, 183	17554
CH13207	413	501		US20100081792; SEQ ID NO: 171	17555
CH13208	413	501		US20100081792; SEQ ID NO: 172	17556
CH13209	413	501		US20100081792; SEQ ID NO: 173	17557
CH13210	413	501		US20100081792; SEQ ID NO: 174	17558
CH13211	413	501		US20100081792; SEQ ID NO: 175	17559
CH13212	413	501		US20100081792; SEQ ID NO: 176	17560
CH13213	413	501		US20100081792; SEQ ID NO: 177, 182	17561
CH13214	413	501		US20100081792; SEQ ID NO: 179	17562
CH13215	413	501		US20100081792; SEQ ID NO: 182	17563
CH13216	413	501		US20100081792; SEQ ID NO: 185	17564
CH13217	413	501		US20100081792; SEQ ID NO: 186	17565
CH13218	413	501		US20100081792; SEQ ID NO: 187	17566

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CII 13221	413	501		US20 10008 1792; SEQ ID NO: 190	l7569
CII 13222	413	501		US20 10008 1792; SEQ ID NO: 191	17570
CII 13223	428	501		ıı S20 10008 l792; SEQ ID NO: l92	17571
CIIl 3224	428	501		US20 [0008 l792; SEQ ID NO: 193	17572
CII l3225	428	501		US20 [0008 l792; SEQ ID NO: 194	17573
CII 13226	428	501		US2010008 1792; SEQ ID NO: l95	17574
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CII13228	428	501		US20100081792; SEQ ID NO: 197	17576
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CII13230	428	501		US20 10008 1792; SEQ ID NO: 199	l7578
CII1323 1	428	501		US20 10008 1792; SEQ ID NO: 200	17579
CI113232	428	501		ıı S20 10008 l792; SEQ ID NO: 201	17580
CII l3233	428	501		US20 [0008 l792; SEQ ID NO: 202	1758 1
CII13234	428	501		US2010008 1792; SEQ ID NO: 203	17582
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CII13236	428	501		US20100081792; SEQ ID NO: 205	l7584
CII13237	428	50 l		US20100081792; SEQ ID NO: 206	l7585
CII13238	428	501		US20 10008 1792; SEQ ID NO: 207	17586
CII13239	428	501		US20 10008 1792; SEQ ID NO: 208	17587
CI113240	428	501		ıı S20 10008 l792; SEQ ID NO: 209	17588
CIIl 324 l	428	501		US20 [0008 1792; SEQ ID NO: 210	17589
CII13242	428	501		US2010008 1792; SEQ ID NO: 2 1 1	17590
CII 13243	428	501		US20 10008 1792; SEQ ID NO: 212	17591
CII13244	428	501		US20100081792; SEQ ID NO: 213	17592
CII13245	428	50 [		US20100081792; SEQ ID NO: 2 [4	17593
CII 13246	428	501		US20 10008 1792; SEQ ID NO: 215	17594
CII 13247	428	501		US20 10008 1792; SEQ ID NO: 216	17595
CI113248	428	501		ıı S20 10008 l792; SEQ ID NO: 217	17596
CIIl 3249	428	501		US20 [0008 l792; SEQ ID NO: 218	17597
CII13250	140	502		WO2008141449; SEQ ID NO: 15	17598
CII 13251	140	502		WO2008141449; SEQ ID NO: 17	17599
CII13252	140	502		WO200814 1449; SEQ ID NO: 19	17600
CII13253	140	502		WO2008 141449; SEQ ID NO: 21	1760 l
CII13254	140	502		WO200814 1449; SEQ ID NO: 23	l7602
CII 13255	140	502		WO200814 1449; SEQ ID NO: 25	17603
CII13256	140	502		WO2008141449; SEQ ID NO: 27	17604
CI113257	140	502		WO2008141449; SEQ ID NO: 29	17605
CII l3258	140	502		WO2008141449; SEQ ID NO: 31	17606
CII13259	140	502		WO2008141449; SEQ ID NO: 33	17607
CII 13260	140	502		WO2008141449; SEQ ID NO: 35	17608
CII13261	66	507		WO2014012085; SEQ ID NO: 94	17609
CII13262	66	507		US200802 13256 SEQ ID NO: 14	17610
CII13263	13			WO2014012085; SEQ ID NO: 262	1761 1
CII 13264	15			WO2014012085; SEQ ID NO: 260	17612
CI113265	53			WO20 140 12085; SEQ ID NO: 266	17613
CII l3266	66		vl380	WO20140 12085; SEQ ID NO: 264	176 [4
CII13267	73			WO20140 12085; SEQ ID NO: 231	17615
CII13268	73		Variant 1090	WO2014012085; SEQ ID NO: 233	17616
CII13269	73		Variant 1090	WO2014012085; SEQ ID NO: 237	17617
CII13270	73		ABH2	WO20 14012085; SEQ ID NO: 239	17618
CII 13271	73		ABH2	WO2014012085; SEQ ID NO: 241	17619
CII 13272	73		vl813	WO2014012085; SEQ ID NO: 243	17620
CI113273	73		vl813	WO20140 12085; SEQ ID NO: 245	17621
CII l3274	73		vl82 l	WO20140 12085; SEQ ID NO: 247	17622
CII13275	73		vl82 [	WO20140 12085; SEQ ID NO: 203	17623
CII 13276	73		v l821	WO2014012085; SEQ ID NO: 205	17624

CII13277	73		vl823	WO2014012085; SEQ ID NO: 207, 235	17625
CI113278	73		vl823	WO20 140 12085; SEQ ID NO: 209	17626
CI113279	73		vl823	WO20 140 12085; SEQ ID NO: 211	17627
CIIl 3280	73		V5850	WO20140 12085; SEQ ID NO: 213	17628
CII1328 1	73		V5850	WO20140 12085; SEQ ID NO: 215	17629
CIIl 3282	73		V5850	WO2014012085; SEQ ID NO: 217	17630
CII13283	73		v585 1	WO2014012085; SEQ ID NO: 219, 229	17631
C[113284	73		v585 1	WO20 140 12085; SEQ ID NO: 221	17632
C[11 3285	73		v585 1	WO20 140 12085; SEQ ID NO: 223	17633
C[113286	73		v5852	WO20140 12085; SEQ ID NO: 225	17634
C 113287	73		v5852	WO2014012085; SEQ ID NO: 227	17635
C113288	140		v5852	US91 50663B2 SEQ ID NO: 30	17636
C113289	140		v-6324	US9 150663B2 SEQ ID NO: 31	17637
Cl 13290	140		v6324	US9150663B2 SEQ ID NO: 32	17638
C[113291	140		v6324	US9150663B2 SEQ ID NO: 8	17639
C[113292	140		v6325	US20120328620 SEQ ID NO: 18	17640
C[113293	194		2F8 in an IgGl backbone	US20130287691; SEQ ID NO: 9	17641
C[113294	194		2F8 in an IgG4 backbone	US20130287691; SEQ ID NO: 25	17642
C[113295	214		2F8 in an partial IgG3 backbone	US20140072582 SEQ ID NO: 34	17643
C113296	294		Hinge-Deleted-IgGl-2F8	US20090 10546 1; SEQ ID NO: 6	17644
C113297	294			US2009010546 1; SEQ ID NO: 7	17645
Cl 13298				US20 140072582 SEQ ID NO: 35	17646
C[113299				US20 140072582 SEQ ID NO: 33	17647
C[113300				US20 140072582 SEQ ID NO: 37	17648
C[11330 1			Hu3S193	US20 140072582 SEQ ID NO: 66	17649
C[113302			Hu3S193	US20090105461; SEQ ID NO: 5	17650
C[113303			construct GB2542	US20 10008 1792; SEQ ID NO: 12	17651
C113304			construct GB3542	US7423 126; SEQ ID NO: 2	17652
C113305			construct GB4542	US7423 126; SEQ ID NO: 4	17653
C[113306			construct C-B7542	US20140072582 SEQ ID NO: 36	17654
Cl 13307			Hu3S193	US20 140072582 SEQ ID NO: 70	17655
C[113308				US20 140072582 SEQ ID NO: 76	17656
C[113309				US20 140072582 SEQ ID NO: 87	17657
C[113310				US20 140072582 SEQ ID NO: 91	17658

[00281] In Table 9, the target number (Target No.) code is described in the following semi¬colon delimited list where the target number is followed by the target (e.g.. Target No. 1 with target AC133 is shown as Target No. 1-Target AC133). The targets represented by the codes in Table 9 include, but are not limited to, Target No. 1-Target AC133; Target No. 2-Target ACTH; Target No. 3-Target activin receptor-like kinase 1 (ALK-1); Target No. 4-Target ADAMTS4; Target No. 5-Target AFP; Target No. 6-Target Albumin; Target No. 7-Target ALCAM: Target No. 8-Target alpha-4 integrin; Target No. 9-Target angiopoietin 2 (ANGPT2; ANG-2); Target No. 10-Targei angiopoietin 2 (ANGPT2; ANG-2) (ANGPT2; ANG-2); Target No. 11-Target Annexin IV or a phospholipid; and (b) a complement inhibitor; Target No. 12-Target Anti-CD-3; Target No. 13-Target antiHER2; Target No. 14-Target anti-Her2 and anti-Her3; Target No. 15-Target antiHER3; Target No. 16-Target anti-idiotype (id); Target No. 17-Target **Anx-Al;** Target No. 18~Target AOC3 (VAP-i); Target No. 19-Target Aipha-V integrin; Target No. 20~Target

AXL; Target No. 21-Target B and T human lymphocytes; Target No. 22-Target b7 subunii of a4b7, aEb7 integrins, humanized IgGi ; Target No. 23-Target B7-H1; Target No. 24-Target B7-H3; Target No. 25-Target B7-H4; Target No. 26-Target B7-H5; Target No. 27-Target B7-H6; Target No. 28-Target B7-H7; Target No. 29-Target B7-H8; Target No. 30-Target BMP9; Target No. 31-Target BSC; Target No. 32-Target C3b; Target No. 33-Target C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9; Target No. 34-Target C5; Target No. 35~Target C5a; Target No. 36-Target C5d polypeptide; Target No. 37-Target CA 125 (MUC16); Target No. 38-Target CA-125 (imitation); Target No. 39-Target C-antigen; Target No. 40-Target Carbohydrate Antigen 242 (CA242); Target No. 41-Target carbonic anhydrase 9(CA-IX); Target No. 42-Target CC chemokines; Target No. 43-Target CCL11 (eotaxin-1); Target No. 44-Target CCL2, MCP-l, MCAF; Target No. 45-Target CCR2; Target No. 46-Target CCR4; Target No. 47-Target CD100; Target No. 48-Target CD11; Target No. 49-Target CD11a; Target No. 50-Target CD123; Target No. 51-Target CD147 (basigin): Target No. 52~Target CD154 (CD40LG); Target No. 53-Target CD19; Target No. 54-Target CD19; Target No. 55-Target CD2; Target No. 56-Target CD20; Target No. 57-Target CD20/CD40; Target No. 58-Target CD20/EGFR; Target No. 59-Target CD200; Target No. 60-Target CD22; Target No. 61-Target CD221; Target No. 62-Target CD248 (TEM-1); Target No. 63-Target CD27; Target No. 64-Target CD274 (PD-L1); Target No. 65-Target CD28; Target No. 66-Target CDS; Target No. 67-Target CD3; Target No. 68-Target CD3 epsi!on; Target No. 69-Target CD3 epsiion, anti-ILl-Ri; Target No. 70-Target CD3, CD19; Target No. 71-Target CD3, EpCAM, Target No. 72-Target CD3, MSCP; Target No. 73-Target CD3/CD19or CD3/CD20; Target No. 74-Target CD3; CD19; Target No. 75-Target CD30; Target No. 76-Target CD31; Target No. 77-Target CD32; Target No. 78-Target CD324/E-cadhenn; Target No. 79-Target CD32b; Target No. 80-Target CD33; Target No. 81-Target CD34; Target No. 82-Target CD35; Target No. 83-Target CD37; Target No. 84-Target CD37 and CD20; Target No. 85-Target CD38; Target No. 86-Target CD38, human IgG1; Target No. 87-Target CD38, human IgG2; Target No. 88-Target CD3E; Target No. 89-Target CD3E, EPCAM; Target No. 90-Target CD3E, EPCAM (IL-beta); Target No. 91-Target CD4; Target No. 92-Target CD40; Target No. 93-Target CD40LG; Target No. 94-Target CD44 v6; Target No. 95-Target CD-49d, CD11a; Target No. 96-Target CD51; Target No. 97-Target CD52; Target No. 98-Target CD55/CD.59 and CD20; Target No. 99-Target CD6; Target No. 100-Target CD64; Target No. 101-Target CD70; Target No. 102-Target CD74; Target No. 103-Target CD79B; Target No. 104-Target CD89; Target No. 105-Target CEA; Target No. 106-Target CEACAM5; Target No. 107-Target Cell surface targets; Target No. 108-Target CH region of an immunoglobulin; Target No. 109-Target c-MET; Target No. 110-Target c-MET/EGFR; Target

No. 111-Target oMET/EGFR; c-MET; Target No. 112-Target c-MET/EGFR; EGFR; HGF; Target No. 113-Target c-MET/FGFR; Target No. 114-Target c-MET/HER; Target No. 115-Target c-MET/HER; ErbB2; Target No. 116-Target c-MET; EGFR; VEGF; c-MET/EGFR; Target No. 117-Target CSAp; Target No. 118-Target CSFIR; Target No. 119-Target CSF2; Target No. 120-Target CSF2RA; Target No. 121-Target CSPG4; Target No. 122-Target CTGF; Target No. 123-Target CTLA4; Target No. 124-Target CTLA4, human igG2; Target No. 125-Target CTLA4, human IgG3; Target No. 126-Target C-X-C chemokine receptor type 4; Target No. 127-Target CXCL10; Target No. 128-Target CXCL13; Target No. 129-Target CXCR4; Target No. 130-Target difucosyl Lewis blood group antigens Y-6 and B-7-2; Target No. 131-Target DKKI; Target No. 132-Target DLL3; Target No. 133-Target DLL4; Target No. 134-Target DNA-Mstone complex: Target No. 135-Target BPP4, CD26; Target No. 136-Target DR5; Target No. 137-Target EFNA1 ; Target No. 138-Target EGF; Target No. 139-Target EGFL7; Target No. 140-Target EGFR; Target No. 141-Target EGFR (EGFRvIII); Target No. 142-Target EGFR (HER1); Target No. 143-Target EGFR and IGF1R; Target No. 144-Target EGFR family; Target No. 145-Target EGFR, ERBBL FIERI; Target No. 146-Target EGFR, ERBB1, FIER2; Target No. 147-Target EGFR, FIER2, or FIER3, Target No. 148-Target EGFR/cMet; Target No. 149-Target EGFR/HER3; Target No. 150-Target EGFR/VEGFR/HER; Target No. 151-Target EGFR; c-Met; Target No. 152-Target EGFR; VEGF; Target No. 153-Target EGFRvIK; Target No. 154-Target EGP-l (TROP2); Target No. 155-Target EMP2; Target No. 156-Target endoglin; Target No. 157-Target EPCAM; Target No. 158-Target EpCAM, CD3; Target No. 159-Target EphA2 receptor; Target No. 160-Target EPHA3; Target No. 161-Target EphA3; EGFR, I-IER2; PD-L1; HGF; Target No. 162-Target episialin; Target No. 163-Target ERB2; Target No. 164-Target ERBB; Target No. 165-Target ERBB1; Target No. 166-Target ERBB2; Target No. 167-Target ERBB3; Target No. 168-Target ErbB3/lGFlR; Target No. 169-Target ErbB4; Target No. 170-Target ErbB5; Target No. 171-Target ErbB6; Target No. 172-Target ErbB7; Target No. 173-Target ErbB8; Target No. 174-Target euGc, NGNA; Target No. 175-Target F3; Target No. 1.76-Target FAP; Target No. 177-Target FAPcx; Target No. 178-Target FasR; Target No. 179-Target FcRn; Target No. 180-Target FcyRHB (FcyR); Target No. 181-Target FcyRIIB, Target No. 182-Target FcyRIIIA; Target No. 183-Target FGF-8; Target No. 184-Target FGFR2; Target No. 185-Target fibronectin ED-A; Target No. 186-Target fibronectirt TTTCS isoforro.; Target No. 187-Target fibronectin extra domain-B; Target No. 188-Target FLT1; Target No. 189-Target FLT3; Target No. 190-Target folate receptor alpha; Target No. 191-Target FOLR1 ; Target No. 192-Target Frizzled receptor; Target No. 193-Target gangiioside; Target No. 194-Target GD2; Target No. 195-Target GD2/BOTA; Target No. 196-Target

GD2/huOKT3; Target No. 197-Targei GD3; Target No. 198-Targei GD3 gangiioside; Target No. 199-Target GFRo3; Target No. 200-Target **gly can** antigen; Target No. 201-Target glypican 3; Target No. 202-Target GM2; Target No. 203-Target GPNMB; Target No. 204-Target Growth factor 7; Target No. 205-Target **GUCY2C,** anti-GCC; Target No. 206-Target HB-EGF; Target No. 207-Target HB-EGF/EGFR; Target No. 208-Target hen egg lysozyme, Target No. 209-Target HER/EGFR; Target No. 2iO-Target HERl , HER3, CD80, CD86, PD-i, CTLA4, B7-H4, RON, CD200, CD4, BAF R, EGFR, IGFR, VEGFR, a member of the TNF family of receptors, a Tie receptor, MET, !GFl, IGF2, TNF, a TNF ligand, IL-6, TWEAK, **Fnl4,** CD20, CD23, CRIPTO, HGF, alpha4betal integrm, alpha5betal integrin, a3pha6beta4 mtegrm, and aIpha.Vbeta6 mtegrin; Target No. 211-Target HER.2; Target No. 212-Target HER2/CD3; Target No. 213-Target HER2/Dig; Target No. 214-Target HER2/neu; Target No. 215-Target HER3 ; Target No. 216-TargetHER3, human IgG1; Target No. 217-Target HGF; Target No. 21.8-Target ML-12; Target No. 219~TargethIL13; Target No. 220-Target HIV gp!20; Target No. 221-Target HLA-DR; Target No. 222-Targei hNav1.7; Target No. 223-Target hPG; Target No. 224-Target human TNF; Target No. 225-Targei huTNFR; Target No. 226-Target huTNFRl; Target No. 227-Target ICAM-1; Target No. 228-Target IFNAR1; Target No. 229-Target IFN-a; Target No. 230-Target IGF; Target No. 231-Target IGF; IGF1R; Target No. 232-Target IGF1; Target No. 233-Target IGFIR; Target No. 234-Target IGF1R/Dig; Target No. 235-Target IGF-lR/ErbB3; Target No. 236-Target IGFIR; EGFR; Target No. 237-Target igG4 (CD40); Target No. 238-Target IGHE; Target No. 239-Target IL1; Target No. 240-Target IL10; Target No. 241-Targei IL11; Target No. 242-Target 1L12; Target No. 243-Target 1L12B, IL12 p40, NKSF2, CMLF p40; Target No. 244-Target IL12B, IL12 p40, NKSF2, CMLF p41; Target No. 245-Target TL12p40; Target No. 246-Target IL13; Target No. 247-Target IL13, Human IgG4, Target No. 248-Target 11,13, Human lgG5; Target No. 249-Target 1L17; Target No. 250-Target 11,17A; Target No. 251-Target 1L17A and IL17F; Target No. 252-Target IL17RA; Target No. 253-Target IL18; Target No. 254-Target IL18BP; Target No. 255-Target ILIA; Target No. 256-Target IL1B; Target No. 257-Target IL20; Target No. 258-Target IL20, NGF; Target No. 259-Target IL22; Target No. 260-Target IL23A; Target No. 261-Target IL23pl9 subimit, humanized IgGl; Target No. 262-Target IL23pl9 subunit, humanized IgG2, Target No. 263-Target IL2RA; Target No. 264-Target IL31RA; Target No. 265-Target IL4; Target No. 266-Target IL4R; Target No. 267-Target IL5; Target No. 268-Target IL5RA; Target No. 269-Target IL6; Target No. 270-Target IL6R; Target No. 271-Target IL6R, humanized lgG2; Target No. 272-Target IL7; Target No. 273-Target IL7R; Target No. 274-Target IL8; Target No. 275-Target IL9; Target No. 276-Target ILGF2; Target No. 277-Target integrin 2; Target No. 278-Target integrin α4β7; Target

No. 279-Target mtegrm α4β8; Target No. 280-Target iP-10; Target No. 281-Target IS12B; Target No. 282-Target ITGA2; Target No. 283-Target ITGA4_ITGB7; Target No. 284-Target ITGAL; Target No. 285-Targei ITGAVJTGB3; Target No. 286-Target ITGAVJTGB3; Target No. 287-Target K1)R; Target No. 288-Target KIR2; Target No. 289-Target KIR2D; Target No. 290-Target KLRC1; Target No. 291-Target LAG-3; Target No. 292-Target LecLe.sup.x. Le.sup.aLe.sup.x, Di-Le.sup.a, Le.sup.x containing glycans and L,e sup. a containing glycans; Target No. 293-Target Lewis b (LeB); Target No. 294-Target Lewis Y (LeY); Target No. 295-Target LIGHT/HER2/CD23; Target No. 296-Target LIGHT/HER2/CD24; Target No. 297-Target LIGHT/HER2/CD25 ; Target No. 298-Target LIGHT/HER2/CD26; Target No. 299-Target I.IGHT/HER2/CD27; Target No. 300-Target LIGHT/HER2/CD28; TargetNo. 301-Target LIGHT/HER2/CD29; Target No. 302-Target LIGHT/HER2/CD30; Target No. 303-Target LIGHT/HER2/CD3 1; Target No. 304-Target LIGHT/HER2/CD32, Target No. **305-**Target LINGO-1; Target No. 306-Target LOXL2; Target No. 307-Target LTA; Target No. 308-Target MAGE-A3; Target No. 309-Target MAÏ (myelin associated inhibitor); Target No. 310-Target many targets; Target No. 311-Target MCP-1; Target No. 312-Target MCP-2; Target No. 313-Target MCP-3; Target No. 314-Target MCP-4; Target No. 315-Target MCP-5; Target No. 316-Target MCP-6; Target No. 317-Target MCSP; Target No. 318-Target MEK; Target No. 319-Target mesothelin; Target No. 320-Target MET; Target No. 321-Target MET Receptor; Target No. 322-Target MHC; Target No. 323-Target MHC class II; Target No. 324-Target M1F; Target No. 325-Target MMP3 , Target No. 326-Target molecules on brain microvascular endothelial cells; Target No. 327-Target monosiaio-GM2; Target No. 328-Target MS4A1; Target No. 329-Target MSLN; Target No. 330-Target MST1R; Target No. 331-Target MT4-MMP/EGFR; Target No. 332-Target MTX and EGFR; Target No. 333-Target MTX and hCD-20; Target No. 334-Target MTX and hCD-3; Target No. 335-Target MTX and mCD-3; Target No. 336-Target MUCl; Target No. 337-Target MUCl/MUCSac; Target No. 338-Target MUC5AC; Target No. 339-Target mucin CanAg; Target No. 340-Target N terminus end of properdin; Target No. 341-Target NCAM1; Target No. 342-Target NeuGc, NGNA; Target No. 343-Target neuregulin (NRG); Target No. 344-Target neurokinin B; Target No. 345-Target neurotensin; Target No. 346-Target NGF; Target No. 347-Target NGF; c-MET; Target No. 348-Target N-gly colyl-GM3; Target No. 349-Target NMD A; Target No. 350-TargetNOGO; Target No. 351-Target Nogo receptor-] ; Target No. 352-Target Notch receptor; Target No. 353-Target NOTCH1; Target No. 354-Target NRPl; Target No. 355-Target O-acetylated-GD2; Target No. 356-Target OPGL; Target No. 357-Target OX-40; Target No. 358-Target oxLDL; Target No. 359-Target PAM4 antigens; Target No. 360-Target PD-1; Target No. 361-Target POL, human

IgG4; Target No. 362-Targei PDGFRA; Target No. 363-Target PDGFR-beta; Target No. 364-Target PDGFRp/VEGFA; Target No. 365-Target PD-L1; Target No. 366-Target PD-L1, human TgGl; Target No. 367-Target PD-L2; Target No. 368-Target periostin; Target No. 369-Target PERP; Target No. 370-Target PhosphatidyL-serine, chimeric IgG1; Target No. 371-Target PhosphatidyL-serine, Chimeric IgG2; Target No. 372-Target poiyubiquitin; Target No. 373-TargetPSMA; Target No. 374-Target PVRL4; Target No. 375-Target PVRL5; Target No. 376-Target RANKL; Target No. 377-Target RANKL/PTH; Target No. 378-Target RFB4; Target No. 379-Target RON; Target No. 380-Target RTN4 (NOGO); Target No. 381-Target S1P4; Target No. 382-Target SDC1; Target No. 383-Target selectin: Target No. 384-Target Serum albumin (mouse); Target No. 385-Target Serum albumin or neonatal Fc receptor: Target No. 386-Target sialic acid (NeuSGc or Neu5 Ac); Target No. 387-Target sialyl Tn (sTn); Target No. 388-Target Sialyi-Lewis A (sLeA); Target No. 389-Target sialyltetraosyl carbohydrate (Coio205); Target No. 390-Target SIRPa: Target No. 391-Target SLAMF7; Target No. 392-Target SLC34A2; Target No. 393-Target SOST; Target No. 394-Target STEAPl; Target No. 395-Target sTn; Target No. 396-Target TAC; Target No. 397-Target TAG-72; Target No. 398-Target Tenascin (TNC-A1 or TNC-A4); Target No. 399-Target Tenascin (TNC-A2): Target No. 400-Target tenascin C; Target No. 401-Target tenascin W; Target No. 402-Target tenascin ; Target No. 403-Target Ten-M2; Target No. 404-Target TGF beta 1; Target No. 405-Target TGFbeta; Target No. 406-Target TGF-α, Target No. 407-Target TIGIT, Target No. 408-Target TiM-3; Target No. 409-Target TLR3, Target No. 410-Target Tn antigen, Target No. 411-Target Tn-(MUCl); Target No. 412-TargetTNF; Target No. 413-Target TNFaipha; Target No. 414-Target TNFRSF10B; Target No. 415-Target TNFRSF12A ; Target No. 416-Target TNFRSF8; Target No. 417-Target TNFRSF9 ; Target No. 418-Ta.rget TNFSFI 1 ; Target No. 419-Target TNFSF13B; Target No. 420-Target TPBG; Target No. 421-Target TRAIL-R2; Target No. 422-Target TrkA; Target No. 423-Target TSLP; Target No. 424-Target tumor associated carbohydrate antigen (TAC A); Target No. 425-Target tumor specific glycosyiation of MUC1; Target No. 426-Target tumor-associated calcium signal transducer 2, Target No. 427-Target TYRPl(glycoprotein 75); Target No. 428-Target VEGF; Target No. 429-Target VEGF, c-Met, **CD20,** CD38, IL-8, CD25, CD74, FcalphaRL FcepsilonRI, acetyl choline receptor, fas, fasL, TRAIL, hepatitis virus, hepatitis C virus, envelope E2 of hepatitis C virus, tissue factor, a complex of tissue factor and Factor VIL EGFr, CD4, and CD28: Target No. 430-Target VEGF A; Target No. 431-Target VEGFA, ANGT2; Target No. 432-Target VEGFR2; Target No. 433-Target vimentin; Target No. 434-Target VRGF; Target No. 435-Target VSTM5; Target No. 436-Target VVVF; Target No. 437-Target α6β4 integrin; Target No. 438-Target a-folate receptor,

avβ6integrin, BCMA, B7-H=3, B7-H6, CAiX, CD19, CD20, CD22, CD30, CD33, CD37, CD44, CD44v6, CD44v7/8, CD70, CD123, CD138, CD171, CEA, DLL4, EGP-2, EGP-40, CSPG4, EGFR, EGFR family including ErbB2 (HER2), EGFRvIII, EPCAM, EpbA2, EpCAM, r.\P., FBP, fetal acetylcholine receptor, Fzd7, GD2, GD3, Glypican-3 (GPC3), h5T4, IL-11Rα, IL13R-o2, KDR, κ light chain, λ light chain, LeY, L1CAM, MAGE-AI, mesothelin, MHC presented peptides, MUC1, MX1C16, NCAM, NKG2D ligands, Notch 1, Notch2/3, NY-ESO-L, FRAME, PSCA, PSMA, Sun/ivin, TAG-72, TEMs, TERT, VEGFR2, and ROR1; and Target No. 439-Target αβv6 integrm.

[00282] In Table 9. the description number (Description No.) code is described in the following semi-colon delimited list where the description number is followed by the description (e.g., Description No. 1 with description aglycosylated antibody is shown as Description No. 1-Description aglycosylated antibody). The targets represented by the codes in Table 9 include, but are not limited to. Description No. 1-Descriptionagly cosylated antibody; Description No. 2-DescriptionAmplified variable region; Description No. 3-DescriptionAntibody; Description No. 4-DescriptionAntibody for Puimonary Fibrosis; Description No. 5-DescriptionBinding peptide; Description No. 6-DescriptionBispeciftc; Description No. 7-Descriptionbispecific antibody; Description No. 8-DescriptionBR96 scFv; Description No. 9-DescriptionChain A, Human Iggl Fc Fragment; Description No. 10-DescriptioiiChaiii B, Human iggl Fc Fragment; Description No. ll-DescriptionChixneric antigen receptor with cdl9 Binding domain; Description No. 12-DeseriptionConsensus sequence, Description No. 13-DescriptionConstant region; Description No. 14-DescriptionConstant region IgGl; Description No. 15-DescriptionConstant region IgG2; Description No. 16-DescriptionConstani region IgG3; Description No. 17-DescripiionConstruct; Description No. 18-DescnptionDiabody; Description No. 19-DescriptionDoinain antibody; Description No. 20-DescriptiondsFv; Description No. 21-DescriptionDVD heavy chain; Description No. 22-DescriptionDVD light chain; Description No. 23-DesenptionEGFR-specific variable region and CH2 region; Description No. 24-DescriptionFab Heavy chain, Description No. 25-Description Fab heavy chain-Fc; Description No. 26-Description Fc; Description No. 27-Description Fc domain; Description No. 28-Description Fc polypeptide; Description No. 29-Description fc region Iggl, Description No. 30-Description fibronectin type III (FN3) domain; Description No. 31-Description first Fc domain, isoleucine zipper, XgG2 hinge, and second Fc domain; Description No. 32-Descript on fragment crystal izable region; Description No. 33-Description full sequence; Description No. 34-Description fusion construct; Description No. 35-Description fusion protein, Description No. 36-Description Fusion protein, bispecific; Description No. 37-Description Fusion protein, tumor suppressor protein ephaJecd; Description

No. 38-Description Germline iieavy Chain - variable region; Description No. 39-Description Heavy chain variable region; Description No. 40-Description Heavy chain; Description No. 41-Description Heavy chain - constant region; Description No. 42-Description Heavy Chain - variable region; Description No. 43-Description Heavy Chain (Genetic Recombination}, Antibody for paroxysmal nocturnal hemoglobinuria, Description No. 44-Description Heavy chain 1; Description No. 45-Descr pt on Heavy Chain 1, Antibody for immunosuppressant; Description No. 46-Descnption Heavy chain 2; Description No. 47-Description Heavy chain A; Description No. 48-Description Heavy chain amino acid sequence humanized. Description No. 49-Description Heavy chain antigen binding region, Description No. 50-Description Heavy chain B; Description No. 51-Description Heavy chain caraelidae antibodies; Description No. 52-Description Heavy chain CDR; Description No. 53-Description Heavy Cham CDR 1, inununesuppressant; Description No. 54-Description Heavy Chain CDR 2, immunosuppressant; Description No. 55-Description Heavy Chain CDR 3, immunosuppressant; Description No. 56-Descnption Heavy chain CDR grafted anti-IL-5; Description No. 57-Description Heavy Chain CDR1; Description No. 58-Description Heavy Chain CDR1, Antibody for paroxysmal noctumai hemoglobinuria, Description No. 59-Description Heavy chain CDR 1, Antibody for rheumatoid arthritis; Description No. 60-Description Heavy Chain CDR1, immunesuppressan t; Description No. 61-Description Heavy Cham CDR2; Description No. 62-Description Heavy Chain CDR2, Antibody for paroxysmal nocturnal hemoglobinuria, Description No. 63-Description Heavy chain CDR2, Antibody for rheumatoid arthritis; Description No. 64-Description Heavy Chain CDR2, immuiiesuppressant; Description No. 65-Description Heavy Cham CDR3; Description No. 66-Description Heavy Chain CDR3, Antibody for paroxysmal nocturnal hemoglobinuria; Description No. 67-Desciiption Heavy chain CDR3, Antibody for rheumatoid arthritis; Description No. 68-Description Heavy Chain CDR3, immunosuppressant; Description No. 69-Description Heavy chain chimeric; Description No. 70-Deseription Heavy chain Consensus sequence, Description No. 71-Description Iieavy chain constant; Description No. 72-Description heavy chain constant domain; Description No. 73-Description Heavy chain constant gamma-1; Description No. 74-Descnption Heavy chain constant Ig gamma 1; Description No. 75-Description Heavy chain constant of polypeptide; Description No. 76-Descnption Heavy chain-constant region Hul D10-IgG2M3; Description No. 77-Description Heavy chain constant region, human lgG4; Description No. 78-Description Heavy chain constant region, vvildlype; Description No. 79-Descriptioii Heavy chain constant, CHI; Description No. 80-Descnption Heavy chain constant (CH2, Description No. 81-Description Heavy chain constant, CH3; Description No. 82-Description Heavy chain constant, human IgG; Description No. 83-

Description Heavy chain constant, human IgG4; Description No. 84-Description Heavy chain constant, human TgG4 hingeless; Description No. 85-Description Heavy chain Fab, Description No. 86-Description Heavy chain Fab fragment, Chimeric (anti~alpha2-VH~lGHGl-CHl); Description No. 87-Description Heavy chain gamma consensus sequence; Description No. 88-Description Heavy chain gamma sequence; Description No. 89-Description Heavy chain humanized construct Hi; Description No. 90-Description Heavy chain humanized construct H14; Description No. 91-Description Heavy chain humanized construct H15; Description No. 92-Description Heavy chain humanized construct H16, Description No. 93-Description Heavy chain humanized construct H17; Description No. 94-Description Heavy chain humanized construct H18; Description No. 95-Description Heavy chain humanized construct H19; Description No. 96-Description Heavy chain humanized construct H20; Description No. 97-Description Heavy chain humanized construct H21; Description No. 98-Description Heavy chain humanized construct H22; Description No. 99-Description Heavy chain humanized construct H23; Description No. 100-Description Heavy chain humanized construct H24; Description No. 101-Description Heavy cham humanized construct H25, Description No. 102-Description Heavy chain humanized construct H5; Description No. 103-Description Heavy chain humanized construct H6; Description No. 104-Description Heavy chain humanized construct H700; Description No. 105-Descriptioii Heavy chain IgG4, immimomodulator; Description No. 106-Description Heavy cham immunoglobulin variable region; Description No. 107-Description Heavy chain innnunoglobulin; Description No. 108-Description Heavy chain leader and variable region of the murine anti-IGF-I receptor antibody; Description No. 109-Description Heavy chain mature; Description No. 110-Description Heavy chain mature fragment, Description No. 111-Description Heavy chain mature iramunoglohulin; Description No. 112-Description Heavy chain mature variable region; Description No. 113-Description Heavy chain mature, Antibody for rheumatic diseases; Description No. 114-Description Heavy cham of liuAbF46-H4-AL , human IgG2 hinge and constant region of human IgGl; Description No. 115-Description Heavy chain of huAbF46-H4-Al, human IgG2 hinge and constant region of human IgG2; Description No. 116-Description Heavy chain of huAbF46-H4- A1, U6-HC7 hinge and constant region of human IgGl; Description No. 117-Description Heavy chain polypeptide; Description No. 118-Description Heavy chain protein; Description No. 119-Description Heavy chain sequence; Description No. 120~Description Heavy chain used in humamzation; Description No. 121-Description Heavy chain variable and constant chain; Description No. 122-Description Heavy chain variable domain; Description No. 123-Description heavy chain variable domain H1 ACIO; Description No. 124-Description heavy chain variable domain H2 AC! 1; Description No. 125-

Description heavy cham variable domain I-I3 AC 12; Description No. 126-Description heavy chain variable domain L1 AC 11; Description No. 127-Description heavy chain variable domain L2 AC 12; Description No. 128-Description heavy chain variable domain L3 AC13; Description No. 129-Description Heavy chain variable domain of aiiti-aipha2-integrin; Description No. 130-Description Heavy cham variable domain of anti-alpha2-integrin mAb, Description No. 131-Description Heavy Chain Variable Domain, Antibody for rheumatoid arthritis, psoriatic arthritis, ankylosing spondylitis, Crohn's disease, ulcerative colitis, moderate to severe chronic psoriasis and juvenile idiopathic arthritis, D2E7; Description No. 132-Description Heavy Chain Variable domain, immunesuppressant for lupus; Description No. 133-Description Heavy chain variable domain, murine; Description No. 134-Description Heavy chain variable of scFv, immunesuppressant for lupus; Description No. 135-Description heavy chain variable region (excludes the heavy chain variable region of the ErbB3 binding site of 16F), Description No. 136-Description heavy chain variable region (VH); Description No. 137-Description Heavy chain variable region (with signal sequence removed): Description No. 138-Deseription Heavy-chain variable region 1, Description No. 139-Description Heavy chain variable region 2; Description No. 140-Descnpti on heavy chain variable region and heavy chain; Description No. 141-Description Heavy chain vanabie region and IgGl constant region; Description No. 142-Descri ption Heavy chain variable region chain, Antibody for rheumatoid arthritis; Description No. 143-Description Heavy chain variable region consensus framework: Description No. 144-Description Heavy chain variable region domain (as translated) listed in US5736137; Description No. 145-Deseription Heavy chain variable region domain chain 1, Anti-IgE antibody; Description No. 146-Description Heavy chain variable region domain. Antibody for Fibrotic diseases, scarring, diffuse scleroderma; Description No. 147-Description heavy chain variable region dual variable domain; Description No. 148-Descripti.on. Heavy chain variable region humanized construct H1; Description No. 149-Description Heavy chain variable region humanized construct H14; Description No. 150-Description Heavy chain variable region humanized construct H15: Description No. 151-Descri ption Heavy chain variable region humanized construct H16; Description No. 152-Description Heavy chain variable region humanized construct H17; Description No. 153-Descripiion Heavy chain variable region humanized construct H I 8; Description No. 154-Description Heavy chain variable region humanized construct H19; Description No. 155-Description Heavy chain variable region humanized construct H20; Description No. 156-Description Heavy chain variable region humanized construct H21; Description No. 157-Description Heavy chain variable region humanized construct H22: Description No. 158-Descri ption Heavy chain variable region

humanized construct H23; Description No. 159-Descripiion Heavy chain variable region humanized construct H24; Description No. 160-Description Heavy chain variable region humanized construct H25; Description No. 161-Description Heavy chain variable region humanized construct H5; Descnpiion No. 162-Deseription Heaw chain variable region humanized consiruci H6; Description No. 163-Description Heavy chain variable region humanized construct H700; Description No. 164-Description Heavy chain variable region variant; Description No. 165-Description Heavy chain vanable region with CDRs and human CHl-hinge-agiycosyiCH2CH3.; Description No. 166-Descripiion Heavy chain vanable region with predicted signal; Description No. 167-Description Heavy chain variable region without predicted signal; Description No. 168-Description Heavy chain variable region without signal; Description No. 169-Descripfion Heavy chain vanable region without signal sequence; Description No. 170-Descr ption Heavy chain variable region, Amino acid sequence encoded by the 4-61 gene; Description No. 171-Description Heavy chain variable region. Antibody for acute coronary syndrome, atherosclerosis; Description No. 172-Description Heavy chain variable region. Antibody for allograft rejection; Description No. 173-Description Heavy Chain Variable Region. Antibody for chronic plaque psoriasis; Description No. 174-Description Heavy chain variable region, Antibody for Neuromyelitis optica and NMO Spectrum Disorder; Description No. 175-Description Heavy chain variable region, Antibody for osteoporosis; Description No. 176-Description Heavy chain variable region, Antibody for psoriasis (blocks T-ce!l migration); Description No. 177-Descr ption Heavy chain variable region, Antibody for Pulmonary Fibrosis; Description No. 178-Description Heavy chain variable region. Antibody for rheumatoid arthritis; Description No. 179-Description Heavy chain variable region, camelid derived; Description No. 180-Description Heavy chain variable region, chimeric; Description No. 181-Description Heavy chain variable region, E26 variants; Description No. 182-Description Heavy chain variable region, human IgG1 subgroup III; Description No. 183-Description Heavy chain variable region, humanized, immunoglobulin; Description No. 184-Descri prion Heavy Chain Variable Region, irnniunesuppressant, Description No. 185-Description Heavy chain variable region, immunoglobulin; Description No. 186-Description Heavy chain variable region, or matuie/immunogiobulin; Description No. 187-Description heavy chain variable region, variant; Description No. 188-Description Heavy chain variable region, with peptide signal; Description No. i89-Description Heavy chain variable region-CDRl; Description No. 190-Description Heavy chain variable region-CDR2; Description No. 191-Description Heavy chain variable region-CDR3; Description No. 192-Description Heavy cham variable region-CHI; Description No 193-Description Heavy chain variable, Antibody for allergic reaction peanuts; Description

No. 194-Description Heavy chain variable, Antibody for psoriasis, graft-versus-host disease (prevention), acute kidney transplant rejection; Description No. 195-Description Heavy chain variable, Antibody for rheumatoid arthritis; Description No. 196-Description Heavy chain variable, Antibody for rheumatoid arthritis, lupus nephritis etc, multiple sclerosis; Description No. 197-Description Heavy chain variant; Description No. 198-Description Heavy chain V-D-J assignment; Description No. 199-Description Heavy chain wild-type; Desenption No. 200-Description Heavy Chain with Flag Tag; Description No. 201-Description Heavy chain with signal peptide; Description No. 202-Description Heavy chain, ANGPT2; Description No. 203-Description Heavy chain, Antibody for acute coronary syndrome, atherosclerosis; Description No. 204-Description Heavy chain, Antibody for allergic diseases; Description No. 205-Description Heavy chain, Antibody for allergic disorders; Description No. 206-Description Heavy chain, Antibody for Allograft rejection, intravenous steroid-refractory ulcerative colitis, kidney transplantation, psoriasis; Description No. 207-Description Heavy chain. Antibody for Allograft rejection, graft-versus-host disease; Description No. 208-Description Heavy chain. Antibody for asthma, rheumatoid arthritis, leukemia, inflammatory diseases; Description No. 209-Description Heavy Chain, Antibody for Crohn's disease and rheumatoid arthritis, Description No. 210-Description Heavy chain, Antibody for Crohn's disease, psoriasis, ankylosing spondylitis; Description No. 211-Description Heavy chain, Antibody for Crohn's disease, Psoriasis, Transplantation, Type 1 diabetes, Ulcerative colitis, Multiple sclerosis, Atherosclerosis, Description No. 212-Description Heavy chain, Antibody for diabetes mellitus type 1; Description No. 213-Description Heavy chain, Antibody for diabetes mellitus type 1, psoriasis; Description No. 214-Description Heavy chain. Antibody for diabetes, vascular disease, acne, cancer and psoriasis, Description No. 215-Description Heavy chain, Antibody for idiopathic pulmonary fibrosis; Description No. 216-Description Heavy chain, Antibody for idiopathic pulmonary fibrosis, focal segmental glomerulosclerosis, cancer; Description No. 217-Description Heavy chain. Antibody for osteoporosis; Description No. 218-Description Heavy chain, Antibody for osteoporosis, Denosumab aOPGL-1 ; Description No. 219-Description Heavy Chain, Antibody for paroxysmal nocturnal hemoglobinuria; Description No. 220-Description Heavy Chain, Antibody for Plaque-type psonasis; Description No. 221-Description Heavy chain, Antibody for prevention of organ transplant rejections: Description No. 222-Description Heavy chain, Antibody for psoriasis; Description No. 223-Description Heavy chain, Antibody for psoriasis, organ transplant immunological rejection suppression; Description No. 224-Description Heavy chain. Antibody for Psoriasis, rheumatoid arthritis; Description No. 225-Description Heavy chain, Antibody for Psoriasis, rheumatoid arthritis, sciatica, lumbar radicular

pain; Description No. 226-Description Heavy chain, Antibody for psoriasis, Crohn's disease, multiple sclerosis, Description No. 227-Description Heavy chain. Antibody for Psoriatic arthritis; Description No. 228-Description Heavy chain, Antibody for rheumatic diseases; Description No. 229-Description Heavy chain, Antibody for rheumatoid arthritis; Description No. 230-Description Heavy chain. Antibody for Rheumatoid arthritis, disease-modifying anti-rheumatic drug; Description No. 231-Description Heavy chain, Antibody for Rheumatoid arthritis, Multiple sclerosis; Description No. 232-Descriptiott Heavy Chain, Antibody for rheumatoid arthritis, psoriatic arthritis, ankylosing spondylitis, Crohn's disease, ulcerative colitis, moderate to severe chronic psoriasis and juvenile idiopathic arthritis, D2E7; Description No. 233-Description Heavy chain, Antibody for Systemic lupus erythematosus; Description No. 234-Description Heavy Chain, Antibody for ulcerative colitis and Crohn's disease; Description No. 235-Description Heavy chain, Anu-EGFr, Description No. 236-Description Heavy chain, anti-1GFR Fab-hli GHT; Description No. 237-Descript on Heavy chain, chimeric; Description No. 238-Description Heavy chain, fusion; Description No. 239-Description Heavy chain, human subgroup ïï; Description No. 240-Description Heavy chain, immunogiobulin; Description No. 241-Description Heavy Chain, immunosuppressant; Description No. 242-Description Heavy chain, immunosuppressive drug; Description No. 243-Description Heavy chain, raus musculus; Description No. 244-Description Heavy7 chain, VEGFA; Description No. 245-Description Heavy chain-constant and variable region; Description No. 246-Description Heavy chain-constant region; Description No. 247-Description Heavy chain-constant region of HulDlO-IgGl; Description No. 248-Description Heavy chain-variable region; Description No. 249-Description Heavy chain- variable region of Huldl( )-IgG2M3 or HulDlO-IgGl; Description No. 250-Description Heavy CHIMERIC chain 1, immunesuppressant, Anti-CD25 antibody, Description No. 251-Description Heavy -chain-CDRI; Description No. 252-Description Heavy-chain~CDR2; Description No. 253-Descriptioii Heavy-chain-CDR3; Description No. 254-Descriptioii Herceptin Heavy chain variable region-CHI (Heavy chain variable region(l-120)- -Ci-ll(121-218)), Description No. 255-Description H-GAMMA-1 (Heavy chain variable region(1-118>fCHl(119~216>fmNGE-REGiON(217~231)+CH2(232~341)+ CH3(342-448)); Description No. 256-Description H-GAMMA-1 (Heavy chain variable region(l-120)+CH 1(121-218)+T-nNGE-REGION(21 9-233)+CH2(234-343>+CH3(344-450); Description No. 257-Descnption H-GAMMA-1 (Heavy chain variable region(1-121)+CH1(122-219)+f NGE-REGiON(220-220)÷CH2(221-330)÷CH3(331-437); Description No. 258-Description Hinge, CH2 and CH3 domain of IgGl, Description No. 259-Description huHMFGl-scFv; Description No. 260-Description HuLuc-63 Heavy chain variable CDR1; Description No. 261-Description

HuLuc-63 Heavy chain variable CDR2; Description No. 262-Description HuLuc-63 Heavy chain variable CDR3; Description No. 263-Descripiion HuLuc-63 Light chain variable CDR1; Description No. 264-Description HuLuc-63 Light chain variable CDR2; Description No. 265-Description HuLuc-63 Light chain variable CDR3; Description No. 266-Description human Heavy chain - constant region; Description No. 267-Description Human IgG2 hinge region; Description No. 268-Description Humanized Heavy chain variable region-CHI (Heavy chain variable region(l-I21)+CHl(122-219)); Description No. 269-Description Humanized Heavy chain variable region-CH 1(Heavy chain variable region(l-121) + CHI(1 22-201); Description No. 270-Descriptiori Humanized Light cham-KAPPA (V-KAPPA(l-107)+C-KAPPA(108-21 1)), Description No. 271-Description Humanized Light chain-KAPPA (V-KAPPA(1-107)+C-KAPPA(1 08-214)); Description No. 272-Desciiption Humanized L-KAPPA, Description No. 273-Descripiion Human-mouse chimeric anti-CD20 Heavy chain 1; Description No. 274-Description Human-mouse chimeric anti-CD20 Light chain 1; Description No. 275-Description Ig gamma-1 chain C region; Description No. 276-Description Ig kappa constant region; Description No. 277-Description IGHG1 constant region; Description No. 278-Description immunosuppressive drug; Description No. 279-Description Isoleucine zipper; Description No. 280-Description Kappa constant region; Description No. 281-Description kappa light chain; Description No. 282-Description Kappa Light Cham - variable region; Description No. 283-Description Lambda light chain; Description No. 284-Description Light chain; Description No. 285-Description Light Chain - variable region; Description No. 286-Description Light Chain (Genetic Recombination), Antibody for paroxysmal nocturnal hemoglobinuria; Description No. 287-Description Light chain (L-KAPPA (V-KAPPA(1-107)÷C-KAPPA(108-214)); Description No. 288-Description Light chain 1; Description No. 289-Description Light Chain 1, Antibody for immunosuppressant; Description No. 290-Description Light chain L Anti-HER2; Description No. 291-Description Light chain 2; Description No. 292-Description Light chain 3; Description No. 293-Description Light chain 4; Description No. 294-Description Light chain amino acid sequence humanized; Description No. 295-Description Light chain and lambda constant region; Description No. 296-Description Light chain antigen binding region; Description No. 2.97-Description Light chain CDR; Description No. 298-Descripiion Light Chain CDR 1, immunesuppressant; Description No. 299-Description Light Chain CDR 2, iramunesuppressant; Description No. 300-Description Light Chain CDR 3, immunesuppressant; Description No. 301-Description Light chain CDR grafted anti-IL-5; Description No. 302-Description Light chain CDRI; Description No. 303-Description Light Chain CDRI, Antibody for paroxysmal nocturnal hemoglobinuria; Description No. 304-Description Light chain CDRI, Antibody for rheumatoid

arthritis; Description No. 305-Description Light Chain CDRL immunesuppressant; Description No. 306-Description Light chain CDR2, Description No. 307-Description Light Cham CDR2, Antibody for paroxysmal nocturnal hemoglobinuria; Description No. 308-Description Light chain CDR2, Antibody for rheumatoid arthritis; Description No. 309-Desenption Light Cham CDR2, immunosuppressant; Description No. 310-Description Light chain CDR3; Description No. 311-Description Light Chain CDR3, Antibody for paroxysmal nocturnal hemoglobinuria; Description No. 312-Description Light chain CDR3, Antibody for rheumatoid arthritis; Description No. 313-Description Light Chain CDR3, immunesuppressant, Description No. 314-Descnption Light chain chimeric; Description No. 315-Description Light chain Ck, Description No. 316-Description Light chain consensus, hum κï, light kappa subgroup I; Description No. 317-Description Light chain constant region; Description No. 318-Deseription Light chain constant region kappa, Description No. 319-Descnption Light chain constant region of HulDlO-lgG2M3 or HulD10-IgGl .; Descnption No. 320-Description Light chain constant region, kappa: Description No. 321-Description Light chain constant region, lambda, human; Description No. 322-Description Light chain D; Description No. 323-Description Light chain E, Description No. 324-Description Light chain F; Description No. 325-Description Light chain humanized construct L11; Description No. 326-Description Light chain humanized construct L13; Description No. 327-Descriptioii Light chain humanized construct L14; Description No. 328-Description Light chain humanized construct L15; Description No. 329-Description Light chain humanized construct L16, Description No. 330-Description Light chain humanized construct L17; Description No. 331-Description Light chain humanized construct L18; Description No. 332-Descnption Light chain humanized construct L6; Description No. 333-Description Light chain IgG4, immunomodulator; Description No. 334-Descnption Light chain immunoglobulin variable region; Description No. 335-Description Light chain immunoglobulin: Description No. 336-Description Light chain kappa; Description No. 337-Description Light chain Kappa, Antibody for allergic reaction peanuts; Description No. 338-Description Light chain kappa consensus framework, human; Description No. 339-Description Light chain kappa consensus sequence; Description No. 340-Description Light chain kappa constant; Descnption No. 341-Description Light chain kappa constant region; Description No. 342-Description Light chain kappa sequence, Description No. 343-Description Light chain kappa variable region, Description No. 344-Description Light chain leader and variable region of the murine anti-IGF-l receptor antibody; Description No. 345-Descnption Light chain mature; Description No. 346-Description Light chain mature fragment; Description No. 347-Description Light chain mature immunoglobulin: Description No. 348-Description Light chain mature protein, Antibody for

rheumatic diseases, Description No. 349-Description Light chain mature vanabie region; Description No. 350-Description Light chain of huAbF46~H4~Al(H36Y) and human kappa constant region; Description No. 351-Description light chain polypeptide; Description No. 352-Description Light cham protein; Description No. 353-Description Light cham sequence; Description No. 354-Description Light cham used in humanization; Description No. 355-Descriplion Light chain variable and constant chain; Description No. 356-Description Light chain variable domain of anti-alpha2.-mtegrin; Description No. 357-Description Light chain vanabie domam of anti-alpha2-integrin mAh; Description No. 358-Description Light Chain Variable Domain, Antibody for rheumatoid arthritis, psoriatic arthritis, ankylosing spondylitis, Crohn's disease, ulcerative colitis, moderate to severe chronic psoriasis and juvenile idiopathic arthritis, D2E7; Description No. 359-Description Light chain variable domain, immunosuppressant for lupus, Description No. 360-Description Light chain variable kappa; Description No. 361-Description Light chain variable kappa, Amino acid sequence encoded by the VK gene; Description No. 362-Description Light chain variable of scFv, imniunesuppressant for lupus, Description No. 363-Description Light chain -variable region; Description No. 364-Description Light chain variable region; Description No. 365-Description light chain variable region (excludes the light chain variable region sequence of the ErbB3 binding site of 16F); Description No. 366-Description light cham variable region (excludes the light chain variable region sequence of the IGF-1R binding site of 16F); Description No. 367-Description light cham variable region (VL), Description No. 368-Description Light chain variable region 1; Description No. 369-Descnption Light chain variable region 2; Description No. 370-Description Light chain variable region and human IgG1 constant region; Description No. 371-Description light chain variable region and light chain; Description No. 372-Description Light cham variable region consensus framework; Description No. 373-Descri pt on Light chain variable region domam (as translated) listed in LS5736137; Description No. 374-Description Light chain variable region domam cham 1, Anti-IgE antibody; Description No. 375-Description Light chain variable region domain listed in US5736137 (with signal sequence removed); Description No. 376-Description Light chain variable region domain, Antibody for Fibrotic diseases, scarring, diffuse scleroderma; Description No. 377-Description light chain variable region dual variable domain; Description No. 378-Description Light chain variable region humanized construct L1S; Description No. 379-Description Light chain variable region humanized construct L13; Description No. 380-Descriptioii Light cham variable region humanized construct L14; Description No. 381-Description Light cham variable region humanized construct L15; Description No. 382-Description Light chain variable region humanized construct L16;

Description No. 383-Description Light chain variable region humanized construct L17; Descnption No. 384-Description Light chain variable region humanized construct L15; Description No. 385-Description Light chain variable region humanized construct L6; Description No. 386-Description Light cham variable region kappa; Description No. 387-Description Light chain variable region of Hu1D10-IgG2M3 or Hu1D10-IgG1; Descnption No. 388-Descripiion Light chain variable region variant; Description No. 389-Description Light chain variable region with predicted signal; Description No. 390-Descriprion Light cham variable region without predicted signal; Description No. 391-Description Light chain variable region without signal sequence, Description No. 392-Description Light chain variable region. Antibody for acute coronary syndrome, atherosclerosis; Description No. 393-Description Light chain variable region. Antibody for allograft rejection: Description No. 394-Description Light Chain Variable Region, Antibody for chronic plaque psoriasis; Description No. 395-Description Light chain variable region, Antibody for idiopathic pulmonary fibrosis, focal segmental glomerulosclerosis, cancer; Description No. 396-Description Light chain variable region, Antibody for Neuromyelitis optica and NMO) Spectrum Disorder; Description No. 397-Descnption Light Cham Variable Region, Antibody for osteoporosis; Description No. 398-Description Light chain variable region. Antibody for psoriasis (blocks T-cell migration); Description No. 399-Description Light chain variable region, Antibody for Pulmonary Fibrosis; Description No. 400-Description Light cham variable region. Antibody for rheumatoid arthritis; Description No. 401-Description Light cham variable region. camelid derived; Description No. 402-Description Light chain variable region, chimeric: Description No. 403-Description Light chain variable region, Chimeric antigen receptor with cd!9Binding domain; Description No. 404-Description Light chain variable region, E26 variants, Description No. 405-Description Light chain variable region. Human kappa; Description No. 406-Description Light chain variable region, humanized; Description No. 407-Description Light chain variable region, humanized, immunoglobulin; Description No. 408-Description Light Chain Variable Region, immunesuppressant, Description No. 409-Description Light chain variable region, immunoglobulin; Description No. 410-Description Light chain variable region, or mature/iinmunogiobulin; Description No. 411-Description tight chain variable region, variant, Description No. 412-Description Light chain variable region; Light chain C, Description No. 413-Description Light chain variable region; Light chain D; Description No. 414-Deseription Light chain variable region; Light chain E; Description No. 415-Description Light cham variable region; Light chain F; Description No. 416-Description Light cham variable region-CDRl From USS557243; Description No. 417-Descr ption Light chain variable region-CDR2 From

US8557243; Description No. 418-Description Light chain variable region-CDR3 From US8557243; Description No. 419-Description Light chain variable, Antibody for psoriasis, graft-versus-host disease (prevention), acute kidney transplant rejection; Description No. 420-Description Light chain variable, Antibody for rheumatoid arthritis; Description No. 421-Description Light chain variable, Antibody for rheumatoid arthritis, lupus nephritis etc, multiple sclerosis: Description No. 422-Description Light chain variant; Description No. 423-Description Light chain V-J assignment; Description No. 424-Description Light chain wild-type; Description No. 425-Description Light chain with signal peptide: Description No. 426-Description Light chain, 7F10Fab-hLTGHT fusion; Description No. 427-Description Light chain, ANGPT2; Description No. 428-Description Light chain. Antibody for acute coronary syndrome, atherosclerosis; Description No. 429-Description Light chain. Antibody for allergic diseases; Description No. 430-Description Light chain. Antibody for allergic disorders; Description No. 431-Description Light chain, Antibody for Allograft rejection, , intravenous steroid-refractory ulcerative colitis, kidney transplantation, psoriasis; Description No. 432-Descriptton Light chain, Antibody for Allograft rejection, graft-versus-host disease; Description No. 433-Description Light chain. Antibody for asthma, rheumatoid arthritis, leukemia, inflammatory diseases,; Description No. 434-Description Light Chain. Antibody for Crohn's disease and rheumatoid arthritis; Description No. 435-Description Light chain. Antibody for Crohn's disease, psoriasis, ankylosing spondylitis; Description No. 436-Description Light chain, Antibody for Crohn's disease, Psoriasis, Transplantation, Type 1 diabetes, Ulcerative colitis, Multiple sclerosis, Atherosclerosis; Description No. 437-Description Light chain, Antibody for diabetes mellitus type 1, psoriasis; Description No. 438-Description Light chain. Antibody for diabetes mellitus type 2; Description No. 439-Description Light chain, Antibody for diabetes, vascular disease, acne, cancer and psoriasis; Description No. 440-Description Light chain. Antibody for Idiopathic pulmonary fibrosis; Description No. 441-Description Light chain, Antibody for idiopathic pulmonary' fibrosis, focal segmental glomerulosclerosis, cancer; Description No. 442-Description Light chain, Antibody for osteoporosis; Description No. 443-Description Light chain, Antibody for osteoporosis, Denosumab aOPGL-1; Description No. 444-Description Light Chain, Antibody for paroxysmal nocturnal hemoglobinuria; Description No. 445-Description Light Chain, Antibody for Plaque-type psoriasis; Description No. 446-Description Light chain. Antibody for prevention of organ transplant rejections; Description No. 447-Description Light chain, Antibody for psoriasis; Description No. 448-Description Light chain, Antibody for psoriasis, organ transplant immunological rejection suppression; Description No. 449-Descnption Light chain, Antibody for Psoriasis, rheumatoid arthritis; Description No. 450-Description Light chain,

Antibody for Psoriatic arthritis; Description No. 451-Description Light chain. Antibody for rheumatic diseases, Description No. 452-Description Light chain. Antibody for rheumatoid arthritis; Description No. 453-Description Light chain, Antibody for Rheumatoid arthritis, disease-modifying anti-rheumatic drag; Description No. 454-Desenption Light chain, Antibody for Rheumatoid arthritis, Multiple sclerosis, Description No. 455-Descnption Light Chain, Antibody for rheumatoid arthritis, psoriatic arthritis, ankylosing spondylitis, Crohn's disease, ulcerative colitis, moderate to severe chronic psoriasis and juvenile idiopathic arthritis, D2E7; Description No. 456-Description Light chain, Antibody for Systemic lupus erythematosus; Description No. 457-Description Light Chain, Antibody for ulcerative colitis and Crohn's disease; Description No. 458-Description Light chain, anti~CD23 Fab-hLIGHT fusion; Description No. 459-Descriptioii Light chain, chimeric; Description No. 460-Description Light chain, Chimeric (anti-alpha2-VL-IGKC-CL); Description No. 461-Description Light chain, human subgroup; Description No. 462-Description Light Chain, immunesuppressant; Description No. 463-Desenption Light chain, immunosuppressive drag; Description No. 464-Description Light chain, kappa constant; Lambda chain constant region, Description No. 465-Description Light chain, lambda constant, Description No. 466-Description Light chain, lambda human Ig; Description No. 467-Description Light chain, mus rausculus; Description No. 468-Description Light chain, VEGFA; Description No. 469-Description Light chain-variable region; Description No. 470-Description Light CHIMERIC chain 1, immunesuppressant, Anti-CD25 antibody, Description No. 471-Description L-KAPPA (V-KAPPA(1-107)÷C-KAPPA(108-214}}; Description No. 472-Description MAbl7-lA gamma; Description No. 473-Description MAb17-1A kappa; Description No. 474-Description Mouse Anti-CD20 Heavy chain; Description No. 475-Description Mouse Anti-CD20 Light chain, Description No. 476-Description Nanobody; Description No. 477-Description Polypeptide; Description No. 478-Description polypeptide. Antibody for tiirombotic thrombocytopenic purpura, acute coronary syndrome,, Description No. 479-Description Scf Light chain variable region-Heavy; Description No. 480-Description ScFv; Description No. 481-Description scFv fusion protein; Description No. 482-Descnption Scfv Heavy-Light; Description No. 483-Description scFv immunesuppressant for lupus, Description No. 484-Descnption scFv, Antibody for allergic reaction peanuts; Description No. 485-Description ScFv, BHA10 ScFvs with S46L(VL) stabilizing mutation; Description No. 486-Description ScFv, BHA10 ScFvs with V55G(VL) stabilizing mutation; Description No. 487-Descriptioii Scfv, Chimeric antigen receptor with cdl9Binding domain; Description No. 488-Description scFv-CH chain, Description No. 489-Description SEA/B-120; Description No. 490-Description secretory signal sequence of Heavy

chain; Description No. 491-Description Single chain; Description No. 492-Description Single chain antibody; Description No. 493~Descri prion Single chain scFv; Description No. 494-Descripiion single chain variable fragment; Description No. 495-Description single chain variable fragmeni (scFv); Description No. 496-Description single chain variable region; Description No. 497-Descripiion Single heavy chain variable domain; Description No. 498-Description Single variable domain antibody; Description No. 499-Description Single-chain fusion peptide; Description No. 500-Description single-domain; Description No. 501-Description single-domain antibody (dAb), Description No. 502-Descnption single-domain antibody (sdAb); Description No. 503-Description Small modular immunopharmaceuticaJ (smip) polypeptide; Description No. 504-Description Variable domain antibody; Description No. 505-Description Variable region: Description No. 506-Deseription variant Fc region; Description No. 507-Description VI!~VL; and Description No. 508-Description VL-VH.

[00283] In one embodiment the payload region of the AAV particle comprises one or more nucleic acid sequences encoding Priiximab, a fragment or variant thereof. As a non-limiting example, the pavioad region of the AAV particle comprises one or more nucleic acid sequences encoding Priiximab may be used to treat, prevent and/or reduce the effects of multiple sclerosis. As another non-limiting example, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding Priiximab, a fragment or variant thereof may be used to treat, prevent and/or reduce the effects of Crohns Disease.

[00284] In one embodiment, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding Rovelizumab, a fragment or variant thereof. As a non-limiting example, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding Rovelizumab, a fragment or variant thereof may be used to treat, prevent and/or reduce the effects of multiple sclerosis.

[ΘΘ285] In one embodiment, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding Nerelimomab, a fragment or variant thereof. As anon-limiting example, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding Nerelimomab, a fragment or variant thereof may be used as an immunosuppressant.

[00286] In one embodiment, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding BAYX135 1, a fragment or variant thereof. As a non-limiting example, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding BAYX1351, a fragment or variant thereof may be used as an immunosuppressant

[00287] In one embodiment, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding Clenobximab (also known as CE9y4PE, IDEC-151 and

PRIMATIZED®), a fragment or variant thereof. As a non-limiting example, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding Cienoiiximab (also known as CE9y4PE, IDEC-151 and PRIMATIZED®), a fragment or variant thereof may be used to treat, prevent or reduce the effects of rheumatoid arthritis and/or astiima. As a non-limiting example, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding the heavy chain of Cienoiiximab (also known as CE9y4PE, IDEC-151 and PRIMATIZED®), a fragment or variant thereof may be used to treat, prevent or reduce the effects of rheumatoid arthritis and/or astiima. As a non-limiting example, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding the light chain of Cienoiiximab (also known as CE9y4PE, IDEC~i51 and PRIMATIZED®), a fragment or variant thereof may be used to treat, prevent or reduce the effects of rheumatoid arthritis and/or asthma. As anon-limiting example, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding the heavy chain of Cienoiiximab (also known as CE9y4PE, IDEC-151 and PRIMATIZED®) as described in US6136310 as SEQ ID NO: 11 (the contents of which are herein incorporated by reference in its entirety), a fragment or variant thereof may be used to treat, prevent or reduce the effects of rheumatoid arthritis and/or asthma. As anon-limiting example, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding the light chain of Cienoiiximab (also known as CE9y4PE, IDEC-151 and PRIMATIZED®) as described in US6136310 as SEQ ID NO: 5 (the contents of which are herein incorporated by reference in its entirety), a fragment or variant thereof may be used to treat, prevent or reduce the effects of rheumatoid arthritis and/or asthma.

[00288] In one embodiment, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding Maslimomab, a fragment or variant thereof. As a non-limiting example, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding Maslimomab, a fragment or variant thereof may be used as an immunosuppressant.

[00289] In one embodiment, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding Atorolimumab (also known as P3x22914G4), a fragment or variant thereof. As a non-limiting example, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding Atorolimumab (also known as P3x22914G4), a fragment or variant thereof may be used as *an* immunosuppressant.

[ΘΘ290] In one embodiment, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding Vapaliximab (also known as 2D10), a fragment or variant thereof. As anon-limiting example, the payload region of the AAV particle comprises one or

more nucleic acid sequences encoding Vapaiiximab (also known as 2D10), a fragment or variant thereof may be used as an immunosuppressant.

[00291] In one embodiment, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding Ziralimuniab (also known as ABX-RB2, cem2.6), a fragment or variant thereof. As a non-limiting example, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding Zira!imumab (also known as ABX-RB2, cem2.6), a fragment or variant thereof may be used to treat, prevent and/or reduce the effects of cancer, inflammation and/or immune system disorders.

[00292] In one embodiment, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding Zoiimoraab aritox (also known as H65-ricin A chain iminunotoxin and H65-RTA), a fragment or variant thereof. As a non-limiting example, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding Zoliraomab aritox (also known as H65-ricm A chain immunotoxin and H65-RTA), a fragment or variant thereof may be used to treat, prevent or reduce the effects of systemic lupus erythematosus, graft-versus-host disease and/or cutaneous T cell lymphoma.

[00293] In one embodiment, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding Zanolimumab (also known as HuMax-CD4), a fragment or variant thereof. As a non-limiting example, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding Zanolimumab (also known as HuMax-CD4), a fragment or variant thereof may be used to treat, prevent or reduce the effects of rheumatoid arthritis, psoriasis and/or T-ceil lymphoma.

[00294] In one embodiment, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding Bertilimumab (also known as CAT-213), a fragment or variant thereof. As a non-limiting example, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding Bertilimumab (also known as CAT-213), a fragment or variant thereof may be used to treat, prevent or reduce the effects of allergies.

[00295] In one embodiment, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding Pascolizumab (also known as SB-240683), a fragment or variant thereof. As a non-limiting example, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding Pascolizumab (also known as SB-240683), a fragment or variant thereof may be used to treat, prevent or reduce the effects of allergies.

[00296] In one embodiment, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding Odulimomab (also known as afolimomab, anti-LFAl and ANTILFA), a fragment or variant thereof. As a non-limiting example, the payload region of the

AAV particle comprises one or more nucleic acid sequences encoding Odulimomab (also known as afolimomah. anti-LFAS and ANTILFA), a fragment or variant thereof may be used to treat, prevent or reduce the effects of allograft rejection.

[00297] In one embodiment, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding Eniimomab pegol. a fragment or variant thereof. As a non-limiting example, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding Eniimomab pegol, a fragment or variant thereof may be used to treat, prevent or reduce the effects of renal transplant rejection.

[00298] In one embodiment, the payload region of the AAV particle comprises a nucleic acid sequence encoding an antibody or a fragment thereof as described in United States Publication Nos. US20130122003, US20150056211, US20160069US2015005621L, US20160069894 or United States Patent No. US7524496. In a non-limiting example, the antibody targets IL-6. In another non-limiting example, the antibody targets EGF.

Migraine and Pain Antibodies

[00299] In one embodiment, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding one or more of the migraine and pain payload antibody polypeptides hsted in Table 10 (MP1-MP564; SEQ ID MO: 3453-3459, 3856. 3890-3898, 4232-4237, 5220-5239, 6406-6429, 6454-6639, 6955-6956, 7905, 8797-8821, 8842-9026, 9288, 17659-17755).

Table 10. Migraine and Pain Antibodies

Antibody No.	Target	Description	Antibody Name	Reference Information	SEQ ID NO
MP1	CGRP	Heavy chain	G1. cluster headache	US9115194 SEQ ID NO: 11	17659
MP2	CGRP	Heavy chain	10E4	US9102731 SEQ ID NO: 36	17660
MP3	CGRP	Heavy chain	11H9	US9102731 SEQ ID NO: 38	17661
MP4	CGRP	Heavy chain	12G8 HL	US9102731 SEQ ID NO: 39	17662
MP5	CGRP	Heavy chain	13H2	US9102731 SEQ ID NO: 40	17663
MP6	CGRP	Heavy chain	32H7	US9102731 SEQ ID NO: 41	17664
MP7	CGRP	Heavy chain	A	US20120294802 SEQ ID NO: 3	17665
MP8	CGRP	Heavy chain	Ab1	US20120294802 SEQ ID NO: 4	17666
MP9	CGRP	Heavy chain	Ab10	US20120294802 SEQ ID NO: 94	17667
MP10	CGRP	Heavy chain	Ab11	US20120294802 SEQ ID NO: 104	17668
MP11	CGRP	Heavy chain	Ab12	US20120294802 SEQ ID NO: 114	17669
MP12	CGRP	Heavy chain	Ab13	US20120294802 SEQ ID NO: 124	17670
MP13	CGRP	Heavy chain	02E7	US9102731 SEQ ID NO: 31	17671
MP14	CGRP	Heavy chain	Ab14	US20120294802 SEQ ID NO: 134	17672
MP15	CGRP	Heavy chain	Ab2	US20120294802 SEQ ID NO: 14	17673
MP16	CGRP	Heavy chain	Ab3	US20120294802 SEQ ID NO: 24	17674

MP17	CGRP	Heavy chain	Ab4	US20120294802 SEQ ID NO: 34	17675
MP18	CGRP	Heavy chain	Ab5	US20120294802 SEQ ID NO: 44	17676
MP19	CGRP	Heavy chain	Ab6	US20120294802 SEQ ID NO: 54	17677
MP20	CGRP	Heavy chain	Ab7	US20120294802 SEQ ID NO: 64	17678
MP21	CGRP	Heavy chain	Ab8	US20120294802 SEQ ID NO: 74	17679
MP22	CGRP	Heavy chain	Ab9	US20120294802 SEQ ID NO: 84	17680
MP23	CGRP	Heavy chain	B	US20120294802 SEQ ID NO: 13	17681
MP24	CGRP	Heavy chain	01E11/04E4/09D4	US9102731 SEQ ID NO: 29	17682
MP25	CGRP	Heavy chain	C	US20120294802 SEQ ID NO: 23	17683
MP26	CGRP	Heavy chain	D	US20120294802 SEQ ID NO: 33	17684
MP27	CGRP	Heavy chain	E	US20120294802 SEQ ID NO: 43	17685
MP28	CGRP	Heavy chain	F	US20120294802 SEQ ID NO: 53	17686
MP29	CGRP	Heavy chain	G	US20120294802 SEQ ID NO: 63	17687
MP30	CGRP	Heavy chain	H	US20120294802 SEQ ID NO: 73	17688
MP31	CGRP	Heavy chain	I	US20120294802 SEQ ID NO: 83	17689
MP32	CGRP	Heavy chain	J	US20120294802 SEQ ID NO: 93	17690
MP33	CGRP	Heavy chain	K	US20120294802 SEQ ID NO: 103	17691
MP34	CGRP	Heavy chain	L	US20120294802 SEQ ID NO: 113	17692
MP35	CGRP	Heavy chain	01H7	US9102731 SEQ ID NO: 30	17693
MP36	CGRP	Heavy chain	M	US20120294802 SEQ ID NO: 123	17694
MP37	CGRP	Heavy chain	N	US20120294802 SEQ ID NO: 133	17695
MP38	CGRP	Heavy chain	03B6	US9102731 SEQ ID NO: 32	17696
MP39	CGRP	Heavy chain	03C8/05F5/12E8	US9102731 SEQ ID NO: 33	17697
MP40	CGRP	Heavy chain	04H6	US9102731 SEQ ID NO: 34	17698
MP41	CGRP	Heavy chain	09F5	US9102731 SEQ ID NO: 35	17699
MP42	CGRP	Heavy chain	11D11	US9102731 SEQ ID NO: 37	17700
MP43	TrkA	Heavy chain	BXhVH1	WO2009098238 SEQ ID NO: 1	3453
MP44	TrkA	Heavy chain	BXhVH2	WO2009098238 SEQ ID NO: 2	3455
MP45	TrkA	Heavy chain	BXhVH3	WO2009098238 SEQ ID NO: 3	3456
MP46	TrkA	Heavy chain	BXhVH4	WO2009098238 SEQ ID NO: 4	3457
MP47	TrkA	Heavy chain	BXhVH5	WO2009098238 SEQ ID NO: 5	3458
MP48	TrkA	Heavy chain	BXhVH5VL1	US20150183885 SEQ ID NO: 28	5220
MP49	TrkA	Heavy chain	GBR VH5(G42E)VL1	US20150183885 SEQ ID NO: 53	5224
MP50	TrkA	Heavy chain	GBR VH5(K3Q)VL1	US20150183885 SEQ ID NO: 50	5221
MP51	TrkA	Heavy chain	GBR VH5(K3Q, A49S, Y50A)VL1	US20150183885 SEQ ID NO: 61	5232
MP52	TrkA	Heavy chain	GBR VH5(K3Q, A49S, Y50A,P60A, T62S)VL1	US20150183885 SEQ ID NO: 66	5237
MP53	TrkA	Heavy chain	GBR VH5(K3Q,	US20150183885 SEQ ID NO: 62	5233

			P60A, T62S)VL1		
MP54	TrkA	Heavy chain	GBR VH5(K3Q, T40A)VL1	US20150183885 SEQ ID NO: 58	5229
MP55	TrkA	Heavy chain	GBR VH5(K3Q, T40A, P60A,T62S)VL1	US20150183885 SEQ ID NO: 63	5234
MP56	TrkA	Heavy chain	GBR VH5(K3Q, T40A, R44G, A49S, Y50A, P60A, T62S)VL1	US20150183885 SEQ ID NO: 67	5238
MP57	TrkA	Heavy chain	GBR VH5(K3Q, T40A, R44G, A49S, Y50A, P60A, T62S, R94K)VL1	US20150183885 SEQ ID NO: 68	5239
MP58	TrkA	Heavy chain	GBR VH5(K3Q, T40A, R44G,A49S, Y50A)VL1	US20150183885 SEQ ID NO: 65	5236
MP59	TrkA	Heavy chain	GBR VH5(K3Q, V37A)VL1	US20150183885 SEQ ID NO: 56	5227
MP60	TrkA	Heavy chain	GBR VH5(K3Q, V37A)VL1(*)	US20150183885 SEQ ID NO: 57	5228
MP61	TrkA	Heavy chain	GBR VH5(K3Q, V37A, R44G)VL1	US20150183885 SEQ ID NO: 60	5231
MP62	TrkA	Heavy chain	GBR VH5(K3Q, V37A, T40A,P60A, T62S)VL1	US20150183885 SEQ ID NO: 64	5235
MP63	TrkA	Heavy chain	GBR VH5(P60A, T62S)VL1	US20150183885 SEQ ID NO: 59	5230
MP64	TrkA	Heavy chain	GBR VH5(R94K)VL1	US20150183885 SEQ ID NO: 55	5226
MP65	TrkA	Heavy chain	GBR VH5(V37A)VL1	US20150183885 SEQ ID NO: 51	5222
MP66	TrkA	Heavy chain	GBR VH5(V37A)VL1(*)	US20150183885 SEQ ID NO: 52	5223
MP67	TrkA	Heavy chain	GBR VH5(V89L)VL1	US20150183885 SEQ ID NO: 54	5225
MP68	TrkA	Heavy chain	HUVHWOV	WO2009098238 SEQ ID NO: 6	3459
MP69	TrkA	Heavy chain	mVHEP	WO2009098238 SEQ ID NO: 15	3454

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MP72	GFRa3	Heavy chain variable region	H4H2207N|	US8968736 SEQ ID NO: 2	6413
MP73	GFRa3	Heavy chain variable regiors	H4H22 10N	US8968736 SEQ ID NO: 66	6427
MP74	GFRa3	Heavy chain variable region	H4H2212N	US8968736 SEQ ID NO: 18	641 1
MP75	GFRa3	Heavy chain variable regiors	H4H2234N	US8968736 SEQ ID NO: 82	6428
MP76	GFRa3	Heavy chain variable region	H4H2236N3	US8968736 SEQ ID NO: 34	6422
MP77	GFRa3	Heavy chain variable region	H4H2243N2	US8968736 SEQ ID NO: 50	6426
MP78	C-FRa3	Heavy chain variable region	H4H2291S	US8968736 SEQ ID NO: 98	6429
MP79	GFRa3	Heavy chain variable region	H4H2292S	US8968736 SEQ ID NO: 114	6406
MP80	C-FRa3	Heavy chain variable region	H4H2293P	US8968736 SEQ ID NO: 130	6407
MP81	GFRa3	Heavy chain variable region	H4H2294S	US8968736 SEQ ID NO: 146	6408
MP82	GFRa3	Heavy chain variable region	H4H2295S	US8968736 SEQ ID NO: 162	6409
MP83	GFRa3	Heavy chain variable region	H4H2296S	US8968736 SEQ ID NO: 178	6410
MP84	C-FRa3	Heavy chain variable region	H4H2341S	US8968736 SEQ ID NO: 194	6412
MPS 5	GFRa3	Heavy chain variable region	H4H2342P	1JS8968736 SEQ ID NO: 210	6414
MP86	GFRa3	Heavy chain variable region	H4H2344S	US8968736 SEQ ID NO: 226	6415
MP87	GFRa3	Heavy chain variable region	H4H2345S	1JS8968736 SEQ ID NO: 242	6416
MP88	GFRa3	Heavy chain variable region	H4H2346S	US8968736 SEQ ID NO: 258	6417
MP89	GFRa3	Heavy chain variable region	H4H2352S	1JS8968736 SEQ ID NO: 290	6418
MP9Θ	GFRa3	Heavy chain variable region	H4H2354S	US8968736 SEQ ID NO: 306	6419
MP91	GFRa3	Heavy chain variable region	H4H2355S	1JS8968736 SEQ ID NO: 322	6420
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MP93	GFRa3	Heavy chain variable region	H4H2364S	1JS8968736 SEQ ID NO: 354	6423
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MP224	hNavl.7	Heavy chain variable region	H4H464B	WO2014159595 SEQ ID NO: 358	6526
MP225	hNav1.7	Heavy chain variable region	H4H465B	WO2014159595 SEQ ID NO: 362	6527
MP226	hNavl.7	Heavy chain variable region	H4H466B	WO2014159595 SEQ ID NO: 366	6528
MP227	hNav1.7	Heavy chain variable region	H4H467B	WO2014159595 SEQ ID NO: 370	6529
MP228	hNavl.7	Heavy chain variable region	H4H468B	WO2014159595 SEQ ID NO: 82	6630
MP229	hNav1.7	Heavy chain variable region	H4H468P	WO2014159595 SEQ ID NO: 86	6632
MP230	hNavl.7	Heavy chain variable region	H4H471B	WO2014159595 SEQ ID NO: 90	6637
MP231	hNav1.7	Heavy chain variable region	H4H471P	WO2014159595 SEQ ID NO: 94	6638
MP232	hNavl.7	Heavy chain variable region	H4H472B	WO2014159595 SEQ ID NO: 374	6530
MP233	hNav1.7	Heavy chain variable region	H4H473B	WO2014159595 SEQ ID NO: 378	6531
MP234	hNavl.7	Heavy chain variable region	H4H475B	WO2014159595 SEQ ID NO: 382	6533
MP235	hNavl.7	Heavy chain variable region	H4H477B	WO2014159595 SEQ ID NO: 386	6534
MP236	hNavl.7	Heavy chain variable region	H4H478B	WO2014159595 SEQ ID NO: 544	6607
MP237	hNavl.7	Heavy chain variable region	H4H480B	WO2014159595 SEQ ID NO: 390	6535
MP238	hNavl.7	Heavy chain variable region	H4H481 B	WO2014159595 SEQ ID NO: 394	6536
MP239	hNavl.7	Heavy chain variable region	H4H482B	WO2014159595 SEQ ID NO: 398	6537
MP240	hNavl.7	Heavy chain variable region	H4H483B	WO2014159595 SEQ ID NO: 402	6538
MP241	hNavl.7	Heavy chain variable region	H4H484B	WO2014159595 SEQ ID NO: 406	6539
MP242	hNavl.7	Heavy chain variable region	H4H486B	WO2014159595 SEQ ID NO: 410	6540
MP243	hNavl.7	Heavy chain variable region	H4H488B	WO2014159595 SEQ ID NO: 414	6541

MP244	**hNav1.7**	Heavy chain variable region	H4H489B	**WO20 14 159595** SEQ ID **NO:** 418	6542
MP245	**hNavl .7**	**Heavy** chain **variable** region	H4H490B	**WO2014 159595** SEQ ID NO: 546	6608
MP246	**hNav !.7**	Heavy chain variable region	**H4H491B**	**WO20 14 159595** SEQ ID NO: 422	6544
MP247	hNavl.7	Heavy chain variable region	**HI HI 105B**	**WO20**!4!59595 SEQ ID **NO:** 198	648!
MP248	hNav !.7	Heavy chain variable region	H i HI 123B	**WO2014159595** SEQ **ID** NO: 202	6483
MP249	hNavl.7	Heavy chain variable region	**HI HI** 138B	**WO20**!4!59595 SEQ ID **NO:** 206	6484
MP250	hNav !.7	Heavy chain variable region	H i HI **144B**	**WO2014159595** SEQ **ID** NO: **210**	6485
MP251	hNavl.7	Heavy chain variable region	HI HI 147B	**WO20**!4!59595 SEQ ID **NO:** 2!4	6486
MP252	hNav !.7	Heavy chain variable region	H i Hi **155B**	**WO2014159595** SEQ ID NO: 218	6487
MP253	hNavl.7	Heavy chain variable region	**HI HI** !64B	**WO20**!4!59595 SEQ ID **NO:** 222	6489
MP254	hNav !.7	Heavy chain variable region	HI HI **166B**	**WO2014159595** SEQ ID NO: 226	6490
MP255	hNavl.7	Heavy chain variable region	**HI HI 169B**	**WO201** 4!59595 SEQ ID **NO:** 230	6491
MP256	**hNav1.7**	Heavy chain variable region	HI **H 1006P**	**WO2014159595** SEQ ID **NO:** 705	6620
MP257	hNavl.7	Heavy chain variable region	**H 1 H1025B**	**WO20 14 159595** SEQ ID NO: 722	6622
MP258	**hNav1.7**	Heavy chain variable region	HI **H 1068B**	**WO20 14 159595** SEQ ID **NO:** 709	6621
MP259	hNavl.7	Heavy chain variable region	**HI H1069B**	**WO20 14 159595** SEQ ID NO: 186	6478
MP260	**liNav1.7**	Heavy chain variable region	HI **H 1082B**	**WO20 14 159595** SEQ ID **NO:** 190	6479
MP261	hNavl.7	Heavy chain variable region	**H 1 H1098B**	**WO20 14 159595** SEQ ID NO: 194	6480
MP262	**liNav1.7**	Heavy chain variable region	HI M683N	**WO20 14 159595** SEQ ID NO: 2	6482
MP263	hNavl.7	**Heavy chain** variable region	**H 1 M797N**	**WO2014159595** SEQ ID **NO:** 6	6610
MP264	**hNavl.7**	**Heavy** chain variable region	**HI M799N**	**WO2014159595** SEQ ID NO: 26	6499
MP265	hNavl.7	**Heavy chain** variable region	HI MSGI N	**WO20 14 159595** SEQ ID NO: 727	6623
MP266	**hNavl.7**	**Heavy** chain variable region	**H 1 M826N**	**WO20 14 159595** SEQ ID **NO:** 743	6625
MP267	hNavl.7	**Heavy chain** variable region	HI M834N	**WO2014159595** SEQ ID NO: **10**	6454
MP268	**hNavl.7**	**Heavy** chain variable region	HI M836N	**WO20 14 159595** SEQ ID NO: 759	6626
MP269	hNavl.7	**Heavy chain** variable region	HI M839N	**WO2014159595** SEQ ID **NO:** 14	6465
MP270	**hNavl.7**	**Heavy** chain variable region	HI M852N	**WO2014159595** SEQ ID NO: 18	6476
MP271	hNavl.7	**Heavy chain** variable region	**HI M875N**	**WO2014159595** SEQ ID **NO:** 22	6488
MP272	**hNavl.7**	**Heavy** chain variable region	HI M879N	**WO20 14 159595** SEQ ID **NO:** 791	6628

MP273	hNav 1.7	Heavy chain variable region	H I M994N	WO20 14 159595 SEQ ID NO: 807	6629
MP274	hNavl.7	Heavy chain variable region	H1H1003B	WO20 14 I 59595 SEQ ID NO: 98	6639
MP275	hNav !.7	Heavy chain variable region	H IH 1006B	WO20 14 159595 SEQ ID NO: 102	6455
MP276	hNavl.7	Heavy chain variable region	H1H1008B	WO20 !4 I 59595 SEQ ID NO: 106	6456
MP277	hNav !.7	Heavy chain variable region	H IH I Oi OB	WO20 14 159595 SEQ ID NO: 114	6458
MP278	hNavl.7	Heavy chain variable region	H1H1Ol1B	WO20 !4 I 59595 SEQ ID NO: 1 I 8	6459
MP279	hNav !.7	Heavy chain variable region	H IH i013B	WO20 14 159595 SEQ ID NO: 122	6460
MP280	TNF	Heavy chain variable region		US2003015706 I SEQ ID NO: 2	6955
MP28 I	TNF	Heavy chain variable region		US20030 157061 SEQ ID NO: 6	6956
MP282	TrkA	Heavy chain variable region	HuVHWO	WO2009098238 SEQ ID NO: 17	3856
MP283	NC-F	Heavy chain, Antibody for chronic pain	Fulranuraab, 4D4, AMG-403, JN.T-42 160443	US760 I 8 18 SEQ ID NO: 40	1770 !
MP284	NGF	Heavy chain. Antibody for chronic pain	Fasinumab, REGN475, SAR164877		17702
MP285	NGF	Heavy chain, Antibody for pain, chronic and acute, osteoarthritis	Tanezumab, PF-04383 119,RN 624, E3	US20040237124 SEQ ID NO: 1	17703
MP286	CGRP	Light chain	GL cluster headache	US91 15 194 SEQ ID NO: 12	17704
MP287	CGRP	Light chain	04£4	US9 10273 1 SEQ ID NO: 17	17705
MP288	CGRP	Light chain	Ï0E4	US9 10273 I SEQ ID NO: 22	17706
MP289	CGRP	Light chain	02E7	US9 10273 1 SEQ ID NO: 14	17707
MP290	CGRP	Light chain	Ï2E8	US9 10273 I SEQ ID NO: 25	17708
MP291	CGRP	Light chain	01E1 I	US9 10273 1 SEQ ID NO: 12	17709
MP292	CGRP	Light chain	01H7	US9 10273 I SEQ ID NO: 13	17710
MP293	CGRP	Light chain	03B6	US9 10273 1 SEQ ID NO: 15	177 11
MP294	CGRP	Light chain	03C8	US9 10273 I SEQ ID NO: 16	1771 2
MP295	CGRP	Light chain	04H6	US9 10273 1 SEQ ID NO: 18	17713
MP296	CGRP	Light chain	05F5	US9 10273 I SEQ ID NO: 19	17714
MP297	CGRP	Light chain	09D4	US9 10273 1 SEQ ID NO: 20	17715
MP298	CGRP	Light chain	09F5	US9 10273 I SEQ ID NO: 21	17716
MP299	CGRP	Light chain	11D11 HL	US9 10273 1 SEQ ID NO: 23	17717
MP300	CGRP	Light chain	ï 1H9	US9 10273 I SEQ ID NO: 24	177 18
MP301	CGRP	Light chain	12G8 HL	US9 10273 1 SEQ ID NO: 26	17719
MP302	CGRP	Light chain	Ï3H2	US9 10273 I SEQ ID NO: 27	17720
MP303	CGRP	Light chain	32H7	US9 10273 1 SEQ ID NO: 28	1772 i
MP304	CGRP	Light chain	A	US20120294802 SEQ ID NO: 1	17722
MP305	CGRP	Light chain	Ab1	US20120294802 SEQ ID NO: 2	17723
MP306	CGRP	Light chain	AblO	US20120294802 SEQ ID NO: 92	17724
MP307	CGRP	Light chain	Abl 1	US20120294802 SEQ ID NO: 102	17725

MP308	CGRP	**Light chain**	**Abl2**	**US20120294802** SEQ ID NO: l l2	17726
MP309	CGRP	Light chain	**Ab l3**	**US20120294802** SEQ ID **NO: 122**	17727
MP3 l 0	CGRP	Light chain	**AM4**	**US20120294802** SEQ ID NO: **132**	17728
MP3 i 1	CGRP	Light chairs	**Ab2**	**US20** l 20294802 SEQ ID NO: l 2	17729
MP3 12	CGRP	Light **chain**	**Ab3**	US20120294802 SEQ ID NO: 22	17730
MP3 13	CGRP	Light chain	**AM**	**US20120294802** SEQ ID **NO:** 32	1773 1
MP3 14	CGRP	Light **chain**	**Ab5**	US20120294802 SEQ ID NO: 42	17732
MP3 15	CGRP	Light chain	**Ab6**	**US20120294802** SEQ ID **NO:** 52	17733
MP3 16	CGRP	Light **chain**	**Ab7**	US20120294802 SEQ ID NO: 62	17734
MP3 17	CGRP	Light chain	**Ab8**	**US20120294802** SEQ ID **NO:** 72	17735
MP3 18	CGRP	Light **chain**	**Ab9**	US20120294802 SEQ ID NO: 82	17736
MP3 19	CGRP	Light chain	B	**US20120294802** SEQ ID **NO:** l l	17737
MP320	CGRP	Light **chain**	C	**US20120294802** SEQ ID NO: 2l	17738
MP321	CGRP	Light chain	D	**US20120294802** SEQ ID NO: 3 1	17739
MP322	CGRP	Light **chain**	E	**US20 120294802** SEQ ID NO: 4l	17740
MP323	CGRP	Light chain	F	**US20120294802** SEQ ID NO: 5 1	17741
MP324	CGRP	Light **chain**	G	US20120294802 SEQ ID NO: 6l	17742
MP325	CGRP	Light chain	H	**US20120294802** SEQ ID NO: 7 1	17743
MP326	CGRP	Light **chain**	I	US20120294802 SEQ ID NO: 8l	17744
MP327	CGRP	Light chain	J	**US20120294802** SEQ ID NO: 9 1	17745
MP328	CGRP	Light **chain**	K	US20120294802 SEQ ID NO: **10 1**	17746
MP329	CGRP	Light chain	L	**US20120294802** SEQ ID NO: l 11	17747
MP330	CGRP	Light **chain**	M	US20120294802 SEQ ID NO: 12 1	17748
MP33 1	CGRP	Light chain	**N**	**US20120294802** SEQ ID NO: **13 1**	17749
MP332	TrkA	Light **chain**	**BXhVH5VLl,** GBR **VH5(K3Q)VL** 1, GBR **VH5(V37A)V** LI, GBR **VH5(V37A)V** Ll(*), GBR **VH5(G42E)V** LI, GBR **VH5(V89L)V** L1, GBR **VH5(R94K)V** LI, GBR **VH5(K3Q,** V37A)VL l, GBR VH5(K3Q. V37A)VL1(*), GBR **VH5(K3Q,** T40A)VL1, GBR \/H5(P60A, T62S)VL i, GBR	**US20150 183885** SEQ ID NO: 29	7905

			VH5(K3Q, V37A, R44G)VL1, GBR VH5(K3Q, A49S, Y50A)VL1, GBR VH5(K3Q, P60A, T62S)VL1, GBR VH5(K3Q, T40A, P60A,T62S)VL1, GBR VH5(K3Q, V37A, T40A,P60A, T62S)VL1, GBR VH5(K3Q, T40A, R44G,A49S, Y50A)VL1, GBR VH5(K3Q, A49S, Y50A,P60A, T62S)VL1, GBR VH5(K3Q, T40A, R44G, A49S, Y50A, P60A, T62S)VL1, GBR VH5(K3Q, T40A, R44G, A49S, Y50A, P60A, T62S, R94K)VL1		
MP333	TrkA	Light chain	BXhVL2	WO2009098238 SEQ ID NO: 8	3897
MP334	TrkA	Light chain	BXhVL3	WO2009098238 SEQ ID NO: 9	3898
MP335	TrkA	Light chain	BXhVL4	WO2009098238 SEQ ID NO: 10	3890
MP336	TrkA	Light chain	BXhVL5	WO2009098238 SEQ ID NO: 11	3891
MP337	TrkA	Light chain	BXhVL7	WO2009098238 SEQ ID NO: 13	3893
MP338	TrkA	Light chain	BXhVL8	WO2009098238 SEQ ID NO: 14	3894
MP339	TrkA	Light chain	BXhVLl	WO2009098238 SEQ ID NO: 7	3896
MP340	TrkA	Light chain	BXhVLβ	WO2009098238 SEQ ID NO: 12	3892
MP341	TrkA	Light chain	mVLEP	WO2009098238 SEQ ID NO: 16	3895
MP342	GFRα3	Light chain variable region	H1M2236N	US8968736 SEQ ID NO: 405	8817
MP343	GFRα3	Light chain variable region	H1M2243N	US8968736 SEQ ID NO: 389	8816
MP344	GFRα3	Light chain variable region	H4H2207N	US8968736 SEQ ID NO: 10	8797
MP345	GFRα3	Light chain variable region	H4H2210N	US8968736 SEQ ID NO: 74	8820

MP346	GFRo3	Light chain variable region	H4H22 12N	US8968736 SEQ ID NO: 26	8808
MP347	GFRa3	Light chain variable region	H4H2234N	US8968736 SEQ ID NO: 90	8821
MP348	GFRa3	Light chain variable region	H4H2236N3	US8968736 SEQ ID NO: 42	8818
MP349	C-FRa3	Light chairs variable region	H4H2243N2	US8968736 SEQ ID NO: 58	8819
MP350	GFRa3	Light chain variable region	H4H229 1S	US8968736 SEQ ID NO: 106	8798
MP351	C-FRa3	Light chairs variable region	H4H2292S	US8968736 SEQ ID NO: 122	8799
MP352	GFRa3	Light chain variable region	H4H2293P	US8968736 SEQ ID NO: 138	8800
MP353	C-FRa3	Light chairs variable region	H4H2294S	US8968736 SEQ ID NO: 154	8801
MP354	GFRa3	Light chain variable region	H4H2295S	US8968736 SEQ ID NO: 170	8802
MP355	C-FRa3	Light chairs variable region	H4H2296S	US8968736 SEQ ID NO: 186	8803
MP356	GFRa3	Light chain variable region	H4H2341s	US8968736 SEQ ID NO: 202	8804
MP357	GFRa3	Light chain variable region	H4H2342P	US8968736 SEQ ID NO: 218	8805
MP358	GFRa3	Light chairs variable region	H4H2344S	US8968736 SEQ ID NO: 234	8806
MP359	GFRa3	Light chain variable region	H4H2345S	US8968736 SEQ ID NO: 250	8807
MP360	GFRa3	Light chairs variable region	H4H2346S	US8968736 SEQ ID NO: 266	8809
MP361	GFRa3	Light chain variable region	H4H2350P	1JS8968736 SEQ ID NO: 282	8810
MP362	GFRa3	Light chairs variable region	H4H2352S	US8968736 SEQ ID NO: 298	8811
MP363	GFRa3	Light chain variable region	H4H2354S	1JS8968736 SEQ ID NO: 314	8812
MP364	GFRa3	Light chain variable region	H4H2355S	US8968736 SEQ ID NO: 330	8813
MP365	GFRa3	Light chain variable region	H4H2357S	1JS8968736 SEQ ID NO: 346	8814
MP366	GFRa3	Light chain variable region	H4H2364S	US8968736 SEQ ID NO: 362	8815
MP367	hNav1.7	Light chain variable region	H1H1 105B	WO2014159595 SEQ ID NO: 200	8870
MP368	hNav1.7	Light chain variable region	H1H1 138B	WO2014159595 SEQ ID NO: 208	8871
MP369	hNav1.7	Light chain variable region	H1H1 144B	WO2014159595 SEQ ID NO: 212	8872
MP370	hNavl.7	Light chain variable region	H1H1 147B	WO2014159595 SEQ ID NO: 216	8873
MP371	hNavl.7	Light chain variable region	H1H1 155B	WO2014159595 SEQ ID NO: 220	8874
MP372	hNavl.7	Light chain variable region	H1H1 164B	WO2014159595 SEQ ID NO: 224	8875
MP373	hNavl.7	Light chain variable region	H1H1 166B	WO2014159595 SEQ ID NO: 228	8876
MP374	hNavl.7	Light chain variable region	H1H1 169B	WO2014159595 SEQ ID NO: 232	8877

MP375	hNav1.7	Light chain variable region	H1H1006P	WO2014159595 SEQ ID NO: 707	9006
MP376	hNav1.7	Light chain variable region	H1H1025B	WO2014159595 SEQ ID NO: 724	9009
MP377	isNav1.7	Light chain variable region	H1H1068B	WO2014159595 SEQ ID NO: 711	9007
MP378	hNavl.7	Light chairs variable region	H1H1069B	WO2014159595 SEQ ID NO: 188	8866
MP379	isNav1.7	Light chain variable region	H1H1082B	WO2014159595 SEQ ID NO: 192	8867
MP380	hNavl.7	Light chairs variable region	H1H1098B	WO2014159595 SEQ ID NO: 196	8868
MP381	isNav1.7	Light chain variable region	H1M683N	WO2014159595 SEQ ID NO: 4	8923
MP382	hNavl.7	Light chairs variable region	H1M797N	WO2014159595 SEQ ID NO: 8	9015
MP383	IsNav1.7	Light chain variable region	H1M799N	WO2014159595 SEQ ID NO: 28	8890
MP384	hNavl.7	Light chairs variable region	H1M801N	WO2014159595 SEQ ID NO: 735	9010
MP385	IsNav1.7	Light chain variable region	H1M826N	WO2014159595 SEQ ID NO: 751	9011
MP386	hNavl.7	Light chain variable region	H1M834N	WO2014159595 SEQ ID NO: 12	8847
MP387	hNav1.7	Light chain variable region	H1M836N	WO2014159595 SEQ ID NO: 767	9013
MP388	hNavl.7	Light chain variable region	H1M839N	WO2014159595 SEQ ID NO: 16	8858
MP389	hNav1.7	Light chain variable region	H1M852N	WO2014159595 SEQ ID NO: 20	8869
MP390	hNavl.7	Light chain variable region	H1M875N	WO2014159595 SEQ ID NO: 24	8879
MP391	liNav1.7	Light chain variable region	H1M879N	WO2014159595 SEQ ID NO: 799	9014
MP392	hNavl.7	Light chain variable region	H1M994N	WO2014159595 SEQ ID NO: 815	9017
MP393	liNav1.7	Light chain variable region	H1H1002B	WO2014159595 SEQ ID NO: 548	8935
MP394	hNavl.7	Light chain variable region	H1H1003B	WO2014159595 SEQ ID NO: 100	8842
MP395	hNavl.7	Light chain variable region	H1H1005B	WO2014159595 SEQ ID NO: 550	8936
MP396	hNavl.7	Light chain variable region	H1H1006B	WO2014159595 SEQ ID NO: 104	8843
MP397	hNavl.7	Light chain variable region	H1H1008B	WO2014159595 SEQ ID NO: 108	8844
MP398	hNavl.7	Light chain variable region	H1H1009B	WO2014159595 SEQ ID NO: 552	8937
MP399	hNavl.7	Light chain variable region	H1H1010B	WO2014159595 SEQ ID NO: 116	8846
MP400	hNavl.7	Light chain variable region	H1H1011B	WO2014159595 SEQ ID NO: 120	8848
MP401	hNavl.7	Light chain variable region	H1H1013B	WO2014159595 SEQ ID NO: 124	8849
MP402	hNavl.7	Light chain variable region	H1H1015B	WO2014159595 SEQ ID NO: 128	8850
MP403	hNavl.7	Light chain variable region	H1H1016B	WO2014159595 SEQ ID NO: 554	8938

MP404	**hNav1.7**	Light **chain** variable region	H1H1019B	**WO2014**159595 SEQ ID **NO:** 112	8845
MP405	**hNav1.7**	Light chain **variable** region	H1H1020B	**WO2014159595** SEQ ID NO: 556	8939
MP406	isNav1.7	Light chain variable region	**H1H 1022B**	**WO2014159595** SEQ ID NO: **132**	8851
MP407	hNavl.7	Light chairs variable region	H1H1023B	WO2014159595 SEQ ID NO: 136	8852
MP408	isNav1.7	Light chain variable region	**H1H 1024B**	**WO2014159595** SEQ ID NO: 558	8940
MP409	hNavl.7	Light chairs variable region	H1H1025B	WO2014159595 SEQ ID NO: 560	8942
MP410	isNav1.7	Light chain variable region	**H1H 1026B**	**WO2014159595** SEQ ID NO: **140**	8853
MP411	hNavl.7	Light chairs variable region	H1H1030B	WO2014159595 SEQ ID NO: 144	8854
MP412	isNav1.7	Light chain variable region	**H1H 1032B**	**WO2014159595** SEQ ID NO: 148	8855
MP413	hNavl.7	Light chairs variable region	H1H1034B	WO2014159595 SEQ ID NO: 562	8943
MP414	isNav1.7	Light chain variable region	**H1H 1035B**	**WO2014159595** SEQ ID NO: 564	8944
MP415	hNavl.7	Light chain variable region	**H1H1038B**	WO2014159595 SEQ ID NO: 152	8856
MP416	hNav1.7	Light chain variable region	H1t!1041B	**WO2014159595** SEQ ID NO: 156	8857
MP417	hNavl.7	Light chain variable region	**H1H1044B**	WO2014159595 SEQ ID NO: 160	8859
MP418	hNav1.7	Light chain variable region	**H1H1045B**	**WO2014159595** SEQ ID NO: 164	8860
MP419	hNavl.7	Light chain variable region	**H1H1048B**	WO2014159595 SEQ ID NO: 566	8945
MP420	**liNav1.7**	Light chain variable region	**H1H1049B**	**WO2014159595** SEQ ID NO: 568	8946
MP421	hNavl.7	Light chain variable region	**H1H1050B**	WO2014159595 SEQ ID NO: 168	8861
MP422	**liNav1.7**	Light chain variable region	H1t!1051B	**WO2014159595** SEQ ID NO: 570	8947
MP423	hNavl.7	Light **chain** variable region	H1H1055B	**WO2014159595** SEQ ID NO: 172	8862
MP424	**hNavl.7**	Light chain variable region	**H1H1056B**	**WO2014159595** SEQ ID NO: 176	8863
MP425	hNavl.7	Light **chain** variable region	H1H1059B	**WO2014159595** SEQ ID NO: 180	8864
MP426	**hNavl.7**	Light chain variable region	H1H1060B	**WO2014159595** SEQ ID NO: 184	8865
MP427	hNavl.7	Light **chain** variable region	H1H1064B	**WO2014159595** SEQ ID NO: 572	8948
MP428	**hNavl.7**	Light chain variable region	H1H1071B	**WO2014159595** SEQ ID NO: 574	8949
MP429	hNavl.7	Light **chain** variable region	H1H1072B	**WO2014159595** SEQ ID NO: 576	8950
MP430	**hNavl.7**	Light chain variable region	H1H1077B	**WO2014159595** SEQ ID NO: 578	8951
MP431	hNavl.7	Light **chain** variable region	H1H1086B	**WO2014159595** SEQ ID NO: 580	8952
MP432	**hNavl.7**	Light chain variable region	**H1H1096B**	**WO2014159595** SEQ ID NO: 582	8953

MP433	hNav1.7	Light chain variable region	H1H1120B	WO2014159595 SEQ ID NO: 584	8954
MP434	hNav1.7	Light chain variable region	H1H1128B	WO2014159595 SEQ ID NO: 586	8955
MP435	isNav1.7	Light chain variable region	H1H1132B	WO2014159595 SEQ ID NO: 588	8956
MP436	hNavl.7	Light chairs variable region	H1H1142B	WO2014159595 SEQ ID NO: 590	8957
MP437	isNav1.7	Light chain variable region	H1H1171B	WO2014159595 SEQ ID NO: 592	8958
MP438	hNavl.7	Light chairs variable region	H2M799N	WO2014159595 SEQ ID NO: 831	9018
MP439	isNav1.7	Light chain variable region	H4H1003P	WO2014159595 SEQ ID NO: 862	9020
MP440	hNavl.7	Light chairs variable region	H4H1025P	WO2014159595 SEQ ID NO: 874	9023
MP441	isNav1.7	Light chain variable region	H4H361 B	WO2014159595 SEQ ID NO: 236	8878
MP442	hNavl.7	Light chairs variable region	H4H362B	WO2014159595 SEQ ID NO: 32	8901
MP443	isNav1.7	Light chain variable region	H4H362P	WO2014159595 SEQ ID NO: 870	9022
MP444	hNavl.7	Light chain variable region	H4H363B	WO2014159595 SEQ ID NO: 594	8959
MP445	hNav1.7	Light chain variable region	H4H364B	WO2014159595 SEQ ID NO: 596	8960
MP446	hNavl.7	Light chain variable region	H4H365B	WO2014159595 SEQ ID NO: 240	8880
MP447	hNav1.7	Light chain variable region	H4H366B	WO2014159595 SEQ ID NO: 598	8961
MP448	hNavl.7	Light chain variable region	H4H367B	WO2014159595 SEQ ID NO: 36	8912
MP449	hNav1.7	Light chain variable region	H4H368B	WO2014159595 SEQ ID NO: 40	8924
MP450	hNavl.7	Light chain variable region	H4H369B	WO2014159595 SEQ ID NO: 600	8963
MP451	hNav1.7	Light chain variable region	H4H371 B	WO2014159595 SEQ ID NO: 244	8881
MP452	hNavl.7	Light chain variable region	H4H372B	WO2014159595 SEQ ID NO: 248	8882
MP453	hNavl.7	Light chain variable region	H4H373B	WO2014159595 SEQ ID NO: 252	8883
MP454	hNavl.7	Light chain variable region	H4H374B	WO2014159595 SEQ ID NO: 602	8964
MP455	hNavl.7	Light chain variable region	H4H375B	WO2014159595 SEQ ID NO: 604	8965
MP456	hNavl.7	Light chain variable region	H4H376B	WO2014159595 SEQ ID NO: 606	8966
MP457	hNavl.7	Light chain variable region	H4H377B	WO2014159595 SEQ ID NO: 608	8967
MP458	hNavl.7	Light chain variable region	H4H379B	WO2014159595 SEQ ID NO: 256	8884
MP459	hNavl.7	Light chain variable region	H4H380B	WO2014159595 SEQ ID NO: 610	8968
MP460	hNavl.7	Light chain variable region	H4H381 B	WO2014159595 SEQ ID NO: 260	8885
MP461	hNavl.7	Light chain variable region	H4H382B	WO2014159595 SEQ ID NO: 44	8932

MP462	**hNav1.7**	Light **chain** variable region	H4H384B	**WO2014159595** SEQ ID NO: 612	8969
MP463	**hNav1.7**	Light chain **variable** region	H4H385B	**WO2014159595** SEQ ID NO: 264	8886
MP464	isNav1.7	Light chain variable region	H4H385B	**WO2014159595** SEQ ID **NO:** 683	9000
MP465	hNavl.7	Light chairs variable region	**H4H387B**	**WO2014159595** SEQ ID **NO:** 614	8970
MP466	isNav1.7	Light chain variable region	H4H388B	**WO2014159595** SEQ ID **NO:** 268	8887
MP467	hNavl.7	Light chairs variable region	**H4H391B**	WO2014159595 SEQ ID **NO:** 48	8933
MP468	isNav1.7	Light chain variable region	**H4H391P**	**WO2014159595** SEQ ID **NO:** 52	8934
MP469	hNavl.7	Light chairs variable region	**H4H392B**	**WO2014159595** SEQ ID **NO:** 616	8971
MP470	isNav1.7	Light chain variable region	H4H394B	**WO2014159595** SEQ ID **NO:** 618	8972
MP471	hNavl.7	Light chairs variable region	**H4H395B**	**WO2014159595** SEQ ID **NO:** 620	8973
MP472	isNav1.7	Light chain variable region	H4H395B	**WO2014159595** SEQ ID **NO:** 687	9001
MP473	hNavl.7	Light chain variable region	**H4H396B**	WO2014 159595 SEQ ID NO: 272	8888
MP474	hNav1.7	Light chain variable region	**H4H397B**	**WO2014159595** SEQ ID **NO:** 56	8941
MP475	hNavl.7	Light chain variable region	**H4H398B**	WO2014 159595 SEQ ID NO: 276	8889
MP476	hNav1.7	Light chain variable region	H4H399B	**WO2014159595** SEQ ID **NO:** 280	8891
MP477	hNavl.7	Light chain variable region	**H4H400B**	WO2014 159595 SEQ ID NO: 284	8892
MP478	**liNav1.7**	Light chain variable region	**H4H402B**	**WO2014159595** SEQ ID **NO:** 288	8893
MP479	hNavl.7	Light chain variable region	**H4H404B**	WO2014 159595 SEQ ID NO: 622	8974
MP480	**liNav1.7**	Light chain variable region	**H4H408B**	**WO2014159595** SEQ ID **NO:** 60	8962
MP481	hNavl.7	Light **chain** variable region	H4H409B	**WO2014159595** SEQ ID NO: 292	8894
MP482	**hNavl .7**	Light chain variable region	H4H411B	**WO2014159595** SEQ ID NO: 626	8976
MP483	hNavl.7	Light **chain** variable region	H4H410B	**WO2014159595** SEQ ID NO: 624	8975
MP484	**hNavl .7**	Light chain variable region	H4H412B	**WO2014159595** SEQ ID NO: 628	8977
MP485	hNavl.7	Light **chain** variable region	H4H414B	**WO2014159595** SEQ ID NO: 630	8978
MP486	**hNavl .7**	Light chain variable region	H4H415B	**WO2014159595** SEQ ID NO: 296	8895
MP487	hNavl.7	Light **chain** variable region	H4H416B	**WO2014159595** SEQ ID NO: 300	8896
MP488	**hNavl .7**	Light chain variable region	H4H419B	**WO2014159595** SEQ ID NO: 304	8897
MP489	hNavl.7	Light **chain** variable region	H4H421B	**WO2014159595** SEQ ID NO: 632	8979
MP490	**hNavl .7**	Light chain variable region	H4H422B	**WO2014159595** SEQ ID NO: 308	8898

MP491	hNav 1.7	Light chain variable region	H4H426B	WO20 14 159595 SEQ ID NO: 64	8983
MP492	hNav 1.7	Light chain variable region	H4H428B	WO2014 159595 SEQ ID NO: 634	8980
MP493	IsNav 1.7	Light chain variable region	H4H430B	WO20 14 159595 SEQ ID NO: 636	8981
MP494	hNavl.7	Light chairs variable region	H4H43 1B	WO20 14 159595 SEQ ID NO: 6.38	8982
MP495	IsNav 1.7	Light chain variable region	H4H433B	WO20 14 159595 SEQ ID NO: 640	8984
MP496	hNavl.7	Light chairs variable region	H4H434B	WO20 14 159595 SEQ ID NO: 312	8899
MP497	IsNav 1.7	Light chain variable region	H4H434B	WO20 14 159595 SEQ ID NO: 691	9002
MP498	hNavl.7	Light chairs variable region	H4H434P	WO20 14 159595 SEQ ID NO: 695	9003
MP499	IsNav 1.7	Light chain variable region	H4H435B	WO20 14 159595 SEQ ID NO: 642	8985
MP500	hNavl.7	Light chairs variable region	H4H438B	WO20 14 159595 SEQ ID NO: 316	8900
MP50 1	IsNav 1.7	Light chain variable region	H4H438B	WO20 14 159595 SEQ ID NO: 699	9004
MP502	hNavl.7	Light chain variable region	H4H439B	WO201 4 159595 SEQ ID NO: 68	8999
MP503	hNav 1.7	Light chain variable region	H4H439P	WO2014159595 SEQ ID NO: 72	9008
MP504	hNavl.7	Light chain variable region	H4H440B	WO2014 159595 SEQ ID NO: 644	8986
MP505	hNav 1.7	Light chain variable region	H4H441B	WO20 14 159595 SEQ ID NO: 646	8987
MP506	hNavl.7	Light chain variable region	H4H441 B	WO2014 159595 SEQ ID NO: 703	9005
MP507	liNav 1.7	Light chain variable region	H4H441 P	WO2014159595 SEQ ID NO: 866	9021
MP508	hNavl.7	Light chain variable region	H4H442B	WO2014 159595 SEQ ID NO: 320	8902
MP509	liNav 1.7	Light chain variable region	H4H443B	WO20 14 159595 SEQ ID NO: 76	9012
MPS 10	hNavl.7	Light chain variable region	H4H444B	WO2014159595 SEQ ID NO: 324	8903
MP5 11	hNavl.7	Light chain variable region	H4H446B	WO20 14 159595 SEQ ID NO: 328	8904
MPS 12	hNavl.7	Light chain variable region	H4H448B	WO20 14 159595 SEQ ID NO: 80	9016
MP5 13	hNavl.7	Light chain variable region	H4H450B	WO20 14 159595 SEQ ID NO: 648	8988
MPS 14	hNavl.7	Light chain variable region	H4H45 1B	WO2014159595 SEQ ID NO: 650	8989
MP5 15	hNavl.7	Light chain variable region	H4H452B	WO20 14 159595 SEQ ID NO: 652	8990
MPS 16	hNavl.7	Light chain variable region	H4H455B	WO2014159595 SEQ ID NO: 654	8991
MP5 17	hNavl.7	Light chain variable region	H4H456B	WO20 14 159595 SEQ ID NO: 332	8905
MPS 18	hNavl.7	Light chain variable region	H4H457B	WO2014159595 SEQ ID NO: 336	8906
MP5 19	hNavl.7	Light chain variable region	H4H458B	WO20 14 159595 SEQ ID NO: 340	8907

MP520	hNav1.7	Light chain variable region	H4H459B	WO2014159595 SEQ ID NO: 656	8992
MP521	hNav1.7	Light chain variable region	H4H460B	WO2014159595 SEQ ID NO: 344	8908
MPS22	isNav1.7	Light chain variable region	H4H461B	WO2014159595 SEQ ID NO: 348	8909
MP523	hNavl.7	Light chains variable region	H4H462B	WO2014159595 SEQ ID NO: 352	8910
MPS24	isNav1.7	Light chain variable region	H4H463B	WO2014159595 SEQ ID NO: 356	8911
MP525	hNavl.7	Light chains variable region	H4H464B	WO2014159595 SEQ ID NO: 360	8913
MPS26	isNav1.7	Light chain variable region	H4H465B	WO2014159595 SEQ ID NO: 364	8914
MP527	hNavl.7	Light chains variable region	H4H466B	WO2014159595 SEQ ID NO: 368	8915
MPS28	isNav1.7	Light chain variable region	H4H467B	WO2014159595 SEQ ID NO: 372	8916
MP529	hNavl.7	Light chains variable region	H4H468B	WO2014159595 SEQ ID NO: 84	9019
MP530	isNav1.7	Light chain variable region	H4H468P	WO2014159595 SEQ ID NO: 88	9024
MP531	hNavl.7	Light chain variable region	H4H469B	WO2014159595 SEQ ID NO: 658	8993
MP532	hNav1.7	Light chain variable region	H4H470B	WO2014159595 SEQ ID NO: 660	8994
MP533	hNavl.7	Light chain variable region	H4H471B	WO2014159595 SEQ ID NO: 92	9025
MP534	hNav1.7	Light chain variable region	H4H471P	WO2014159595 SEQ ID NO: 96	9026
MP535	hNavl.7	Light chain variable region	H4H472B	WO2014159595 SEQ ID NO: 376	8917
MP536	hNav1.7	Light chain variable region	H4H473B	WO2014159595 SEQ ID NO: 380	8918
MP537	hNavl.7	Light chain variable region	H4H474B	WO2014159595 SEQ ID NO: 662	8995
MPS38	hNav1.7	Light chain variable region	H4H475B	WO2014159595 SEQ ID NO: 384	8919
MP539	hNavl.7	Light chain variable region	H4H476B	WO2014159595 SEQ ID NO: 664	8996
MP540	hNavl.7	Light chain variable region	H4H477B	WO2014159595 SEQ ID NO: 388	8920
MP541	hNavl.7	Light chain variable region	H4H479B	WO2014159595 SEQ ID NO: 666	8997
MP542	hNavl.7	Light chain variable region	H4H480B	WO2014159595 SEQ ID NO: 392	8921
MP543	hNavl.7	Light chain variable region	H4H481B	WO2014159595 SEQ ID NO: 396	8922
MP544	hNavl.7	Light chain variable region	H4H482B	WO2014159595 SEQ ID NO: 400	8925
MP545	hNavl.7	Light chain variable region	H4H483B	WO2014159595 SEQ ID NO: 404	8926
MP546	hNavl.7	Light chain variable region	H4H484B	WO2014159595 SEQ ID NO: 408	8927
MP547	hNavl.7	Light chain variable region	H4H486B	WO2014159595 SEQ ID NO: 412	8928
MP548	hNavl.7	Light chain variable region	H4H487B	WO2014159595 SEQ ID NO: 668	8998

MP549	hNav1.7	Light chain variable region	H4H488B	WO2014159595 SEQ ID NO: 416	8929
MP550	hNav1.7	Light chain variable region	H4H489B	WO2014159595 SEQ ID NO: 420	8930
MP551	hNav 1.7	Light chain variable region	H4H491B	WO2014159595 SEQ ID NO: 424	8931
MP552	TNF	Light chairs variable region		US2003015706 1 SEQ ID NO: 4	9288
MP553	TrkA	Light chain variable region	3-23*01	WO2009098238 SEQ ID NO: 19	4233
MP554	TrkA	Light chairs variable region	BXhVHSVL1 N297A 1	WO2009098238 SEQ ID NO: 23	4237
MP555	TrkA	Light chain variable region	HuVLWO	WO2009098238 SEQ ID NO: 18	4232
MP556	TrkA	Light chairs variable region	JH4	WO2009098238 SEQ ID NO: 20	4234
MP557	TrkA	Light chain variable region	JK1	WO2009098238 SEQ ID NO: 22	4236
MP558	TrkA	Light chairs variable region	L6*01	WO2009098238 SEQ ID NO: 21	4235
MP559	NGF	Light chain variable region, Antibody for chronic pain	Fasinutnab, REGN475, SAR 164877	US7988967 SEQ ID NO: 110; US7988967 SEQ ID NO: 92	17750
MP560	NGF	Light chain, Antibody for chronic pain	Fulranuinab, 4D4, AMG-403, JNJ-42160443	US7601818 SEQ ID NO: 44; US8552157 SEQ ID NO: 17; US8048421 SEQ ID NO: 84	17751
MP561	NGF	Light chain, Antibody for chronic pain	Fasinumab, REGN475, SAR164877		17752
MP562	NGF	Light chain, Antibody for pain, chronic and acute, osteoarthritis	Tanezumab, PF-04383119, RN624, E3	US20040237124 SEQ ID NO: 2	17753
MP563	CGRP	Variable Heavy Domain	GL cluster headache	US9115194 SEQ ID NO: 1	17754
MP564	CGRP	Variable Light Domain	GL cluster headache	US9115194 SEQ ID NO: 2	17755

Ocular Disease Antibodies

[ΘΘ300] In one embodiment the payload region of the AAV particle comprises one or more nucleic acid sequences encoding one or more of the ocular disease payload antibody polypeptides listed **in** Table **11 (OC1-OC676;** SEQ ID NO: 3124-3125, 3164-3177, 3329-3330, 3358-3371, 4308, 4323, 4420, 4431, 4680-4682, 4685-4728, 4735-4772, **4779-4781,** 4783, 6792-6919, 7022-7024, 7271-7274, 7389-7392, 7396-7439, 7446-7496, 7503-7505, 9142-9255, 9257-9269, 9350, 9466-9468, 9617-9624, 9630-9633, 9655-9677, 17666-17670, 17672-17680, 17723-17736, 17756-17875)

Table 11. Ocular Disease Antibodies

Antibody No.	Target	Description	Antibody Name	Reference Information	SEQ ID NO

OC1	VEGF-A	Fab-12 1cz8_L, Fab-12 variant Y0317/L-KAPPA (V-KAPPA(1-107)+C-KAPPA(108-213)	Ranibizumab, Lucentis	Lien and Lowman, In: Chemajovsky, 2008, Therapeutic Antibodies. Handbook of Experimental Pharmacology 181, Springer-Verlag, Berlin Heidelberg 131-150	17756
OC2	VEGF-A	Fab-12 variant Y031/Fab-12 variant Y0317 and VH-CH1 (VH(1-123)+CH1(124-215)	Ranibizumab, Lucentis	Lien and Lowman, In: Chemajovsky, 2008, Therapeutic Antibodies. Handbook of Experimental Pharmacology 181, Springer-Verlag, Berlin Heidelberg 131-150	17757
OC3	VEGF-A	Fab-12 variant Y0317/L-KAPPA (V-KAPPA(1-107)+C-KAPPA(108-213)	Ranibizumab, Lucentis	Lien and Lowman, In: Chemajovsky, 2008, Therapeutic Antibodies. Handbook of Experimental Pharmacology 181, Springer-Verlag, Berlin Heidelberg 131-150	17758
OC4	VEGF-A	Fab-12 variant Y0317/VH-CH1 (VH(1-123)+CH1(124-215)	Ranibizumab, Lucentis	Lien and Lowman, In: Chemajovsky, 2008, Therapeutic Antibodies. Handbook of Experimental Pharmacology 181, Springer-Verlag, Berlin Heidelberg 131-150	17759
OC5		Fusion protein	Aflibercept fusion protein		17760
OC6		Fusion protein	Conbercept fusion protein		17761
OC7	Annexin IV or a phospholipid; and (b) a complement inhibitor	Heavy chain	B4	WO2014116880 SEQ ID NO: 15	4680
OC8	Annexin IV or a phospholipid; and (b) a complement inhibitor	Heavy chain	B4	WO2014116880 SEQ ID NO: 16	4681
OC9	Annexin IV or a phospholipid; and (b) a complement inhibitor	Heavy chain	C2	WO2014116880 SEQ ID NO: 36	4682
OC10	C3b	Heavy chain	rhuMAB 4D5-8	US8377437 SEQ ID NO: 14	4685
OC11	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-6	WO2015099838 SEQ ID NO: 49	4716
OC12	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-7	WO2015099838 SEQ ID NO: 50	4717

OC13	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-8	WO2015099838 SEQ ID NO: 51	4718
OC14	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-9	WO2015099838 SEQ ID NO: 52	4719
OC15	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-10	WO2015099838 SEQ ID NO: 53	4720
OC16	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-11	WO2015099838 SEQ ID NO: 54	4721
OC17	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-12	WO2015099838 SEQ ID NO: 55	4722
OC18	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-13	WO2015099838 SEQ ID NO: 56	4723
OC19	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-14	WO2015099838 SEQ ID NO: 57	4724
OC20	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-15	WO2015099838 SEQ ID NO: 58	4725
OC21	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-16	WO2015099838 SEQ ID NO: 59	4726
OC22	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-17	WO2015099838 SEQ ID NO: 60	4727
OC23	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-18	WO2015099838 SEQ ID NO: 61	4728
OC24	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-19	WO2015099838 SEQ ID NO: 62	4686

OC25	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-20	WO2015099838 SEQ ID NO: 63	4687
OC26	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-21	WO2015099838 SEQ ID NO: 64	4688
OC27	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-22	WO2015099838 SEQ ID NO: 65	4689
OC28	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-23	WO2015099838 SEQ ID NO: 66	4690
OC29	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-24	WO2015099838 SEQ ID NO: 67	4691
OC30	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-25	WO2015099838 SEQ ID NO: 68	4692
OC31	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-26	WO2015099838 SEQ ID NO: 69	4693
OC32	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-27	WO2015099838 SEQ ID NO: 70	4694
OC33	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-28	WO2015099838 SEQ ID NO: 71	4695
OC34	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-29	WO2015099838 SEQ ID NO: 72	4696
OC35	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-30	WO2015099838 SEQ ID NO: 73	4697
OC36	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-31	WO2015099838 SEQ ID NO: 74	4698

OC37	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-32	WO2015099838 SEQ ID NO: 75	4699
OC38	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-33	WO2015099838 SEQ ID NO: 76	4700
OC39	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-34	WO2015099838 SEQ ID NO: 77	4701
OC40	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-35	WO2015099838 SEQ ID NO: 78	4702
OC41	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-36	WO2015099838 SEQ ID NO: 79	4703
OC42	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-37	WO2015099838 SEQ ID NO: 80	4704
OC43	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-38	WO2015099838 SEQ ID NO: 81	4705
OC44	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-39	WO2015099838 SEQ ID NO: 82	4706
OC45	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-40	WO2015099838 SEQ ID NO: 83	4707
OC46	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-41	WO2015099838 SEQ ID NO: 84	4708
OC47	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-42	WO2015099838 SEQ ID NO: 85	4709
OC48	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-43	WO2015099838 SEQ ID NO: 86	4710

OC49	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-1	WO2015099838 SEQ ID NO: 44	4711
OC50	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-2	WO2015099838 SEQ ID NO: 45	4712
OC51	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-3	WO2015099838 SEQ ID NO: 46	4713
OC52	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-4	WO2015099838 SEQ ID NO: 47	4714
OC53	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Heavy chain	H-5	WO2015099838 SEQ ID NO: 48	4715
OC54	C5	Heavy chain	NVS808	US20150158936 SEQ ID NO: 107	4735
OC55	C5	Heavy chain	NVS806	US20150158936 SEQ ID NO: 121	4736
OC56	C5	Heavy chain	NVS804	US20150158936 SEQ ID NO: 135	4737
OC57	C5	Heavy chain	NVS809	US20150158936 SEQ ID NO: 149	4738
OC58	C5	Heavy chain	NVS805	US20150158936 SEQ ID NO: 163	4739
OC59	C5	Heavy chain	NVS962-S	US20150158936 SEQ ID NO: 177	4740
OC60	C5	Heavy chain	NVS962-Q	US20150158936 SEQ ID NO: 191	4741
OC61	C5	Heavy chain	NVS962-S31A	US20150158936 SEQ ID NO: 205	4742
OC62	C5	Heavy chain	NVS962-G	US20150158936 SEQ ID NO: 219	4743
OC63	C5	Heavy chain	NVS963	US20150158936 SEQ ID NO: 23	4744
OC64	C5	Heavy chain	NVS962-T	US20150158936 SEQ ID NO: 233	4745
OC65	C5	Heavy chain	NVS965-T	US20150158936 SEQ ID NO: 247	4746
OC66	C5	Heavy chain	NVS965-Q	US20150158936 SEQ ID NO: 261	4747
OC67	C5	Heavy chain	NVS965-S	US20150158936 SEQ ID NO: 275	4748
OC68	C5	Heavy chain	NVS964	US20150158936 SEQ ID NO: 37	4749
OC69	C5	Heavy chain	Antibody 8109	US20150158936 SEQ ID NO: 418	4750
OC70	C5	Heavy chain	Antibody 8110	US20150158936 SEQ ID NO: 434	4751
OC71	C5	Heavy chain	Antibody 8111	US20150158936 SEQ ID NO: 449	4752

OC72	C5	Heavy chain	Antibody 8113	US20 150 158936 SEQ ID NO: 462	4753
QC73	C5	Heavy chain	Antibody 8114	US20150158936 SEQ ID NO: 478	4754
OC74	C5	Heavy chain	NVS966	US20150 158936 SEQ ID NO: 51	4755
OC75	C5	Heavy chain	NVS965	US20 150158936 SEQ ID NO: 65	4756
OC76	C5	Heavy chain	NVS967	US20150 158936 SEQ ID NO: 79	4757
OC77	C5	Heavy chain	NVS962	US20150158936 SEQ ID NO: 9	4758
QC78	C5	Heavy chain	NVS807	US20150158936 SEQ ID NO: 93	4759
OC79	C5	Heavy chain	H5	US20150239966 SEQ ID NO: 10	4760
OC80	C5	Heavy chain	H6	US20 150239966 SEQ ID NO: 12	4761
OC81	C5	Heavy chain	H1	US20150239966 SEQ ID NO: 2	4762
OC82	C5	Heavy chain	H2	US20150239966 SEQ ID NO: 4	4763
OC83	C5	Heavy chain	H3	US20150239966 SEQ ID NO: 6	4764
OC84	C5	Heavy chain	H4	US20150239966 SEQ ID NO: 8	4765
OC85	C5	Heavy chain	Tesidolumab, "LFG 316, LFG-3 16, LFG3 16"	US8241628 SEQ ID NO: 9	4766
OC86	C5	Heavy chain		US9133269 SEQ ID NO: 1	4767
OC87	C5	Heavy chain		US9133269 SEQ ID NO: 2	4768
OC88	C5	Heavy chain		US9133269 SEQ ID NO: 27	4769
OC89	C5	Heavy chain		US9133269 SEQ ID NO: 3	4770
OC90	C5	Heavy chain		US9133269 SEQ ID NO: 4	4771
OC91	C5	Heavy chain		US9133269 SEQ ID NO: 5	4772
OC92	C5a	Heavy chain	BN.T364	US20130224187 SEQ ID NO: 25	4779
OC93	C5a	Heavy chain	BNJ367, BNJ371, BNJ378	US20 130224187 SEQ ID NO: 33	4780
OC94	C5a	Heavy chain	BNJ366	US20130224187 SEQ ID NO: 44	4781
OC95	CA 125 (MUC16)	Heavy chain	Sofitnzumab vedotin, DMUC5754A (conjugate), MMUC1206A (nonconjugate)	US7723485 SEQ ID NO: 1	4783
OC96	CGRP	Heavy chain	Ab4	US20 120294802 SEQ ID NO: 34	17675
OC97	CGRP	Heavy chain	Ab1	US20 120294802 SEQ ID NO: 4	17666
COS	CGRP	Heavy chain	Ab5	US20 120294802 SEQ ID NO: 44	17676
OC99	CGRP	Heavy chain	Ab6	US20 120294802 SEQ ID NO: 54	17677
OCIOO	CGRP	Heavy chain	Ab7	US20 120294802 SEQ ID NO: 64	17678
OC101	CGRP	Heavy chain	Ab8	US20 120294802 SEQ ID NO: 74	17679
OC102	CGRP	Heavy chain	Ab9	US20 120294802 SEQ ID NO: 84	17680
OC103	CGRP	Heavy chain	AblO	US20 120294802 SEQ ID NO: 94	17667
OC104	CGRP	Heavy chain	Ab 11	US20120294802 SEQ ID NO: 104	17668
OC105	CGRP	Heavy chain	Abl 2	US20 120294802 SEQ ID NO: 114	17669
OC106	CGRP	Heavy chain	Ab13	US20120294802 SEQ ID NO: 124	17670

OC107	CGRP	Heavy chain	Ab14	US20120294802 SEQ ID NO: 134	17672
OC108	CGRP	Heavy chain	Ab2	US20120294802 SEQ ID NO: 14	17673
OC109	CGRP	Heavy chain	Ab3	US20120294802 SEQ ID NO: 24	17674
OC110	Factor D	Heavy chain	Fab 238	WO2009134711 SEQ ID NO: 52	17762
OC111	Factor D, humanized IgG1	Heavy Chain	Lampalizumab ,	US8273352 SEQ ID NO: 62	17763
OC112	platelet-derived growth factor receptor beta PDGFRB	Heavy chain	Rinucumab, REGN2176		17764
OC113	S1P4	Heavy chain		WO2015057939 SEQ ID NO: 39	4308
OC114	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Heavy chain	NVS73	US20140186350 SEQ ID 113	17765
OC115	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Heavy chain	NVS73T	US20140186350 SEQ ID 115	17766
OC116	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Heavy chain	NVS75	US20140186350 SEQ ID 194	17767
OC117	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Heavy chain	NVS74T, NCS75T	US20140186350 SEQ ID 196	17768
OC118	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Heavy chain	NVS1	US20140186350 SEQ ID 21	17769
OC119	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Heavy chain	NVS2	US20140186350 SEQ ID 23	17770
OC120	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Heavy chain	NVS3	US20140186350 SEQ ID 25	17771
OC121	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A,	Heavy chain	NVS36	US20140186350 SEQ ID 27	17772

	Il-10, TNFα, or FGFR2				
OC122	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Heavy chain	NVS37	US20140186350 SEQ ID 29	17773
OC123	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Heavy chain	NVS70	US20140186350 SEQ ID 42	17774
OC124	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Heavy chain	NVS70T	US20140186350 SEQ ID 44	17775
OC125	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Heavy chain	NVS71	US20140186350 SEQ ID 61	17776
OC126	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Heavy chain	NVS71T	US20140186350 SEQ ID 63	17777
OC127	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Heavy chain	NVS72	US20140186350 SEQ ID 83	17778
OC128	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Heavy chain	NVS72T	US20140186350 SEQ ID 85	17779
OC129	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Heavy chain	NVS4, NVS1j	US20140186350 SEQ ID 9	17780
OC130	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Heavy chain	NVS81	US20140186350 SEQ ID 157	17781
OC131	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A,	Heavy chain	NVS81T	US20140186350 SEQ ID 159	17782

	11-10, TNFa, or FGFR2				
OC132	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFa, or FGFR2	Heavy chain	NVS82	US20140186350 SEQ ID 161	17783
OC133	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, 11-10, TNFa, **or** FGFR2	Heavy chain	NVS82T	US20140186350 SEQ ID 163	17784
OC134	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, 11-10, TNFa, **or** FGFR2	Heavy chain	NVSlb	US20140186350 SEQ ID 171	17785
OC135	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, 11-10, TNFa, or FGFR2	Heavy chain	NVSlc	US20140186350 SEQ ID 173	17786
OC136	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-IP, IL-17A, 11-10, TNFa, or FGFR2	Heavy chain	NVSld	US20140186350 SEQ ID 175	17787
OC137	VEGF, C5, Factor P, Factor D, EPO, EPOR, Il, -1β, IL-17A, 11-10, TNFa, or FGFR2	Heavy chain	NVSle	US20140186350 SEQ ID 177	17788
OC138	VEGF, C5, Factor P, Factor D, EPO, EPOR, Il, -1β, IL-17A, 11-10, TNFa, or FGFR2	Heavy **chain**	NVSlf	US20140186350 SEQ ID 179	17789
OC139	VEGF, C5, **Factor** P, **Factor** D, EPO, EPOR, IL-ip, IL-17A, 11-10, TNFa, or FGFR2	Heavy **chain**	NVSlg	US20140186350 SEQ ID 181	17790
OC140	VEGF, C5, **Factor** P, **Factor** D, EPO. EPOR. IL-ip, IL-17A, 11-10, TNFa, or FGFR2	**Heavy** chain	NVSlh	US20140186350 SEQ ID 183	17791
OC141	**sphingosine-1-phosphate**	**Heavy** chain **foil**	Sonepcizumab, SIP-LT101 I		17792
OC142	**sphingosine-1-phosphate**	**Heavy** chain variable	**Sonepcizumab**, S1P-LT1009		17793

OC143	Factor D	Heavy chain variable region	Fab 238	WO2009 134711 SEQ ID NO: 18	17794
OC144	Factor D	Heavy chain variable region	Fab 238-1	WO2009 13471 1 SEQ ID NO: 19	17795
OC145	Factor I)	Heavy chain variable region	Humanized Clone #111	WO200913471 I SEQ ID NO: 2	17796
OC1 46	Factor D	Heavy chain variable region	Fab 238-2	WO2009 1347! 1 SEQ ID NO: 20	17797
OC147	Factor I)	Heavy chain variable region	Fab 238-3	WO200913471 1 SEQ ID NO: 21	17798
OC148	Factor D	Heavy chain variable region	Fab 238-4	WO2009 1347! 1 SEQ ID NO: 22	17799
OC149	Factor I)	Heavy chain variable region	Fab 238-5	WO200913471 ! SEQ ID NO: 23	17800
OC1 50	Factor D	Heavy chain variable region	Fab 238-6	WO2009 1347! 1 SEQ ID NO: 24	17801
OC15 1	Factor I)	Heavy chain variable region	Fab 238-7	WO200913471 ! SEQ ID NO: 25	17802
OC1 52	Factor D	Heavy chain variable region	Fab 238-8	WO2009 1347! 1 SEQ ID NO: 26	17803
OC153	Factor I)	Heavy chain variable region	Fab 238-9	WO200913471 ! SEQ ID NO: 27	17804
OC154	Factor D	Heavy chain variable region	Fab 238-10	WO2009 13471 1 SEQ ID NO: 28	17805
OC155	Factor D	Heavy chain variable region	Fab 238-1 1	WO200913471 1 SEQ ID NO: 29	17806
OC156	Factor D	Heavy chain variable region	L243	WO2009 13471 1 SEQ ID NO: 34	17807
OC157	Factor D	Heavy chain variable region	humanized L243	WO200913471 1 SEQ ID NO: 38	17808
OC158	LPG (lysopliosphatid ylglucoside)	Heavy chain variable region	#7	US8591902 SEQ ID NO: 18	3124
OC159	LPG (lysopliosphatid ylgiucoside)	Heavy chain variable region	#15	US8591902 SEQ ID NO: 8	3125
OC160	PDGFR-beta	Heavy chain variable region	3373N	US20 140193402 SEQ ID 114	6792
QC161	PDGFR-beta	Heavy chain variable region	3374N	US20140193402 SEQ ID 130	6793
OC162	PDGFR-beta	Heavy chain variable region	3094P	US20140 193402 SEQ ID 146	6794
OC163	PDGFR-beta	Heavy chain variable region	3095S	US20 140193402 SEQ ID 162	6795
OC164	PDGFR-beta	Heavy chain variable region	3096S	US20140 193402 SEQ ID 178	6796
OC165	PDGFR-beta	Heavy chain variable region	3305N	US20 140193402 SEQ ID 18	6797
OC166	PDGFR-beta	Heavy chain variable region	3097S	US20140 193402 SEQ ID 194	6798
OC167	PDGFR-beta	Heavy chain variable region	3299N	US20 140193402 SEQ ID 2	6799
OC168	PDGFR-beta	Heavy chain variable region	3098S	US20140 193402 SEQ ID 2 10	6800
OC169	PDGFR-beta	Heavy chain variable region	3099S	US20 140193402 SEQ ID 226	680 1
OC170	PDGFR-beta	Heavy chain variable region	3 102S	US20 140193402 SEQ ID 242	6802

OC171	PDGFR-beta	Heavy chain variable region	3103S	US20 140193402 SEQ ID 258	6803
OC172	PDGFR-beta	Heavy chain variable region	3104S	US20140193402 SEQ ID 274	6804
OC173	PDGFR-beta	Heavy chain variable region	3105S	US20140 193402 SEQ ID 290	6805
OC174	PDGFR-beta	Heavy chain variable region	3106S	US20140193402 SEQ ID 306	6806
OC175	PDGFR-beta	Heavy chain variable region	3107S	US20140 193402 SEQ ID 322	6807
OC176	PDGFR-beta	Heavy chain variable region	33ION	US20 140193402 SEQ ID 34	6808
OC177	PDGFR-beta	Heavy chain variable region	336IN	US20140 193402 SEQ ID 50	6809
OC178	PDGFR-beta	Heavy chain variable region	3363N	US20 140193402 SEQ ID 66	6810
OC179	PDGFR-beta	Heavy chain variable region	3365N	US20140 193402 SEQ ID 82	6811
OC180	PDGFR-beta	Heavy chain variable region	3368N	US20 140193402 SEQ ID 98	6812
OC181	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 1322	US201 10 177074 SEQ ID NO: 100	6813
OC182	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 1323	US201 10177074 SEQ ID NO: 104	6814
OC183	PDGFRp/VEGF-A	Heavy chain variable region	Cluster s 1330	US201 10 177074 SEQ ID NO: 108	6815
OC184	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 1334	US201 10177074 SEQ ID NO: 112	6816
OC185	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 1345	US201 10 177074 SEQ ID NO: 116	6817
OC186	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 600	US201 10177074 SEQ ID NO: 12	6818
OC187	PDGFRp/VEGF-A	Heavy chain variable region	Cluster s 1346	US201 10 177074 SEQ ID NO: 120	6819
OC188	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 1359	US201 10177074 SEQ ID NO: 124	6820
OC189	PDGFRp/VEGF-A	Heavy chain variable region	Cluster s 1365	US201 10 177074 SEQ ID NO: 128	6821
OC190	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 1402	US201 10177074 SEQ ID NO: 132	6822
OC191	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 15 15	US20 110 177074 SEQ ID NO: 136	6823
OC192	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 153 1	US201 10177074 SEQ ID NO: 140	6824
OC193	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 1535	US20 110 177074 SEQ ID NO: 144	6825
OC194	PDGFRP/VEGF-A	Heavy chain variable region	Cluster # 1541	US201 10177074 SEQ ID NO: 148	6826
OC195	PDGFRp/VEGF-A	Heavy chain variable region	Cluster s 1550	US20 110 177074 SEQ ID NO: 152	6827
OC196	PDGFRP/VEGF-A	Heavy chain variable region	Cluster * 1564	US201 10177074 SEQ ID NO: 156	6828
OC197	PDGFRp/VEGF-A	Heavy chain variable region	Cluster S 607	US20 110 177074 SEQ ID NO: 16	6829
OC198	PDGFRP/VEGF-A	Heavy chain variable region	Cluster * 1601	US201 10177074 SEQ ID NO: 160	6830
OC199	PDGFRp/VEGF-A	Heavy chain variable region	Cluster S 1629	US20 110 177074 SEQ ID NO: 164	683 1

OC200	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 635	US20 110 177074 SEQ ID NO: 168	6832
QC201	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 636	US201 10177074 SEQ ID NO: 172	6833
OC202	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 638	US201 10 177074 SEQ ID NO: 176	6834
OC203	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 656	US20 l 10177074 SEQ ID NO: 180	6835
OC204	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 665	US201 10 177074 SEQ ID NO: 184	6836
OC205	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 668	US20 l 10177074 SEQ ID NO: 188	6837
OC206	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 669	US201 10 177074 SEQ ID NO: 192	6838
OC207	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 679	US20 l 10177074 SEQ ID NO: 196	6839
OC208	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 613	US201 10 177074 SEQ ID NO: 20	6840
OC209	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 695	US20 l 10177074 SEQ ID NO: 200	6841
OC2 10	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 709	US201 10 177074 SEQ ID NO: 204	6842
OC21 1	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 710	US20H0177074 SEQ ID NO: 208	6843
OC212	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 741	US20 110 177074 SEQ ID NO: 212	6844
OC213	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 752	US20H0177074 SEQ ID NO: 216	6845
OC214	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 772	US20 110 177074 SEQ ID NO: 220	6846
OC215	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 779	US20H0177074 SEQ ID NO: 224	6847
OC216	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 799	US20 110 177074 SEQ ID NO: 228	6848
OC217	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 830	US20H0177074 SEQ ID NO: 232	6849
OC218	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 844	US20 110 177074 SEQ ID NO: 236	6850
OC219	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 941	US201 10177074 SEQ ID NO: 24	6851
OC220	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 847	US20 110 177074 SEQ ID NO: 240	6852
OC221	PDGFRP/VEGF-A	Heavy chain variable region	Cluster # 868	US201 10177074 SEQ ID NO: 244	6853
OC222	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 870	US20 110 177074 SEQ ID NO: 248	6854
OC223	PDGFRP/VEGF-A	Heavy chain variable region	Cluster # 883	US201 10177074 SEQ ID NO: 252	6855
OC224	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 887	US20 110 177074 SEQ ID NO: 256	6856
OC225	PDGFRP/VEGF-A	Heavy chain variable region	Cluster # 901	US201 10177074 SEQ ID NO: 260	6857
OC226	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 905	US20 110 177074 SEQ ID NO: 264	6858
OC227	PDGFRP/VEGF-A	Heavy chain variable region	Cluster # 909	US201 10177074 SEQ ID NO: 268	6859
OC228	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 928	US20 110 177074 SEQ ID NO: 272	6860

OC229	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 1036	US20 110 177074 SEQ ID NO: 276	6861
OC230	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 946	US201 10177074 SEQ ID NO: 28	6862
OC23 1	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 1039	US201 10 177074 SEQ ID NO: 280	6863
OC232	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 1040	US20 1 10177074 SEQ ID NO: 284	6864
OC233	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 1044	US201 10 177074 SEQ ID NO: 288	6865
OC234	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 1048	US20 1 10177074 SEQ ID NO: 292	6866
OC235	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 1056	US201 10 177074 SEQ ID NO: 296	6867
OC236	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 1064	US20 1 10177074 SEQ ID NO: 300	6868
OC237	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 1080	US201 10 177074 SEQ ID NO: 304	6869
OC238	PDGFRp/VEGF-A	Heavy chain variable region	Cluster * 1092	US20 1 10177074 SEQ ID NO: 308	6870
OC239	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 1094	US201 10 177074 SEQ ID NO: 312	6871
OC240	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 1096	US20H0177074 SEQ ID NO: 316	6872
OC241	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 947	US20 1 10 177074 SEQ ID NO: 32	6873
OC242	PDGFRp/VEGF-A	Heavy chain variable region	Cluster * 1107	US20H0177074 SEQ ID NO: 320	6874
OC243	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 1111	US20 1 10 177074 SEQ ID NO: 324	6875
OC244	PDGFRp/VEGF-A	Heavy chain variable region	Cluster * 1123	US20H0177074 SEQ ID NO: 328	6876
OC245	PDGFRp/VEGF-A	Heavy chain variable region	Cluster * 1135	US20 1 10 177074 SEQ ID NO: 332	6877
OC246	PDGFRp/VEGF-A	Heavy chain variable region	Cluster * 1142	US20H0177074 SEQ ID NO: 336	6878
OC247	PDGFRp/VEGF-A	Heavy chain variable region	Cluster * 1155	US20 1 10 177074 SEQ ID NO: 340	6879
OC248	PDGFRp/VEGF-A	Heavy chain variable region	Clusier # 1250	US201 10177074 SEQ ID NO: 344	6880
OC249	PDGFRp/VEGF-A	Heavy chain variable region	Cluster * 1252	US20 110 177074 SEQ ID NO: 348	6881
OC250	PDGFRP/VEGF-A	Heavy chain variable region	Clusier # 1254	US201 10177074 SEQ ID NO: 352	6882
OC25 1	PDGFRp/VEGF-A	Heavy chain variable region	Cluster * 1257	US20 110 177074 SEQ ID NO: 356	6883
OC252	PDGFRP/VEGF-A	Heavy chain variable region	Clusier # 949	US201 10177074 SEQ ID NO: 36	6884
OC253	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 1264	US20 110 177074 SEQ ID NO: 360	6885
OC254	PDGFRP/VEGF-A	Heavy chain variable region	Clusier # 1266	US201 10177074 SEQ ID NO: 364	6886
OC255	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 1268	US20 110 177074 SEQ ID NO: 368	6887
OC256	PDGFRP/VEGF-A	Heavy chain variable region	Clusier # 1269	US201 10177074 SEQ ID NO: 372	6888
OC257	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 1270	US20 110 177074 SEQ ID NO: 376	6889

OC258	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 1281	US20 110 177074 SEQ ID NO: 380	6890
OC259	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 1283	US201 10177074 SEQ ID NO: 384	6891
OC260	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 1285	US201 10 177074 SEQ ID NO: 388	6892
OC26 !	PDGFRp/VEGF-A	Heavy chain variable region	Cluster * 1409	US20 1 10177074 SEQ ID NO: 392	6893
OC262	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 141O	US201 10 177074 SEQ ID NO: 396	6894
OC263	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 975	US20 1 10177074 SEQ ID NO: 40	6895
OC264	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 14 13	US201 10 177074 SEQ ID NO: 400	6896
OC265	PDGFRp/VEGF-A	Heavy chain variable region	Cluster * 1416	US20 1 10177074 SEQ ID NO: 404	6897
OC266	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 1420	US201 10 177074 SEQ ID NO: 408	6898
OC267	PDGFRp/VEGF-A	Heavy chain variable region	Cluster * 1428	US20 1 10177074 SEQ ID NO: 412	6899
OC268	PDGFRp/VEGF-A	Heavy chain variable region	Cluster * 1437	US201 10 177074 SEQ ID NO: 416	6900
OC269	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 1449	US20H0177074 SEQ ID NO: 420	6901
OC270	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 1458	US201 10 177074 SEQ ID NO: 424	6902
OC27 1	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 1476	US20H0177074 SEQ ID NO: 428	6903
OC272	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 1479	US201 10 177074 SEQ ID NO: 432	6904
OC273	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 997	US20H0177074 SEQ ID NO: 44	6905
OC274	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 1035	US201 10 177074 SEQ ID NO: 48	6906
OC275	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 1223	US20H0177074 SEQ ID NO: 52	6907
OC276	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 1228	US201 10 177074 SEQ ID NO: 56	6908
OC277	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 1230	US201 10177074 SEQ ID NO: 60	6909
OC278	PDGFRp/VEGF-A	Heavy chain variable region	Cluster * 1231	US20 110 177074 SEQ ID NO: 64	6910
OC279	PDGFRP/VEGF-A	Heavy chain variable region	Cluster # 1236	US201 10177074 SEQ ID NO: 68	6911
OC280	PDGFRp/VEGF-A	Heavy chain variable region	Cluster * 1238	US20 110 177074 SEQ ID NO: 72	6912
OC281	PDGFRP/VEGF-A	Heavy chain variable region	Cluster # 1244	US201 10177074 SEQ ID NO: 76	6913
OC282	PDGFRp/VEGF-A	Heavy chain variable region	Cluster # 1245	US20 110 177074 SEQ ID NO: 80	6915
OC283	PDGFRP/VEGF-A	Heavy chain variable region	Cluster # 1299	US201 10177074 SEQ ID NO: 84	6916
OC284	PDGFRp/VEGF-A	Heavy chain variable region	Cluster * 1312	US201 10177074 SEQ ID NO: 88	6917
OC285	PDGFRP/VEGF-A	Heavy chain variable region	Cluster * 1314	US201 10177074 SEQ ID NO: 92	6918
OC286	PDGFRp/VEGF-A	Heavy chain variable region	Cluster * 1317	US20 110 177074 SEQ ID NO: 96	6919

OC287	PDGFRβ/VEGF-A	Heavy chain variable region	Cluster # 597	US20110177074 SEQ ID NO: 8	6914
OC288	RGMa	Heavy chain variable region	AE12-1	US20140023659 SEQ ID NO: 1	3164
OC289	RGMa	Heavy chain variable region	AE12-20	US20140023659 SEQ ID NO: 107	3165
OC290	RGMa	Heavy chain variable region	AE12-21	US20140023659 SEQ ID NO: 115	3166
OC291	RGMa	Heavy chain variable region	AE12-23	US20140023659 SEQ ID NO: 123	3167
OC292	RGMa	Heavy chain variable region	AE12-24	US20140023659 SEQ ID NO: 131	3168
OC293	RGMa	Heavy chain variable region	AE12-3	US20140023659 SEQ ID NO: 17	3169
OC294	RGMa	Heavy chain variable region	AE12-4	US20140023659 SEQ ID NO: 25	3170
OC295	RGMa	Heavy chain variable region	AE12-5	US20140023659 SEQ ID NO: 33	3171
OC296	RGMa	Heavy chain variable region	AE12-6	US20140023659 SEQ ID NO: 41	3172
OC297	RGMa	Heavy chain variable region	AE12-7	US20140023659 SEQ ID NO: 49	3173
OC298	RGMa	Heavy chain variable region	AE12-8	US20140023659 SEQ ID NO: 57	3174
OC299	RGMa	Heavy chain variable region	AE12-2	US20140023659 SEQ ID NO: 9	3175
OC300	RGMa	Heavy chain variable region	AE12-13	US20140023659 SEQ ID NO: 91	3176
OC301	RGMa	Heavy chain variable region	AE12-15	US20140023659 SEQ ID NO: 99	3177
OC302	S1P4	Heavy chain variable region		WO2015057939 SEQ ID NO: 7	4323
OC303	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Heavy chain variable region	NVS73	US20140186350 SEQ ID 111	17809
OC304	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Heavy chain variable region	NVS75	US20140186350 SEQ ID 193	17810
OC305	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Heavy chain variable region	NVS70	US20140186350 SEQ ID 40	17811
OC306	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Heavy chain variable region	NVS71	US20140186350 SEQ ID 59	17812
OC307	VEGF, C5, Factor P, Factor D, EPO, EPOR,	Heavy chain variable region	NVS4	US20140186350 SEQ ID 7	17813

	IL-1β, IL-17A, Il-10, TNFα, or FGFR2				
OC308	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Heavy chain variable region	NVS72	US20140186350 SEQ ID 81	17814
OC309	VEGF-A	Heavy chain variable region	H6	US20140086829 SEQ ID 4	7022
OC310	VEGF-A	Heavy chain variable region	H5	US20140086829 SEQ ID 5	7023
OC311	VEGF-A	Heavy chain variable region	H7	US20140086829 SEQ ID 6	7024
OC312	C5a	Heavy chain with signal peptide	BNJ364	US20130224187 SEQ ID 24	7271
OC313	C5a	Heavy chain with signal peptide	BNJ367, BNJ371, BNJ378	US20130224187 SEQ ID 32	7272
OC314	C5a	Heavy chain with signal peptide	BNJ366	US20130224187 SEQ ID 43	7273
OC315	C5a	Heavy chain with signal peptide	BNJ369, BNJ381, BNJ383	US20130224187 SEQ ID 48	7274
OC316	Annexin IV or a phospholipid; and (b) a complement inhibitor	Light chain	B4	WO2014116880 SEQ ID 13	7389
OC317	Annexin IV or a phospholipid; and (b) a complement inhibitor	Light chain	B4	WO2014116880 SEQ ID 14	7390
OC318	Annexin IV or a phospholipid; and (b) a complement inhibitor	Light chain	C2	WO2014116880 SEQ ID 34	7391
OC319	Annexin IV or a phospholipid; and (b) a complement inhibitor	Light chain	C2	WO2014116880 SEQ ID 35	7392
OC320	C3b	Light chain	rhuMAB 4D5-8	US8377437 SEQ ID 13	7396
OC321	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-1	WO2015099838 SEQ ID 1	7397
OC322	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-10	WO2015099838 SEQ ID 10	7398

OC323	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-11	WO2015099838 SEQ ID 11	7399
OC324	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-12	WO2015099838 SEQ ID 12	7400
OC325	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-13	WO2015099838 SEQ ID 13	7401
OC326	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-14	WO2015099838 SEQ ID 14	7402
OC327	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-15	WO2015099838 SEQ ID 15	7403
OC328	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-16	WO2015099838 SEQ ID 16	7404
OC329	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-17	WO2015099838 SEQ ID 17	7405
OC330	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-18	WO2015099838 SEQ ID 18	7406
OC331	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-19	WO2015099838 SEQ ID 19	7407
OC332	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-2	WO2015099838 SEQ ID 2	7408
OC333	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-20	WO2015099838 SEQ ID 20	7409
OC334	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-21	WO2015099838 SEQ ID 21	7410

OC335	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-22	WO2015099838 SEQ ID 22	7411
OC336	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-23	WO2015099838 SEQ ID 23	7412
OC337	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-24	WO2015099838 SEQ ID 24	7413
OC338	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-25	WO2015099838 SEQ ID NO: 25	7414
OC339	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-26	WO2015099838 SEQ ID NO: 26	7415
OC340	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-27	WO2015099838 SEQ ID NO: 27	7416
OC341	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-28	WO2015099838 SEQ ID NO: 28	7417
OC342	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-29	WO2015099838 SEQ ID NO: 29	7418
OC343	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-3	WO2015099838 SEQ ID NO: 3	7419
OC344	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-30	WO2015099838 SEQ ID NO: 30	7420
OC345	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-31	WO2015099838 SEQ ID NO: 31	7421
OC346	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-32	WO2015099838 SEQ ID NO: 32	7422

OC347	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-33	WO2015099838 SEQ ID NO: 33	7423
OC348	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-34	WO2015099838 SEQ ID NO: 34	7424
OC349	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-35	WO2015099838 SEQ ID NO: 35	7425
OC350	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-36	WO2015099838 SEQ ID NO: 36	7426
OC351	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-37	WO2015099838 SEQ ID NO: 37	7427
OC352	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-38	WO2015099838 SEQ ID NO: 38	7428
OC353	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-39	WO2015099838 SEQ ID NO: 39	7429
OC354	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-4	WO2015099838 SEQ ID NO: 4	7430
OC355	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-40	WO2015099838 SEQ ID NO: 40	7431
OC356	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-41	WO2015099838 SEQ ID NO: 41	7432
OC357	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-42	WO2015099838 SEQ ID NO: 42	7433
OC358	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-43	WO2015099838 SEQ ID NO: 43	7434

OC359	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-5	WO2015099838 SEQ ID NO: 5	7435
OC360	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-6	WO2015099838 SEQ ID NO: 6	7436
OC361	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-7	WO2015099838 SEQ ID NO: 7	7437
OC362	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-8	WO2015099838 SEQ ID NO: 8	7438
OC363	C3b, Properdin (factor P), Factors Ba and Bb, C5, C6, C7, C8, C9	Light chain	L-9	WO2015099838 SEQ ID NO: 9	7439
OC364	C5	Light chain	NVS962	US20150158936 SEQ ID 10	7446
OC365	C5	Light chain	NVS808	US20150158936 SEQ ID 108	7447
OC366	C5	Light chain	NVS806	US20150158936 SEQ ID 122	7448
OC367	C5	Light chain	NVS804	US20150158936 SEQ ID 136	7449
OC368	C5	Light chain	NVS809	US20150158936 SEQ ID 150	7450
OC369	C5	Light chain	NVS805	US20150158936 SEQ ID 164	7451
OC370	C5	Light chain	NVS962-S	US20150158936 SEQ ID 178	7452
OC371	C5	Light chain	NVS962-Q	US20150158936 SEQ ID 192	7453
OC372	C5	Light chain	NVS962-S31A	US20150158936 SEQ ID 206	7454
OC373	C5	Light chain	NVS962-G	US20150158936 SEQ ID 220	7455
OC374	C5	Light chain	NVS962-T	US20150158936 SEQ ID 234	7456
OC375	C5	Light chain	NVS963	US20150158936 SEQ ID 24	7457
OC376	C5	Light chain	NVS965-T	US20150158936 SEQ ID 248	7458
OC377	C5	Light chain	NVS965-Q	US20150158936 SEQ ID 262	7459
OC378	C5	Light chain	NVS965-S	US20150158936 SEQ ID 276	7460
OC379	C5	Light chain	NVS964	US20150158936 SEQ ID 38	7461
OC380	C5	Light chain	Antibody 8109	US20150158936 SEQ ID 419	7462
OC381	C5	Light chain	Antibody 8110	US20150158936 SEQ ID 435	7463
OC382	C5	Light chain	Antibody 8111	US20150158936 SEQ ID 450	7464
OC383	C5	Light chain	Antibody 8113	US20150158936 SEQ ID 463	7465
OC384	C5	Light chain	Antibody 8114	US20150158936 SEQ ID 479	7466
OC385	C5	Light chain	NVS966	US20150158936 SEQ ID 52	7467
OC386	C5	Light chain	NVS965	US20150158936 SEQ ID 66	7468
OC387	C5	Light chain	NVS967	US20150158936 SEQ ID 80	7469
OC388	C5	Light chain	NVS807	US20150158936 SEQ ID 94	7470
OC389	C5	Light chain	L1	US20150239966 SEQ ID 1	7471

OC390	C5	Light chain	L6	US20150239966 SEQ ID NO: 11	7472
OC39 !	C5	Light chain	L2	US20 l50239966 SEQ ID 3	7473
OC392	C5	Light chain	L3	US20150239966 SEQ ID NO: 5	7474
OC393	C5	Light chain	L4	US20150239966 SEQ ID NO: 7	7475
OC394	C5	Light chain	L5	US20150239966 SEQ ID NO: 9	7476
OC395	C5	Light chain	Tesidolumab, 1 ..!·<; 316. LFG-3 16. LFG3 16"	US824 1628 SEQ ID l0	7477
OC396	C5	Light chain		US9133269 SEQ ID 10	7478
OC397	C5	Light chain		US9133269 SEQ ID 11	7479
OC398	C5	Light chain		US9133269 SEQ ID l2	7480
OC399	C5	Light chain		US9133269 SEQ ID 13	748 1
OC400	C5	Light chain		US9133269 SEQ ID l4	7482
OC40 1	C5	Light chain		US9133269 SEQ ID 15	7483
OC402	C5	Light chain		US9133269 SEQ ID 16	7484
OC403	C5	Light chain		US9133269 SEQ ID l7	7485
OC404	C5	Light chain		US9133269 SEQ ID 18	7486
OC405	C5	Light cliain		US9 l33269 SEQ ID 19	7487
OC406	C5	Light chain		US9133269 SEQ ID 20	7488
OC407	C5	Light chain		US9133269 SEQ ID 2 1	7489
OC408	C5	Light chain		US9133269 SEQ ID 22	7490
OC409	C5	Light chain		US9133269 SEQ ID 23	7491
OC4 10	C5	Light cliain		US9 133269 SEQ ID 24	7492
OC41 1	C5	Light chain		US9133269 SEQ ID 6	7493
OC412	C5	Light chain		US9133269 SEQ ID 7	7494
OC413	C5	Light chain		US9133269 SEQ ID 8	7495
QC414	C5	Light chain		US9133269 SEQ ID 9	7496
OC4 15	C5a	Light cliain	BNJ364, BNJ367, BNJ366, BN.T369	US20130224187 SEQ ID 17	7503
OC416	C5a	Light chain	BNJ371, BNJ381	US20130224187 SEQ ID 36	7504
OC417	C5a	Light chain	BNJ378, BN.T383	US20 130224 187 SEQ ID 40	7505
OC418	CGRP	Light chain	Abl l	US20 120294802 SEQ ID NO: l02	17725
OC419	CGRP	Light chain	Abl2	US20 120294802 SEQ ID NO: 1l2	17726
OC420	CGRP	Light chain	Ab2	US20 120294802 SEQ ID NO: 12	17729
QC42 l	CGRP	Light chain	Ab13	US20 120294802 SEQ ID NO: 122	17727
OC422	CGRP	Light chain	Ah 14	US20 120294802 SEQ ID NO: l32	17728
OC423	CGRP	Light chain	Abl	US20 120294802 SEQ ID NO: 2	17723
OC424	CGRP	Light cliain	Ab3	US20 120294802 SEQ ID NO: 22	17730
OC425	CGRP	Light chain	Ab4	US20 120294802 SEQ ID NO: 32	1773 l
OC426	CGRP	Light chain	Ab5	US20 120294802 SEQ ID NO: 42	17732
OC427	CGRP	Light chain	Ab6	US20 120294802 SEQ ID NO: 52	17733

OC428	CGRP	Light chain	Ab7	US20120294802 SEQ ID NO: 62	17734
OC429	CGRP	Light chain	Ab8	US20120294802 SEQ ID NO: 72	17735
OC430	CGRP	Light chain	Ab9	US20120294802 SEQ ID NO: 82	17736
OC431	CGRP	Light chain	Ab10	US20120294802 SEQ ID NO: 92	17724
OC432	Factor D	Light chain	Fab 238	WO2009134711 SEQ ID NO: 47	17815
OC433	Factor D, humanized IgG2	Light Chain	Lampalizumab ,	US8273352 SEQ ID NO: 47	17816
OC434	platelet-derived growth factor receptor beta PDGFRB	Light chain	Rinucumab, REGN2176		17817
OC435	S1P4	Light chain		WO2015057939 SEQ ID NO: 41	4420
OC436	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Light chain	NVS73,	US20140186350 SEQ ID 122	17818
OC437	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Light chain	NVS81	US20140186350 SEQ ID 158	17819
OC438	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Light chain	NVS81T	US20140186350 SEQ ID 160	17820
OC439	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Light chain	NVS82	US20140186350 SEQ ID 162	17821
OC440	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Light chain	NVS82T	US20140186350 SEQ ID 164	17822
OC441	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Light chain	NVS1b	US20140186350 SEQ ID 172	17823
OC442	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Light chain	NVS1c	US20140186350 SEQ ID 174	17824
OC443	VEGF, C5, Factor P, Factor D, EPO, EPOR,	Light chain	NVS1d	US20140186350 SEQ ID 176	17825

	IL-1β, IL-17A, Il-10, TNFα, or FGFR2				
OC444	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Light chain	NVS1e	US20140186350 SEQ ID 178	17826
OC445	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Light chain	NVS1f	US20140186350 SEQ ID 180	17827
OC446	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Light chain	NVS1g	US20140186350 SEQ ID 182	17828
OC447	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Light chain	NVS1h	US20140186350 SEQ ID 184	17829
OC448	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Light chain	NVS1j	US20140186350 SEQ ID 185	17830
OC449	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Light chain	NVS4, NVS1, NVS2, NVS3, NVS36, NVS37	US20140186350 SEQ ID 19	17831
OC450	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Light chain	NVS75, NVS74T, NCS75T	US20140186350 SEQ ID 202	17832
OC451	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Light chain	NVS70, NVS70T	US20140186350 SEQ ID 51	17833
OC452	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Light chain	NVS71, NVS71T	US20140186350 SEQ ID 73	17834
OC453	VEGF, C5, Factor P, Factor D, EPO, EPOR,	Light chain	NVS72, NVS72T	US20140186350 SEQ ID 95	17835

	IL-Iβ, IL-17A, 11-10, TNFα, or FGFR2				
OC454	sphingosine-1-phosphate	Light chain full	Sonepcizumab, S1P-LT1012		17836
OC455	sphingosine-1 -phosphaie	Light chain variable	Sonepcizumab, S1P-LT1010		17837
OC456	Factor D	Light chain variable region	Humanized Clone #111	WO200913471 1 SEQ ID NO: I	17838
OC457	Factor D	Light chain variable region	Fab 238-4	WO2009 I3471 1 SEQ ID NO: 10	17839
OC458	Factor D	Light chain variable region	Fab 238-5	WO200913471 1 SEQ ID NO: 11	17840
OC459	Factor D	Light chain variable region	Fab 238-6	WO2009 I3471 1 SEQ ID NO: 12	17841
OC460	Factor D	Light chain variable region	Fab 238-7	WO200913471 1 SEQ ID NO: 13	17842
OC46 1	Factor D	Light chain variable region	Fab 238-8	WO2009 I3471 1 SEQ ID NO: 14	17843
OC462	Factor D	Light chain variable region	Fab 238-9	WO200913471 1 SEQ ID NO: 15	17844
OC463	Factor D	Light chain variable region	Fab 238-10	WO2009 13471 1 SEQ ID NO: 16	17845
OC464	Factor D	Light chain variable region	Fab 238-1 1	WO2009 13471 1 SEQ ID NO: 17	17846
OC465	Factor D	Light chain variable region	L243	WO200913471 1 SEQ ID NO: 32	17847
OC466	Factor D	Light chain variable region	humanized L243	WO200913471 1 SEQ ID NO: 36	17848
OC467	Factor D	Light chain variable region	Fab 238	WO200913471 1 SEQ ID NO: 6	17849
OC468	Factor D	Light chain variable region	Fab 238-1	WO200913471 1 SEQ ID NO: 7	17850
OC469	Factor D	Light chain variable region	Fab 238-2	WO200913471 1 SEQ ID NO: 8	1785 1
OC470	Factor D	Light chain variable region	Fab 238-3	WO200913471 1 SEQ ID NO: 9	17852
OC471	LPG (lysophosphatidylglucoside)	Light chain variable region	#7	US8591902 SEQ ID NO: 17	3329
OC472	LPG (lysophosphat d vlglucoside)	Light chain variable region	#15	US859 !902 SEQ ID NO: 7	3330
OC473	PDGFR-beta	Light chain variable region	3299N	US20140 193402 SEQ ID 10	9142
OC474	PDGFR-beta	Light chain variable region	3368N	US20140193402 SEQ ID 106	9143
OC475	PDGFR-beta	Light chain variable region	3373N	US20140 193402 SEQ ID 122	9144
OC476	PDGFR-beta	Light chain variable region	3374N	US20 140193402 SEQ ID 138	9145
OC477	PDGFR-beta	Light chain variable region	3094P	US20 140193402 SEQ ID 154	9146
OC478	PDGFR-beta	Light chain variable region	3095S	US20140193402 SEQ ID 170	9147
OC479	PDGFR-beta	Light chain variable region	3096S	US20140193402 SEQ ID 186	9148
OC480	PDGFR-beta	Light chain variable region	3097S	US20 140193402 SEQ ID 202	9149

OC481	PDGFR-beta	Light chain variable region	3098S	US20 140193402 SEQ ID 218	9150
OC482	PDGFR-beta	Light chain variable region	3099S	US20140193402 SEQ ID 234	9151
OC483	PDGFR-beta	Light clmin variable region	3102S	US20140 193402 SEQ ID 250	9152
OC484	PDGFR-beta	Light chain variable region	3305N	US20 140193402 SEQ ID 26	9153
OC485	PDGFR-beta	Light clmin variable region	3103S	US20140 193402 SEQ ID 266	9154
OC486	PDGFR-beta	Light chain variable region	3104S	US20 140193402 SEQ ID 282	9155
OC487	PDGFR-beta	Light chain variable region	3105S	US20140 193402 SEQ ID 298	9156
OC488	PDGFR-beta	Light chain variable region	3106S	US20 140193402 SEQ ID 314	9157
OC489	PDGFR-beta	Light clmin variable region	3107S	US20140 193402 SEQ ID 330	9158
OC490	PDGFR-beta	Light chain variable region	331ON	US20 140193402 SEQ ID 42	9159
OC491	PDGFR-beta	Light clmin variable region	3361N	US20140 193402 SEQ ID 58	9160
OC492	PDGFR-beta	Light chain variable region	3363N	US20 140193402 SEQ ID 74	9161
OC493	PDGFR-beta	Light chain variable region	3365N	US20140 193402 SEQ ID 90	9162
OC494	PDGFRp/VEGF-A	Light chain variable region	Cluster # 600	US201 10177074 SEQ ID NO: 10	9163
OC495	PDGFRp/VEGF-A	Light chain variable region	Cluster s 1323	US201 10177074 SEQ ID NO: 102	9164
OC496	PDGFRp/VEGF-A	Light chain variable region	Cluster # 1330	US201 10177074 SEQ ID NO: 106	9165
OC497	PDGFRp/VEGF-A	Light chain variable region	Cluster s 1334	US201 10177074 SEQ ID NO: 110	9166
OC498	PDGFRp/VEGF-A	Light chain variable region	Cluster # 1345	US201 10177074 SEQ ID NO: 114	9167
OC499	PDGFRp/VEGF-A	Light chain variable region	Cluster s 1346	US201 10177074 SEQ ID NO: 118	9168
OC500	PDGFRp/VEGF-A	Light chain variable region	Cluster # 1359	US201 10177074 SEQ ID NO: 122	9169
OC501	PDGFRp/VEGF-A	Light chain variable region	Cluster # 1365	US20 110177074 SEQ ID NO: 126	9170
OC502	PDGFRp/VEGF-A	Light chain variable region	Cluster # 1402	US201 10177074 SEQ ID NO: 130	9171
OC503	PDGFRp/VEGF-A	Light chain variable region	Cluster # 1515	US20 110177074 SEQ ID NO: 134	9172
OC504	PDGFRP/VEGF-A	Light chain variable region	Cluster * 1531	US201 10177074 SEQ ID NO: 138	9173
OC505	PDGFRp/VEGF-A	Light chain variable region	Cluster # 607	US20 110177074 SEQ ID NO: 14	9174
OC506	PDGFRP/VEGF-A	Light chain variable region	Cluster * 1535	US201 10177074 SEQ ID NO: 142	9175
OC507	PDGFRp/VEGF-A	Light chain variable region	Cluster * 1541	US20 110177074 SEQ ID NO: 146	9176
OC508	PDGFRP/VEGF-A	Light chain variable region	Cluster * 1550	US201 10177074 SEQ ID NO: 150	9177
OC509	PDGFRp/VEGF-A	Light chain variable region	Cluster * 1564	US20 110177074 SEQ ID NO: 154	9178

OC510	PDGFRp/VEGF-A	Light chain variable region	Cluster # 1601	US20110177074 SEQ ID NO: 158	9179
OC511	PDGFRp/VEGF-A	Light chain variable region	Cluster # 1629	US201 10177074 SEQ ID NO: 162	9180
OC512	PDGFRp/VEGF-A	Light chain variable region	Cluster # 635	US201 10177074 SEQ ID NO: 166	9181
OC513	PDGFRp/VEGF-A	Light chain variable region	Cluster # 636	US20110177074 SEQ ID NO: 170	9182
OC514	PDGFRp/VEGF-A	Light chain variable region	Cluster # 638	US201 10177074 SEQ ID NO: 174	9183
OC515	PDGFRp/VEGF-A	Light chain variable region	Cluster # 656	US20110177074 SEQ ID NO: 178	9184
OC516	PDGFRp/VEGF-A	Light chain variable region	Cluster # 613	US201 10177074 SEQ ID NO: 18	9185
OC517	PDGFRp/VEGF-A	Light chain variable region	Cluster # 665	US20110177074 SEQ ID NO: 182	9186
OC518	PDGFRp/VEGF-A	Light chain variable region	Cluster # 668	US201 10177074 SEQ ID NO: 186	9187
OC519	PDGFRp/VEGF-A	Light chain variable region	Cluster # 669	US20110177074 SEQ ID NO: 190	9188
OC520	PDGFRp/VEGF-A	Light chain variable region	Cluster # 679	US201 10177074 SEQ ID NO: 194	9189
OC521	PDGFRp/VEGF-A	Light chain variable region	Clusier # 695	US20H0177074 SEQ ID NO: 198	9190
OC522	PDGFRp/VEGF-A	Light chain variable region	Cluster # 709	US20110177074 SEQ ID NO: 202	9191
OC523	PDGFRp/VEGF-A	Light chain variable region	Clusier # 710	US20H0177074 SEQ ID NO: 206	9192
OC524	PDGFRp/VEGF-A	Light chain variable region	Cluster * 741	US20110177074 SEQ ID NO: 210	9193
OC525	PDGFRp/VEGF-A	Light chain variable region	Clusier # 752	US20H0177074 SEQ ID NO: 214	9194
OC526	PDGFRp/VEGF-A	Light chain variable region	Cluster # 772	US20110177074 SEQ ID NO: 218	9195
OC527	PDGFRp/VEGF-A	Light chain variable region	Clusier # 941	US20H0177074 SEQ ID NO: 22	9196
OC528	PDGFRp/VEGF-A	Light chain variable region	Cluster # 779	US20110177074 SEQ ID NO: 222	9197
OC529	PDGFRp/VEGF-A	Light chain variable region	Clusier # 799	US201 10177074 SEQ ID NO: 226	9198
OC530	PDGFRp/VEGF-A	Light chain variable region	Cluster # 830	US20110177074 SEQ ID NO: 230	9199
OC531	PDGFRP/VEGF-A	Light chain variable region	Clusier # 844	US201 10177074 SEQ ID NO: 234	9200
OC532	PDGFRp/VEGF-A	Light chain variable region	Cluster # 847	US20110177074 SEQ ID NO: 238	9201
OC533	PDGFRP/VEGF-A	Light chain variable region	Clusier # 868	US201 10177074 SEQ ID NO: 242	9202
OC534	PDGFRp/VEGF-A	Light chain variable region	Cluster # 870	US20110177074 SEQ ID NO: 246	9203
OC535	PDGFRP/VEGF-A	Light chain variable region	Clusier # 883	US201 10177074 SEQ ID NO: 250	9204
OC536	PDGFRp/VEGF-A	Light chain variable region	Cluster # 887	US20110177074 SEQ ID NO: 254	9205
OC537	PDGFRP/VEGF-A	Light chain variable region	Clusier # 901	US201 10177074 SEQ ID NO: 258	9206
OC538	PDGFRp/VEGF-A	Light chain variable region	Cluster # 946	US20110177074 SEQ ID NO: 26	9207

OC539	PDGFRp/VEGF-A	Light chain variable region	Cluster # 905	US20 110 177074 SEQ ID NO: 262	9208
OC540	PDGFRp/VEGF-A	Light chain variable region	Cluster # 909	US201 10177074 SEQ ID NO: 266	9209
OC541	PDGFRp/VEGF-A	Light chain variable region	Cluster # 928	US201 10 177074 SEQ ID NO: 270	92 10
OC542	PDGFRp/VEGF-A	Light chain variable region	Cluster # 1036	US20 l 10177074 SEQ ID NO: 274	92 1!
OC543	PDGFRp/VEGF-A	Light chain variable region	Cluster # i039	US201 10 177074 SEQ ID NO: 278	92 12
OC544	PDGFRp/VEGF-A	Light chain variable region	Cluster # 1040	US20 l 10177074 SEQ ID NO: 282	92 13
OC545	PDGFRp/VEGF-A	Light chain variable region	Cluster # 1044	US201 10 177074 SEQ ID NO: 286	92 14
OC546	PDGFRp/VEGF-A	Light chain variable region	Cluster # 1048	US20 l 10177074 SEQ ID NO: 290	92 15
OC547	PDGFRp/VEGF-A	Light chain variable region	Cluster # i056	US201 10 177074 SEQ ID NO: 294	92 16
OC548	PDGFRp/VEGF-A	Light chain variable region	Cluster * 1064	US20 l 10177074 SEQ ID NO: 298	92 17
OC549	PDGFRp/VEGF-A	Light chain variable region	Cluster # 947	US201 10 177074 SEQ ID NO: 30	92 18
OC550	PDGFRp/VEGF-A	Light chain variable region	Clusier # 1080	US20H0177074 SEQ ID NO: 302	9219
OC55 1	PDGFRp/VEGF-A	Light chain variable region	Cluster # 1092	US20 110 177074 SEQ ID NO: 306	9220
OC552	PDGFRp/VEGF-A	Light chain variable region	Clusier # 1094	US20H0177074 SEQ ID NO: 3 10	9221
OC553	PDGFRp/VEGF-A	Light chain variable region	Cluster # 1096	US20 110 177074 SEQ ID NO: 3 14	9222
OC554	PDGFRp/VEGF-A	Light chain variable region	Clusier * 1107	US20H0177074 SEQ ID NO: 3 18	9223
OC555	PDGFRp/VEGF-A	Light chain variable region	Cluster * 1111	US20 110 177074 SEQ ID NO: 322	9224
OC556	PDGFRp/VEGF-A	Light chain variable region	Clusier * 1123	US20H0177074 SEQ ID NO: 326	9225
OC557	PDGFRp/VEGF-A	Light chain variable region	Cluster * 1135	US20 110 177074 SEQ ID NO: 330	9226
OC558	PDGFRp/VEGF-A	Light chain variable region	Cluster * 1142	US201 10177074 SEQ ID NO: 334	9227
OC559	PDGFRp/VEGF-A	Light chain variable region	Cluster * 1155	US20 110 177074 SEQ ID NO: 338	9228
OC560	PDGFRP/VEGF-A	Light chain variable region	Clusier # 949	US201 10177074 SEQ ID NO: 34	9229
OC561	PDGFRp/VEGF-A	Light chain variable region	Cluster * 1250	US20 110 177074 SEQ ID NO: 342	9230
OC562	PDGFRP/VEGF-A	Light chain variable region	Clusier # 1252	US201 10177074 SEQ ID NO: 346	923 1
OC563	PDGFRp/VEGF-A	Light chain variable region	Cluster * 1254	US20 110 177074 SEQ ID NO: 350	9232
OC564	PDGFRP/VEGF-A	Light chain variable region	Clusier # 1257	US201 10177074 SEQ ID NO: 354	9233
OC565	PDGFRp/VEGF-A	Light chain variable region	Cluster # 1264	US20 110 177074 SEQ ID NO: 358	9234
OC566	PDGFRP/VEGF-A	Light chain variable region	Clusier # 1266	US201 10177074 SEQ ID NO: 362	9235
OC567	PDGFRp/VEGF-A	Light chain variable region	Cluster # 1268	US20 110 177074 SEQ ID NO: 366	9236

OC568	PDGFRp/VEGF-A	Light chain variable region	Cluster # 1269	US20 110 177074 SEQ ID NO: 370	9237
OC569	PDGFRp/VEGF-A	Light chain variable region	Cluster # 1270	US201 10177074 SEQ ID NO: 374	9238
OC570	PDGFRp/VEGF-A	Light clmin variable region	Cluster # 1281	US201 10 177074 SEQ ID NO: 378	9239
OC57 !	PDGFRp/VEGF-A	Light chain variable region	Cluster # 975	US20 l 10177074 SEQ ID NO: 38	9240
OC572	PDGFRp/VEGF-A	Light clmin variable region	Cluster # 1283	US201 10 177074 SEQ ID NO: 382	9241
OC573	PDGFRp/VEGF-A	Light chain variable region	Cluster # 1285	US20 l 10177074 SEQ ID NO: 386	9242
OC574	PDGFRp/VEGF-A	Light chain variable region	Cluster # 1409	US201 10 177074 SEQ ID NO: 390	9243
OC575	PDGFRp/VEGF-A	Light chain variable region	Cluster # 1410	US20 l 10177074 SEQ ID NO: 394	9244
OC576	PDGFRp/VEGF-A	Light clmin variable region	Cluster # l4 l3	US201 10 177074 SEQ ID NO: 398	9245
OC577	PDGFRp/VEGF-A	Light chain variable region	Cluster # 1416	US20 l 10177074 SEQ ID NO: 402	9246
OC578	PDGFRp/VEGF-A	Light clmin variable region	Cluster # 1420	US201 10 177074 SEQ ID NO: 406	9247
OC579	PDGFRp/VEGF-A	Light chain variable region	Clusier # 1428	US20H0177074 SEQ ID NO: 410	9248
OC580	PDGFRp/VEGF-A	Light chain variable region	Cluster # 1437	US20 110 177074 SEQ ID NO: 414	9249
OC58 1	PDGFRp/VEGF-A	Light chain variable region	Clusier # 1449	US20H0177074 SEQ ID NO: 418	9250
OC582	PDGFRp/VEGF-A	Light chain variable region	Cluster # 997	US20 110 177074 SEQ ID NO: 42	9251
OC583	PDGFRp/VEGF-A	Light chain variable region	Clusier # 1458	US20H0177074 SEQ ID NO: 422	9252
OC584	PDGFRp/VEGF-A	Light chain variable region	Cluster # 1476	US20 110 177074 SEQ ID NO: 426	9253
OC585	PDGFRp/VEGF-A	Light chain variable region	Clusier # 1479	US20H0177074 SEQ ID NO: 430	9254
OC586	PDGFRp/VEGF-A	Light chain variable region	Cluster # 1035	US20 110 177074 SEQ ID NO: 46	9255
OC587	PDGFRp/VEGF-A	Light chain variable region	Clusier # 1228	US201 10177074 SEQ ID NO: 54	9257
OC588	PDGFRp/VEGF-A	Light chain variable region	Cluster # 1230	US20 110 177074 SEQ ID NO: 58	9258
OC589	PDGFRP/VEGF-A	Light chain variable region	Cluster * 123 1	US201 10177074 SEQ ID NO: 62	9260
OC590	PDGFRp/VEGF-A	Light chain variable region	Cluster * 1236	US20 110 177074 SEQ ID NO: 66	9261
OC591	PDGFRP/VEGF-A	Light chain variable region	Clusier # 1238	US201 10177074 SEQ ID NO: 70	9262
OC592	PDGFRp/VEGF-A	Light chain variable region	Cluster # 1244	US20 110 177074 SEQ ID NO: 74	9263
OC593	PDGFRP/VEGF-A	Light chain variable region	Clusier # 1245	US201 10177074 SEQ ID NO: 78	9264
OC594	PDGFRp/VEGF-A	Light chain variable region	Cluster * 1299	US20 110 177074 SEQ ID NO: 82	9265
OC595	PDGFRP/VEGF-A	Light chain variable region	Cluster * 13 l2	US201 10177074 SEQ ID NO: 86	9266
OC596	PDGFRp/VEGF-A	Light chain variable region	Cluster * 13 l4	US20 110 177074 SEQ ID NO: 90	9267

OC597	PDGFRβ/VEGF-A	Light chain variable region	Cluster # 1317	US20110177074 SEQ ID NO: 94	9268
OC598	PDGFRβ/VEGF-A	Light chain variable region	Cluster # 1322	US20110177074 SEQ ID NO: 98	9269
OC599	PDGFRβ/VEGF-A	Light chain variable region	Cluster # 597	US20110177074 SEQ ID NO: 6	9259
OC600	RGMa	Light chain variable region	AE12-15	US20140023659 SEQ ID NO: 103	3358
OC601	RGMa	Light chain variable region	AE12-20	US20140023659 SEQ ID NO: 111	3359
OC602	RGMa	Light chain variable region	AE12-21	US20140023659 SEQ ID NO: 119	3360
OC603	RGMa	Light chain variable region	AE12-23	US20140023659 SEQ ID NO: 127	3361
OC604	RGMa	Light chain variable region	AE12-2	US20140023659 SEQ ID NO: 13	3362
OC605	RGMa	Light chain variable region	AE12-24	US20140023659 SEQ ID NO: 135	3363
OC606	RGMa	Light chain variable region	AE12-3	US20140023659 SEQ ID NO: 21	3364
OC607	RGMa	Light chain variable region	AE12-4	US20140023659 SEQ ID NO: 29	3365
OC608	RGMa	Light chain variable region	AE12-5	US20140023659 SEQ ID NO: 37	3366
OC609	RGMa	Light chain variable region	AE12-6	US20140023659 SEQ ID NO: 45	3367
OC610	RGMa	Light chain variable region	AE12-1	US20140023659 SEQ ID NO: 5	3368
OC611	RGMa	Light chain variable region	AE12-7	US20140023659 SEQ ID NO: 53	3369
OC612	RGMa	Light chain variable region	AE12-8	US20140023659 SEQ ID NO: 61	3370
OC613	RGMa	Light chain variable region	AE12-13	US20140023659 SEQ ID NO: 95	3371
OC614	S1P4	Light chain variable region		WO2015057939 SEQ ID NO: 9	4431
OC615	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Light chain variable region	NVS73	US20140186350 SEQ ID 120	17853
OC616	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Light chain variable region	NVS4	US20140186350 SEQ ID 17	17854
OC617	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Light chain variable region	NVS75	US20140186350 SEQ ID 201	17855
OC618	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A,	Light chain variable region	NVS70	US20140186350 SEQ ID 49	17856

	Il-10, TNFα, or FGFR2				
OC619	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Light chain variable region	NVS71	US20140186350 SEQ ID 71	17857
OC620	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	Light chain variable region	NVS72	US20140186350 SEQ ID 93	17858
OC621	VEGF-A	Light chain variable region	L3	US20140086829 SEQ ID NO: 8	9350
OC622	C5a	Light chain with signal peptide	BNJ364, BNJ367, BNJ366, BNJ369	US20130224187 SEQ ID 16	9466
OC623	C5a	Light chain with signal peptide	BNJ371, BNJ381	US20130224187 SEQ ID 35	9467
OC624	C5a	Light chain with signal peptide	BNJ378, BNJ383	US20130224187 SEQ ID 39	9468
OC625	VEGF-A	scFv	L3H6	US20140086829 SEQ ID NO: 10	9617
OC626	VEGF-A	scFv	L3H5	US20140086829 SEQ ID NO: 12	9618
OC627	VEGF-A	scFv	L3H7	US20140086829 SEQ ID NO: 14	9619
OC628	VEGF-A	scFv	Fab L3H6	US20140086829 SEQ ID 17	9620
OC629	VEGF-A	scFv	Fab L3H6	US20140086829 SEQ ID 18	9621
OC630	VEGF-A	scFv	Fab L3H5	US20140086829 SEQ ID 21	9622
OC631	VEGF-A	scFv	Fab L3H5	US20140086829 SEQ ID 22	9623
OC632	VEGF-A	scFv	Fab L3H7	US20140086829 SEQ ID 25	9624
OC633	Annexin IV or a phospholipid; and (b) a complement inhibitor	scoff	B4	WO2014116880 SEQ ID 17	9630
OC634	Annexin IV or a phospholipid; and (b) a complement inhibitor	scFV	B4	WO2014116880 SEQ ID 18	9631
OC635	Annexin IV or a phospholipid; and (b) a complement inhibitor	scFV	C2	WO2014116880 SEQ ID 37	9632
OC636	Annexin IV or a phospholipid; and (b) a complement inhibitor	scFV	C2	WO2014116880 SEQ ID 38	9633
OC637	VEGF, C5, Factor P, Factor D, EPO, EPOR,	single chain	NVS78	US20140186350 SEQ ID 146	17859

	IL-1β, IL-17A, Il-10, TNFα, or FGFR2				
OC638	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	single chain	NVS78T	US20140186350 SEQ ID 147	17860
OC639	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	single chain	NVS90	US20140186350 SEQ ID 148	17861
OC640	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	single chain	NVS90T	US20140186350 SEQ ID 149	17862
OC641	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	single chain	NVS79	US20140186350 SEQ ID 150	17863
OC642	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	single chain	NVS79T	US20140186350 SEQ ID 151	17864
OC643	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	single chain	NVS91	US20140186350 SEQ ID 152	17865
OC644	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	single chain	NVS91T	US20140186350 SEQ ID 153	17866
OC645	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	single chain	NVS80	US20140186350 SEQ ID 154	17867
OC646	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-1β, IL-17A, Il-10, TNFα, or FGFR2	single chain	NVS80T	US20140186350 SEQ ID 156	17868
OC647	VEGF, C5, Factor P, Factor D, EPO, EPOR,	single chain	NVS83	US20140186350 SEQ ID 165	17869

	IL-Iβ, IL-17A, 11-10, TNFa, or FGFR2				
OC648	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-Iβ, IL-17A, 11-10, TNFα, or FGFR2	single chain	NVS83T	US20140186350 SEQ ID 166	17870
OC649	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-Iβ, IL-17A, 11-10, TNFa, or FGFR2	single chain	NVS84	US20140186350 SEQ ID 167	17871
OC650	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-Iβ, IL-17A, 11-10, TNFa, or FGFR2	single chain	NVS84T	US20140186350 SEQ ID 168	17872
OC651	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-Iβ, IL-17A, 11-10, TNFa, or FGFR2	single chain	NVS85	US20140186350 SEQ ID 169	17873
OC652	VEGF, C5, Factor P, Factor D, EPO, EPOR, IL-Iβ, IL-17A, 11-10, TNFa, or FGFR2	single chain	NVS85T	US20140186350 SEQ ID 170	17874
OC653	TGFbeta	single-domain	DOM23h-33	WO2011012609 SEQ ID 1	9655
OC654	TGFbeta	single-domain	DOM23h-439	WO2011012609 SEQ ID 10	9656
OC655	TGFbeta	single-domain	DOM23h-440	WO2011012609 SEQ ID 11	9657
OC656	TGFbeta	single-domain	DOM23h-262-6	WO2011012609 SEQ ID 12	9658
OC657	TGFbeta	single-domain	DOM23h-262-10	WO2011012609 SEQ ID 13	9659
OC658	TGFbeta	single-domain	DOM2311-271-3	WO2011012609 SEQ ID 14	9660
OC659	TGFbeta	single-domain	DOM23h-271-7	WO2011012609 SEQ ID 15	9661
OC660	TGFbeta	single-domain	DOM2311-271-12	WO2011012609 SEQ ID 16	9662
OC661	TGFbeta	single-domain	DOM23h-271-13	WO2011012609 SEQ ID 17	9663
OC662	TGFbeta	single-domain	DOM23h-437-4	WO2011012609 SEQ ID 18	9664
OC663	TGFbeta	single-domain	DOM23h-437-6	WO2011012609 SEQ ID 19	9665
OC664	TGFbeta	single-domain	DOM23h-251	WO2011012609 SEQ ID 2	9666
OC665	TGFbeta	single-domain	DOM23h-437-8	WO2011012609 SEQ ID 20	9667
OC666	TGFbeta	single-domain	DOM23h-437-9	WO2011012609 SEQ ID 21	9668

OC667	TGFbeta	single-domain	DOM23h-439-6	WO2011012609 SEQ ID 22	9669
OC668	TGFbeta	single-domain	DOM23h-439-8	WO2011012609 SEQ ID 23	9670
OC669	TGFbeta	single-domain	DOM23h-262	WO2011012609 SEQ ID 3	9671
OC670	TGFbeta	single-domain	DOM23h-271	WO2011012609 SEQ ID 4	9672
OC671	TGFbeta	single-domain	DOM23h-348	WO2011012609 SEQ ID 5	9673
OC672	TGFbeta	single-domain	DOM23h-435	WO2011012609 SEQ ID 6	9674
OC673	TGFbeta	single-domain	DOM23h-436	WO2011012609 SEQ ID 7	9675
OC674	TGFbeta	single-domain	DOM23h-437	WO2011012609 SEQ ID 8	9676
OC675	TGFbeta	single-domain	DOM23h-438	WO2011012609 SEQ ID 9	9677
OC676	VEGFA		Brolucizumab, ESBA-1008, ESBA1008,		17875

Systemic Disease Antibodies

[00301] In one embodiment, the payload region of the AAV particle comprises one or more nucleic acid sequences encoding one or more of the systemic disease payload antibody polypeptides listed in Table 12 (SYS1-SYS73; SEQ ID NO: 7124, 7127, 7291-7293, 9394, 9397, 9485-9487, 17876-17938).

Table 12. Systemic Disease **Antibodies**

Antibody No.	**Target**	**Description**	**Antibody Name**	**Reference Information**	**SEQ ID NO**
SYS1	integrin αIIbβ3, GPIIb/IIIa	Chain A, Antibody for platelet aggregation	Tadocizumab, C4G1, YM-337	US5777085 SEQ ID NO: 23	17876
SYS2	integrin αIIbβ3, GPIIb/IIIa	Chain B, Antibody for platelet aggregation	Tadocizumab, C4G1, YM-337	US5777085 SEQ ID NO: 12	17877
SYS3		Fab fragment	Tadocizumab		17878
SYS4		Fab fragment	Tadocizumab		17879
SYS5		Fusion protein	Sotatercept		17880
SYS6	selectin P	Heavy chain	Inclacumab, LC1004-002, RO4905417		17881
SYS7		Heavy chain	Alirocumab		17882
SYS8		Heavy chain	Abciximab		17883
SYS9		Heavy chain	Bococizumab		17884
SYS10		Heavy chain	Evinacumab		17885
SYS11		Heavy chain	Inclacumab		17886
SYS12		Heavy chain	Lanadelumab		17887
SYS13		Heavy chain	Ralpancizumab		17888
SYS14		Heavy chain	Roledumab		17889
SYS15	CD20	Heavy Chain, Antibody for reversing anticoagulation of dabigatran	Idarucizumab	US8486398 SEQ ID NO: 35; US8486398 SEQ ID NO: 39	17890

SYS16	oxLDL	Heavy chain Antibody for acute coronary syndrome, atherosclerosis	Orticumab, BI-204, MLDL-1278A, R7418, RG-7418		17891
SYS17		Heavy chain Fab fragment	Idarucizumab		17892
SYS18	selectin P	Heavy chain variable region	Inclacumab, LC1004-002, RO4905417	US7563441 SEQ ID NO: 4	17893
SYS19	oxLDL	Heavy chain variable region, Antibody for acute coronary syndrome, atherosclerosis	Orticumab, Bi-204, MLDL-1278A, R7418, RG-7418	US8318161 SEQ ID NO: 3	7124
SYS20	C5	Heavy Chain Variable Region, Antibody for cardiopulmonary bypass, myocardial infection, h5g1.1VHC + F	Pexelizumab, 5G1.1-SC		17894
SYS21	PCSK9	Heavy chain variable region, Antibody for cholesterol	Alirocumab	US8062640 SEQ ID NO: 90	17895
SYS22	TNFSF11	Heavy Chain Variable Region, Antibody for osteoporosis	Denosumab, Prolia	US7364736; US8058418; US8409578	7127
SYS23	TFPI	Heavy chain, Antibody for bleeding,	Concizumab, Anti-TFPI, NN7415, mab2021	US8361469 SEQ ID NO: 24	17896
SYS24	PCSK9	Heavy chain, Antibody for cardiovascular disease	Bococizumab	US8399646 SEQ ID NO: 15	17897
SYS25	PCSK9	Heavy chain, Antibody for cholesterol	Alirocumab		17898
SYS26	PCSK9	Heavy chain, Antibody for dyslipidemia, Hypercholesterolemia	Ralpancizumab, PF-05335810, RN317		17899
SYS27	F9, F10	Heavy chain, Antibody for hematology (hemophilia), anti 10	Emicizumab, ACE910, hBS910		17900
SYS28	F9, F10	Heavy chain, Antibody for hematology (hemophilia), anti F-91	Emicizumab, ACE910, hBS910		17901
SYS29	PCSK9	Heavy chain, Antibody for hypercholesterolemia	Lodelcizumab, LGT209, NVP-LGT209		17902

SYS30	PCSK9	Heavy chain, Antibody for hyperlipidemia	Evolocumab	US8030457	17903
SYS31	ANGPTL3	Heavy chain, Antibody for Hypertriglyceridemia	Evinacumab, REGN 1500		17904
SYS32	TNFSF11	Heavy Chain, Antibody for osteoporosis	Denosumab, Prolia	US7364736; US8058418; US8409578	7292
SYS33	SOST	Heavy chain, Antibody for osteoporosis,	Romosozumab	US7592429; US7872106; US8003108; US8017120 SEQ ID NOs: 147, 145	17905
SYS34	SOST	Heavy chain, Antibody for osteoporosis,	Blosozumab	US7744874 SEQ ID NO: 3	7291
SYS35	TNFSF11	Heavy chain, Antibody for osteoporosis, Denosumab αOPGL-1	Denosumab, Prolia	US8962807 SEQ ID NO: 177; US7528236 SEQ ID NO: 28	7293
SYS36	RHD	Heavy chain, Antibody for prevention of fetomaternal alloimmunization in RhD women	Roledumab, LFB-R593, DMATRIA™	WO 2010100383	17906
SYS37	CD20	Heavy Chain, Antibody for reversing anticoagulation of dabigatran	Idarucizumab	US8486398 SEQ ID NO: 38; US8486398 SEQ ID NO: 41; US8486398 SEQ ID NO: 36	17907
SYS38		hemophilia	Factor IX-Fc antibody	US20050147618 SEQ ID NO: 23	17908
SYS39		hemophilia	Factor VIII-Fc antibody	WO2011069164 SEQ ID NO: 2	17909
SYS40	selectin P (a5b1)	Light chain	Inclacumab, LC1004-002, RO4905418	US8039596 SEQ ID NO: 10; US7432359 SEQ ID NO: 89	17910
SYS41		Light chain	Alirocumab		17911
SYS42		Light chain	Abciximab		17912
SYS43		Light chain	Bococizumab		17913
SYS44		Light chain	Evinacumab		17914
SYS45		Light chain	Idarucizumab		17915
SYS46		Light chain	Inclacumab		17916
SYS47		Light chain	Lanadelumab		17917
SYS48		Light chain	Ralpancizumab		17918
SYS49		Light chain	Roledumab		17919
SYS50	ANGPTL3	Light chain, Antibody for Hypertriglyceridemia	Evinacumab, REGN 1500		17920

SYS51	CD41 7E3	Light chain 1, Antibody for preventing blood clot, ReoPro-Like	Abciximab, c7E3 Fab, ReoPro	US5275812; US5770198; US5440020	17921
SYS52	CD41 7E3	Light chain 1, Antibody for preventing blood clot, ReoPro-Like	Abciximab, c7E3 Fab, ReoPro	US5275812; US5770198; US5440020	17922
SYS53	selectin P	Light chain variable region	Inclacumab, LC1004-002, RO4905417	US7563441 SEQ ID NO: 3	17923
SYS54	oxLDL	Light chain variable region, Antibody for acute coronary syndrome, atherosclerosis	Orticumab, Bi-204, MLDL-1278A, R7418, RG-7418	US8318161 SEQ ID NO: 4	9394
SYS55	C5	Light Chain Variable Region, Antibody for cardiopulmonary bypass, myocardial infection, h5g1.1VHC + F	Pexelizumab, 5G1.1-SC		17924
SYS56	PCSK9	Light chain variable region, Antibody for cholesterol	Alirocumab	US8062640 SEQ ID NO: 92	17925
SYS57	TNFSF11	Light Chain Variable Region, Antibody for osteoporosis	Denosumab, Prolia	US7364736; US8058418; US8409578	9397
SYS58	oxLDL	Light chain, Antibody for acute coronary syndrome, atherosclerosis	Orticumab, BI-204, MLDL-1278A, R7418, RG-7418		17926
SYS59	PCSK9	Light chain, Antibody for blood, hypercholesterolemia	Lodelcizumab, LGT209, NVP-LGT209	US8710192 SEQ ID NO: 17	17927
SYS60	PCSK9	Light chain, Antibody for cardiovascular disease	Bococizumab	US8399646 SEQ ID NO: 14	17928
SYS61	PCSK9	Light chain, Antibody for cholesterol	Alirocumab		17929
SYS62	PCSK9	Light chain, Antibody for dyslipidemia, Hypercholesterolemia	Ralpancizumab, PF-05335810, RN317		17930
SYS63	F9, F10	Light chain, Antibody for hematology (hemophilia)	Emicizumab, ACE910, hBS910		17931
SYS64	TFPI	Light chain, Antibody for hemophilia,	Concizumab, Anti-TFPI, NN7415, **mab2021**	US8361469 SEQ ID NO: 21	17932

SYS65	PCSK9	Light chain, Antibody for hyperlipidemia	Evolocumab	US8030457 SEQ ID NO: 297	17933
SYS66	TNFSF11	Light Chain, Antibody for osteoporosis	Denosumab, Prolia	US7364736; US8058418; US8409578	9486
SYS67	SOST	Light chain, Antibody for osteoporosis,	Romosozumab	US7592429; US7872106; US8003108; US8017120 SEQ ID NOs: 141, 143	17934
SYS68	SOST	Light chain, Antibody for osteoporosis,	Blosozumab	US7744874 SEQ ID NO: 6	9485
SYS69	TNFSF11	Light chain, Antibody for osteoporosis, Denosumab αOPGL-1	Denosumab, Prolia	US8992925 SEQ ID NO: 8; US7364736 SEQ ID NO: 4	9487
SYS70	RHD	Light chain, Antibody for prevention of fetomaternal alloimmunization in RhD women	Roledumab, LFB-R593, DMATRIA™	WO 2010100383	17935
SYS71		Peptide	Ecallantide		17936
SYS72	C5	scFv, Antibody for cardiopulmonary bypass, myocardial infection, h5g1.1	Pexelizumab, 5G1.1-SC		17937
SYS73			**Abaloparatide**		17938

[00302] In one embodiment, the payload region of the AAV particle comprises a nucleic acid sequence encoding a polypeptide which is an antibody, an antibody-based composition, or a fragment thereof. As a non-limiting example, the antibody may be one or more of the polypeptides listed in Tables 3-12. As another non-limiting example, the antibody may be one or more of the heavy chain sequences listed in Tables 3-12. As a non-limiting example, the antibody may be one or more of the light chain sequences listed in Table 3-12.

[00303] In one embodiment, the payload region of the AAV particle comprises a nucleic acid sequence encoding a polypeptide comprising a heavy chain and a light cham sequence listed in Tables 3-12. The payload region may also comprise a linker between the heavy and light chain sequences. The linker may be a sequence known in the art or described in Table 2,

[00304] In one embodiment, the payload region of the AAV particle comprises a nucleic acid sequence encoding a polypeptide comprising a heavy cham and a light chain sequence listed in Tables 3-12, where the heavy cham sequence is from a different antibody than the light cham sequence. The payload region may also comprise a linker between the heavy and light chain sequences. The linker may be a sequence known in the art or described in Table 2.

[00305] In one embodiment, the payload region comprises, in the 5' to 3' direction, an antibody light chain sequence, a linker and a heavy chain sequence.

[00306] In one embodiment, the payload region comprises a nucleic acid sequence encoding, in the 5' to 3' direction, an antibody light chain sequence from Tables 3-12, a linker from Table 2 and a heavy chain sequence from Tables 3-12.

[00307] In one embodiment, the payload region comprises, in the 5' to 3' direction, an antibody heavy chain sequence, a linker and a light chain sequence.

[00308] In one embodiment, the payload region comprises a nucleic acid sequence encoding, in the 5' to 3' direction, an antibody heavy chain sequence from Tables 3-12, a linker from Table 2 and a light chain sequence from Tables 3-12.

[00309] In one embodiment, the payload region comprises a nucleic acid sequence encoding a single heavy chain. As a non-limiting example, the heavy chain is an amino acid sequence or fragment thereof described in Tables 3-12.

[00310] Shown in Tables 3-12 are a listing of antibodies and their polynucleotides and/or polypeptides sequences. These sequences may be encoded by or included in the AAV particles of the present invention. Variants or fragments of the antibody sequences described in Tables 3-12 may be utilized in the AAV particles of the present invention.

[00311] In some embodiments, the AAV particles may comprise codon-optimized versions of the nucleic acids encoding the polypeptides listed in Tables 3-12. In some cases, the payload region of the AAV particles of the invention may encode one or more isoforms or -variants of these heavy and light chain antibody domains. Such variants may be humanized or optimized antibody domains comprising one or more complementarity determining regions (CDRs) from the heavy and light chains listed in Tables 3-12. Methods of detennining CDRs are well known in the art and are described herein. Payload regions may encode antibody variants with one or more heavy chain variable domain (**VH**) or light chain variable domain (**VL**) derived from the antibody sequences in Tables 3-12. In some cases, such variants may include bispecific antibodies. Bispecific antibodies encoded by payload regions of the invention may comprise variable domain pairs from two different antibodies.

[00312] In one embodiment, the AAV particles may comprise a heavy and a light chain of an antibody described herein and two promoters. As anon-limiting example, the AAV particles may comprise a nucleic acid sequence of a genome as described in Figure 1 or Figure 2 of US Patent Publication No. US20030219733, the contents of which are herein incorporated by-reference in its entirety. As another non-limiting example, the AAV particles may be a dual-promoter AAV for antibody expression as described by Lewis et al. (J. of. Virology, Sept 2002,

Vol. 76(17). p 8769-8775, the contents of which are herein incorporated by reference in its entirety).

Disease Specific Epitopes. Innate Defense Regulator Peptides. Cyclic Peptides

[00313] In one embodiment, the viral genomes of the AAV particles may comprise nucleic acids which have been engineered to enable expression of antibodies binding to disease-specific epitopes of proteins. Such antibodies may be used to diagnose, prevent, and/or treat the corresponding medical conditions by targeting epitopes of the protein presented by or accessible on native or non-native forms (e.g., misfoided forms of native proteins) of the target. Such epitopes may be specific to diseases involved with misfolding of a protein due to pathologic condition and resulting in misfoided aggregates. The disease-specific proteins are considered to be toxic to neurons and to have a role in neuronal cell death and dysfunction in neurodegenerative diseases including, but not limited to, Alzheimer's disease (AD), amyotrophic lateral sclerosis (ALS), Parkinson's disease, dementia by Lewy body (DLB), and prion diseases, e.g. Creutzfeldt-Jakob disease (CJD), Gerstniann-Straussier-Scheinker syndrome (GSS), kuru, and fatal familial insomnia (FFI).

[00314] In one embodiment, the encoded disease-specific epitopes may include epitopes on SOD1 that are revealed as SOD1 (Superoxide disrnutase [Cu-Zn]) dissociates from its homodimeric, normal state. The SOD epitopes may be selectively presented or accessible in non-native SOD1 forms including misfoided SOD1 monomer, misfoided SOD1 dimer, and the epitopes selectively presented or accessible in SOD1 aggregates. Such epitopes may be specific to neurodegenerative diseases including, but not limited to, amyotrophic lateral sclerosis (ALS), Alzheimer's (AD), Parkinson's (PD), and Lewy body diseases (LBD).

[00315] In one embodiment, the expressed antibodies may bind to epitopes presented by or accessible on non-native forms of SOD1, such as those presented by SED ID NO: 2, 3, 5, 6, and 7 of US Patent No. US7977314 (the contents of which are herein incorporated by reference in its entirety), or presented by or accessible on monomelic forms of SODl , such as those presented by SEQ ID NOs: 1 and 4 of US Patent No. US7977314, the contents of which are herein incorporated by reference in their entirety. In one embodiment, the expressed antibodies may comprise isolated peptides corresponding to such epitopes, such as those presented in SEQ ID NOs: 1-8 or SEQ ID NOs: 8-16, or epitopes presented by SEQ ID NOs: 34-63, 65-79 of US Patent No. US7977314, the contents of which are herein incorporated by reference in their entirety.

[00316] In one embodiment, the encoded disease-specific epitopes may be specific to diseases associated with prion protein (PrP); familial amyloid polyneuropathy or senile systemic

amyloidosis or a disease related by the presence of misfoided transihyretine (TTR); renal accumulation of β2 microglobulin amyloid deposits or a disease related by the presence of misfoided β2 microglobulin, amyotrophic lateral sclerosis (ALS) or a disease related by the presence of misfoided SOD1; leukemias or myelomas or a disease related by the presence of misfoided cluster of differentiation 38 (CD38); colon cancer metastasis and or a disease related by the presence of misfoided cluster of differentiation (CD44); tumors associated with tumor necrosis factor receptor (TNFR); cancers including cervical, head and neck, endometrial, lung and breast carcinomas, pleural mesotheliomas, malignant melanomas, Hodgkin lymphomas, anaplastic large cell non-Hodgkin lymphomas, or a disease related by the presence of misfoided Notch homolog 1 (NOTCH 1) e.g. acute myeloid leukemias and B-cell chronic lymphoid leukemias; cancer in which Fas receptor (FasR) is implicated: cancers and related disorders in which misfoided epidermal growth factor (EGFR) is implicated, and/or other related diseases, disorders and conditions.

|00317] In one embodiment, the encoded disease specific epitopes may include epitopes that are revealed as the proteins misfold. In one embodiment, the expressed antibodies may bind to predicted epitopes of human PrP, such as those presented by SEQ ID NOs: 1-10 of US Patent Publication No. US20100233176; bovine PrP, such as those presented by SEQ ID NOs: 11-15 of US Patent Publication No. US20100233176, TTR, such as those presented by SEQ ID NOs: 16-22 of US Patent Publication No. US20 100233 176; beta-2 microglobulin, such as those presented by SEQ ID NOs: 23-26 of US Patent Publication No. US201 00233 176; SOD1, such as those presented by SEQ ID NOs: 27-40 of US Patent Publication No. US20100233176; CD38, such as those presented by SEQ ID NOs: 41-45 of US Patent Publication No. US201002331 76; CD44, such as those presented by 46-50 of US Patent Publication No. US201 00233176: TNFR, such as those presented by 51-55 of US Patent Publication No. US20100233 176; notch protein, such as those presented in SEQ ID NOs: 56-60 of US Patent Publication No. US201002331 76; FasR, such as those presented by SEQ ID NOs: 61-65 of US Patent Publication No. US20100233176 and EGFR, such as those presented by SEQ ID NOs: 66-80 of US Patent Publication No. US20 100233 176; the contents of which are herein incorporated by reference in their entirety.

[00318] In one embodiment, the expressed antibodies may comprise peptides corresponding to such epitopes. In one embodiment, the expressed antibodies may comprise prion-specific peptides, such as those presented by SEQ ID NOs: 81-88 of US Patent Publication No. US20 100233176, the contents of which are herein incorporated by reference in their entirety, and variations thereof.

[00319] In one embodiment, the encoded disease-specific epitopes may be specific to prion diseases, including transmissible spongiform encephalopathies (TSEs) or other prion diseases. In one embodiment, the expressed antibodies may bind to predicted epitopes of PrP, such as those presented by SEQ ID NOs: 24, 26, 28, 30, 32, 34, 36, 39-43, of US Patent Publication No. US20150004185, the contents of which are herein incorporated by reference in their entirety. In one embodiment, the expressed antibodies may comprise prion-specific peptides or peptide fusions, such as those presented by SEQ ID NOs: 12-23, 25, 27, 29, 31, 33, 35, 37, 38, 43, and 44-48 of US Patent Publication No. US20150004185, the contents of which are herein incorporated by reference in their entirety.

[00320] In one embodiment, the expressed antibodies may comprise prion peptides binding to prion specific abnormal isoform of the prion protein, such as those presented by SEQ ID NOs: 2-10 of US Patent Publication No. US20040072236, the contents of which are herein incorporated by reference in their entirety.

[00321] In one embodiment, the viral genomes of the AAV particles may comprise nucleic acids which have been engineered to express innate defense regulator (IDR) peptides. IDRs are immunomodulatory peptides that act directly on cells to effect an innate immune response. Such IDRs may be used to treat neurodegenerative diseases associated with neuroinflammation, e.g. amyotrophic lateral sclerosis (ALS), Alzheimer's disease, Friedreich's ataxia, Huntington's disease, Lewy body disease, Parkinson's disease, spinal muscular atrophy, and multiple sclerosis (MS) and other neurodegenerative diseases. In one embodiment, IDRs may be those presented by SEQ ID NOS: 1-969, and 973-1264 of International Publication No. WO2013034982, the contents of which are herein incorporated by reference in their entirety, or analogs, derivatives, amidated variations and conservative variations thereof.

[00322] In one embodiment, the viral genomes of the AAV particles may comprise nucleic acids which have been engineered to express antibodies binding to an epitope of the Tropomyosin receptor kinase (TrkC) receptor. Such antibodies may comprise a peptide, such as one presented by SEQ ID NO: 1 of US Patent No. US9200080, the contents of which are herein incorporated by reference in their entirety.

[00323] In some embodiments, the viral genomes of the AAV particles may comprise nucleic acids which have been engineered to express cyclic peptides with an amino acid sequence SNK. Non-limiting examples of other cyclic peptides include SEQ ID NO: 1-7 of US Patent No. US9216217, the contents of which are herein incorporated by reference in their entirety. The method of preparing the antibodies may include hyperimmune preparation method, as described

in US Patent No. US9216217, the contents of which are herein incorporated by reference in their entirety.

Prions

[00324] In one embodiment, the viral genomes of the AAV particles may comprise a nucleic acid sequence encoding antibodies comprising prion peptides comprising prion epitopes, and fusions and repeats thereat such as those presented by SEQ ID NOs: 8-32, 35, and 36 of US Patent No. US9056918, the contents of which are herein incorporated by reference in their entirety.

[00325] In one embodiment, the viral genomes of the AAV particles may comprise a nucleic acid sequence encoding prion binding proteins (PrPBP). In one embodiment, the PrPBPs are cadheriiis, such as those presented by SEQ ID NOs: 1 and 2 of International Publication WO 1997/045746, the contents of which are herein incorporated by reference in their entirety. In one embodiment, the PrPBPs are cadherins. such as those presented by SEQ ID NOs: 2 and 7-9 of International Publication No. WO2001000235, the contents of which are herein incorporated by reference in their entirety.

The nature of the polypeptides and variants

[00326] Antibodies encoded by payload regions of the viral genomes of the invention may be translated as a whole polypeptide, a plurality ofpolvpeptides or fragments ofpolvpeptides, which independently may be encoded by one or more nucleic acids, fragments of nucleic acids or variants of any of the aforementioned. As used herein, ''polypeptide" means a polymer of amino acid residues (natural or unnatural) linked together most often by peptide bonds. The term, as used herein, refers to proteins, polypeptides, and peptides of any size, structure, or function. In some instances, the polypeptide encoded is smaller than about 50 amino acids and the polypeptide is then termed a peptide. If the polypeptide is a peptide, it will be at least about 2, 3, 4, or at least 5 amino acid residues long. Thus, polypeptides include gene products, naturally occurring polypeptides, synthetic polypeptides, homoiogs, orthoiogs, paralogs, fragments and other equivalents, variants, and analogs of the foregoing. A polypeptide may be a single molecule or may be a multi-molecular complex such as a dimer, turner or tetramer. They may also comprise single chain or multichain polypeptides and may be associated or linked. The term polypeptide may also apply to amino acid polymers in which one or more amino acid residues are an artificial chemical analogue of a corresponding naturally occurring amino acid.

[00327] The term ''polypeptide variant" refers to molecules which differ in their amino acid sequence from a native or reference sequence. The amino acid sequence variants may possess substitutions, deletions, and/or insertions at certain positions within the amino acid sequence, as

compared to a native or reference sequence. Ordinarily, variants will possess at least about 50% identity (homology) to a native or reference sequence, and preferably, they will be at least about 80%, more preferably at least about 90% identical (homologous) to a native or reference sequence.

[00328] In some embodiments "variant mimics" are provided. As used herein, the term "variant mirnic" is one which contains one or more amino acids which would mimic an activated sequence. For example, giutamate may serve as a mimic for phosphoro-threonine and/or phosphoro-serme. Alternatively, variant mimics may result in deactivation or in an inactivated product containing the mimic, e.g., phenylalanine may act as an inactivating substitution for tyrosine; or alanine may act as an inactivating substitution for serine.

[00329] The term "ammo acid sequence variant" refers to molecules with some differences in their amino acid sequences as compared to a native or starting sequence. The amino acid sequence variants may possess substitutions, deletions, and/or insertions at certain positions within the amino acid sequence. "Native" or "starting" sequence should not be confused with a wild type sequence. As used herein, a native or starling sequence is a relative term referring to an original molecule against which a comparison may be made. "Native" or "starting" sequences or molecules may represent the wild-type (that sequence found in nature) but do not have to be the wild-type sequence.

[00330] Ordinarily, variants will possess at least about 70% homology to a native sequence, and preferably, they will be at least about 80%, more preferably at least about 90% homologous to a native sequence. "Homology" as it applies to amino acid sequences is defined as the percentage of residues in the candidate amino acid sequence that are identical with the residues in the amino acid sequence of a second sequence after aligning the sequences and introducing gaps, if necessary, to achieve the maximum percent homology. Methods and computer programs for the alignment are well known in the art. it is understood that homology depends on a calculation of percent identity but may differ in value due to gaps and penalties introduced in the calculation.

[00331] By "homologs" as it applies to amino acid sequences is meant the corresponding sequence of other species having substantial identity to a second sequence of a second species.

[00332] "Analogs" is meant to include polypeptide variants which differ by one or more amino acid alterations, e.g., substitutions, additions or deletions of amino acid residues that still maintain the properties of the parent polypeptide.

[00333] Sequence tags or amino acids, such as one or more lysines, can be added to the peptide sequences of the invention (e.g., at the N~terminal or C-terminai ends). Sequence tags can be

used for peptide purification or localization. Lysines can be used to increase peptide solubility or to allow for biotinylation. Alternatively, amino acid residues located at the carboxy and amino terminal regions of the amino acid sequence of a peptide or protein may optionally be deleted providing for truncated sequences. Certain amino acids (e.g., C-ternnnai or N-terminal residues) may alternatively be deleted depending on the use of the sequence, as for example, expression of the sequence as part of a larger sequence which is soluble, or linked to a solid support.

|00334] "Substitutional variants" when referring to proteins are those that have at least one amino acid residue in a native or starting sequence removed and a different amino acid inserted in its place at the same position. The substitutions may be single, where only one amino acid in the molecule has been substituted, or they may be multiple, where two or more amino acids have been substituted in the same molecule.

[ΘΘ335] As used herein the term "conservative amino acid substitution" refers to the substitution of an amino acid that is normally present in the sequence with a different amino acid of similar size, charge, or polarity. Examples of conservative substitutions include the substitution of anon-poiar (hydrophobic) residue such as isoleucme, valine and leucine for another non-polar residue. Likewise, examples of conservative substitutions include the substitution of one polar (hydrophilic) residue for another such as between arginine and lysine, between glutamine and asparagine, and between glycine and serine. Additionally, die substitution of a basic residue such as lysine, arginine or histidme for another, or the substitution of one acidic residue such as aspartic acid or glutamic acid for another acidic residue are additional examples of conservative substitutions. Examples of non-conservative substitutions include the substitution of a non-polar (hydrophobic) ammo acid residue such as isoleucme, valine, leucine, alanine, methionine for a polar (hydrophilic) residue such as cysteine, giutamine, glutamic acid or lysine and/or a polar residue for a non-polar residue.

[00336] "Xnsertionai variants" when referring to proteins are those with one or more ammo acids inserted immediately adjacent to an amino acid at a particular position in a native or starting sequence. "Immediately adjacent" to *an* amino acid means connected to either the alpha-carboxy or alpha-ammo functional group of the amino acid.

[00337] "Deietionai variants" when referring to proteins, are those with one or more amino acids in the native or starting amino acid sequence removed. Ordinarily, deietionai variants will have one or more amino acids deleted in a particular region of the molecule.

[00338] As used herein, the term "derivative" is used synonymously with the term "variant" and refers to a molecule that has been modified or changed in any way relative to a reference molecule or starting molecule. In some embodiments, derivatives include native or starting

proteins that have been modified with an organic protemaceous or non-protein aceous derivat!zmg agent, and post-translational modifications. Covalent inodifications are traditionally introduced by reacting targeted amino acid residues of the protein with an organic derivatizing agent that is capable of reacting with selected side-chains or terminal residues, or by harnessing mechanisms of post-translational modifications that function in selected recombinant host cells. The resultant covalent derivatives are useful in programs directed at identifying residues important for biological activity, for immunoassays, or for the preparation of anti-protein antibodies for immunoaffinity purification of the recombinant glycoprotein. Such modifications are within the ordinary skill in the art and are performed without undue experimentation.

[00339] Certain post-trans!ational modifications are the result of the action of recombinant host ceils on the expressed polypeptide. Giutaminyl and asparagmyi residues are frequently post-translationally deamidated to the corresponding glutamyl and aspartyl residues. Alternatively, these residues are deami dated under mildly acidic conditions. Either form of these residues may be present in the proteins used in accordance with the present invention.

[00340] Other post-translational modifications include hydroxy lation of proline and lysine, phosphorylation of hydroxy! groups of seryl or threonyl residues, raethylation of the aJpha-arnmo groups of lysine, argimne, and histi dine side chains (T. E. Creighton, Proteins: Structure and Molecular Properties, W.H. Freeman & Co., San Francisco, pp. 79-86 (1983)).

[00341] "Features" when referring to proteins are defined as distinct amino acid sequence-based components of a molecule. Features of the proteins of the present invention include surface manifestations, local conformational shape, folds, loops, half-loops, domains, half-domains, sites, termini or any combination thereof.

[00342] As used herein when referring to proteins the term "surface manifestation" refers to a polypeptide based component of a protein appearing on an outermost stsrface.

[00343] As used herein when referring to proteins the term "local conformational shape" means a polypeptide based structural manifestation of a protein which is located within a definable space of the protein.

[00344] As used herein when referring to proteins the term "fold" means the resultant conformation of an amino acid sequence upon energy minimization. A fold may occur at the secondary or tertiary level of the folding process. Examples of secondary level folds include beta sheets and alpha helices. Examples of tertiary folds include domains and regions formed due to aggregation or separation of energetic forces. Regions formed in this way include hydrophobic and hydrophilic pockets, and the like.

[00345] As used herein the term "turn" as it relates to protein conformation means a bend which alters the direction of the backbone of a peptide or polypeptide and may involve one, two, three or more amino acid residues.

[ΘΘ346] As used herein when referring to proteins the term "loop" refers to a structural feature of a peptide or polypeptide which reverses the direction of the backbone of a peptide or polypeptide and comprises four or more amino acid residues. Oliva et al. have identified at least 5 classes of protein loops (J. Mol Biol 266 (4): 814-830; 1997).

[00347] As used herein when referring to proteins the term "half-loop" refers to a portion of an identified loop having at least half the number of amino acid residues as the loop from which it is derived. it is understood that loops may not always contain an even number of amino acid residues. Therefore, in those cases where a loop contains or is identified to comprise an odd number of amino acids, a half-loop of the odd-numbered loop will comprise the whole number portion or next whole number portion of the loop (number of amino acids of the loop/2+/-0.5 amino acids). For example, a loop identified as a 7 ammo acid loop could produce half-loops of 3 amino acids or 4 amino acids (7/2=3.5+/-0.5 being 3 or 4).

[00348] As used herein when referring to proteins the term "domain" refers to a motif of a polypeptide having one or more identifiable structural or functional characteristics or properties (e.g., binding capacity, serving as a site for protein-protein interactions).

[00349] As used herein when referring to proteins the term "half-domain" means portion of an identified domain having at least half the number of amino acid residues as the domain from which it is derived. It is understood that domains may not always contain an even number of amino acid residues. Therefore, in those cases where a domain contains or is identified to comprise an odd number of amino acids, a half-domain of the odd-numbered domain will comprise the whole number portion or next whole number portion of the domain (number of ammo acids of the doniain/2+/-0.5 amino acids). For example, a domain identified as a 7 amino acid domain could produce half-domains of 3 amino acids or 4 amino acids (7/2=3.5+/-0.5 being 3 or 4). It is also understood that sub-domains may be identified within domains or half-domains, these subdomains possessing less than all of the structural or functional properties identified in the domains or half domains from which they were derived. It is also understood that the amino acids that comprise any of the domain types herein need not be contiguous along the backbone of the polypeptide (i.e., nonadjacent amino acids may fold structurally to produce a domain, half-domain or subdoniain).

[00350] As used herein when referring to proteins the terms "site" as it pertains to amino acid based embodiments is used synonymous with "amino acid residue" and "amino acid side chain".

A site represents a position within a peptide or poly peptide that may be modified, manipulated, altered, derivaxized or varied within the polypeptide baaed molecules of the present invention.

[00351] As used herein the terms "termini or terminus" when referring to proteins refers to an extremity of a peptide or polypeptide. Such extremity is not limited only to the first or final site of the peptide or polypeptide but may include additional amino acids in the terminal regions. The polypeptide based molecules of the present invention may be characterized as having both an N~ terminus (terminated by an amino acid with a free amino group (NH2)) and a C-terminus (terminated by an amino acid with a free carboxyi groiip (COOH)). Proteins of the invention are in some cases made up of multiple polypeptide chains brought together by disulfide bonds or by non-covalent forces (multimers, oligomers). These sorts of proteins will have multiple N- and C-termiiii. Alternatively, the termini of the polypeptides may be modified such that they begin or end, as the case may be, with anon-polypeptide based moiety such as an organic conjugate.

[00352] Once any of the features have been identified or defined as a component of a molecule of the invention, any of several manipulations and/or modifications of these features may be performed by moving, swapping, inverting, deleting, randomizing or duplicating. Furthermore, it is understood that manipulation of features may result in the same outcome as a modification to the molecules of the invention. For example, a manipulation which involves deleting a domain would result in the alteration of the length of a molecule just as modification of a nucleic acid to encode less than a full length molecule would.

[00353] Modifications and manipulations can be accomplished by methods known in the art such as site directed mutagenesis. The resulting modified molecules may then be tested for activity using in vitro or in vivo assays such as those described herein or any other suitable screening assay known in the art.

AAV Production

[ΘΘ354] The present invention provides methods for the generation of parvoviral particles, *e.g.* AAV particles, by viral genome replication in a viral replication ceil.

[00355] In accordance with the invention, the viral genome comprising a payload region encoding an antibody, an antibody-based composition or fragment thereof, will be incorporated into the AAV particle produced in the viral replication cell. Methods of making AAV particles are well known in the art and are described in e.g., United States patent Nos. US6204059, IJS5756283, TJS6258595, IJS6261551, US6270996, US6281010, US6365394, US6475769, US6482634, US6485966, US6943019, TJS6953690, US7022519, US7238526, US7291498 and US7491508, IJS5064764, IJS6194191, IJS6566118, US8137948; or International Publication Nos. WO1996039530, WO1998010088, WO1999014354, WO1999015685, WO 199904 7691,

WO2000055342, WO2000075353 and WO2001 023597; Methods In Molecular Biology, ed. Richard, Humana Press, NJ (1995); O'Reilly et al., Baculovirus Expression Vectors, A Laboratory- Manual, Oxford Univ. Press (1994); Samulski et al.,*J. Vir.*63: 3822-8 (1989): Kajigaya et al., *Proc. Natl Acad. Set USA* 88: 4646-50 (1991); Ruffing et al., *J. Vir.* 66:6922-30 (1992); Kimbauer et ai. *Vir.* 219:37-44 (1996), Zhao et al., *Vir.*272:382-93 (2000); the contents of each of which are herein incorporated by reference in their entirety. In one embodiment, the AAV particles are made using the methods described in WO2.015191508, the contents of which are herein incorporated by reference in their entirety.

[00356] Viral replication cells commonly used for production of recombinant AAV viral vectors include but are not limited to 293 ceils, COS cells, HeLa cells. KB ceils, and other mammalian ceil lines as described in U.S. Pat. Nos. US6156303, US5387484, US5741683, US5691 176, and US5688676; U.S. patent publication No. 2002/0081721 , and International Patent Publication Nos. WO 00/47757. WO 00/24916, and WO 96/17947, the contents of each of which are herein incorporated by reference in their entireties.

[00357] In some embodiments, the present invention provides a method for producing an AAV particle having enhanced (increased, improved) transduction efficiency comprising the steps of: 1) co-transfecting competent bacterial cells with a bacmid vector and either a viral construct vector and/or AAV payioad constmct vector, 2) isolating the resultant viral construct expression vector and AAV payload construct expression vector and separately transfecting viral replication cells, 3) isolating and purifying resultant payioad and viral constmct particles comprising viral construct expression vector or AAV payioad construct expression vector, 4) co-infecting a viral replication cell with both the AAV payioad and viral construct particles comprising viral construct expression vector or AAV payioad construct expression vector, and 5) harvesting and purifying the AAV particle comprising a viral genome.

[00358] In some embodiments, the present invention provides a method for producing an AAV particle comprising the steps of 1) simultaneously co-transfecting mammalian cells, such as, but not limited to HEK293 cells, with a payioad region, a construct expressing rep and cap genes and a helper construct, 2) harvesting and purifying the AAV particle comprising a viral genome.

[00359] In some embodiments, the viral genome of the AAV particle of the invention optionally encodes a selectable marker. The selectable marker may comprise a cell-surface marker, such as any protein expressed on the surface of the cell including, but not limited to receptors, CD markers, lectins, integrins, or truncated versions thereof.

[00360] In some embodiments, selectable marker reporter genes as described in International application No. WO 96/23810: Heira et al., Current Biology 2:178-182 (1996); Heim et al., Proc.

Natl. Acad. Sci. USA (1995); or **Heim** et ai., Science 373:663-664 (1995), WO 96/30540, the contents of each of which are incorporated herein by reference in their entireties).

II. FORMULATION AND DELIVERY

Pharmaceutical Compositions

[00361] According to the present invention the AAV particles may be prepared as pharmaceutical compositions. It will be understood that such compositions necessarily comprise one or more active ingredients and, most often, a pharmaceutically acceptable exeipient.

[00362] Relative amounts of the active ingredient (e.g. AAV particle), a pharmaceutically acceptable excipient, and/or any additional ingredients in a pharmaceutical composition in accordance with the present disclosure may vary, depending upon the identity, size, and/or condition of the subject being treated aid further depending upon the route by which the composition is to be administered. For example, the composition may comprise between 0.1% and 99% (w/w) of the active ingredient. By way of example, the composition may comprise between 0.1% and 100%, e.g., between .5 and 50%, between 1-30%, between 5-80%, at least 80% (w/w) active ingredient.

[00363] In some embodiments, the AAV particle pharmaceutical compositions described herein may comprise at least one payload. As a non-limiting example, the pharmaceutical compositions may contain an AAV particle with 1, 2, 3, 4 or 5 payloads. In one embodiment, the pharmaceutical composition may contain a nucleic acid encoding a payload construct encoding proteins selected from antibodies and/or antibody-based compositions.

[00364] Although the descriptions of pharmaceutical compositions provided herein are principally directed to pharmaceutical compositions which are suitable for administration to humans, it will be understood by the skilled artisan that such compositions are generally suitable for administration to any other animal, e.g., to non-human animals, e.g. non-human mammals. Modification of pharmaceutical compositions suitable for administration to humans in order to render the compositions suitable for administration to various animals is well understood, and the ordinarily skilled veterinary pharmacologist can design and/or perform such modification with merely ordinary, if any, experimentation. Subjects to which administration of the pharmaceutical compositions is contemplated include, but are not limited to, humans and/or other primates: mammals, including commercially relevant mammals such as cattle, pigs, horses, sheep, cats, dogs, mice, rats, birds, including commercially relevant birds such as poultry, chickens, ducks, geese, and/or turkeys.

[00365] In some embodiments, compositions are administered to humans, human patients or subjects.

Formulations

[00366] The AAV particles of the invention can be formulated using one or more excipients to: (1) increase stability; (2) increase cell transfection or transduction; (3) permit the sustained or delayed expression of the payload; (4) alter the biodistribirtion (e.g., target the viral particle to specific tissues or cell types), (5) increase the translation of encoded protein; (6) alter the release profile of encoded protein and/or (7) allow for regulatable expression of the payload.

[00367] Formulations of the present invention can include, without limitation, saline, liposomes, lipid nanoparticles, polymers, peptides, proteins, cells transfected with viral vectors (e.g., for transfer or transplantation into a subject) and combinations thereof.

[00368] Formulations of the pharmaceutical compositions described herein may be prepared by any method known or hereafter developed in the art of pharmacology. As used herein the term "pharmaceutical composition" refers to compositions comprising at least one active ingredient and optionally one or more pharmaceutically acceptable excipients.

[00369] In general, such preparatory methods include the step of associating the active ingredient with an excipient and/or one or more other accessory ingredients. As used herein, the phrase "active ingredient" generally refers either to an AAV particle carrying a payload region encoding the polypeptides of the invention or to the antibody or antibody-based composition encoded by a viral genome of by an AAV particle as described herein.

[00370] Fonnidations of the AAV particles and pharmaceutical compositions described herein may be prepared by any method known or hereafter developed in the art of pharmacology. In general, such preparatory methods include the step of bringing the active ingredient into association with an excipient and/or one or more other accessory ingredients, and then, if necessary and/or desirable, dividing, shaping and/or packaging the product into a desired single- or multi-dose unit.

[00371] A pharmaceutical composition in accordance with the present disclosure may be prepared, packaged, and/or sold in bulk, as a single unit dose, and/or as a plurality of single unit doses. As used herein, a "unit dose" refers to a discrete amount of the pharmaceutical composition comprising a predetermined amount of the active ingredient. The amount of the active ingredient is generally equal to the dosage of the active ingredient which would be administered to a subject and/or a convenient fraction of such a dosage such as, for example, one-half or one-third of such a dosage.

[00372] In one embodiment, the AAV particles of the invention may be formulated in PBS with 0.001% of pluromc acid (F-68) at a pH of about 7.0.

[00373] Relative amounts of the active ingredient (e.g. AAV particle), the pharmaceutically acceptable excipieni and/or any additional ingredients in a pharmaceutical composition in accordance with the present disclosure may vary, depending upon the identity, size, and/or condition of the subject being treated and further depending upon the route by which the composition is to be administered. For example, the composition may comprise between 0.1% and 99% (w/w) of the active ingredient. By way of example, the composition may comprise between 0.1% and 100%, e.g., between 0.5 and 50%, between 1-30%, between 5-80%, at least 80% (w/w) active ingredient.

[00374] In some embodiments, the AAV formulations described herein may contain sufficient AAV particles for expression of at least one expressed functional antibody or antibody-based composition. As a non-limiting example, the AAV particles may contain viral genomes encoding 1, 2, 3, 4 or 5 functional antibodies.

[00375] According to the present invention AAV particles may be formulated for CNS delivery. Agents that cross the brain blood barrier may be used. For example, some cell penetrating peptides that can target molecules to the brain blood barrier endothelium may be used for formulation (e.g., Mathupaia, *Expert Opin Ther Pat.*, 2009, 19, 137-140; the content of which is incorporated herein by reference in its entirety).

Excipients and Diluents

[00376] The AAV particles of the invention can be formulated using one or more excipients or diluents to (1) increase stability; (2) increase cell transfection or transduction; (3) permit the sustained or delayed release; (4) alter the biodistribution (e.g., target the viral particle to specific tissues or cell types); (5) increase the translation of encoded protein in vivo, (6) alter the release profile of encoded protein in vivo and/or (7) allow for regulatable expression of the polypeptides of the invention.

[00377] In some embodiments, a pharmaceutically acceptable excipieni may be at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or 100% pure. In some embodiments, an excipieni is approved for use for humans and for veterinary use. In some embodiments, an excipient may be approved by United States Food and Drug Administration. In some embodiments, an excipient may be of pharmaceutical grade. In some embodiments, an excipient may meet the standards of the United States Pharmacopoeia (USP), the European Pharmacopoeia (EP), the British Pharmacopoeia, and/or the International Pharmacopoeia.

[00378] Excipients, as used herein, include, but are not limited to, any and all solvents, dispersion media, diluents, or other liquid vehicles, dispersion or suspension aids, surface active agents, isotonic agents, thickening or emulsifying agents, preservatives, and the like, as suited to

the particular dosage form desired. Various excipients for formulating pharmaceutical compositions and techniques for preparing the composition are known in the art (see Remington: The Science and Practice of Pharmacy, 21st Edition, A. R. Gennaro, Lippincott, Williams & Wilkins, Baltimore, MD, 2006; incorporated herein by reference in its entirety). The use of a conventional excipient medium may be contemplated within the scope of the present disclosure, except insofar as any conventional excipient medium may be incompatible with a substance or its derivatives, such as by producing any undesirable biological effect or otherwise interacting in a deleterious manner with any other component(s) of the pharmaceutical composition.

[00379] Exemplary diluents include, but are not limited to, calcium carbonate, sodium carbonate, calcium phosphate, dicalcium phosphate, calcium sulfate, calcium hydrogen phosphate, sodium phosphate lactose, sucrose, cellulose, microcrystailine cellulose, kaolin, mannitol, sorbitol, inositol, sodium chloride, dry starch, cornstarch, powdered sugar, *etc.*, and/or combinations thereof.

Inactive Ingredients

[00380] In some embodiments, AAV particle formulations may comprise at least one inactive ingredient. As used herein, the term "inactive ingredient" refers to one or more agents that do not contribute to the activity of the active ingredient of the pharmaceutical composition included in formulations. In some embodiments, all, none or some of the inactive ingredients which may be used in the formulations of the present invention may be approved by the US Food and Drug Administration (FDA).

[00381] In one embodiment, the AAV particle pharmaceutical compositions comprise at least one inactive ingredient such as, but not limited to, 1,2,6-Hexanetriol; 1,2-Dimyristoyl-Sn-Glycero-3-(Phospho-S-(1-Glycerol)); 1,2-Dimyristoyl-Sn-Glycero-3-Phosphocholine; 1,2-Dioleoyl-Sn-Glycero-3-PhosphochoHne; 1,2-Dipalmitoyl-Sn-GJycero-3-(Phospho-Rac-(1-Glycerol)); 1,2-Distearoyl~Sn-Glycero-3~(Phospho-Rac-(1~Glycerol)); 1,2-Distearoyl-Sn-Glycero-3-Phosphochoiine; 1-O-Tolylbiguanide, 2-Ethyl-1,6-Hexanediol; Acetic Acid; Acetic Acid, Glacial; Acetic Anhydride; Acetone; Acetone Sodium Bisulfite; Acetylated Lanolin Alcohols; Acetylated Monoglycerides; Acetylcysteine; Acetyltryptophaii, DL-; Aerylates Copolymer; Acrylic Acid-Isooctyl Acrylate Copolymer; Acrylic Adhesive 788, Activated Charcoal; Adcote 72A103; Adhesive Tape; Adipic Acid; Aerotex Resin 3730; Alanine; Albumin Aggregated; Albumin Colloidal; Albumin Human; Alcohol; Alcohol, Dehydrated; Alcohol, Denatured; Alcohol, Diluted; Aifadex; Aigmic Acid; Alkyl Ammonium Sulfonic Acid Betaine; Alkyl Aryl Sodium Sulfonate; Allantoin; Allyl .Alpha-Ionone; Almond Oil; Alpha-Terpineol; Alpha-Tocopherol; Alpha-Tocopherol Acetate, D1-; Alpha-Tocopherol, D1-; Aluminum Acetate;

Aluminum Chlorhydroxy Allantoinate; Aluminum HydiOxide; Aluminum Hydroxide - Sucrose, Hydrated; Aluminum Hydroxide Gel; Aluminum Hydroxide Gel F .500, Aluminum Hydroxide Gel F 5000; Aluminum Monostearate; Aluminum Oxide; Aluminum Polyester; Aluminum Silicate; Aluminum Starch Oetenylsuceinate: Aluminum Stearate; Aluminum Subacetate; Aluminum Sulfate Anhydrous; Amerchol C; Amerchol-Cab; Aminomethylpropanol; Ammonia, Ammonia Solution; Ammonia Solution, Strong; Ammonium Acetate; Ammonium Hydroxide; Ammonium Lauryi Sulfate; Ammonium Nonoxynol-4 Sulfate; Ammonium Salt Of C-12-C-15 Linear Primary Alcohol Ethoxylate; Ammonium Sulfate; Ammonyx; Amphoteric-2, Amphoteric-9; Anethole; Anhydrous Citric Acid; Anhydrous Dextrose; Anhydrous Lactose; Anhydrous Trisodium Citrate; Aniseed Oil; Anoxid Sbn; Antifoam; Antipyrine; Apaflurane; Apricot Kernel Oil Peg-6 Esters; Aquaphor; Argmine; Ariacel; Ascorbic Acid; Ascorbyl Palmitaie; Aspartic Acid; Balsam Peru; Barium Sulfate; Beeswax; Beeswax, Synthetic, Beheneth~i0; Bentonite; Benzalkonium Chloride; Benzenesuifonic Acid; Benzethonium Chloride; Benzododecinium Bromide; Benzoic Acid; Benzyl Alcohol; Benzyl Benzoate: Benzyl Chloride; Betadex; Bibapcitide, Bismuth Suhgal!ate; Boric Acid; Brocrinat; Butane; Butyl Alcohol; Butyl Ester Of Vinyl Methyl Ether/Maleic Anhydride Copolymer (125000 Mw); Butyl Stearate; Buty!ated Hydroxy anisole; Buty!ated Hydroxytoluene; Butylene Glycol; Butylparaben; Butyric Acid; C20-40 Pareth-24; Caffeine; Calcium; Calcium Carbonate: Calcium Chloride: Calcium G!uceptate; Calcium Hydroxide, Calcium Lactate; Calcobutrok Caldiamide Sodium; Caloxetate Trisodium; Calteridoi Calcium; Canada Balsam; Caprylic/Capric Triglyceride; Caprylic/Capric/Stearic Triglyceride; Captan; Captisol; Caramel; Carbomer 1342; Carbomer 1382; Carbomer 934; Carbomer 934p; Carbomer 940; Carbomer 941, Carbomer 980, Carbomer 981; Carbomer Homopolymer Type B (Allyl Pentaerythritol Crosslinked); Carbomer Homopolymer Type C (Allyl Pentaerythritol Crosslinked): Carbon Dioxide; Carboxy Vinyl Copolymer; Carboxymethyiceilulose; Carboxynietliylceilulose Sodium; Carboxypolymethylene: Carrageenan; Carrageenan Salt; Castor Oil; Cedar Leaf Oil; Cellulose; Cellulose, Macrocrystalline; Cerasynt-Se; Ceresin; Ceteareth-12; Ceteareth-15; Ceteareth-30; Cetearyl Aleohol/Ceteareth-20; Cetearyl Ethylhexanoate; Ceteth-iO; Ceteth-2; Ceteth-20; Ceteth-23; Cetostearyl Alcohol, Cetrimonium Chioxide; Cety! Alcohol; Cety! Esters Was;; Cetyl Palmitaie; Cetylpyridiniura Chloride; Chlorobutanol; Chlorobutanol Heraihydrate; Chlorobutanoi, Anhydrous; Chlorocresol; Chloroxylenol; Cholesterol; Choletb; Choleth-24; Citrate; Citric Acid: Citric Acid Monohydrate; Citric Acid, Hydrous; Cocamide Ether Sulfate; Cocamine Oxide; Coco Betaine: Coco Diethanolamide; Coco Monoethanolamide; Cocoa Butter; Coco-Glycerides; Coconut Oil; Coconut Oil, Hydrogenaied; Coconut Oil/Palm Kernel Oil Glycerides,

Hydrogenated; Cocoyl Caprylocaprate; Cola Nitida Seed Extract; Collagen; Coloring Suspension; Corn Oil; Cottonseed Oil; Cream Base; Creatine; Creatinine; Cresol; Croscarraellose Sodium; Crospovidone; Cupric Sulfate; Cupric Sulfate Anhydrous; Cydomethicone; Cydomethicone/Dimethicone Copolyol; Cysteine; Cysteine Hydrochloride; Cysteine Hydrochloride Anhydrous; Cysteine, D1-; D&C Red No. 28; D&C Red No. 33; D&C Red No. 36; D&C Red No. 39: D&C Yellow No. 10; Dalfampridine; Daubert 1-5 Festr (Matte) 164z; Decyi Methyl Sulfoxide; Dehydag Wax Sx; Dehydroacetic Acid; Dehymuls E; Denatonium Benzoate; Deoxycholic Acid; Dextran; Dextran 40; Dextrin; Dextrose; Dextrose Monohydrate; Dextrose Solution; Diatrizoic Acid; Diazotidinyl Urea, Dichlorobenzyl Alcohol; Dichlorodifluoromethane; Dicbiorotetrafluoroethane; Diethanolamine; Diethyl Pyrocarbonate; Diethyl Sebacate; Diethylene Glycol Monoethyl Ether; Diethylhexyl Phthalate; Dihydroxyaluininura Aminoacetate; Dhsopropanolamine; Diisopropyl Adipate; Drisopropyl Dilinoieate; Dimethicone 350; Dimethicone Copolyol; Dimethicone Mdx4-4210; Dirnethicone Medical Fluid 360; Dimethyl Isosorbide; Dimethyl Sulfoxide; Dimethyiarninoethyl Methacrylate - Butyl Methacrylate - Methyl Methacrylate Copolymer; Dimeihyldioctadecylammonium Bentonite; DimeAylsiloxane/Meftylvmylsiloxane Copolymer; Dinoseh Ammonium Salt, Dipalmitoylphosphatidylgiycerol, D1-; Dipropyiene Glycol; Disodium Cocoamphodiacetate; Disodium Laureth Sulfosiicciiiate; Disodium Lauryl Sulfosuccinate; Disodium Suifosalicylate; Disofenin; Diviny!benzene Styrene Copolymer; Dmdm Hydantom, Docosanol; Docusate Sodium; Duro-Tak 280-2516; Duro-Tak 387-2516; Duro-Tak 80-1196; Duro-Tak 87-2070, Duro-Tak 87-2194; Duro-Tak 87-2287; Duro-Tak 87-2296; Duro-Tak 87-2.888; Duro-Tak 87-2979; Edetate Calcium Disodium; Edetate Disodium; Edetate Disodium Anhydrous; Edetate Sodium, Edetic Acid; Egg Phospholipids; Entsufon, Entsufon Sodium, Epilactose; Epitetracycline Hydrochloride; Essence Bouquet 9200; Ethanolamine Hydrochloride; Ethyl Acetate; Ethyl Oieate; Ethylcelluloses; Ethylene Glycol; Ethylene Vinyl Acetate Copolymer; Ethylenediamine; Ethylenediamine Dihydrochloride; Ethylene-Propylene Copolymer; Ethylene-Vinyl Acetate Copolymer (28% Vinyl Acetate); Ethylene-Vinyl Acetate Copolymer (9% Vinylacetate); Ethyihexyi Hydroxystearate; Ethylparaben; Eucalyptol; Exametazime; Fat, Edible; Fat, Hard; Fatty Acid Esters; Fatty Acid Pentaery Ariel Ester; Fatty Acids; Fatty Alcohol Curate; Fatty Alcohols; Fd&C Blue No. 1; Fd&C Green No. 3; Fd&C Red No. 4, Fd&C Red No. 40; Fd&C Yellow No. 10 (Delisted); Fd&C Yellow No. 5; Fd&C Yellow No. 6; Feme Chloride; Ferric Oxide; Flavor 89-186; Flavor 89-259; Flavor Df-119; Flavor Df-1530; Flavor Enhancer; Flavor Fig 827118, Flavor Raspberry Pfc-8407; Flavor Rhodia Pharmaceutical No. Rf 451; Fluorochlorohydrocarbons; Formaldehyde; Formaldehyde Solution; Fractionated Coconut Oil;

Fragrance 3949-5; Fragrance 520a, Fragrance 6.007; Fragrance 91-122; Fragrance 9128-Y; Fragrance 93498g; Fragrance Balsam Pine No. 5124; Fragrance Bouquet 10328; Fragrance Cbemoderm 6401-B; Fragrance Chemoderm 6411; Fragrance Cream No. 73457; Fragrance Cs-28197; Fragrance Felton 066m; Fragrance Firnienich 47373; Fragrance Givaiidan Ess 9090/1c; Fragrance H-6540; Fragrance Fierba! 10396; Fragrance Nj-1085; Fragrance P 0 F!-147; Fragrance Pa 52805; Fragrance Pera Derm D; Fragrance Rbd-9819; Fragrance Shaw Mudge Ii-7776; Fragrance Tf 044078; Fragrance Ungerer Honeysuckle K 2771; Fragrance Ungerer N5195; Fructose; Gadolinium Oxide; Galactose; Gamma Cyclodextrin; Gelatin; Gelatin, Crosslinked, Geifoarn Sponge; Gellan Guin (Low Acyl); Gelva 737; Gentisic Acid; Gentisic Acid Ethanolamide; Gluceptate Sodium; Gluceptate Sodium Dibydrate; Gluconolactone; Glucuronic Acid; Glutamic Acid, D1-; Glutathione; Glycerin; Glycerol Ester Of Hydrogenated Rosin; Glyceryl Citrate; Glyceryl Isostearate; Glyceryl Laurale; Glyceryl Monostearate; Glyceryl Oleate; Glyceryl Oleate/Propylene Glycol; Glyceryl Palmitate; Glyceryl Ricinoleate; Glyceryl Stearate; Glyceiyl Stearate - Laureth-23; Glyceryl Stearate/Peg Stearate; Glyceryl Stearate/Peg-100 Stearate; Glyceryl Stearate/Peg-40 Stearate; Glyceryl Stearate- Stearamidoethyl Diethylaraine; Glyceryl Trioleate; Glycine, Glycine Hydrochloride; Glycol Distearate; Glycol Stearate; Guanidine Hydrochloride; Guar Gum; Hair Conditioner (18ni95~lm); Heptane; Hetastarch; Hexylene Glycol; High Density Polyethylene; Histidine; Human Albumin Microspheres; Flyaluronate Sodium; Hydrocarbon; Hydrocarbon Gel, Plasticized, Hydrochloric Acid; Hydrochloric Acid, Diluted; Hydrocortisone; FTydrogel Polymer, Hydrogen Peroxide, Hydrogenated Castor Oil; Hydrogenated Palm Oil; Hydrogenated Palm/Palm Kernel Oil Peg-6 Esters; Hydrogenated Polybutene 635-690; Hydroxide ion; Hydroxy ethyl Cellulose; Hydroxyethylpiperazine Ethane Sulfonic Acid; Hydroxy raethyl Cellulose; Hydroxy octacosanyl Hydroxystearate; Hydroxypropyl Cellulose; Hydroxy-propyl Methylceliulose 2906; HydiOxypropyi-Beta-cyelodextrin; Hypromellose 2208 (15000 Mpa.S); Hypromellose 2910 (15000 Mpa. S); Hypromelloses; Imidurea, Iodine; lodoxamic Acid; lofetamine Hydrochloride; Irish Moss Extract; Tsobutane; Tsoceteth-20; Isoleucine; Isooctyl Acrylate, Isopropyl Alcohol; Isopropyi Isostearate; Isopropyl Myristate; isopropyl Myristate - Mynstyi Alcohol; Isopropyl Palmitate, isopropyl Stearate, Isostearic Acid; Isostearyi Alcohol, Isotonic Sodium Chloride Solution; Jelene; Kaolin; Kathon Cg; Kathon Cg II; Lactate, Lactic Acid; Lactic Acid, D1-; Lactic Acid, L-; Lactohionic Acid; Lactose; Lactose Monohydrate; Lactose, Hydrous; I.aneth; Lanolin; Lanohn Alcohol - Mineral Oil; Lanolin Alcohols; Lanolin Anhydrous; Lanolin Cholesterois; Lanolin Nomonic Derivatives, Lanolin, Ethoxyiated; Lanohn, Hydrogenated; Lauralkonium Chloride; Lauranrine Oxide; Laurdimoniurn Hydrolyzed Animal Collagen;

Laureth Sulfate; Laureth-2; Laureth-23; Laureth-4; Laurie Diethanolamide; Laurie Myristic Diethanolamide; Lauroyl Sarcosine; Lauryl Lactate; Lauryl Sulfate; Lavandula Arsgustifolia Flowering Top; Lecithin: Lecithin Unbleached; Lecithin, Egg; Lecithin, Hydrogenated; Lecithin, Hydrogenated Soy; Lecithin, Soybean; Lemon Oil; Leucine; Levulinic Acid; Lidofenin; Light Mineral Oil; Light Mineral Oil (85 Ssu); Limonene, (·»-/-)-; Lipocoi Sc-15; Lysine; Lysine Acetate; Lysine Monohydrate; Magnesium Aluminum Silicate; Magnesium Aluminum Silicate Hydrate; Magnesium Chloride; Magnesium Nitrate; Magnesium Stearate; Maleic Acid; Mannitol; Mapfofix; Mehrofenin; Medical Adhesive Modified S-15; Medical Antiform A-F Emulsion; Medronate Disodiura; Medronic Acid; Meglumine; Menthol; Metacresol; Metaphosphoric Acid; Metbanesulfonic Acid: Methionine; Methyl Alcohol; Methyl Gluceth-10; Methyl Gluceth-20; Methyl Gluceth-20 Sesquistearate; Methyl Glucose Sesquistearate; Methyl Laurate; Methyl Pyrrolidone; Methyl Salicylate; Methyl Stearate; Methyiboronic Acid; Methylcellulose (4000 Mpa.S); Methylcelluloses; Methyl chloroisothiazolinone; Methylene Blue; Methylisothiazolinone; Methylparaben; Microciystailine Wax; Mineral Oil; Mono and Diglyceride; Monostearyi Citrate; Monothioglyceroi; Multisterol Extract; Myristyl Alcohol; Myristyi Lactate; Myristyl-Gamma.-Picolinium Chloride; N-(Carbamoyl-Methoxy Peg-40)-1,2-Distearoyl-Cephalin Sodium; N,N-Dimethylacetamide; Niacinamide; Nioxime; Nitric Acid; Nitrogen; Nonoxynol iodine; Nonoxynol-15; Nonoxynol-9; Norflurane: Oatmeal; Octadeeene-l/Maleic Acid Copolymer; Octanoic Acid; Octisalate; Octoxynol-1; Octoxynol-40; Octoxynol-9; Octyldodecanol; Octylphenol Polyinethylene; Oleic Acid; Oleth-10/Oleth-5; Oleth-2, OIeth-20; Oleyl Alcohol; Oleyl Oleate; Olive Oil; Oxidronate Disodium; Oxyquinoline; Palm Kernel Oil; Palmitamme Oxide; Parabens; Paraffin; Paraffin, White Soft; Parfum Creme 45/3, Peanut Oil; Peanut Oil. Refined; Pectin; Peg 6-32 Stearate/Glycol Stearate; Peg Vegetable Oil; Peg- 100 Stearate; Peg-12 Glyceryl Laurate; Peg- 120 Glyceryl Stearate; Peg- .120 Methyl Glucose Dioleate; Peg-15 Cocamine; Peg- 150 Distearate; Peg-2 Stearate; Peg-2.0 Sorbitan Isostearate; Peg-22 Methyl Ether/Dodecyl Glycol Copolymer; Peg-25 Propylene Glycol Stearate; Peg-4 Dilaurate; Peg-4 Laurate; Peg-40 Castor Oil; Peg-40 Sorbitan Diisostearate; Peg~4.5/Dodaeyl Glycol Copolymer; Peg-5 Oleate; Peg-50 Stearate; Peg-54 Hydrogenated Castor Oil; Peg-6 Isostearate; Peg-60 Castor Oil; Peg-60 Hydrogenated Castor Oil; Peg-7 Methyl Ether; Peg-75 Lanolin; Peg-8 Laurate; Peg-8 Stearate; Pegoxol 7 Stearate; Pentadecalactone; Pentaerythritol Cocoate; Pentasodium Pentetate: Pentetate Calcium.Trisodium: Pentetic Acid; Peppermint Oil; Perfmtren; Perfume 25677; Perfume Bouquet; Perfume E-1991; Perfume Gd 5604; Perfume Tana 90/42 Scba, Perfume W-1952-1; Petrolatum; Petrolatum, White; Petroleum Distillates; Phenol; Phenol, Liquefied; Phenonip; Phenoxyethanol; Phenylalanine; Phenylethyl Alcohol;

Phenylmercurie Acetate; Phenylmercuric Nitrate; Phosphatidyl Glycerol, Egg, Phospholipid, Phospholipid, Egg; Phospholipon 90g, Phosphoric Acid; Pine Needle Oil (Pinus Syivestris); Piperazine Hexahydrate; Piastibase-50w; Polacrilin; Polidroniutn Chloride; Poloxarner 124; Poloxamer 181; Poloxarner 182; Poloxarner 188; Poloxarner 237; Poloxarner 407; Poiy(Bis(P-Carboxyphenoxy)Propane Anhydride): Sebacic Acid; Poiy(Dimetnyisiloxane^ ethylvinylsiloxane/Methylhydrogensiloxane) Dimethylvmyl Or Dimethyihydroxy Or Trimethyl Endblocked; Poly(Di-Lactic-Co-Glycoiic Acid), (50:50; Po!y(Di-Lactic-Co-Glycolic Acid), Ethyl Ester Terminated, (50:50, Polyacry!ic Acid (250000 Mw); Polybutene (1400 Mw); Polycarbophil; Polyester; Polyester Poly amine Copolymer; Polyester Rayon: Polyethylene Glycol 1000; Polyethylene Glycol 1450; Polyethylene Glycol 1500; Polyethylene Glycol 1540; Polyethylene Glycol 200; Polyethylene Glycol 300; Polyethylene Glycol 300-1600; Polyethylene Glycol 3350, Polyethylene Glycol 400; Polyethylene Glycol 4000; Polyethylene Glycol 540; Polyethylene Glycol 600; Polyethylene Glycol 6000; Polyethylene Glycol 8000; Polyethylene Glycol 900; Polyethylene High Density Containing Ferric Oxide Black (<1%), Polyethylene Low Density Containing Barium Sulfate (20-24%); Polyethylene T; Polyethylene Terephthalates; Poiyglactm; Polygiyceryl-3 Oleate; Polygiyceryl-4 Oleate; Polyhydroxy ethyl Methacrylate; Polyisobutylene; Polyisobutylene (1100000 Mw); Polyisobutylene (35000 Mw); Polyisobutylene 178-236; Polyisobutylene 241-294; Polyisobutylene 35-39; Polyisobutylene Low Molecular Weight, Polyisobutylene Medium Molecular Weight; Polyisobutylene/Polyhutene Adhesive; Polylactide; Polyols; Polyoxy ethylene - Polyoxypropylene 1800; Polyoxy ethylene Alcohols; Polyoxy ethylene Fatty Acid Esters; Po!yoxyethylene Propylene; Polyoxyi 20 Ceiosteary! Ether; Polyoxyi 35 Castor Oil; Polyoxyi 40 Hydrogenated Castor Oil; Polyoxyi 40 Stearate; Polyoxyi 400 Stearate; Polyoxyi 6 And Polyoxyi 32 Palmitosiearate; Polyoxyi Distearate; Polyoxyi Glyceryl Stearate: Polyoxyi Lanolin; Polyoxyi Paimitate; Polyoxyi Stearate; Polypropylene; Polypropylene Glycol; Polyquaternium-10; Polyquaternitun-7 (70/30 Acryiamide/Dadmac, Poiysiioxane; Poiysorhate 20; Polysorbate 40; Polysorbate 60; Polysorbate 65; Poiysorhate 80; Polyurethane; Polyvinyl Acetate; Polyvinyl Alcohol; Polyvinyl Chloride; Polyvinyl Chloride-Polyvinyl Acetate Copolymer; Po!yviny!pyridine; Poppy Seed Oil; Potash; Potassium Acetate; Potassium Alum, Potassium Bicarbonate; Potassium Bisulfite; Potassium Chloride; Potassium Citrate; Potassium Hydroxide; Potassium Metabisulfite; Potassium Phosphate, Dibasic; Potassium Phosphate, Monobasic; Potassium Soap; Potassium Sorbate; Povidone Acrylate Copolymer; Povidone Hydrogei; Povidone K17; Povidone K25; Povidone K29/32; Povidone K30; Povidone K90; Povidone K90f; Povidone/Eicosene Copolymer; Povidones; Ppg-12/Sradi Copolymer; Ppg-15 Stearyl

Ether; Ppg-20 Methyl Glucose Ether Distearate; Ppg-26 Oleate; Product Wat; Proline, Proraulgen D; Promulgen G; Propane; Propellant A-46; Propyl Gallate; Propylene Carbonate; Propylene Glycol; Propylene Glycol Diaeetate; Propylene Glycol Dicaprylate; Propylene Glycol Monolaurate; Propylene Glycol Monopaimitostearate; Propylene Glycol Palmitostearate; Propylene Glycol Ricinoieate; Propylene Glycol/Diazoiidinyi LTrea-'Methylparaben/Propylparben; Propylparaben; Protamine Sulfate; Protein Hydrolysate; Pvm/Ma Copolymer; Quaternium-15; Quaternium-15 Cis-Form; Quaternium-52; Ra-2397; Ra-30ll; Saccharm, Saccharin Sodium, Saccharin Sodium Anhydrous; Safflower Oil; Sd Alcohol 3a; Sd Alcohol 40; Sd Alcohol 40-2; Sd Alcohol 40b; Sepmeo P 600; Serine; Sesame Oil; Shea Butter; Silastic Brand Medical Grade Tubing; Silastic Medical Adhesfve,Silicone Type A; Silica, Dental; Silicon; Silicon Dioxide; Silicon Dioxide, Colloidal; Silicone; Silicone Adhesive 4102; Silicone Adhesive 4502; Silicone Adhesive Bio-Psa Q7-4201; Silicone Adhesive Bio-Psa 07-4301; Silicone Emulsion; Siiicone-'Polyester Film Strip; Simethicone; Simethicone Emulsion; Sipoii Ls 20np; Soda Ash; Sodium Acetate; Sodium Acetate Anhydrous; Sodium Alkyl Sulfate; Sodium Ascorbate; Sodium Benzoaie; Sodium Bicarbonate; Sodium Bisulfate; Sodium Bisulfite; Sodium Borate; Sodium Borate Decahydrate; Sodium Carbonate, Sodium Carbonate Decahydrate; Sodium Carbonate Monohydrate; Sodium Cetostearyl Sulfate; Sodium Chlorate; Sodium Chionde; Sodium Chloride Injection; Sodium Chloride Injection, Bacteriostatic; Sodium Cholesteryl Sulfate; Sodium Citrate; Sodium Cocoyl Sarcosinate; Sodium Desoxycholate; Sodium Dithionite, Sodium Dodecylbenzenesulfonate; Sodium Formaldehyde Sulfoxylate; Sodium Gluconate; Sodium Hydroxide; Sodium Hypochlorite; Sodium Iodide; Sodium Lactate; Sodium Lactate, L-; Sodium Laureth-2 Sulfate; Sodium Laureth-3 Sulfate; Sodium Laureth-5 Sulfate; Sodium Lauroyl Sarcosinate; Sodium Lauryl Sulfate; Sodium Lauryl Sulfoacetate; Sodium Metabisuifite; Sodium Nitrate; Sodium Phosphate; Sodium Phosphate Dihydrate; Sodium Phosphate, Dibasic; Sodium Phosphate, Dibasic, Anhydrous; Sodium Phosphate, Dibasic, Dihydrate; Sodium Phosphate, Dibasic, Dodecahydrate; Sodium Phosphate, Dibasic, Heptahydrate; Sodium Phosphate, Monobasic; Sodium Phosphate, Monobasic, Anhydrous; Sodium Phosphate, Monobasic, Dihydrate; Sodium Phosphate, Monobasic, Monohydrate; Sodium Polyacrylate (2500000 Mw); Sodium Pyrophosphate; Sodium Pyrrolidone Carboxylate; Sodium Starch Glycolate; Sodium Succinate Hexabydrate; Sodium Sulfate; Sodium Sulfate Anhydrous; Sodium Sulfate Decahydrate; Sodium Sulfite; Sodium Sulfosuccinated Undecyclenic Monoalkyloiamide; Sodium Tartrate; Sodium Thioglycolate; Sodium Thiomalate; Sodium Thiosuifate; Sodium Thiosulfate Anhydrous; Sodium Tnmetaphosphate; Sodium Xyienesuifonate; Soraay 44; Sorbic Acid; Sorbitan; Sorbitan Isostearate; Sorbitan Monolaurate;

Sorbitan Monooieate; Sorbitan Monopalmitate; Sorbitan Monostearate; Sorbitan Sesquioleate; Sorbitan Trioleate; Sorbitan Tristearate; Sorbitol, Sorbitol Solution; Soybean Flour; Soybean Oil; Spearmint Oil; Spermaceti; Squalane; Stabilized Oxychloro Complex; Stannous 2-Ethylhexanoate; Stannous Chloride; Stannous Chloride Anhydrous; Stannous Fluoride; Stannous Tartrate, Starch, Starch 1500, Prege!atrnized, Starch, Corn; Stearalkonium Chloride; Stearalkonium Hectorite/Propylene Carbonate; Steararnidoethy] Diethylamine; Steareth-10; Steareth-100; Steareth-2; Steareth-20; Steareth-21; Steareth-40; Stearic Acid; Stearic Diethanoiamide; Stearoxy trimethyisiiane; Steartrimomum Hydrolyzed Animal Collagen; Stearyi Alcohol; Sterile Water For Inhalation, Styrene/Isoprene/Styrene Block Copolymer, Succiraer; Succinic Acid; Sucraiose; Sucrose; Sucrose Distearate; Sucrose Polyesters; Sulfacetamide Sodium; Suifobufyiether .Beta.-Cyclodextrin; Sulfur Dioxide; Sulfuric Acid; Sulfurous Acid; Surfactol Qs, Tagatose, D-; Talc; Tall Oil; Tallow Glycerides; Tartaric Acid; Tartaric Acid, D1-; Tenox; Tenox-2; Tert-Butyl Alcohol; Tert-Butyl Hydroperoxide; Tert-Buty hydroquinone; Tetralds(2-Methoxyisobiirylisocyanide)Copper(I) Tetrafluoroborate; Tetrapropyl Ortliosilicate; Tetrofosmin; Theophylline; Thimerosal; Threonine; Thymol; Tin; Titanium Dioxide; Tocopherol, Tocophersolan, Total parenteral nutrition, lipid emulsion; Tnacetin; Tricaprylm; Trichloromonofluoromethane: Trideceth-10; TriethanoJamine Lauryl Sulfate; Trifluoroacetic Acid; Triglycerides, Medium Chain; Trihydroxy stearin; Trilaneth-4 Phosphate; Trilaureth-4 Phosphate; Trisodium Citrate Dihydrate; Trisodium Hedta; Triton 720; Triton X-200; Troiamine; Tromantadine; Tromelb amine (TRIS); Tryptophan; Tyloxapol; Tyrosine; Undecyienic Acid; Union 76 Amsco-Res 6038; Urea; Valine; Vegetable Oil; Vegetable Oil Giyceride, Hydrogenated; Vegetable Oil, Bydrogenated; Versetamide, Viscarm; Viscose/Cotton; Vitamin E; Wax, Emulsifying; Wecobee Fs; White Ceresin Wax; White Wax; Xantban Gum; Zinc; Zinc Acetate; Zinc Carbonate; Zinc Chloride; and Zinc Oxide.

[00382] Pharmaceutical composition formulations of AAV particles disclosed herein may include cations or anions. In one embodiment, the formulations include metal cations such as, but not limited to, Zn2+, Ca2+, Cu2+, Mn2+, Mg+ and combinations thereof. As a non-limiting example, formulations may include polymers and complexes with a metal cation *(See e.g.,* U.S. Pat. Nos. 6,265,389 and 6,555,525, each of which is herein incorporated by reference in its entirety).

[00383] Formulations of the invention may also include one or more pharmaceutically acceptable salts. As used herein, "pharmaceutically acceptable salts" refers to derivatives of the disclosed compounds wherein the parent compound is modified by converting an existing acid or base moiety to its salt form (e.g., by reacting the free base group with a suitable organic acid).

Examples of pharmaceutically acceptable salts include, but are not limited to, mineral or organic acid salts of basic residues such as amines, alkali or organic salts of acidic residues such as carboxylic acids; and the like. Representative acid addition salts include acetate, acetic acid, adipate, alginate, aseorbate, aspartate, benzenesulfonate, benzene sulfonic acid, benzoate, bisulfate, borate, butyrate, camphorate, camphorsulfonate, citrate, cyclopentanepropionate, digluconate. dodecylsuifate, ethanesuifonate, fumarate. glucoheptonate, glycerophosphate, heinisiiifate, heptonate, hexanoate, hydrobroinide, hydrochloride, hydroiodide, 2-hydroxy-ethanesulfonate, lactobionate, lactate, laurate, lauryl sulfate, malate, maleate, malonate, methanesulfonate, 2-naphthdenesulfonate, nicotinate, nitrate, oleatc, oxalate, palmitate, pamoate, pectinate, persulfate, 3-phenyIpropionate, phosphate, picrate, pivalate, propionate, stearate, succinate, sulfate, tartrate, thiocyaiiate, toluenesulfonate, undecanoate, valerate salts, and the like. Representative alkali or alkaline earth metal salts include sodium, lithium, potassium, calcium, magnesium, and the like, as well as nontoxic ammonium, quaternary ammonium, and amine cations, including, but not limited to ammonium, tetramethylammoniuni, tetraethylammomum, methylamme, dimethyiamine, tnmethylamme, triethylamine, ethylamine, and the like. The pharmaceutically acceptable salts of the present disclosure include the conventional non-toxic salts of the parent compound formed, for example, from non-toxic inorganic or organic acids.

[00384] Solvates may be prepared by crystallization, recrystallization, or precipitation from a solution that includes organic solvents, water, or a mixture thereof. Examples of suitable solvents are ethanol, water (for example, mono-, di-, and tn-hydrates), *N*-methyipyrroiidiiione (NMP), dimethyl sulfoxide (DMSO), *N,N*'-dimethylformamide (DMF), *N,N'*-dimethylacetamide (DMAC), 1,3-di!nethyl-2-iimdazolidinone (DMEU), 1,3-diinethyl-3,4..5,6-tetrahydro-2-(1H)-pyrimidinone (DMPU). acetonitrile (ACN), propylene glycol, ethyl acetate, benzyl alcohol, 2-pyrrolidone, benzyl benzoate, and the like. When water is the solvent, the solvate is referred to as a "hydrate."

III. ADMINISTRATION AND DOSING

Administration

[00385] The AAV particles of the present invention may be administered by any delivery route which results in a therapeutically effective outcome. These include, but are not limited to, enteral (into the intestine), gastroenteral, epidural (into the dura mater), oral (by way of the mouth), transdermal, intracerebral (into the cerebrum), intracerebroventrieular (into the cerebral ventricles), epicutaneous (application onto the skin), intradermal, (into the skin itself), subcutaneous (under the skin), nasal administration (through the nose), intravenous (into a vein),

intravenous bolus, intravenous drip, intra-arterial (into an artery), intramuscular (into a muscle), intracardiac (into the heart), intraosseous mfusion (into the bone marrow), intrathecal (into the spinal canal), intraparenchymaJ (into brain tissue), intraperitoneal, (infusion or injection into the peritoneum), intravesical infusion, intravitreai, (through the eye), intraeavemous injection (into a pathologic cavity) intracavitary (into the base of the penis), intravaginal administration, intrauterine, extra-amniotic administration, transdermal (diffusion through the intact skin for systemic distribution), transmucosal (diffusion through a mucous membrane), transvaginal, insufflation (snorting), sublingual, sublabial, enema, eye drops (onto the conjunctiva), or in ear drops, auricular (in or by way of the ear), buccal (directed toward the cheek), conjunctival, cutaneous, dental (to a tooth or teeth), electro-osmosis, endocervical, endosimisial, endotracheal, extracorporeal, hemodialysis, infiltration, interstitial, intra-abdominal, intra-amniotic, intra-articular, intrahiliary, intrabronchial, intrahursal, intracartilaginous (within a cartilage), intracaudal (within the cauda equine), intracisternal (within the cistema magna cerebeliomedularis), mtracorneai (withm the cornea), dental intracoronal, intracoronaiy (within the coronary arteries), intracorporus cavernosum (within the dilatable spaces of the corporus cavernosa of the penis), intradiscal (within a disc), intraductal (within a duct of a gland), intraduodenai (within the duodenum), intradural (within or beneath the dura), intraepulermal (to the epidermis), intraesophageal (to the esophagus), intragastric (within the stomach), mtragingrval (within the gingivae), intraileal (within the distal portion of the small intestine), intralesional (within or introduced directly to a localized lesion), intraluminal (within a lumen of a tube), intralymphatic (within the lymph), intramedullary (within the marrow cavity of a bone), intramemngeal (within the meninges), intramy ocardial (within the myocardium), intraocular (within the eye), intraovarian (within the ovary), mtrapericardial (within the pericardium), intrapleural (within the pleura), intraprostatic (within the prostate gland), intrapu!monary (within the lungs or its bronchi), mtrasinal (within the nasal or periorbital sinuses), intraspinal (within the vertebral column), intrasynovial (within the synovial cavity of a joint), mtratendmous (within a tendon), mtratesticuiar (within the testicle), intrathecal (within the cerebrospinal fluid at any-level of the cerebrospinal axis), intrathoracic (within the thorax), intratubiiiar (within the tubules of an organ), mtratumor (within a tumor), mtratympanic (within the aurus media), intravascular (within a vessel or vessels), intraventricular (within a ventricle), iontophoresis (by means of electric current where ions of soluble salts migrate into the tissues of the body), irrigation (to bathe or flush open wounds or body cavities), laryngeal (directly upon the larynx), nasogastric (through the nose and into the stomach), occlusive dressing technique (topical route administration which is then covered by a dressing which occludes the area), ophthalmic (to the

external eye), oropharyngeal (directly to the mouth and pharynx), parenteral, percutaneous, periarticular, peridural perineural, periodontal, rectal, respiratory (withm the respiratory tract by inhaling orally or nasally for local or systemic effect), retrobulbar (behind the pons or behind the eyeball), soft tissue, subarachnoid, subconjunctival, submucosal, topical, transplacental (through or across the placenta), transtracheal (through the wall of the trachea), transtympanic (across or through the tympanic cavity), ureteral (to the ureter), urethral (to the urethra), vaginal, caudal block, diagnostic, nerve block, biliary perfusion, cardiac perfusion, photopheresis and spinal.

[00386] In some embodiments, compositions may be administered in a way winch allows them to cross the blood-brain barrier, vascular barrier, or other epithelial barrier. The AAV particles of the present invention may be administered in any suitable form, either as a liquid solution or suspension, as a solid form suitable for liquid solution or suspension in a liquid solution. The AAV particles may be formulated with any appropriate and pharmaceutically acceptable excipient.

[00387] In one embodiment, the AAV particles of the present invention may be delivered to a subject via a single route administration.

[00388] In one embodiment, the AAV particles of the present invention may be delivered to a subject via a multi-site route of administration. A subject may be administered at 2, 3, 4, 5 or more than 5 sites.

[00389] In one embodiment, a subject may be administered the AAV particles of the present invention using a bolus infusion.

[00390] In one embodiment, a subject may be administered the AAV particles of the present invention using sustained delivery over a period of minutes, hours or days. The infusion rate may be changed depending on the subject distribution, formulation or another delivery parameter.

[00391] In one embodiment, the AAV particles of the present invention may be delivered by intramuscular delivery route. (See, e.g., U. S. Pat. No. 6506379; the content of which is incorporated herein by reference in its entirety). Non-limiting examples of intramuscular administration include an intravenous injection or a subcutaneous injection.

[00392] In one embodiment, the AAV particles of the present invention may be delivered by oral administration. Non-iimitmg examples of oral administration include a digestive tract administration and a buccal administration.

[00393] In one embodiment, the AAV particles of the present invention may be delivered by intraocular delivery route. A non-limiting example of intraocular administration include an mtravitreal injection.

[00394] In one embodiment, the AAV panicles of the present invention may be delivered by intranasal delivery route. Non-limiting examples of intranasal delivery include administration of nasal drops or nasal sprays.

[ΘΘ395] In some embodiments, the AAV particles that may be administered to a subject by peripheral injections. Non-limiting examples of peripheral injections include intraperitoneal, intramuscular, intravenous, conjunctival or joint injection. It was disclosed in the art that the peripheral administration of AAV vectors can be transported to the central nervous system, for example, to the motor neurons (e.g., U. S. Patent Publication Nos. 20100240739, and 20100130594; the content of each of which is incorporated herein by reference in their entirety).

[ΘΘ396] In one embodiment, the AAV particles may be delivered by injection into the CSF pathway. Non-limiting examples of delivery to the CSF pathway include intrathecal and intracerebroventricul ar admimstrati on.

[00397] In one embodiment, the AAV particles may be delivered by systemic deliver}-. As a non-limiting example, the systemic delivery may be by intravascular administration.

[00398] In one embodiment, the AAV particles of the present invention may be administered to a subject by intracranial delivery (See, e.g., U. S. Pat. No. 8,1 19,61 1; the content of which is incorporated herein by reference in its entirety).

[Θ0399] In one embodiment, the AAV particles of the present invention may be administered to a subject by intraparenchymal administration.

[00400] In one embodiment, the AAV particles of the present invention may be administered to a subject by intramuscular administration.

[00401] In one embodiment, the AAV particles of the present invention are administered to a subject and transduce muscle of a subject. As anon-limiting example, the AAV particles are administered by intramuscular administration.

[Θ0402] In one embodiment, the AAV particles of the present invention may be administered to a subject by intravenous administration.

[00403] In one embodiment, the AAV particles of the present invention may be administered to a subject by subcutaneous administration.

[00404] In one embodiment, the AAV particles of the present invention may be administered to a subject by topical administration.

[00405] In one embodiment, the AAV particles may be delivered by direct injection into the brain. As a non-limiting example, the brain delivery may be by intrastriatal administration.

[00406] In one embodiment, the AAV particles may be delivered by more than one route of administration. As non-limiting examples of combination administrations, AAV particles may

be delivered by intrathecal and iitiracerebroventricular, or by intravenous and intraparenchymai administration.

Parenteral and injectable administration

[00407] In some embodiments, pharmaceutical compositions, AAV particles of the present invention may be administered parenterally. Liquid dosage forms for oral and parenteral administration include, but are not limited to, pharmaceutically acceptable emulsions, microemulsions, solutions, suspensions, syrups, and/or elixirs. In addition to active ingredients, liquid dosage forms may comprise inert diluents commonly used in the art such as, for example, water or other solvents, solubilizing agents and emulsifiers such as ethyl alcohol, isopropyl alcohol, ethyl carbonate, ethyl acetate, benzyl alcohol, benzyl benzoate, propylene glycol, 1,3-bufyiene glycol, dimethylformamide, oils (in particular, cottonseed, groundnut corn, germ, olive, castor, and sesame oils), glycerol, tetrahydrofurfury 1alcohol, polyethylene glycols and fatty acid esters of sorbitan, and mixtures thereof Besides inert diluents, oral compositions can include adjuvants such as wetting agents, emulsifying and suspending agents, sweetening, flavoring, and/or perfuming agents. In certain embodiments for parenteral administration, compositions are mixed with solubilizing agents such as CREMOPHOR®, alcohols, oils, modified oils, glycols, polysorbat.es, cyclodextrins, polymers, and/or combinations thereof. In other embodiments, surfactants are included such as hydroxypropyicelluiose.

[00408] Injectable preparations, for example, sterile injectable aqueous or oleaginous suspensions may be formulated according to the known art using suitable dispersing agents, wetting agents, and/or suspending agents. Sterile injectable preparations may be sterile injectable solutions, suspensions, and/or emulsions in nontoxic parenterally acceptable diluents and/or solvents, for example, as a solution in 1,3-butanediol. Among the acceptable vehicles and solvents that may be employed are water. Ringer's solution, U.S.P., and isotonic sodium chloride solution. Sterile, fixed oils are conventionally employed as a solvent or suspending medium. For this purpose, any bland fixed oil can be employed including synthetic mono- or digiycerides. Fatly acids such as oleic acid can be used in the preparation of injectables.

[00409] Injectable formulations may be sterilized, for example, by filtration through a bacterial-retaining filter, and/or by incorporating sterilizing agents in the form of sterile solid compositions which can be dissolved or dispersed in sterile water or other sterile injectable medium prior to use.

[00410] In order to prolong the effect of active ingredients, it is often desirable to slow the absorption of active ingredients from subcutaneous or mtramuscidar injections. This may be accomplished by the use of liquid suspensions of crystalline or amorphous material with poor

water solubility. The rate of absorption of active ingredients depends upon the rate of dissolution which, in turn, may depend upon crystal size and crystalline form. Alternatively, delayed absorption of a parenteraily administered drug form is accomplished by dissolving or suspending the drag in an oil vehicle. injectable depot forms are made by forming niicroencapsule matrices of the drug in biodegradable polymers such as polyiactide-poiygiycolide. Depending upon the ratio of drug to polymer and the nature of the particular polymer employed, the rate of drug release can be controlled. Examples of other biodegradable polymers include poiy(orthoesters) and poly(anhydrides). Depot injectable formulations are prepared by entrapping the drug in liposomes or microemulsions which are compatible with body tissues.

Rectal and vaginal administration

[00411] in some embodiments, pharmaceutical compositions, AAV particles of the present invention may be administered rectally and/or vaginally. Compositions for rectal or vaginal administration are typically suppositories which can be prepared by mixing compositions with suitable non-irritating excipients such as cocoa butter, polyethylene glycol or a suppository wax which are solid at ambient temperature but liquid at body temperature and therefore inelt in the rectum or vaginal cavity and release the active ingredient.

Oral administration

[00412] in some embodiments, pharmaceutical compositions, AAV particles of the present invention may he administered orally. Solid dosage forms for oral administration include capsules, tablets, pills, powders, and granules. In such solid dosage forms, an active ingredient is mixed with at least one inert, pharmaceutically acceptable excipient such as sodium citrate or dicalcium phosphate and/or fillers or extenders *{e.g.* starches, lactose, sucrose, glucose, mannitol, and silicic acid), binders *{e.g.* carboxymethylcelluiose, alginates, gelatin, poiyvinylpyrrolidinone, sucrose, and acacia), humectants *{e.g.* glycerol), disintegrating agents *(e.g.* agar, calcium carbonate, potato or tapioca starch, alginic acid, certain silicates, and sodium carbonate), solution retarding agents *(e.g.* paraffin), absorption accelerators *{e.g.* quaternary ammonium compounds), wetting agents *{e.g.* cetyl alcohol and glycerol monostearate), absorbents *{e.g.* kaolin and bentonite clay), and lubricants *(e.g.* talc, calcium stearate, magnesium stearate, solid polyethylene glycols, sodium iauryl sulfate), and mixtures thereof. In the case of capsules, tablets and pills, the dosage form may comprise buffering agents.

Topical or transdermal administration

[00413] As described herein, pharmaceutical compositions, AAV particles of the present invention may be formulated for administration topically. The skin may be an ideal target site for deliver} as it is readily accessible. Three routes are commonly considered to deliver

pharmaceutical compositions, AAV particles of the present invention to the skin: (i) topical application *(e.g.* for local/regional treatment and/or cosmetic applications); (ii) intradermal injection *(e.g.* for local/regional treatment and/or cosmetic applications); and (iii) systemic delivery *(e.g.* for treatment of dermatologic diseases that affect both cutaneous and extracutaneous regions). Pharmaceutical compositions, AAV particles of the present invention can be delivered to the skin by several different approaches known in the art.

|00414] In some embodiments, the invention provides for a variety of dressings (e.g., wound dressings) or bandages (e.g., adhesive bandages) for conveniently and/or effectively carrying out methods of the present invention. Typically dressing or bandages may comprise sufficient amounts of pharmaceutical compositions, AAV particles of the present invention described herein to allow users to perform multiple treatments.

[00415] Dosage forms for topical and/or transdermal administration may include ointments, pastes, creams, lotions, gels, powders, solutions, sprays, inhalants and/or patches. Generally, active ingredients are admixed under sterile conditions with pharmaceutically acceptable excipients and'or any needed preservatives and/or buffers. Additionally, the present invention contemplates the use of transdermal patches, which often have the added advantage of providing controlled deliver> of pharmaceutical compositions, AAV particles of the present invention to the body. Such dosage forms may be prepared, for example, by dissolving and/or dispensing pharmaceutical compositions, AAV particles in the proper medium. Alternatively, or additionally, rates may be controlled by either providing rate controlling membranes and'or by dispersing pharmaceutical compositions, AAV particles in a polymer matrix and/or gel.

[00416] Formulations suitable for topical administration include, but are not limited to, liquid and/or semi liquid preparations such as liniments, lotions, oil in water and/or water in oil emulsions such as creams, ointments and/or pastes, and/or solutions and/or suspensions.

[00417] Topicaliy-administrable formulations may, for example, comprise from about 1% to about 10% (w/w) active ingredient, although the concentration of active ingredient may be as high as the solubility limit of the active ingredient in the solvent. Formulations for topical administration may further comprise one or more of the additional ingredients described herein.

Depot administration

[00418] As described herein, in some embodiments, pharmaceutical compositions, AAV particles of the present invention are formulated in depots for extended release. Generally, specific organs or tissues ("target tissues") are targeted for administration.

[00419] In some aspects of the invention, pharmaceutical compositions, AAV particles of the present invention are spatially retained within or proximal to target tissues. Provided are methods

of providing pharmaceutical compositions, AAV particles, to target tissues of mammalian subjects by contacting target tissues (which comprise one or more target cells) with pharmaceutical compositions, AAV particles, under conditions such that they are substantially retained in target tissues, meaning that at least 10, 20, 30, 40, 50, 60, 70, 80, 85, 90, 95, 96, 97, 98, 99, 99.9, 99.99 or greater than 99.99% of the composition is retained in the target tissues. Advantageously, retention is determined by measuring the amount of pharmaceutical compositions, AAV particles, that enter one or more target cells. For example, at least 1%, 5%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 85%, 90%, 95%, 96%, 97%, 98%, 99%, 99.9%, 99.99% or greater than 99.99% of pharmaceutical compositions, AAV particles, administered to subjects are present intracellular!}' at a period of time following administration. For example, intramuscular injection to mammalian subjects may be performed using aqueous compositions comprising pharmaceutical compositions, AAV particles of the present invention and one or more transfection reagents, and retention is determined by measuring the amount of pharmaceutical compositions, AAV particles, present in muscle cells.

[00420] Certain aspects of the invention are directed to methods of providing pharmaceutical compositions, AAV particles of the present invention to a target tissues of mammalian subjects, by contacting target tissues (comprising one or more target cells) with pharmaceutical compositions, AAV particles under conditions such that they are substantially retained in such target tissues. Pharmaceutical compositions, AAV particles comprise enough active ingredient such that the effect of interest is produced in at least one target ceil. In some embodiments, pharmaceutical compositions, AAV particles generally comprise one or more ceil penetration agents, although "naked" formulations (such as without ceil penetration agents or other agents) are also contemplated, with or without pharmaceutically acceptable carriers.

Pulmonary administration

[ΘΘ421] In some embodiments, pharmaceutical compositions, AAV particles of the present invention may be prepared, packaged, and/or sold in formulations suitable for pulmonary administration. In some embodiments, such administration is via the buccal cavity. In some embodiments, formulations may comprise dry particles comprising active ingredients. In such embodiments, dry particles may have a diameter in the range from about 0.5 nm to about 7 nm or from about 1 nm to about 6 nm. In some embodiments, formulations may be in the form of dry powders for administration using devices comprising dry powder reservoirs to which streams of propellent may be directed to disperse such powder. In some embodiments, self-propelling solvent/powder dispensing containers may be used. In such embodiments, active ingredients may be dissolved and/or suspended in low-boiling propellant in sealed containers. Such powders may

comprise particles wherein at least 98% of the particles by weight have diameters greater than 0.5 nm and at least 95% of the particles by number have diameters less than 7 nm. Alternatively, at least 95% of the particles by weight have a diameter greater than 1 nm and at least 90% of the particles by number have a diameter less than 6 nm. Dry powder compositions may include a solid fine powder diluent such as sugar and are conveniently provided in a unit dose form.

[00422] Low boiling propellants generally include liquid propellants having a boiling point of below 65 °F at atmospheric pressure. Generally, propellants may constitute 50% to 99.9% (w/w) of the composition, and active ingredient may constitute 0.1% to 20% (w/w) of the composition. Propellants may further comprise additional ingredients such as liquid non-ionic and/or solid anionic surfactant and/or solid diluent (which may have particle sizes of the same order as particles comprising active ingredients).

[00423] Pharmaceutical compositions formulated for pulmonary delivery may provide active ingredients in the form of droplets of solution and/or suspension. Such formulations may be prepared, packaged, and/or sold as aqueous and/or dilute alcoholic solutions and/or suspensions, optionally sterile, comprising active ingredients, and may conveniently be administered using any nebulization and/or atomization device. Such formulations may further comprise one or more additional ingredients including, but not limited to, a flavoring agent such as saccharin sodium, a volatile oil, a buffering agent, a surface active agent, and/or a preservative such as methylhydroxybenzoate. Droplets provided by this route of administration may have an average diameter in the range from about 0.1 nm to about 200 nm.

Intranasal, nasal and buccal administration

[00424] In some embodiments, pharmaceutical compositions, AAV particles of the present invention may be administered nasally and/or intranasal. In some embodiments, formulations described herein useful for pulmonary delivery may also be useful for intranasal delivery. In some embodiments, formulations for intranasal administration comprise a coarse powder comprising the active ingredient and having an average particle from about 0.2 μη to 500 μm. Such formulations are administered in the manner in which snuff is taken, *i.e.* by rapid inhalation through the nasal passage from a container of the powder held close to the nose.

[00425] Formulations suitable for nasal administration may, for example, comprise from about as little as 0.1% (w/w) and as much as 100% (w/w) of active ingredient, and may comprise one or more of the additional ingredients described herein. A pharmaceutical composition may be prepared, packaged, and/or sold in a formulation suitable for buccal administration. Such formulations may, for example, be in the form of tablets and/or lozenges made using conventional methods, and may, for example, 0.1% to 20% (w/w) active ingredient, the balance

comprising an orally dissolvable and/or degradable composition and, optionally, one or more of the additional ingredients described herein. Alternately, formulations suitable for buccal administration may comprise powders and/or an aerosolized and/or atomized solutions and/or suspensions comprising active ingredients. Such powdered, aerosolized, and/or aerosolized formulations, when dispersed, may comprise average particle and/or droplet sizes in the range of from about 0.1 nm to about 200 nm, and may further comprise one or more of any additional ingredients described herein.

Ophthalmic or otic administration

[00426] In some embodiments, pharmaceutical compositions, AAV particles of the present invention may be prepared, packaged, and/or sold in formulations suitable for ophthalmic and/or otic administration. Such formulations may, for example, be in the form of eye and/or ear drops including, for example, a 0.1/1.0% (w/w) solution and/or suspension of the active ingredient in aqueous and/or oily liquid excipients. Such drops may further comprise buffering agents, salts, and/or one or more other of any additional ingredients described herein. Other opMialmicaliy-admimstrahle formulations which are useful include those which comprise active ingredients in macrocrystalline form and/or in liposomal preparations. Subretinal inserts may also be used as forms of administration.

Delivery

[00427] In one embodiment, the AAV particles or pharmaceutical compositions of the present invention may be administered or delivered using the methods for treatment of disease described in US Patent No. 8,999,948, or International Publication No. WO2014178863, the contents of which are herein incorporated by reference in their entirety.

[00428] In one embodiment, the AAV particles or pharmaceutical compositions of the present invention may be administered or delivered using the methods for delivering gene therapy in Alzheimer's Disease or other neurodegenerative conditions as described in US Application No. 20150126590, the contents of which are herein incorporated by reference in their entirety.

[00429] In one embodiment, the AAV particles or pharmaceutical compositions of the present invention may be administered or delivered using the methods for delivery of a CNS gene therapy as described in US Patent Nos. 6,436,708, and 8,946,152, and international Publication No. WO2015168666, the contents of which are herein incorporated by reference in their entirety.

[00430] In one embodiment, the AAV particle or pharmaceutical compositions of the present invention may be administered or delivered using the methods for delivering proteins using AAV vectors described in European Patent Application No. EP2678433, the contents of which are herein incorporated by reference in their entirety.

[00431] In one embodiment, the AAV panicle or pharmaceutical compositions of the present invention may be administered or delivered using the methods for delivering DNA to the bloodstream described in US Patent No. US 6,211,163, the contents of which are herein incorporated by reference in their entirety.

[00432] In one embodiment, the AAV particle or pharmaceutical compositions of the present invention may be administered or delivered using the methods for delivering a payioad to the central nervous system described in US Patent No. US 7,588,757, the contents of which are herein incorporated by reference in their entirety.

[00433] In one embodiment, the AAV particle or pharmaceutical compositions of the present invention may be administered or delivered using the methods for delivering a payioad described in US Patent No. US 8,283,151, the contents of which are herein incorporated by reference in their entirety.

[00434] In one embodiment, the AAV particle or pharmaceutical compositions of the present invention may be administered or delivered using the methods for delivering a payioad using a glutamic acid decarboxylase (GAD) delivery vector described in international Patent Publication No. WO2001089583, the contents of which are herein incorporated by reference in their entirety.

[00435] In one embodiment, the AAV particle or pharmaceutical compositions of the present invention may be administered or delivered using the methods for delivering a payioad to neural cells described in International Patent Publication No. WO2012057363, the contents of which are herein incorporated by reference in their entirety.

Delivery to Cells

[00436] The present disclosure provides a method of delivering to a ceil or tissue any of the above-described AAV particles, comprising contacting the cell or tissue with said AAV particle or contacting the cell or tissue with a formulation comprising said AAV particle, or contacting the cell or tissue with any of the described compositions, including pharmaceutical compositions. The method of delivering the AAV particle to a cell or tissue can be accomplished in *vitro, ex vivo,* or *in vivo.*

Delivery to Subjects

[00437] The present disclosure additionally provides a method of delivering to a subject, including a mammalian subject, any of the above-described AAV particles comprising administering to the subject said AAV particle, or administering to the subject a formulation comprising said AAV particle, or administering to the subject any of the described compositions, including pharmaceutical compositions.

Dose and Regimen

[00438] The present invention provides methods of administering AAV particles in accordance with the invention to a subject in need thereof. The pharmaceutical, diagnostic, or prophylactic AAV particles and compositions of the present invention may be administered to a subject using any amount and any route of administration effective for preventing, treating, managing, or diagnosing diseases, disorders and/or conditions. The exact amount required will vary from subject to subject, depending on the species, age, and general condition of the subject, the severity of the disease, the particular composition, its mode of administration, its mode of activity, and the like. The subject may he a human, a mammal, or an animal. Compositions in accordance with the invention are typically formulated in unit dosage form for ease of administration and uniformity of dosage. It will be understood, however, that the total daily usage of the compositions of the present invention may be decided by the attending physician within the scope of sound medical judgment. The specific therapeutically effective, prophylactically effective, or appropriate diagnostic dose level for any particular individual will depend upon a variety of factors including the disorder being treated and the severity of the disorder, the activity of the specific payload employed, the specific composition employed; the age, body weight, general health, sex and diet of the patient; the time of administration, route of administration, and rate of excretion of the specific AAV particle employed; the duration of the treatment; drugs used in combination or coincidental with the specific AAV particle employed: and like factors well known in the medical arts.

[ΘΘ439] In certain embodiments, AAV particle pharmaceutical compositions in accordance with the present invention may be administered at dosage levels sufficient to deliver from about 0.0001 mg/kg to about 100 mg/kg, from about 0.001 rng/kg to about 0.05 mg/kg, from about 0.005 mg/kg to about 0.05 mg/kg, from about 0.001 mg/kg to about 0.005 mg/kg, from about 0.05 mg/kg to about 0.5 rng/kg, from about 0.01 mg/kg to about 50 rng/'kg, from about 0.i mg/kg to about 40 mg/kg, from about 0.5 mg/kg to about 30 mg/kg, from about 0.01 mg/kg to about 10 mg/kg, from about 0.1 mg/kg to about 10 mg/kg, or from about 1 mg/kg to about 25 mg/kg, of subject body weight per day, one or more times a day, to obtain the desired therapeutic, diagnostic, or prophylactic, effect. It will be understood that the above dosing concentrations may be converted to vg or viral genomes per kg or into total viral genomes administered by one of skill in the art.

[ΘΘ440] In certain embodiments, AAV particle pharmaceutical compositions in accordance with the present disclosure may be administered at about 10 to about 600 µl/site, 50 to about 500 µl/site, 100 to about 400 µl/site, 120 to about 300 µl/site, 140 to about 200 µl/site. about 160

µl/site. As non-limiting examples, AAV panicles may be administered at 50 µl/site and/or 150 µl/site.

[00441] The desired dosage of the AAV particles of the present invention may be delivered only once, three times a day, two times a day, once a day, every other day, every third day, every week, every two weeks, every three weeks, or *every* four weeks. in certain embodiments, the desired dosage may be delivered using multiple administrations *(e.g.,* two, three, four, five, six, seven, eight, nine, ten, eleven, twelve, thirteen, fourteen, or more administrations). When multiple administrations are employed, split dosing regimens such as those described herein may be *used. As* used herein, a "split dose" is the division of "single unit dose" or total daily dose into two or more doses, *e.g.,* two or more administrations of the "single unit dose". *As* used herein, a "single unit dose" is a dose of any therapeutic administered in one dose/at one time/single route/single point of contact, i.e., single administration event.

[00442] The desired dosage of the AAV particles of the present invention may be administered as a "pulse dose" or as a "continuous flow". As used herein, a "pulse dose" is a series of single unit doses of any therapeutic administered with a set frequency over a period of time. As used herein, a "continuous flow" is a dose of therapeutic administered continuously for a period of time in a single route/single point of contact, i.e., continuous administration event. A total daily dose, an amount given or prescribed in 24 hour period, may be administered by any of these methods, or as a combination of these methods, or by any other methods suitable for a pharmaceutical administration.

[00443] In one embodiment, delivery of the AAV particles of the present invention to a subject provides neutralizing activity to a subject. The neutralizing activity can be for at least 1 month, 2 months, 3 months. 4 months, 5 months, 6 months. 7 months, 8 months, 9 months, 10 months, 11 months, 1 year, 13 months, 14 months, 15 months, 16 months, 17 months, 18 months, 19 months, 20 months, 20 months, 21 months, 22 months, 23 months, 2 years, 3 years, 4 years, 5 years, 6 years, 7 years, 8 years, 9 years, 10 years or more than 10 years.

[00444] In one embodiment, delivery of the AAV particles of the present invention results in minimal serious adverse events (SAEs) as a result of the delivery of the AAV particles.

[00445] In one embodiment, delivery of AAV particles to cells of the central nervous system (e.g., parenchyma) may comprise a total dose between about 1x10" VG and about $1x10^{16}$ VG. In some embodiments, delivery may comprise a total dose of about $lxi0^{6}$, $2x10^{6}$, $3xl0^{6}$, 4x10% $5xl0^{6}$, $6xl0^{6}$, $7xl0^{6}$, $8xl0^{6}$, $9xl0^{6}$, $1xlO^{7}$, $2xl0^{7}$, $3xl0^{7}$, $4xl0^{7}$, $5xl0^{7}$, $6xl0^{7}$, $7xl0^{7}$, $8xl0^{7}$, $9x10^{7}$, $1x10^{8}$, $2x10^{8}$, $3x10^{8}$, $4x10^{8}$, $5x10^{8}$, $6x10^{8}$, $7x10^{8}$, $8x10^{8}$, $9x10^{8}$, $1x10^{9}$, $2xl0^{9}$, $3x10^{9}$, $4x10^{9}$, $5xl0^{9}$, $6x10^{9}$, $7x10^{9}$, $8xl0^{9}$, $9x10^{9}$, $IxlO^{10}$, $1.9xlO^{10}$, $2xl0^{10}$, $3x10^{10}$, $3.73xi0^{10}$, $4x10^{10}$,

5xlO[10], 6χ10[10], 7x1 0[10], 8xl0 [10], 9xl0 [10], 1χ10"', 2x1 o[11], 2.5x1 o[11], 3xlO[11], 4χ10[11], 5x10", 6x10", 7x10", 8x10", 9χ10[11], 1x10", 2x10", 3x10". 4x10", 5x10", 6x10", 7x1 0", 8x 10", 9x10", lxlO", 2x10", 3x10", 4x10", 5x10", 6x10", 7x10", 8x10", 9x10", 1x1 0", 2x10", 3x10", 4x10", 5x10", 6x10", 7x 10", 8x10", 9x10", 1x10", 2x10", 3x10", 4x10", 5x10", 6x10", 7x10", 8x10", 9x10", or 1x10" VG. As a non-limiting example, the total dose is 1x10" VG. As another non-limiting example, the total dose is 2.1x 10" VG.

|00446] In one embodiment, delivery of AAV particles to cells of the central nervous system (e.g., parenchyma) may comprise a composition concentration between about 1x10[6] VG/mL and about 1x10[16] VG/mL. In some embodiments, delivery may comprise a composition concentration of about 1x10[6], 2x10[6], 3x10[6], 4x10[6], 5xi0 [6], 6x10[6], 7xl0 [6], 8x10[6], 9xl0 [6], 1x10[7], 2xi0 [7], 3xl0 [7], 4x10[7], 5x10[7], 6xl0 [7], 7xl0 [7], 8x10[7], 9xl0 [7], 1x10[s], 2xi0 [8], 3x10[s], 4x10[s], 5xi0 [8], 6x10[8], 7x 10[8], 8x10[s], 9x10[8], IxlO[9], 2xi0 [9], 3x10[9], 4xl0 [9], 5xi0 [9], 6x10[9], 7x10[9], 8x 10[9], 9x10[9], 1x10", 2x10". 3x10", 4x10", 5x10", 6x1 0", 7x10", 8x10", 9x10", 1x10". 2x10", 3xl0 [11], 4x10", 5x10", 6x10", 7x 10", 8x10", 9x10", 1x10", 2x10", 3x10", 4x10", 5x10", 6x10", 7x10", 8x10", 9x10", 1x10", 2x10", 3x10", 4x10", 5x10". 6x10", 7x10", 8x10", 9x10", 1x10", 2x10", 3x 10", 4x10", 5x10", 6x 10", 7x10", 8x10", 9x10", 1x 10", 2x 10", 3x10", 4x10", 5x10", 6x10", 7x10", 8x10", 9x10". or 1x10" VG/mL. In one embodiment, the delivery comprises a composition concentration of 1x10" VG/mL. In one embodiment, the delivery comprises a composition concentration of 2.1x10[12] VG/mL.

Combinations

[00447] The AAV particles may be used in combination with one or more other therapeutic, prophylactic, research or diagnostic agents. By 'in coinbination with," it is not intended to imply that the agents must be administered at the same time and/or formulated for delivery together, although these methods of delivery are within the scope of the present invention. Compositions can be administered concurrently with, prior to, or subsequent to, one or more other desired therapeutics or medical procedures. in general, each agent will be administered at a dose and/or on a time schedule determined for that agent. In some embodiments, the present disclosure encompasses the delivery of pharmaceutical, prophylactic, research, or diagnostic compositions in coinbination with agents that inay improve their bioavailability, reduce and/or modify their metabolism, inhibit their excretion, and/or modify their distribution within the body.

Measurement of Expression

[00448] Expression of payloads from viral genomes may be determined using various methods known in the art such as, but not limited to rmmunochemistry (e.g., IHC), *in situ* hybridization (1SH). enzyme-linked immunosorbent assay (ELTSA), affinity ELISA, ELTSPOT, flow

cytometry, immunocytoiogy, surface plasmon resonance analysis, kinetic exclusion assay, liquid chrorrmtography-mass spectrometry (LCMS), high-performance liquid chromatography (HPLC), BCA assay, Immunoelectrophoresis, Western blot, SDS-PAGE, protein immtmoprecipitation. and/or PGR.

Bioavailability

[00024] The AAV particles, when formulated into a composition with a delivery agent as described herein, can exhibit an increase in bioavailability as compared to a composition lacking a delivery agent as described herein. As used herein, the term "bioavailability" refers to the systemic availability of a given amount of AAV particle or expressed payload administered to a mammal. Bioavailability can be assessed by measuring the area under the curve (AUG) or the maximum serum or plasma concentration (C_{max}) of the composition following. AUG is a determination of the area under the curve plotting the serum or plasma concentration of a compound (e.g., AAV particles or expressed payloads) along the ordinate (Y-axis) against time along the abscissa (X-axis). Generally, the AUG for a particular compound can be calculated using methods known to those of ordinary skill in the art and as described in G. S. Banker, Modem Pharmaceutics, Drugs and the Pharmaceutical Sciences, v. 72, Marcel Dekker, New York, Inc., 1996, the contents of which are herein incorporated by reference in its entirety.

[00025] The Cmax value is the maximum concentration of the AAV particle or expressed payload achieved in the serum or plasma of a mammal following administration of the AAV particle to the mammal. The Cmax value of can be measured using methods known to those of ordinary skill in the art. The phrases "increasing bioavailability" or "improving the pharmacokinetics," as used herein mean that the systemic availability of a first AAV particle or expressed payload, measured as AUG, Cmax, or Cmin in a mammal is greater, when co¬ administered with a delivery agent as described herein, than when such co-administration does not take place. In some embodiments, the bioavailability can increase by at least about 2%, at least about 5%, at least about 10%, at least about 15%, at least about 20%, at least about 25%, at least about 30%, at least about 35%, at least about 40%, at least about 45%, at least about 50%, at least about 55%, at least about 60%, at least about 65%, at least about 70%, at least about 75%>, at least about 80%, at least about 85%, at least about 90%, at least about 95%, or about 100%.

Therapeutic Window

[00026] As used herein "therapeutic window" refers to the range of plasma concentrations, or the range of levels of therapeutically active substance at the site of action, with a high probability of eliciting a therapeutic effect. In some embodiments, the therapeutic window of the AAV

particle as described herein can increase by at least about 2%, at least about 5%, at least about 10%, at least about 15%, at least about 20%, at least about 25%, at least about 30%, at least about 35%, at least about 40%, at least about 45%, at least about 50%, at least about 55%, at least about 60%, at least about 65%, at least about 70%, at least about 75%, at least about 80%, at least about 85%, at least about 90%, at least about 95%, or about 100%.

Volume of Distribution

|00027] As used herein, the term "volume of distribution" refers to the fluid volume that would be required to contain the total amount of the drug in the body at the same concentration as in the blood or plasma: **Vdist** equals the amount of drug in the body/concentration of drug in blood or plasma. For example, for a 10 mg dose and a plasma concentration of 10 mg/L, the volume of distribution would be 1 liter. The volume of distribution reflects the extent to which the drug is present in the extravascular tissue. A large volume of distribution reflects the tendency of a compound to bind to the tissue components compared with plasma protein binding. In a clinical setting, **Vdist** can be used to determine a loading dose to achieve a steady state concentration. In some embodiments, the volume of distribution of the AAV particles as described herein can decrease at least about 2%, at least about 5%, at least about 10%, at least about 15%, at least about 20%, at least about 25%, at least about 30%, at least about 35%, at least about 40%, at least about 45%, at least about 50%, at least about 55%, at least about 60%, at least about 65%, at least about 70%.

Biological Effect

|00028] In one embodiment, the biological effect of the AAV particles delivered to the animals may be categorized by analyzing the payload expression in the animals. The payload expression may be determined from analyzing a biological sample collected from a mammal administered the AAV particles of the present invention. For example, a protein expression of 50-200 pg/ml for the protein encoded by the AAV particles delivered to the mammal may be seen as a therapeutically effective amount of protein in the mammal.

IV. METHODS AND USES OF THE COMPOSITIONS OF THE INVENTION

|00449] The present disclosure provides a method for treating a disease, disorder and/or condition in a mammalian subject, including a human subject, comprising administering to the subject any of the AAV particles described herein or administering to the subject any of the described compositions, including pharmaceutical compositions, described herein.

[00450] In one embodiment, the AAV particles of the present invention are administered to a subject pfophylacticaily.

[00451] In one embodiment, the AAV particles of the present invention are administered to a subject having at least one of the diseases described herein.

[00452] In one embodiment, the AAV particles of the present invention are administered to a subject to treat a disease or disorder described herein. The subject may have the disease or disorder or may be at-risk to developing the disease or disorder.

[00453] In one embodiment, the AAV particles of the present invention are pari of an active immunization strategy to protect against diseases and disorders. In an active immunization strategy, a vaccine or AAV particles are administered to a subject to prevent an infectious disease by activating the subject's production of antibodies that can fight off invading bacteria or viruses.

[00454] In one embodiment, the AAV particles of the present invention are part of a passive immunization strategy. In a passive immunization strategy, antibodies against a particular infectious agent are given directly to the subject.

Diseases and toxins

[00455] Various infectious diseases may be treated with pharmaceutical compositions, AAV particles, of the present invention. As used herein, the terra "infectious disease" refers to any disorders caused by organisms such as bacteria, viruses, fungi or parasites. As anon-limiting example, the infectious disease may be Acute bacterial rhinosinusitis, 14-day measles, Acne, Acrodermatitis chronica atrophicans (ACA)-(late skin manifestation of latent Lyme disease), Acute hemorrhagic conjunctivitis, Acute hemorrhagic cystitis, Acute rhinosinusitis. Adult T-cell Leukemia-Lyniphoma (ATLL), African Sleeping Sickness, AIDS (Acquired Immunodeficiency Syndrome), Alveolar hydatid, Amebiasis, Amebic meningoencephalitis, Anaplasmosis, Anthrax, Arboviral or parainfectious, Ascariasis (Roundworm infections), Aseptic meningitis. Athlete's foot (Tinea pedis), Australian tick typhus, Avian Influenza, Babesiosis, Bacillary angiomatosis, Bacterial meningitis, Bacterial vaginosis, Balanitis, Balantidiasis, Bang's disease, Barmah Forest virus infection, Bartoneiiosis (Verruga peruana; Carrion's disease, Oroya fever), Bat Lyssavims infection. Bay sore (Chiclero's ulcer), Bayhsascaris infection (Racoon roundworm infection), Beaver fever. Beef tapeworm. Bejel (endemic syphilis), Biphasic meningoencephalitis, Black Bane, Black death , Black piedra, Biackwater Fever, Blastomycosis, Blennorrhea of the newborn, Blepharitis, Boils, Bomholm disease (pleurodynia), Borrelia miyamotoi Disease, Botulism, Boutonneuse fever, Brazilian purpuric fever, Break Bone fever, Brill, Bronchiolitis, Bronchitis, Brucellosis (Bang's disease), Bubonic plague, Bullous impetigo, Burkholderia mallei (Glanders), Burkholderia pseudomailei (Melioidosis), Buruli ulcers (also Mycoburuli ulcers), Busse, Busse-Buschke disease (Cryptococcosis), California group encephalitis,

Campylobacteriosis, Candidiasis, Canefield fever (Canicoia fever; 7-day fever; Weil's disease; leptospirosis; canefield fever), Canicoia fever, Capillariasis, Carate, Carbapenem-resistant Enterobacteriaceae (CRE), Carbuncle, Carrion's disease, Cat Scratch fever, Cave disease. Central Asian hemorrhagic fever, Central European tick, Cervical cancer, Chagas disease, Chancroid (Soft chancre), Chicago disease, Chickenpox (Varicella), Chiclero's ulcer, Chikungunya fever, Chlamydial infection, Cholera, Chromobiastomycosis, Ciguatera, Clap, Clonorchiasis (Liver fluke infection), Clostridium Difficile Infection, ClostriDium Perfringens (Epsilon Toxm), Coccidioidomycosis fungal infection (Valley fever; desert rheumatism), Coenurosis, Colorado tick fever, Condyloma accurnmata. Condyloma accuminata(Warts), Condyloma lata, Congo fever, Congo hemorrhagic fever virus. Conjunctivitis , cowpox, Crabs, Crimean, Croup. Cryptococcosis, Cryptosporidiosis (Crypto), Cutaneous Larval Migrans, Cyclosporiasis, Cystic hydatid, Cysticercosis, Cystitis, Czechoslovak tick, D68 (EV-D68), Dacryocytitis, Dandy fever, Darling's Disease, Deer fly fever, Dengue fever (1, 2, 3 and 4), Desert rheumatism, Devil's grip, Diphasic milk fever, Diphtheria, Disseminated Intravascular Coagulation, Dog tapeworm, Donovanosis, Donovanosis (Ciranuioma inguinale), Dracontiasis, Dracunculosis, Duke's disease, Dum Dum Disease, Durand-Mcbolas-Favre disease. Dwarf tapeworm, E. Coli infection (E.Coli), Eastern equine encephalitis, Ebola Hemorrhagic Fever (Ebola virus disease EVD), Ectothrix, Ehrlichiosis (Sennetsu fever), Encephalitis, Endemic Relapsing fever. Endemic syphilis, Endophthalmitis, Endothrix, Enterobiasis (Pinworm infection), Enterotoxin - B Poisoning (Staph Food Poisoning), Enterovirus Infection, Epidemic Keratoconjunctivitis, Epidemic Relapsing fever. Epidemic typhus, Epiglottitis, Erysipelis, Erysipeloid (Erysipelothricosis), Erythema chronicum migrans. Erythema infectiosum, Erythema marginatum, Erythema multiforme, Erythema nodosum. Erythema nodosum leprosum, Erythrasma, Espundia, Eumycotic mycetoma, European blastomycosis, Exanthem subitum (Sixth disease), Eyeworm, Far Eastern tick, Fascioliasis, Fievre boutonneuse (Tick typhus). Fifth Disease (erythema infectiosum), Filatow-Dukes' Disease (Scalded Skin Syndrome; Ritter's Disease), Fish tapeworm, Fitz-Hugh-Curtis syndrome - Perihepatitis, Flinders Island Spotted Fever, Flu (Influenza), Folliculitis, Four Corners Disease, Four Corners Disease (Human Pulmonary Syndrome (HPS)), Frambesia, Francis disease, Furunculosis, Gas gangrene, Gastroenteritis, Genital Herpes, Genital Warts, German measles, Gerstmann-Straussler-Scheinker (GSS), Giardiasis, Gilchrist's disease, Gingivitis, Gingivostomatitis, Glanders, Glandular fever (infectious mononucleosis), Gnathostomiasis, Gonococcal Infection (Gonorrhea), Gonorrhea, Granuloma inguinale (Donovanosis), Guinea Worm, Haemophilus Influenza disease. Hamburger disease, Hansen's disease - leprosy, Hantaan disease, Hantaan-Korean hemorrhagic fever, Hantavirus Pulmonary

Syndrome , Hantavirus Pulmonary Syndrome (HPS). Hard chancre. Hard measles, Haverhill fever - Rat bite fever. Head and Body Lice, Heartland fever, Helicobacterosis, Hemolytic Uremic Syndrome (HUS), Hepatitis A, Hepatitis B, Hepatitis C, Hepatitis D, Hepatitis E, Herpangina. Herpes- genital, Herpes labiaiis, Herpes- neonatal, Hidradenitis, Histoplasmosis, Histoplasmosis infection (Histoplasmosis), His-Wemer disease, HiV infection, Hookworm infections. Hordeola, Hordeola (Stye), HTLY. HTLV- associated myelopathy CHAM), Human granulocytic ehrlichiosis. Human monocytic ehrlichiosis. Human Papillomavirus (HPV), Human Pulmonary Syndrome, Hydatid cyst. Hydrophobia, Impetigo, including congenital (German Measles), Inclusion conjunctivitis, Inclusion conjunctivitis - Swimming Pool conjunctivitis- Pannus, infantile diarrhea. Infectious Mononucleosis, infectious myocarditis, Infectious pericarditis, Influenza, isosporiasis, Israeli spotted fever, Japanese Encephalitis, Jock itch, Jorge Lobo disease - lobomycosis, Jungle yellow fever, Juntn Argentinian hemorrhagic fever, Kala Azar, Kaposi's sarcoma, Keloidal blastomycosis, Keratoconjunctivitis , Kuru. Kyasanur forest disease. LaCrosse encephalitis, Lassa hemorrhagic fever, Legioneilosis (Legionnaires Disease), Legionnaire's pneumonia, Lemierre's Syndrome (Postanginai septicemia), Lemming fever, Leprosy, Leptospirosis (Nanukayami fever; Weil's disease), Listeriosis (listeria). Liver fluke infection. Lobo's mycosis, Lockjaw, Loiasis, Louping ill, Ludwig's angina, Lung fluke infection, Lung fluke infection (Paragonimiasis), Lyme disease. Lymphogranuloma venereum infection (LGV), Machiipo Bolivian hemorrhagic fever, Madura foot, Mal del pinto. Malaria, Malignant pustule, Malta fever, Marburg hemorrhagic fever. Masters disease. Maternal Sepsis (Puerperal fever), Measles, Mediterannean spotted fever, Melioidosis (Whitmore's disease). Meningitis, Meningococcal Disease, MERS, Milker's nodule, Molluscum contagiosum. Moniliasis, monkeypox. Mononucleosis, Mononucleosis-like syndrome, Montezuma's Revenge, Morbilh, MRSA (methicilhn-resistant Staphylococcus aureus) infection. Mucormycosis- Zygoraycosis, Multiple Organ Dysfunction Syndrome or MODS, Multiple-system atrophy (MSA), Mumps, Murine typhus, Murray Valley Encephalitis (MVE), Mycoburuli ulcers, Mycoburuli uicers- Buruli ulcers. Mycotic vulvovaginitis, Myositis, Nanukayami fever, Necrotizing fasciitis, Necrotizing fasciitis- Type 1, Necrotizing fasciitis- Type 2, Negishi, New world spotted fever, Nocardiosis, Nongonococcal urethritis, Non-Polio (Non-Polio Enterovirus), Norovirus infection. North American blastomycosis, North Asian tick typhus, Norwalk virus infection, Norwegian itch, O'Hara disease. Omsk hemorrhagic fever, Onchoceriasis. Onychomycosis, Opisthorchiasis, Opthalmia neonatorium, Oral hairy leukoplakia, Orf, Oriental Sore, Oriental Spotted Fever, Ornithosis (Parrot fever; Psittacosis), Oroya fever. Otitis externa, Otitis media, Pannus, Paracoccidioidomycosis, Paragonimiasis, Paralytic Shellfish Poisoning (Paralytic Shellfish

Poisoning). Paronychia (Whitlow), Parotitis, PCP pneumonia. Pediculosis. Peiiosis hepatica. Pelvic Inflammatory Disease , Pertussis (also called Whooping cough), Phaeohyphomycosis, Pharyngoconjunctival fever, Piedra (White Piedra), Piedra (Black Piedra). PigheL Pink eye conjunctivitis, Pmta, Pinworm infection, Pitted Keratolysis, Pityriasis versicolor (Tinea versicolor). Plague; Bubonic, Pleurodynia, Pneumococcal Disease, Pneumocystosis. Pneumonia, Pneumonic (Plague), Polio or Poliomyelitis. Polycystic hydatid, Pontiac fever, Pork tapeworm, Posada-Wemicke disease, Postanginal septicemia, Powassan, Progressive multifocal leukencephalopathy. Progressive Rubella Panencephalitis, Prostatitis. Pseudomembranous colitis, Psittacosis, Puerperal fever, Pustular Rash diseases (Small pox), Pyelonephritis, Pylephlebitis, Q-Fever, Quinsy, Quintana fever (5~day fever), Rabbit fever. Rabies, Racoon roundworm infection, Rat bite fever, Rat tapeworm, Reiter Syndrome, Relapsing fever, Respiratory syncytial virus (RSV) infection, Rheumatic fever. Rhodotorulosis, Ricin Poisoning, Rickettsialpox, Rickettsiosis , Rift Valley Fever, Ringworm, Ritier's Disease, River Blindness, Rocky Mountain spotted fever, Rose Handler's disease (Sporotrichosis), Rose rash of infants, Roseola, Ross River fever, Rotavirus infection, Roundworm infections, Rubella, Rubeola, Russian spring. Salmonellosis gastroenteritis, San Joaquin Valley fever, Sao Paulo Encephalitis, Sao Paulo fever, SARS. Scabies Infestation (Scabies) (Norwegian itch), Scalded Skin Syndrome, Scarlet fever (Scarlatina), Schistosomiasis, Scombroid, Scrub typhus, Sennetsu fever, Sepsis (Septic shock), Severe Acute Respiratory Syndrome, Severe Acute Respiratory Syndrome (SARS), Shiga Toxigenic Escherichia coli (STEC/VTEC), Shigellosis gastroenteritis (Shigella), Shinbone fever, Shingles , Shipping fever, Siberian tick typhus, Sinusitis, Sixth disease, Slapped cheek disease . Sleeping sickness, Smallpox (Variola). Snail Fever. Soft chancre, Southern tick associated rash illness, Sparganosis, Spelunker's disease, Sporadic typhus, Sporotrichosis, Spotted fever, Spring, St. Louis encephalitis. Staphylococcal Food Poisoning, Staphylococcal infection, Strep. throat, Streptococcal Disease, Streptococcal Toxic-Shock Syndrome, Strongyloiciasis, Stye, Subacute Sclerosing Panencephalitis , Subacute Sclerosing Panencephalitis (SSPE), Sudden Acute Respirator) Syndrome, Sudden Rash, Swimmer's ear, Swimmer's Itch, Swimming Pool conjunctivitis, Sylvatic yellow fever, Syphilis, Systemic Inflammatory Response Syndrome (SIRS), Tabes dorsaiis (tertiary syphilis), Taeniasis, Taiga encephalitis, Tanner's disease, Tapeworm infections, Temporal lobe encephalitis, Temporal lobe encephalitis, tetani (Lock Jaw), Tetanus infection, Threadworm infections, Thrush, Tick, Tick typhus. Tinea barbae, Tinea capitis, Tinea corporis, Tinea cruris, Tinea manuum. Tinea nigra, Tinea pedis. Tinea unguium, Tinea versicolor, Toruiopsosis. Torulosis, Toxic Shock Syndrome, Toxoplasmosis, transmissible spongioform (CJD), Traveler's diarrhea, Trench fever 5,

Trichineiiosis, Trichomoniasis, Trichomycosis axillaris. Trichuriasis, Tropical Spastic Paraparesis (TSP), Trypanosomiasis, Tuberculosis (TB), Tuberculousis, Tularemía, Typhoid Fever, Typhus fever, Ulcus molle, Undulant fever, Urban yellow fever, Urethritis, Vaginitis, Vaginosis, Vancomycin intermediate (VISA), Vancomycin Resistant (VRSA), Varicella, Venezuelan Equine encephalitis. Verruga peruana, Vibrio cholerae (Cholera), Vibriosis (Vibrio), Vincent's disease or Trench mouth. Viral conjunctivitis , Viral Meningitis, Viral meningoencephalitis, Viral rash, Visceral Larval Migrans, Vomito negro. Vulvovaginitis, Warts, Waterhouse, Weil's disease, West Nile Fever, Western equine encephalitis, Whipple's disease. Whipworm infection, White Piedra, Whitlow, Whitmore's disease. Winter diarrhea, Wolhynia fever, Wool sorters' disease. Yaws, Yellow Fever, Yersinosis. Yersinosis (Yersinia), Zahorsky's disease, Zika virus disease, Zoster, Zygomycosis, John Cunningham Vims (JCV), Human immunodeficiency virus (HIV), Influenza virus. Hepatitis B, Hepatitis C, Hepatitis D, Respiratory syncytial virus (RSV), Herpes simplex virus 1 and 2, Human Cytomegalovirus, Epstein-Barr virus , Varicella zoster vims, Coronaviruses , Poxviruses, Enterovirus 71, Rubella virus, Human papilloma virus, *Streptococcus pneumoniae. Streptococcus viridaris.*, *Staphylococcus aureus (S. aureus),* Methiciilin-resistant *Staphylococcus aureus* (MRSA), Vancornycin-intermediate *Staphylococcus aureus* (VISA) , Vancomycm-resistant *Staphylococcus aureus* (VRSA), *Staphylococcus epidermidis (S. epidermfdis), Clostridium Tetani, Bordetella pertussis. BordeteUa paratussls, Mycobacterium. Francisella Tularensis, Toxoplasma gondii,* Candida (C. *albicans. C. glahrata, C. parapsilosis, C. tropica!is, C. krusei and C. lusitaniae)* and/or any other infectious diseases, disorders or syndromes.

[00456] Various toxins may be treated with the pharmaceutical compositions, AAV particles, of the present invention. Non-limited examples of toxins include Ricin, Bacillus anthracis, Shiga toxin and Shiga-Iike toxin, Botulinum toxins.

[ΘΘ457] Various tropical diseases may be treated with pharmaceutical compositions, AAV particles, of the present invention. Non-iimiied examples of tropical diseases include Chikungunya fever, Dengue fever, Chagas disease, Rabies, Malaria, Ebola virus, Marburg virus, West Nile Virus, Yellow Fever, Japanese encephalitis virus, St. Louis encephalitis virus.

[00458] Various foodborne illnesses and gastroenteritis may be treated with pharmaceutical compositions, AAV particles, of the present invention. Non-limited examples of foodborne illnesses and gastroenteritis include Rotavirus. Norwaik vims (Norovirus), Campylobacter jejuni, Clostridium difficile, Entamoeba histolytica, Helicobacter pyroli, Enterotoxm B of Staphylococcus aureus, Hepatitis A virus (HAV), Hepatitis E, Listeria monocytogenes. Salmonella, Clostridium perfringens, and Salmonella

[00459] Various infectious agents may be treated with pharmaceutical compositions, AAV particles, of the present invention. Non-limited examples of infectious agents include adenoviruses, *Anaplasma phagocyiophilium, Ascaris lumhricoides. Bacillus anthracis. Bacillus cereus, Bacteriodes* sp, Barman Forest virus, *Bartonella bacilliformis, Bartonella henselae, Bartonella quintana,* beta-toxin of *Clostridium perfringens, Bordete!la pertussis, Bordetella parapertussis. Borrelia burgdorferi, Borrelia miyamotoi. Borrelia recurrentis, Borrelia* sp.. *Botulinum* toxin. *Brucella* sp., *Burkholderia pseudomallei,* California encephalitis virus, *Campylobacter, Candida albicans,* chikungunya virus, *Chlamydia psittaci. Chlamydia trachomatis, Clonorchis sinensis, Clostridium difficile bacteria, Clostridium tetani,* Colorado tick fever virus, *Corynebacterium diphtheriae, Corynebacterium minutissimum, Coxiella burnetii,* coxsackie A, coxsackie B, Crimean-Congo hemorrhagic fever virus, cytomegalovirus, dengue virus, Eastern Equine encephalitis virus, Ebola viruses, echovirus. *Ehrlichia chqffeensis., Ehrlichia equl, Ehrlichia* sp., *Entamoeba histolytica, Enterobacter sp.. Enterococcus feacalis,* Enterovirus 71, Epstein-Barr virus (EBV), *Erysipelothrixrhusiopathiae. Escherichia coli,* Flavivirus, *Fusobacterium necrophorum, Gardnerella vaginalis,* Group B *streptococcus, Haemophilus aegyptius, Haemophilus ducreyi, Haemophilus influenzae,* hantavirus, *Helicobacter pylori,* Hepatitis A, Hepatitis B, Hepatitis C, Hepatitis D, Hepatitis E, herpes simplex virus 1 and *2,,* human herpes virus 6, human herpes Virus 8, human immunodeficiency virus 1 and *2,* human T-cell leukemia viruses i and II, influenza viruses (A, B, C), Jamestown Canyon virus, Japanese encephalitis antigenic, Japanese encephalitis virus, John Cunningham virus, juninvirus, Kaposi's Sarcoma-associated Herpes Virus (KSHV), *Klebsiella granulomatis, Klebsiella sp.,* Kyasanur Forest Disease virus, La Crosse virus, Lassavirus, *Legionella pneumophila, Leptospira interrogans, Listeria monocytogenes,* lymphocytic choriomeningitis virus, lyssavirus, Machupovirus, Marburg virus, measles virus, MERS coronavirus (MERS-CoV), *Micrococcus sedentarius, Mobiluncus sp., Molluscipoxvirus, Moraxella catarrhalis, Morbilli- Rubeola virus,* Mumpsvirus, *Mycobacterium leprae, Mycobacterium tuberculosis, Mycobacterium ulcerans, Mycoplasma genitalium. Mycoplasma* sp, Nairovirus, *Neisseria gonorrhoeae, Neisseria meningitidis, Nocardia,* Norwalk virus, norovirus, Omsk hemorrhagic fever virus, papilloma virus, parainfluenza viruses 1-3, parapoxvirus, parvovirus B19, *Peptostrepiococccus* sp., *Plasmodium* sp., polioviruses types I, II, and III, *Proteus* sp., *Pseudomonas aeruginosa, Pseudomonas pseudomallei, Pseudomonas* sp., rabies virus, respiratory syncytial virus, ricin toxin, *Rickettsia australis, Rickettsia conori, Rickettsia honei, Rickettsia prowazekii,* Ross River Virus, rotavirus, rubellavirus, Saint Louis encephalitis, *Salmonella Typhi, Sarcoples scabiei,* SARS-associated coronavirus (SARS-CoV), *Serratia sp.,*

Shiga toxin and Shiga-like toxin. *Shigella* sp., Sin Nombre Virus, Snowshoe hare virus, *Staphylococcus aureus, Staphylococcus epidermidis, Strepiobacillus moniliformis, Streptoccoccus pneumoniae, Streptococcus agalactiae, Streptococcus agalacliae, Streptococcus* group A-H, *Streptococcus pneumoniae, Streptococcus pyogenes, Treponema pallidum subsp. Pallidum, Treponema pallidum var. caraieum. Treponema pallidum var. endemicum, Tropheryma whippelii, Ureaplasma iirealyticiim.* Varicella-Zoster virus, variola virus. *Vibrio cholerae,* West Nile virus, yellow fever virus. *Yersinia enterocolitica. Yersinia pestis,* and Zika virus.

[00460] Various rare diseases may be treated with pharmaceutical compositions, AAV particles, of the present invention. As used herein, the terra "rare disease" refers to any disease that affects a small percentage of the population. As a non-limiting example, the rare disease may be Acrocephalosyndactylia, Acrodermatitis, Addison Disease, Adie Syndrome, Alagille Syndrome, Amylose. Amyotrophic Lateral Sclerosis, Angelraan Syndrome, Angiolyraphoid Hyperplasia with Eosmophilia, Amold-Chiari Malformation, Arthritis, Juvemie Rheumatoid, Asperger Syndrome, Bardet-Biedl Syndrome, Barrett Esophagus, Beckwith-Wiedemann Syndrome, Behcet Syndrome, Bloom Syndrome, Bowen's Disease, Brachial Plexus Neuropathies, Brown-Sequard Syndrome, Budd-Chiari Syndrome, Burkitt Lymphoma, Carcinoma 256, Walker, Caroli Disease, Charcot-Marie-Tooth Disease, Chediak-Higashi Syndrome, Chiari-Frommel Syndrome, Chondrodysplasia Punctata, Colonic Pseudo-Obstruction, Colorectal Neoplasms, Hereditary Nonpolyposis, Craniofacial Dysostosis, Creutzfeldt-Jakob Syndrome, Crohn Disease, dishing Syndrome, Cystic Fibrosis, Dandy-Walker Syndrome, De Lange Syndrome, Dementia, Vascular, Dermatitis Herpetiformis, DiGeorge Syndrome, Diffuse Cerebral Sclerosis of Schilder, Duane Retraction Syndrome, Dupuytren Contracture, Ebstein Anomaly, Eisenraenger Complex, Ellis-Van Creveld Syndrome, Encephalitis, Enchondromatosis, Epidermal Necrolysis, Toxic, Facial Hemiatrophy, Factor XII Deficiency, Fanconi Anemia, Felty's Syndrome, Fibrous Dysplasia, Polyostotic, Fox-Fordyce Disease, Friedreich Ataxia, Fusobacteriura, Gardner Syndrome, Gaucher Disease, Gerstmann Syndrome, Giant Lymph Node Hyperplasia, Glycogen Storage Disease Type I, Glycogen Storage Disease Type II, Glycogen Storage Disease Type IV, Glycogen Storage Disease Type V, Glycogen Storage Disease Type VII, Goldenhar Syndrome, Guillain-Barre Syndrome, Hallermann's Syndrome, Hamartoma Syndrome, Multiple, Hartnup Disease, Hepatolenticular Degeneration, Hepatolenticular Degeneration, Hereditary Sensor/ and Motor Neuropathy, Hirschsprung Disease, Histiocytic Necrotizing Lymphadenitis, Histiocytosis, Langerhans-Cell, Hodgkin Disease, Horner Syndrome, Huntington Disease, Hyperaldosteronism, Hyperhidrosis,

Hyperostosis, Diffuse idiopathic Skeletal, Hypopituitarism, inappropriate ADH Syndrome, intestinal Polyps, Isaacs Syndrome, Kartagener Syndrome, Keams-Sayre Syndrome, Klippel-Fei Syndrome, Klippe.l-Trenaun.ay-Weber Syndrome, Kluver-Bucy Syndrome, Korsakoff Syndrome, Lafora Disease, Lambert-Eaton Myasthenic Syndrome, Landau-Klefmer Syndrome, Langer-Giedion Syndrome, Leigh Disease, Lesch-Nyhan Syndrome, Leukodystrophy, Globoid Cell, Li-Fraumeni Syndrome, Long QT Syndrome, Machado-Joseph Disease, Mallory-Weiss Syndrome, Marek Disease, Marfan Syndrome, Meckel Diverticulum, Meige Syndrome, Melkersson-Rosenthal Syndrome, Meniere Disease, Mikulicz' Disease, Miller Fisher Syndrome, Mobius Syndrome, Moyamoya Disease, Mucocutaneous Lymph Node Syndrome, Mucopolysaccharidosis Ï, Mucopolysaccharidosis тт, Mucopolysaccharidosis 111, Mucopoiysaccharidosis IV, Mucopolysaccharidosis Vi, Multiple Endocrine Neoplasia Type 1, Munchausen Syndrome by Proxy, Muscular Atrophy, Spinal, Narcolepsy, Neuroaxonal Dystrophies. Neuromyelitis Optica, Neuronal Ceroid-Lipofuscinoses, Niemann-Pick Diseases, Noonan Syndrome, Optic Atrophies, Hereditary, Osteitis Deformans, Osteochondritis, Osteochondrodyspiasias, Osteolysis, Essential, Paget Disease Extramammary, Paget's Disease, Mammary, Panniculitis, Nodular Nonsuppurative, Papillon-Lefevre Disease, Paralysis, Pelizaeus-Merzbacher Disease, Pemphigus, Benign Familial, Penile induration. Pericarditis, Constrictive, Peroxisomal Disorders, Peutz-Jeghers Syndrome, Pick Disease of the Brain, Pierre Robin Syndrome, Pigmentation Disorders, Pityriasis Lichenoides, Polycystic Ovary Syndrome, Polyendocrinopathies, Autoimmune, Prader-Willi Syndrome, Pupil Disorders, Rett Syndrome, Reye Syndrome, Rubinstein-Taybi Syndrome, Sandhoff Disease, Sarcoma, Ewing's, Sclinitzler Syndrome, Sjogren's Syndrome, Sjogren-Larsson Syndrome, Smith-Lemli-Opitz Syndrome, Spinal Muscular Atrophies of Childhood, Sturge-Weber Syndrome, Sweating, Gustatory, Takayasu Arteritis, Tangier Disease, Tay-Sachs Disease, Thromboangiitis Obliterans, Thyroiditis, Autoimmune, Tietze's Syndrome, Togaviridae Infections, Toiosa-Hunt Syndrome, Tourette Syndrome, tJveomeningoencephaiitic Syndrome, Waardenburg's Syndrome, Wegener Granul omatosis, Weil Disease, Werner Syndrome, Williams Syndrome, Wilms Tumor, Wolff-Parkinson-White Syndrome, Wolfram Syndrome, Woiman Disease, Zellweger Syndrome, Zol!inger-Eliison Syndrome, and von Wiilebrand Diseases.

[00461] Various autoimmune diseases and autoimmune-relaxed diseases may be treated with pharmaceutical compositions, AAV particles, of the present invention. As used herein, the term "autoimmune disease" refers to a disease in which the body produces antibodies that attack its own tissues. As a non-iimiting example, the autoimmune disease may be Acute Disseminated Encephalomyelitis (ADEM), Acute necrotizing hemorrhagic leukoencephalitis. Addison's

disease. Agammaglobulinemia, Alopecia areata. Amyloidosis, Ankylosing spondylitis, Anti-GBM/Anti-TBM nephritis, Antiphosphoiipid syndrome (APS), Autoimmune angioedema. Autoimmune aplastic anemia. Autoimmune dysautonomia, Autoimmune hepatitis. Autoimmune hyperiipidemia, Autoimmune immunodeficiency, Autoimmune inner ear disease (A1ED), Autoimmune myocarditis, Autoimmune oophoritis. Autoimmune pancreatitis, Autoimmune retinopathy, Autoimmune thrombocytopenic purpura (ATP), Autoimmune thyroid disease. Autoimmune urticaria, Axonal & neuronal neuropathies, Balo disease, Behcet's disease, Bullous pemphigoid. Cardiomyopathy, Castleman disease. Celiac disease, Chagas disease. Chronic fatigue syndrome**. Chronic inflammatory demyelinating polyneuropathy (CIDP), Chronic recurrent multifocal ostomyelitis (CRMO), Churg-Strauss syndrome, Cicatricial peniphigoid/benign mucosal pemphigoid, Crohn's disease, Cogans syndrome, Cold agglutinin disease, Congenital heart block, Coxsackie myocarditis, CREST disease, Essential mixed cryoglobulinemia. Demyelinating neuropathies, Dermatitis heipetiformis, Dermatomyositis, Devic's disease (neuromyelitis optica). Discoid lupus, Dressier's syndrome, Endometriosis, Eosinophilic esophagitis, Eosinophilic fasciitis, Eryihema nodosum. Experimental allergic encephalomyelitis, Evans syndrome. Fibromyalgia**, Fibrosing alveolitis. Giant cell arteritis (temporal arteritis), Giant cell myocarditis, Glomerulonephritis, Goodpasture's syndrome, Granulomatosis with Polyangiitis (GPA) (formerly called Wegener's Granulomatosis), Graves' disease, Guillain-Barre syndrome, Hashimoto's encephalitis, Hashimoto's thyroiditis, Hemolytic anemia, Henoch-Schoniem purpura. Herpes gestationis, Hypogammaglobulinemia, idiopathic thrombocytopenic purpura (ITP), IgA nephropathy, igG4-related sclerosing disease, Immunoregulatory lipoproteins, Inclusion body myositis, interstitial cystitis, Juvenile arthritis, Juvenile diabetes (Type 1 diabetes). Juvenile myositis, Kawasaki syndrome, Lambert-Eaton syndrome, Leukocytoclastic vasculitis, Lichen planus, Lichen sclerosus, Ligneous conjunctivitis. Linear IgA disease (LAD), Lupus (SLE), Lyme disease, chrome, Meniere's disease, Microscopic polyangiitis, Mixed connective tissue disease (MCTD), Mooren's ulcer, Mucha-Habermann disease, Multiple sclerosis, Myasthenia gravis, Myositis, Narcolepsy, Neuromyelitis optica (Devic's), Neutropenia, Ocular cicatricial pemphigoid, Optic neuritis, Palindromic rheumatism, PANDAS (Pediatric Autoimmune Neuropsychiatric Disorders Associated with Streptococcus), Paraneoplastic cerebellar degeneration, Paroxysmal nocturnal hemoglobinuria (PNH), Parry Romberg syndrome, Parsonnage-Turaer syndrome, Pars planitis (peripheral uveitis), Pemphigus, Peripheral neuropathy, Perivenous encephalomyelitis, Pernicious anemia, POEMS syndrome. Polyarteritis nodosa, Type I, II, & III autoimmune polyglandular syndromes, Polymyalgia rheumatica, Polymyositis, Postrayocardial infarction syndrome. Postpericardiotoray syndrome,

Progesterone dermatitis, Primary biliary cirrhosis, Primary sclerosing cholangitis, Psoriasis, Psoriatic arthritis, Idiopathic pulmonary fibrosis, Pyoderma gangrenosum, Pure red cell aplasia, Raynauds phenomenon, Reactive Arthritis, Reflex sympathetic dystrophy, Reiter's syndrome, Relapsing polychondritis, Restless legs syndrome. Retroperitoneal fibrosis, Rheumatic fever, Rheumatoid arthritis. Sarcoidosis, Schmidt syndrome, Scieritis, Scleroderma, Sjogren's syndrome. Sperm & testicular autoimmunity. Stiff person syndrome. Subacute bacterial endocarditis (SBE), Susac's syndrome, Sympathetic ophthalmia, Takayasu's arteritis, Temporal arteritis/Giant cell arteritis. Thrombocytopenic purpura (TTP), Tolosa-Hunt syndrome, Transverse myelitis, Ulcerative colitis, Undifferentiated connective tissue disease (UCTD), Uveitis, Vasculitis, Vesiculobui!ous dermatosis. Vitiligo, and Wegener's granulomatosis (now termed Granulomatosis with Polyangiitis (GPA).

[ΘΘ462] Various kidney diseases may be treated with pharmaceutical compositions, AAV particles, of the present invention. As a non-limiting example, the kidney disease Abderhalden-Kaufmami-Lignac syndrome (Nepliropathic Cystmosis), Abdominal Compartment Syndrome, Acute Kidney Failure/Acute Kidney Injury, Acute Lobar Nephronia, Acute Phosphate Nephropathy, Acute Tubular Necrosis, Adenine Phosphor!bosyltransferase Deficiency, Adenovirus Nephritis, Alport Syndrome, Amyloidosis, ANCA Vasculitis Related to Endocarditis and Other infections, Angiomyoiiponia, Analgesic Nephropathy, Anorexia Nervosa and Kidney Disease, Angiotensin Antibodies and Focal Segmental Glomerulosclerosis, Antiphosphohpid Syndrome, Anti-TNF-a Therapy-related Glomerulonephritis, APOL1 Mutations, Apparent Miiieraiocorticoid Excess Syndrome, Aristolochic Acid Nephropathy, Chinese Herbal Nephropathy, Balkan Endemic Nephropathy, Barrier Syndrome, Beeturia, β-Thalassemia Renal Disease, Bile Cast Nephropathy, BK Polyoma Virus Nephropathy in the Native Kidney, Bladder Rupture, Bladder Sphincter Dyssynergia, Bladder Tamponade, Rorder-Crossers* Nephropathy, Bourbon Virus and Acute Kidney injury, Burnt Sugarcane Harvesting and Acute Renal Dysfunction, Byetia and Renal Failure, C1q Nephropathy, Cannabinoid Piyperemesis Acute Renal Failure, Cardiorenal syndrome, Carfilzomib-Induced Renal injury, CFHR5 nephropathy, Charcot-Marie-Tooth Disease with Glomerulopathy, Cherry Concentrate and Acute Kidney Injury, Cholesterol Emboli, Churg-Strauss syndrome, Chyluria, Colistin Nephrotoxicity, Collagenofibrotic Glomerulopathy, Collapsing Glomerulopathy, Collapsing Glomerulopathy Related to CMV, Congenital Nephrotic Syndrome, Conorenal syndrome (Mainzer-Saldino Syndrome or Saldino-Mainzer Disease), Contrast Nephropathy, Copper Sulpfate Intoxication, Cortical Necrosis, Crizotinib-related Acute Kidney injury, Cryoglobuinemia, Crystalglobulin-Induced Nephropathy, Crystal-Induced Acute Kidney injury, Cystic Kidney Disease, Acquired,

Cystinuria. Dasatinib-Induced Nephrotic-Range Proteinuria, Dense Deposit Disease (MPGN Type *2),* Dent Disease (X-linked Recessive Nephrolithiasis), Dialysis Disequilibrium Syndrome, Diabetes and Diabetic Kidney Disease, Diabetes Insipidus, Dietary Supplements and Renal Failure, Drugs of Abuse and Kidney Disease, Duplicated Ureter, EAST syndrome, Ebola and the Kidney, Ectopic Kidney, Ectopic Ureter, Edema, Swelling, Erdheim-Chester Disease, Fabry's Disease, Familial Hypocaieiuric Hypercalcemia, Fanconi Syndrome, Fraser syndrome, Fibroneciin Glomerulopathy, Fibrillary Glomerulonephritis and inimimotactoid Glomerulopathy, Fraley syndrome, Focal Segmental Glomerulosclerosis, Focal Sclerosis, Focal Glomerulosclerosis, Galloway Mowat syndrome, Giant Cell (Temporal) Arteritis with Kidney involvement. Gestational Hypertension, Gitelraan Syndrome, Glomerular Diseases, Glomerular Tubular Reflux, Glycosuria, Goodpasture Syndrome, Hair Dye ingestion and Acute Kidney Injury, Hantavirus infection Podocytopathy, Hematuria (Blood in Urine), Hemolytic Uremic Syndrome (HUS), Atypical Hemolytic Uremic Syndrome (aHUS), Hemopbagoeytic Syndrome, Hemorrhagic Cystitis, Hemorrhagic Fever with Renal Syndrome (HFRS, Hantavirus Renal Disease, Korean Hemorrhagic Fever, Epidemic Hemorrhagic Fever, Nephropamis Epidemica), Hemosiderosis related to Paroxysmal Nocturnal Hemoglobinuria and Hemolytic Anemia, Hepatic Glomerulopathy, Hepatic Veno-Occlusive Disease, Sinusoidal Obstruction Syndrome, Hepatitis C-Associated Renal Disease, Hepatorenal Syndrome, Herbal Supplements and Kidney Disease, High Blood Pressure and Kidney Disease, HIV-Associated Nephropathy (HIVAN), Horseshoe Kidney (Renal Fusion), Hunner's Ulcer, Hyperaldosteronism, Hypercalcemia, Hyperkalemia, Hypermagnesemia, Hypernatremia, Hyperoxaluria, Hyperphosphatemia, Hypocalcemia, Hypokalemia, Hypokalemia-induced renal dysfunction. Hypokalemic Periodic Paralysis, Hypomagnesemia, Hyponatremia, Hypophosphatemia, IgA Nephropathy, IgG4 Nephropathy, interstitial Cystitis, Painful Bladder Syndrome (Questionnaire), interstitial Nephritis, ivemark's syndrome, Ketamine-Associated Bladder Dysfunction, Kidney Stones, Nephrolithiasis, Kombucha Tea Toxicity, Lead Nephropathy and Lead-Related Nephrotoxicity, Leptospirosis Renal Disease, Light Cham Deposition Disease, Monoclonal immunoglobulin Deposition Disease, Liddie Syndrome, Lightwood-Albright Syndrome, Lipoprotein Glomerulopathy, Lithium Nephrotoxicity, LMX1B Mutations Cause Hereditary FSGS, Loin Pain Hematuria, Lupus, Systemic Lupus Erythematosts, Lupus Kidney Disease, Lupus Nephritis, Lupus Nephritis with Andneutrophil Cytoplasmic Antibody Seropositiviiy, Lyme Disease-Associated Glomerulonephritis, Malarial Nephropathy, Malignancy-Associated Renal Disease, Malignant Hypertension, Malakopiakia, Meatal Stenosis, Medullary Cystic Kidney Disease, Medullary Sponge Kidney, Megaureter. Meiamine Toxicity and the Kidney,

Membranoproliferatrve Glomerulonephritis, Membranous Nephropathy , MesoAmencan Nephropathy, Metabolic Acidosis, Metabolic Alkalosis, Methotrexate-related Renal Failure, Microscopic Polyangiitis. Miik-alkalai syndrome, Minimal Change Disease. MDMA (Molly; Ecstacy; 3,4-Metliylenedioxymethamphetarniiie) and Kidney Failure, Multicystic dysplastie kidney, Multiple Myeloma, Myeloproliferative Neoplasms and Glomerulopathy, Nail-patella Syndrome, Nephrocalcinosis, Nephrogenic Systemic Fibrosis, Nephroptosis (Floating Kidney, Renal Ptosis), Nephrotic Syndrome, Neurogenic Bladder, Nodular Glomerulosclerosis, Non-Gonococcal Urethritis. Nutcracker syndrome. Orofaciodigital Syndrome, Orotic Aciduria, Orthostatic Hypotension, Orthostatic Proteinuria, Osmotic Diuresis, Ovarian Hypers timulation Syndrome, Page Kidney, Papillary Necrosis, Papiliorenal Syndrome (Renal-Coloboma Syndrome, Isolated Renal Hypoplasia), Parvovirus B19 and the Kidney, The Peritoneal-Renal Syndrome, Posterior Urethral Valve, Post-infectious Glomerulonephritis, Poststreptococcal Glomerulonephritis, Polyarteritis Nodosa, Polycystic Kidney Disease, Posterior Urethral Valves, Preeclampsia, Propofol infusion syndrome. Proliferative Glomerulonephritis with Monoclonal IgG Deposits (Nasr Disease), Propolis (Honeybee Resin) Related Renal Failure, Proteinuria (Protein in Urine). Pseudohyperaldosteromsm, Pseudohypobicarbonatemia, Pseudohypoparathyroidism, Pulmonary-Renal Syndrome, Pyelonephritis (Kidney Infection), Pyonephrosis, Radiation Nephropathy, Ranolazine and the Kidney, Refeedmg syndrome, Reflux Nephropathy, Rapidly Progressive Glomerulonephritis, Renal Abscess, Peripnephric Abscess, Renal Agenesis, Renal Arcuate Vein Microthrombi-Associated Acute Kidney Injury, Renal Artery Aneurysm, Renal Artery Stenosis, Renal Cell Cancer, Renal Cyst, Renal Hypouricemia with Exercise-induced Acute Renal Failure, Renal Infarction, Renal Osteodystrophy, Renal Tubular Acidosis, Renin Secreting Tumors (Juxtaglomerular Cell Tumor), Reset Osmostat, Retrocaval Ureter, Retroperitoneal Fibrosis, Rhabdomyoiysis, Rhabdomyolysis related to Bariatric Sugery, Rheumatoid Arthritis-Associated Renal Disease, Sarcoidosis Renal Disease, Salt Wasting, Renal and Cerebral. Schistosomiasis and Glomerular Disease, Schimke immuno-osseous dysplasia, Scleroderma Renal Crisis, Serpentine Fibula-Polycystic Kidney Syndrome, Exner Syndrome, Sickle Cell Nephropathy, Silica Exposure and Chronic Kidney Disease, Sri Lankan Farmers' Kidney Disease, Sjogren's Syndrome and Renal Disease. Synthetic Cannabinoid Use and Acute Kidney injury. Kidney Disease Following Hematopoietic Cell Transplantation. Kidney Disease Related to Stem Cell Transplantation, Thin Basement Membrane Disease, Benign Familial Hematuria, Trigomtis, Tuberculosis, Genitourinary, Tuberous Sclerosis, Tubular Dysgenesis, immune Complex Tubulointerstitial Nephritis Due to Autoantibodies to the Proximal Tubule Brush Border, Tumor Lysis Syndrome, Uremia, Uremic

Optic Neuropathy, Ureteritis Cystica, Ureterocele, Urethral Caruncle, Urethral Stricture, Urinary Incontinence, Urinary Tract infection, Urinary Tract Obstruction, Vesicointestinal Fistula, Vesicoureteral Reflux, Volatile Anesthetics and Acute Kidney injur}-. Von Hippei-Lindau Disease, Waldenstrom's Macroglobuiinemic Glomerulonephritis, Warfarin-Related Nephropathy, Wasp Stings and Acute Kidney Injury, Wegener's Granulomatosis, Granulomatosis with Folyangiitis, West Nile Vims and Chronic Kidney Disease, and Wunderiich syndrome.

[00463] Various cardiovascular diseases may be treated with pharmaceutical compositions, AAV particles, of the present invention. As a non-limiting example, the cardiovascular disease may be ischemic heart disease also known as coronary artery disease, cerebrovascular disease (Stroke), Peripheral vascular disease, Heart failure, Rheumatic heart disease, and Congenital heart disease.

[00464] Various antibody deficiencies may be treated with pharmaceutical compositions, AAV particles, of the present invention. As a non-limiting example, the antibody deficiencies may be X-Linked Agammaglobulinemia (XLA), Autosomal Recessive Agammaglobulinemia (ARA), Common Variable immune Deficiency (CVID), IgG (IgG1, IgG2, IgG3 and IgG4) Subclass Deficiency. Selective IgA Deficiency, Specific Antibody Deficiency (SAD), Transient Hypogammaglobulinemia of Infancy, Antibody Deficiency with Normal or Elevated immunoglobulins, Selective IgM Deficiency, Immunodeficiency with Thymoma (Good's Syndrome), Transcobalamin II Deficiency, Warts, Hypogammaglobulinemia, Infection, Myelokathexis (WHIM) Syndrome, Drug-Induced Antibody Deficiency, Kappa Chain Deficiency, Heavy Chain Deficiencies, Post-Meiotic Segregation (PMS2) Disorder, and Unspecified Hypogammaglobulinemia.

[ΘΘ465] Various ocular diseases may be treated with pharmaceutical compositions, AAV particles, of the present invention. As anon-limiting example, the ocular disease may be thyroid eye disease (TED), Graves' disease (GD) and orbitopathy, Retina Degeneration, Cataract, optic atrophy, macular degeneration, Leber congenital amaurosis, retinal degeneration, cone-rod dystrophy, Usher syndrome, leopard syndrome, photophobia, and photoaversion.

[00466] Various neurological diseases may be treated with pharmaceutical compositions, AAV particles, of the present invention. As a non-limiting example, the neurological disease may be Absence of the Septum Feliucidum, Acid Lipase Disease, Acid Maltase Deficiency, Acquired Epileptiform Aphasia, Acute Disseminated Encephalomyelitis, Attention Deficit-Hyperactivity Disorder (ADHD), Adie's Pupil, Adie's Syndrome, Adrenoieukody strophy, Agenesis of the Corpus Callosum, Agnosia. Aicardi Syndrome, Aicardi-Goutieres Syndrome Disorder, AIDS -

Neurological Complications, Alexander Disease, Alpers' Disease, Alternating Hemiplegia, Alzheimer's Disease, Amyotrophic Lateral Sclerosis (ALS), Anencephaly, Aneurysm, Angelraan Syndrome, Angiomatosis, Anoxia, Antiphospholipid Syndrome, Aphasia, Apraxia, Arachnoid Cysts, Arachnoiditis, Amold-Chiari Malformation, Arteriovenous Malformation, Asperger Syndrome, Ataxia, Ataxia Telangiectasia, Ataxias and Cerebellar or Spinocerebellar Degeneration, Atrial Fibrillation and Stroke, Attention Deficit-Hyperacti vity Disorder. Autism Spectrum Disorder, Autonomic Dysfunction, Back Pain, Barth Syndrome, Batten Disease, Becker's Myotonia, Behcet's Disease, Bell's Palsy, Benign Essential Blepharospasm, Benign Focal Amyotrophy, Benign Intracranial Hypertension, Bernhardt-Roth Syndrome, Binswanger's Disease, Blepharospasm, Bloch-Suizberger Syndrome, Brachial Plexus Birth Injuries, Brachial Plexus Injuries, Bradbury-Eggleston Syndrome, Brain and Spinal Tumors, Brain Aneurysm, Brain Injury, Brown-Sequard Syndrome, Bulbospinal Muscular Atrophy, Cerebral Autosomal Dominant Arteriopathy with Sub-cortical Infarcts and Leukoencephalopathy (CADASIL), Canavan Disease, Carpal Tunnel Syndrome, Causaigia, Caveniomas, Cavernous Angioma, Cavernous Malformation, Central Cervical Cord Syndrome, Central Cord Syndrome, Central Pain Syndrome, Central Pontine Myetinolysis, Cephalic Disorders, Ceramidase Deficiency, Cerebellar Degeneration, Cerebellar Hypoplasia, Cerebral Aneurysms, Cerebral Arteriosclerosis, Cerebral Atrophy, Cerebral Beriberi, Cerebral Cavernous Malformation, Cerebral Gigantism, Cerebral Hypoxia, Cerebral Palsy, Cerebro-Oculo-Facio-Skeietal Syndrome (COFS), Charcot-Marie-Tooth Disease, Chiari Malformation, Cholesterol Ester Storage Disease, Chorea, Choreoaeanthocytosis, Chrome inflammatory Demyeiinatmg Polyneuropathy (CIDP), Chronic Orthostatic Intolerance, Chronic Pain, Cockayne Syndrome Type 11, Coffin Lowry Syndrome, Colpocephaly, Coma, Complex Regional Pain Syndrome, Congenital Facial Diplegia, Congenital Myasthenia, Congenital Myopathy, Congenital Vascular Cavernous Malformations, Corticobasai Degeneration, Cranial Arteritis, Craniosynostosis, Cree encephalitis, Creutzfeidt-Jakob Disease, Cumulative Trauma Disorders, Cushing's Syndrome, Cytomegalic inclusion Body Disease, Cytomegalovirus Infection, Dancing Eyes-Dancing Feet Syndrome, Dandy-Walker Syndrome, Dawson Disease, De Morsier's Syndrome, Dejerine-Klumpke Palsy, Dementia, Dementia -Multi-infarct. Dementia - Semantic, Dementia -Subcortical, Dementia With Lewy Bodies, Dentate Cerebellar Ataxia, Deniatorubral Atrophy, Dennatomyositis, Developmental Dyspraxia, Devic's Syndrome, Diabetic Neuropathy, Diffuse Sclerosis, Dravet Syndrome, Dysautonomy, Dysgraphia, Dyslexia, Dysphagia, Dyspraxia, Dyssynergia Cerebellaris Myocionica, Dyssynergia Cerebeliaris Progressiva, Dystonias, Early Infantile Epileptic Encephalopathy, Empty Sella Syndrome, Encephalitis, Encephalitis Letbargica,

Encephaloceies, Encephalopathy. Encephalopathy (familial infantile), Encephalotrigeminal Angiomatosis, Epilepsy, Epileptic Hemiplegia, Erb's Palsy, Erb-Duchenne and Dejerine-Klumpke Palsies, Essential Tremor. Extrapontine Myelinolysis, Fabry Disease, Fate's Syndrome, Fainting, Familial Dysautonomia, Familial Hemangioma, Familial Idiopathic Basal Ganglia Calcification, Familial Periodic Paralyses, Famiiiai Spastic Paralysis, Farber's Disease, Febrile Seizures, Fibromuscular Dysplasia, Fisher Syndrome, Floppy Infant Syndrome, Foot Drop, Friedreich's Ataxia, Frontotemporal Dementia, Gaucher Disease, Generalized Gangliosidoses, Gerstmann's Syndrome, Gerstmann-Straussler-Scheinker Disease, Giant Axonai Neuropathy, Giant Cell Arteritis, Giant Cell Inclusion Disease, Globoid Cell Leukodystrophy , Glossopharyngeal Neuralgia, Glycogen Storage Disease, GuiUain-Barre Syndrome, Haliervorden-Spatz Disease, Head injury, Headache, Hemicrania Continua, Hemifacial Spasm, Heraiplegia Alterans, Hereditary Neuropathies, Hereditary Spastic Paraplegia, Heredopathia Atactica Polyneuritiformis, Herpes Zoster, Herpes Zoster Oticus, Hirayama Syndrome, Holmes-Adie syndrome, Holoprosencephaiy, HTLV-1 Associated Myelopathy, Hughes Syndrome, Huntington's Disease, Hydranencephaly, Hydrocephalus, Hydrocephalus - Normal Pressure, Hydromyelia, Hypercortisoiisra, Hypersomnia, Hypertonia, Hypotonia, Hypoxia, Immune-Mediated Encephalomyelitis, inclusion Body Myositis, Incontinentia Pigment!, infantile Hypotonia, Infantile Neuroaxonal Dystrophy, Infantile Phytanic Acid Storage Disease, Infantile Refsum Disease, Infantile Spasms, Inflammatory Myopathies, Iniencephaiy, Intestinal Lipodystrophy, Intracranial Cysts, Intracranial Hypertension, Isaacs' Syndrome, Joubert Syndrome, Kearns-Sayre Syndrome, Kennedy's Disease, Kinsbourne syndrome, Kleine-Levin Syndrome, KJippei-Fei! Syndrome, Klippel-Trenaunay Syndrome (KTS), Kliiver-Bucy Syndrome, Korsakoff's Amnesic Syndrome, Krabbe Disease, Kugelberg-Welander Disease, Kuru, Lambert-Eaton Myasthenic Syndrome, Landau-Kleffner Syndrome, Lateral Femoral Cutaneous Nerve Entrapment, Lateral Medullary Syndrome, Learning Disabilities, Leigh's Disease, Lennox-Gastaut Syndrome, Lesch-Nyhan Syndrome, Leukodystrophy, Levine-Critchley Syndrome, Lewy Body Dementia, Lipid Storage Diseases, Lipoid Proteinosis, Lissencephaiy, Loeked-In Syndrome, Lou Gehrig's Disease, Lupus - Neurological Sequelae, Lyme Disease - Neurological Complications, Machado-Joseph Disease, Macrencephaiy, Megalencephaly, Melkersson-Rosenthal Syndrome, Meningitis, Meningitis and Encephalitis, Menkes Disease, Meraigia Paresthetica, Metachromatic Leukodystrophy, Microcephaly, Migraine, Miller Fisher Syndrome, Mini Stroke, Mitochondrial Myopathy, Moebius Syndrome, Monomelic Amyotrophy, Motor Neuron Diseases, Moyamoya Disease, Mucolipidoses, Mucopolysaccharidoses, Multi-Infarct Dementia, Multifocal Motor Neuropathy, Multiple

Sclerosis, Multiple System Atrophy, Multiple System Atrophy with Orthostatic Hypotension, Muscular Dystrophy, Myasthenia - Congenital, Myasthenia Gravis, Myetinoclastic Diffuse Sclerosis, Myoclonic Encephalopathy of infants, Myoclonus, Myopathy, Myopathy- Congenital, Myopathy -Thyrotoxic, Myotonia, Myotonia Congenita, Narcolepsy, Neiiroacanthocytosis, Neurodegeneration with Brain iron Accumulation, Neurofibromatosis, Neuroleptic Malignant Syndrome, Neurological Complications of AIDS, Neurological Complications of Lyme Disease, Neurological Consequences of Cytomegalovirus infection, Neurological Manifestations of Pompe Disease, Neurological Sequelae Of Lupus, Neuromyelitis Optica, Neifromyotoma, Neuronal Ceroid Lipofuscinosis, Neuronal Migration Disorders, Neuropathy- Hereditary, Neurosarcoidosis, Neurosyphilis, Neurotoxicity, Nevus Cavernosas, Niemann-Pick Disease, O'Sullivan-McLeod Syndrome, Occipital Neuralgia, Ohtahara Syndrome, Olivopontocerebellar Atrophy, Opsoclonus Myoclonus, Orthostatic Hypotension, Overuse Syndrome, Pain -Chronic, Pantothenate Kinase- Associated Neurodegeneration, Paraneoplastic Syndromes, Paresthesia, Parkinson's Disease, Paroxysmal Choreoathetosis, Paroxysmal Hemicrania, Parry-Romberg, Pelizaeus-Merzbacher Disease, Pena Shokeir II Syndrome, Perineural Cysts, Periodic Paralyses, Peripheral Neuropathy, Periventricular Leukomalacia, Persistent Vegetative State, Pervasive Developmental Disorders, Phytanic Acid Storage Disease, Pick's Disease, Pinched Nerve, Piriformis Syndrome, Pituitary Tumors, Polymyositis, Pompe Disease, Porencephaly, Post-Polio Syndrome, Postherpetic Neuralgia, Postinfectious Encephalomyelitis, Postural Hypotension, Postural Orthostatic Tachycardia Syndrome, Postural Tachycardia Syndrome, Primary Dentaturn Atrophy, Primary Lateral Sclerosis, Primary Progressive Aphasia, Prion Diseases, Progressive Hemifacial Atrophy, Progressive Locomotor Ataxia, Progressive Multifocal Leukoencephalopathy, Progressive Sclerosing Poliodystrophy, Progressive Supranuclear Palsy, Prosopagnosia, Pseudo-Torch syndrome. Pseudotoxoplasmosis syndrome, Pseudotumor Cerebri, Psychogenic Movement, Ramsay Hunt Syndrome I, Ramsay Hunt Syndrome II, Rasmussen's Encephalitis, Reflex Sympathetic Dystrophy Syndrome, Refsum Disease, Refsum Disease - infantile, Repetitive Motion Disorders, Repetitive Stress Injuries, Restless Legs Syndrome, Retrovirus-Associated Myelopathy, Rett Syndrome, Reye's Syndrome, Rheumatic Encephalitis, Riley-Day Syndrome. Sacral Nerve Root Cysts, Saint Vitus Dance, Salivary (Hand Disease, SandhoifDisea.se, Schilder's Disease, Scbizencepbaly. Seitelberger Disease, Seizure Disorder, Semantic Dementia, Septo-Optic Dysplasia, Severe Myoclonic Epilepsy of infancy (SMEl), Shaken Baby Syndrome, Shingles, Shy-Drager Syndrome, Sjogren's Syndrome, Sleep Apnea, Sleeping Sickness, Sotos Syndrome, Spasticity, Spina Bifida, Spinal Cord Infarction. Spinal Cord Injury, Spinal Cord Turaors, Spinal Muscular Atrophy, Spinocerebellar Atrophy,

Spinocerebellar Degeneration, Steeie-Richardson-Olszevvski Syndrome, Stiff-Person Syndrome, Striatonigral Degeneration, Stroke, Sturge-Weber Syndrome, Subacute Sclerosing Panencephalitis. Subcortical Arteriosclerotic Encephalopathy, Short-lasting, Unilateral Neuralgiform (SUNCT) Headache, Swallowing Disorders, Sydenham Chorea, Syncope, Syphilitic Spinal Sclerosis, Syringohydromyeiia. Syringomyelia, Systemic Lupus Erythematosus, Tabes Dorsalis, Tardive Dyskinesia, Tariov Cysts, Tay-Sachs Disease, Temporal Arteritis, Tethered Spinal Cord Syndrome, Thomson's Myotonia, Thoracic Outlet Syndrome, Thyrotoxic Myopathy, Tic Douloureux, Todd's Paralysis, Touretie Syndrome, Transient Ischemic Attack, Transmissible Spongiform Encephalopathies, Transverse Myelitis, Traumatic Brain injury. Tremor, Trigeminal Neuralgia, Tropical Spastic Paraparesis, Troyer Syndrome, Tuberous Sclerosis, Vascular Erectile Tumor, Vasculitis Syndromes of the Central and Peripheral Nervous Systems, Von Economo's Disease, Von Hippel-Lindau Disease (VHL), Von Recklinghausen's Disease, Wallenberg's Syndrome, Werdmg-Hoffman Disease, Wernicke-Korsakoff Syndrome, West Syndrome, Whiplash, Whipple's Disease, Williams Syndrome, Wilson Disease, Wolman's Disease, X-Lmked Spinal and Bulbar Muscular Atrophy.

[00467] Various psychological disorders may be treated with pharmaceutical compositions, AAV particles, of the present invention. As a non-limiting example, the psychological disorders may be Aboulia, Absence epilepsy, Acute stress Disorder, Adjustment Disorders, Adverse effects of medication NOS, Age related cognitive decline, Agoraphobia, Alcohol Addiction, Alzheimer's Disease, Amnesia (also known as Amnestic Disorder), Amphetamine Addiction, Anorexia Nervosa, Anterograde amnesia, Antisocial personality disorder (also known as Sociopathy), Anxiety Disorder (Also known as Generalized Anxiety Disorder), Anxiolytic related disorders, Asperger's Syndrome (now part of Autism Spectrum Disorder), Attention Deficit Disorder (Also known as ADD). Attention Deficit Hyperactivity Disorder (Also known as ADHD), Autism Spectrum Disorder (also known as Autism), Autophagia, Avoidant Personality Disorder, Barbiturate related disorders. Benzodiazepine related disorders. Bereavement, Bibliomania, Binge Eating Disorder, Bipolar disorder (also known as Manic Depression, includes Bipolar I and Bipolar 11), Body Dysmorphic Disorder, Borderline intellectual functioning, Borderline Personality Disorder, Breathing-Related Sleep Disorder, Brief Psychotic Disorder, Bruxism, Bulimia Nervosa, Caffeine Addiction, Cannabis Addiction, Catatonic disorder, Catatonic schizophrenia. Childhood amnesia, Childhood Disintegrative Disorder (now part of Autism Spectrum Disorder), Childhood Onset Fluency Disorder (formerly known as Stuttering), Orcadian Rhythm Disorders, Claustrophobia, Cocaine related disorders, Communication disorder, Conduct Disorder, Conversion Disorder, Cotard delusion,

Cyclothymia (also known as Cyclothymic Disorder), Delerium, Delusional Disorder, dementia , Dependent Personality Disorder (also known as Asthenic Personality Disorder), Depersonalization disorder (now known as Depersonalization/Derealization Disorder), Depression (also known as Major Depressive Disorder), Depressive personality disorder, Derealization disorder (now known as Depersonalization / Derealization Disorder), Dermotiiloraania, Desynchronosis, Developmental coordination disorder, Diogenes Syndrome. Disorder of written expression, Dispareunia, Dissocial Personality Disorder, Dissociative Amnesia, Dissociative Fugue, Dissociative Identity Disorder (formerly known as Multiple Personality Disorder), Down syndrome, Dyslexia, Dyspareunia, Dysthymia (now known as Persistent Depressive Disorder), Eating disorder NOS, Ekbom's Syndrome (Delusional Parasitosis), Emotionally unstable personality disorder, Encopresis, Enuresis (bedwetting), Erotomania. Exhibitiomstic Disorder, Expressive language disorder, Factitious Disorder. Female Sexual Disorders. Fetish)stic Disorder. Folie à deux. Fregoli delusion, Frotteuristic Disorder, Fugue State, Ganser syndrome, Gambling Addiction, Gender Dysphoria (formerly known as Gender Identity Disorder), Generalized Anxiety Disorder, General adaptation syndrome. Grandiose delusions. Hallucinogen Addiction, Flaltlose personality disorder, Histrionic Personality Disorder, Primary hypersomnia, Huntington's Disease, Hypoactive sexual desire disorder, Hypochondriasis, Hypomania, Hyperkinetic syndrome. Hypersomnia, Hysteria, impulse control disorder, Impulse control disorder NOS, inhalant Addiction, Insomnia, intellectual Development Disorder, Intermittent Explosive Disorder. Joubert syndrome, Kleptomania, Korsakoff s syndrome, Lacunar amnesia, Language Disorder, Learning Disorders, Major Depression (also known as Major Depressive Disorder), major depressive disorder, Male Sexual Disorders, Malingering, Mathematics disorder, Medication-related disorder. Melancholia, Mental Retardation (now known as intellectual Development Disorder), Misopbonia, Morbid jealousy, Multiple Personality Disorder (now known as Dissociative identity Disorder), Munchausen Syndrome, Munchausen by Proxy, Narcissistic Personality Disorder, Narcolepsy, Neglect of child, Neurocognitive Disorder (formerly known as Dementia). Neuroleptic-rel ated disorder. Nightmare Disorder, Non Rapid Eye Movement, Obsessive-Compulsive Disorder, Obsessive-Compulsive Personality Disorder (also known as Anankastic Personality Disorder), Oneirophrenia. Orrycbophagia, Opioid Addiction, Oppositional Defiant Disorder. Orthorexia (ON), Pain disorder, Panic attacks, Panic Disorder, Paranoid Personality Disorder, Parkinson's Disease, Partner relational problem, Passive-aggressive personality disorder, Pathological gambling, Pedophilic Disorder, Perfectionism, Persecutory delusion, Persistent Depressive Disorder (also known as Dysthymia), Personality change due to a general medical condition,

Personality disorder, Pervasive developmental disorder (PDD), Phencychdine related disorder, Phobic disorder, Phonological disorder. Physical abuse, Pica, Poly substance related disorder, Postpartum Depression, Post-traumatic embitterment disorder (PTED), Post Traumatic Stress Disorder, Premature ejaculation, Premenstrual Dysphoric Disorder, Psychogenic amnesia, Psychological factor affecting medical condition. Psychoneurotic personality disorder, Psychotic disorder, not otherwise specified, Pyroraania, Reactive Attachment Disorder, Reading disorder, Recurrent brief depression, Relational disorder, REM Sleep Behavior Disorder, Restless Leg Syndrome, Retrograde amnesia, Retts Disorder (now part of Autism Spectrum Disorder), Rumination syndrome, Sadistic personality disorder, Schizoaffective Disorder, Schizoid Personality Disorder, Schizophrenia, Schizophreniform disorder, Schizotypal Personality Disorder, Seasonal Affective Disorder, Sedative, Hypnotic, or Anxiolytic Addiction, Selective Mutism, Self-defeating personality disorder, Separation Anxiety Disorder, Sexual Disorders Female, Sexual Disorders Male, Sexual Addiction, Sexual Masochism Disorder, Sexual Sadism Disorder, Shared Psychotic Disorder, Sleep Arousal Disorders, Sleep Paralysis, Sleep Terror Disorder (now part of Nightmare Disorder, Social Anxiety Disorder, Somatization Disorder, Specific Phobias, Stendhal syndrome, Stereotypic movement disorder, Stimulant Addiction, Stuttering (now known as Childhood Onset Fluency Disorder), Substance related disorder, Tardive dyskinesia. Tobacco Addiction, Tourettes Syndrome, Transient tic disorder. Transient global amnesia, Transvestic Disorder, Trichotillomania, Undifferentiated Somatoform Disorder, Vaginismus, and Voyeuristic Disorder.

[00468] Various lung diseases may be treated with pharmaceutical compositions, AAV particles, of the present invention. As a non-limiting example, the lung diseases may be Asbestosis, Asthma, Bronchiectasis, Bronchitis, Chronic Cough, Chronic Obstructive Pulmonary Disease (COPD), Croup. Cystic Fibrosis, Hantavirus, Idiopathic Pulmonary Fibrosis, Pertussis, Pleurisy, Pneumonia, Pulmonary Embolism, Pulmonary Hypertension, Sarcoidosis, Sleep Apnea, Spirometry, Sudden Infant Death Syndrome (SIDS), Tuberculosis, Aiagille Syndrome, Autoimmune Hepatitis, Biliary Atresia. Cirrhosis, ERCP (Endoscopic Retrograde Cholangiopancreatography), and Hemochromatosis. Nonalcoholic Steatohepatitis, Porphyria, Primary Biliary Cirrhosis, Primary Sclerosing Cholangitis.

[00469] Various bone diseases may be treated with pharmaceutical compositions, AAV particles, of the present invention. As a non-limiting example, the bone diseases may be osteoporosis, neurofibromatosis, osteogenesis imperfecta (OI), rickets, osteosarcoma, achondroplasia, fracture, osteomyelitis, Ewing tumour of bone, osteomalacia, hip dysplasia, Paget disease of bone, marble bone disease, osteochondroma, bone cancer, bone disease,

osteochondrosis, osteoma, fibrous dysplasia, cleidocranial dysostosis, osteoclastoma, bone cyst, metabolic bone disease, melorheostosis, callus, Caf ey syndrome, and mandibulofacial dysostosis.

[00470] Various blood diseases may be treated with pharmaceutical compositions, AAV particles, of the present invention. As anon-limiting example, the blood diseases may be Anemia and CKD (for health care professionals). Aplastic Anemia and Myelodysplastic Syndromes, Deep Vein Thrombosis, Hemochromatosis, Hemophilia, Henoch-Schonlem Purpura, idiopathic Thrombocytopemc Purpura, Iron-Deficiency Anemia, Pernicious Anemia, Pulmonary Embolism, Sickle Cell Anemia, Sickle Cell Trait and Other Hemoglobinopathies, Thalassemia, Thrombotic Thrombocytopenic Purpura, and Von Willebrand Disease.

[00471] Various diseases associated with TNF-alpha may be treated with the pharmaceutical compositions, AAV particles, of the present invention. As anon-limiting example, the disease may be respirator}' disorder; asthma; allergic and nonallergic asthma; asthma due to infection; asthma due to infection with respirator/ syncytial virus (RSV); chronic obstructive pulmonary disease (COPD); a condition involving airway inflammation; eosinophiiia; fibrosis and excess mucus production; cystic fibrosis, pulmonary fibrosis; an atopic disorder, atopic dermatitis; urticaria; eczema; allergic rhinitis; allergic enterogastritis: an inflammatory and/or autoimmune condition of the skin; an inflammatory and/or autoimmune condition of gastrointestinal organs; inflammatory bowel diseases (IBD); ulcerative colitis; Crohn's disease; an inflammatory and/or autoimmune condition of the liver; liver cirrhosis; liver fibrosis; liver fibrosis caused by hepatitis B and/or C virus; scleroderma; tumors or cancers; hepatocellular carcinoma; glioblastoma; lymphoma, Bodgkin's lymphoma; a viral infection, a bacterial infection; a parasitic infection; HTLV-1 infection; suppression of expression of protective type 1 immune responses, and suppression of expression of a protective type 1 immune response during vaccination, rheumatoid arthritis, osteoarthritis, juvenile chronic arthritis, septic arthritis, Lyme arthritis, psoriatic arthritis, reactive arthritis, spondyloarthropathy, systemic lupus erythematosus, Crohn's disease, ulcerative colitis, inflammatory bowel disease, insulin dependent diabetes mellitus, thyroiditis, asthma, allergic diseases, psoriasis, dermatitis scleroderma, graft versus host disease, organ transplant rejection, acute or chronic immune disease associated with organ transplantation, sarcoidosis, atherosclerosis, disseminated intravascular coagulation, Kawasaki's disease, Grave's disease, nephrotic syndrome, chronic fatigue syndrome, Wegener's granulomatosis, Henoch-Schoenlein purpurea, microscopic vasculitis of the kidneys, chronic active hepatitis, uveitis, septic shock, toxic shock syndrome, sepsis syndrome, cachexia, infectious diseases, parasitic diseases, acquired immunodeficiency syndrome, acute transverse

myelitis, Huntington's chorea, Parkinson's disease, Alzheimer's disease, stroke, primary biliary cirrhosis, hemolytic anemia, malignancies, heart failure, myocardial infarction, Addison's disease, sporadic, polyglandular deficiency type 1 and polyglandular deficiency type II, Schmidt's syndrome, adult (acute) respiratory distress syndrome, alopecia, alopecia greata, seronegative arthropathy, arthropathy, Reiter's disease, psoriatic arthropathy, ulcerative coiitic arthropathy, enteropathy synovitis, chlamydia, yersinia and salmonella associated arthropathy, spondyloarthropathy, atheromatous disease/arteriosclerosis, atopic allergy, autoimmune bullous disease, pemphigus vulgaris, pemphigus foliaceus, pemphigoid, linear IgA disease, autoimmune haemolytic anaemia, Coombs positive haemoly tic anaemia, acquired pernicious anaemia, juvenile pernicious anaemia, myalgic encephalitis/Royal Free Disease, chronic mucocutaneous candidiasis, giant ceil arteritis, primary sclerosing hepatitis, cryptogenic autoimmune hepatitis, Acquired Immunodeficiency Disease Syndrome, Acquired Immunodeficiency Related Diseases, hepatitis B, hepatitis C, common varied immunodeficiency (common variable hypoganimaglobulinaemia), dilated cardiomyopathy, female infertility, ovarian failure, premature ovarian failure, fibrotic lung disease, cryptogenic fibrosing alveolitis, post¬ inflammatory interstitial lung disease, interstitial pneumonitis, connective tissue disease associated interstitial lung disease, mixed connective tissue disease associated lung disease, systemic sclerosis associated interstitial lung disease, rheumatoid arthritis associated interstitial lung disease, systemic lupus erythematosus associated lung disease, derrnatomyositis/polymyositis associated lung disease, Sjogren's disease associated lung disease, ankylosing spondylitis associated lung disease, vascuiitic diffuse lung disease, haemosiderosis associated lung disease, drug-induced interstitial lung disease, f brosis, radiation fibrosis, bronchiolitis obliterans, chronic eosinophilic pneumonia, lymphocytic infiltrative lung disease, postinfectious interstitial lung disease, gouty arthritis, autoimmune hepatitis, type-1 autoimmune hepatitis (classical autoimmune or lupoid hepatitis), type-2 autoimmune hepatitis (anti-LKM antibody hepatitis), autoimmune mediated hypoglycaemia, type B insulin resistance with acanthosis nigricans, hypoparathyroidism, acute immune disease associated with organ transplantation, chronic immune disease associated with organ transplantation, osteoarthrosis, primary sclerosing cholangitis, psoriasis type 1, psoriasis type 2, idiopathic !eucopaenia, autoimmune neutropaenia, renal disease NOS, giomerul onephritides, microscopic vasculitis of the kidneys, Lyme disease, discoid lupus erythematosus, male infertility idiopathic or NOS, sperm autoimmunity, multiple sclerosis (all subtypes), sympathetic ophthalmia, pulmonary hypertension secondary to connective tissue disease, Goodpasture's syndrome, pulmonary manifestation of polyarteritis nodosa, acute rheumatic fever, rheumatoid spondylitis. Still's

disease, systemic sclerosis, Sjorgren's syndrome, Takayasu's disease/arteritis, autoimmune thrombocyiopaenia, idiopathic thrombocytopaenia, autoimmune thyroid disease, hyperthyroidism, goitrous autoimmune hypothyroidism (Hashimoto's disease), atrophic autoimmune hypothyroidism, primary myxoedema, phacogenic uveitis, primary vasculitis, vitiligo acute liver disease, chronic Uver diseases, alcoholic cirrhosis, alcohol-induced liver injur}', choleostasis. idiosyncratic liver disease, drug-induced hepatitis, non-alcoholic steatohepatitis, allergy and asthma, group B streptococci (GBS) infection, mental disorders (e.g., depression and schizophrenia). Th2 Type and Th1 Type mediated diseases, acute and chronic pain (different forms of pain), and cancers such as lung, breast, stomach, bladder, colon, pancreas, ovarian, prostate and rectal cancer and hematopoietic malignancies (leukemia and lymphoma) abetalipoproteinemia, acrocyanosis, acute and chronic parasitic or infectious processes, acute leukemia, acute lymphoblastic leukemia (ALL), acute myeloid leukemia (AML), acute or chronic bacterial infection, acute pancreatitis, acute renal failure, adenocarcinomas, aerial ectopic beats, AIDS dementia complex, alcohol-induced hepatitis, allergic conjunctivitis, allergic contact dermatitis, allergic rhinitis, allograft rejection, alpha-] -antitrypsin deficiency, amyotrophic lateral sclerosis, anemia, angina pectoris, anterior horn cell degeneration, anti-CD3 therapy, antiphosphohpid syndrome, anti-receptor hypersensitivity reactions, aortic and peripheral aneurysms, aortic dissection, arterial hypertension, arteriosclerosis, arteriovenous f stula, ataxia, atrial fibrillation (sustained or paroxysmal), atrial flutter, atrioventricular block, B ceil lymphoma, bone graft rejection, bone marrow transplant (BMT) rejection, bundle branch block, Burkitt's lymphoma, burns, cardiac arrhythmias, cardiac stun syndrome, cardiac tumors, cardiomyopathy, cardiopidmonary bypass inflammation response, cartilage transplant rejection, cerebellar cortical degenerations, cerebellar disorders, chaotic or multifocal atrial tachycardia, chemotherapy associated disorders, chronic myelocytic leukemia (CML), chronic alcoholism, chronic inflammatory pathologies, chronic lymphocytic leukemia (CLL), chronic obstructive pulmonary disease (COPD), chronic salicylate intoxication, colorectal carcinoma, congestive heart failure, conjunctivitis, contact dermatitis, corpulmonale, coronary artery disease, Creutzfeldt- Jakob disease, culture negative sepsis, cystic fibrosis, cytokine therapy associated disorders, dementia pugilistica, demyeimatmg diseases, dengue hemorrhagic fever, dermatitis, dermatologic conditions, diabetes, diabetes mellitus, diabetic arteriosclerotic disease. Diffuse Lewy body disease, dilated congestive cardiomyopathy, disorders of the basal ganglia, Down's Syndrome in middle age, drug-induced movement disorders induced by drugs which block CNS dopamine receptors, drug sensitivity, eczema, encephalomyelitis, endocarditis, endocrinopathy, epiglottitis, Epstein-Barr virus infection,

eryihromelalgia, extrapyramidal and cerebellar disorders, familial hemophagocytic lymphohistiocytosis, fetal thymus implant rejection, Friedreich's ataxia, functional peripheral arterial disorders, fungal sepsis, gas gangrene, gastric ulcer, glomerular nephritis, graft rejection of any organ or tissue, gram negative sepsis, gram positive sepsis, granulomas due to intracellular organisms, hairy cell leukemia, Haliervorden-Spatz disease, Hashimoto's thyroiditis, hay fever, heart transplant rejection, hemochromatosis, hemodialysis, hemolytic uremic syndrome/thronibolytic thrombocytopenic purpura, hemorrhage, hepatitis (A), His bundle arrhythmias, HIV infection/HIV neuropathy, Hodgkin's disease, hyperkinetic movement disorders, hypersensitivity reactions, hypersensitivity pneumonitis, hypertension, hypokinetic movement disorders, hypoihalamic-pituitaiy-adrenal axis evaluation, idiopathic Addison's disease, idiopathic pulmonary fibrosis, antibody mediated cytotoxicity, asthenia, infantile spinal muscular atrophy, inflammation of the aorta, influenza a, ionizing radiation exposure, iridocyclitis/uveitis/optic neuritis, ischemia-reperfusion injury, ischemic stroke, juvenile rheumatoid arthritis (JRA), juvenile spinal muscular atrophy, Kaposi's sarcoma, kidney transplant rejection, !egionel!a, leishmaniasis, leprosy, lesions of the corticospinal system, lipedema, liver transplant rejection, lymphedema, malaria, malignant lymphoma, malignant histiocytosis, malignant melanoma, meningitis, meningococcemia, metabolic/idiopathic, migraine headache, mitochondrial multi-system disorder, mixed connective tissue disease, monoclonal gammopathy, multiple myeloma, multiple systems degenerations (Menzel, Dejerine-Thornas, Shy-Drager. and Machado-Joseph), myasthenia gravis, mycobacterium avium intraceiluiare, mycobacterium tuberculosis, myelodysplastic syndrome, myocardial infarction, myocardial ischemic disorders, nasopharyngeal carcinoma, neonatal chronic lung disease, nephritis, nephrosis, neurodegenerative diseases, neurogenic I muscular atrophies, neutropenic fever, non-Hodgkins lymphoma, occlusion of the abdominal aorta and its branches, occlusive arterial disorders, OKT 3® therapy, orchitis/epidydimitis, orchitis/vasectomy reversal procedures, organomegaly, osteoporosis, pancreas transplant rejection, pancreatic carcinoma, paraneoplastic syndrome/hypercalcemia of malignancy, parathyroid transplant rejection, pelvic inflammatory disease, perennial rhinitis, pericardial disease, peripheral atherosclerotic disease, peripheral vascular disorders, peritonitis, pernicious anemia, Pneumocystis carinii pneumonia, pneumonia, POEMS syndrome (polyneuropathy, organomegaly, endocrinopathy, monoclonal gammopathy, and skin changes syndrome), post perfusion syndrome, post pump syndrome, post-MT cardiotomy syndrome, preeclampsia, progressive supraniicleo palsy, primary pulmonary hypertension, radiation therapy, Raynaud's phenomenon and disease, Raynaud's disease, Refsum's disease, regular narrow QRS tachycardia, renovascular hypertension, reperfusion

injury, restrictive cardiomyopathy, sarcomas, scleroderma, senile chorea, senile dementia of Lewy body type, seronegative arthropathies, shock, sickle cell anemia, skin allograft rejection, skin changes syndrome, small bowel transplant rejection, solid tumors, specific arrhythmias, spinal ataxia, spinocerebellar degenerations, streptococcal myositis, structural lesions of the cerebellum, subacute sclerosing panencephalitis, syncope, syphilis of the cardiovascular system, systemic anaphylaxis, systemic inflammatory response syndrome, systemic onset juvenile rheumatoid arthritis, T-cell or FAB ALL, telangiectasia, thromboangitis obliterans, thrombocytopenia, toxicity, transplants, trauma/hemorrhage, type III hypersensitivity reactions, type IV hypersensitivity, unstable angina, uremia, urosepsis, urticaria, valvular heart diseases, varicose veins, vasculitis, venous diseases, venous thrombosis, ventricular fibrillation, viral and fungal infections, viral encephalitis/aseptic meningitis, viral-associated hemophagocytic syndrome, Wernicke-Korsakoff syndrome, Wilson's disease, xenograft rejection of any organ or tissue, acute coronary syndromes, acute idiopathic polyneuritis, acute inflammatory demyelinating polyradiculoneuropathy, acute ischemia, adult Still's disease, alopecia greata, anaphylaxis, anti-phospholipid antibody syndrome, aplastic anemia, arteriosclerosis, atopic eczema, atopic dermatitis, autoimmune dermatitis, autoimmune disorder associated with streptococcus infection, autoimmune enteropathy, autoimmune hearing loss, autoimmune lymphoproliferative syndrome (ALPS), autoimmune myocarditis, autoimmune premature ovarian failure, blepharitis, bronchiectasis, bullous pemphigoid, cardiovascular disease, catastrophic antiphospholipid syndrome, celiac disease, cervical spondylosis, chronic ischemia, cicatricial pemphigoid, clinically isolated syndrome (CIS) with risk for multiple sclerosis, conjunctivitis, childhood onset psychiatric disorder, chronic obstructive pulmonary disease (COPD), dacryocystitis, dermatomyositis, diabetic retinopathy, diabetes mellitus, disk herniation, disk prolapse, drug induced immune hemolytic anemia, endocarditis, endometriosis, endophthalmitis, episcleritis, erythema multiforme, erythema multiforme major, gestational pemphigoid, Guillain-Barré syndrome (CSS), hay fever, Hughes syndrome, idiopathic Parkinson's disease, idiopathic interstitial pneumonia, IgE-mediated allergy, immune hemolytic anemia, inclusion body myositis, infectious ocular inflammatory disease, inflammatory demyelinating disease, inflammatory heart disease, inflammatory kidney disease, IPF/UIP, iritis, keratitis, keratojunctivitis sicca, Kussmaul disease or Kussmaul-Meier disease, Landry's paralysis. Langerhan's cell histiocytosis, livedo reticularis, macular degeneration, microscopic polyangiitis, morbus bechterev, motor neuron disorders, mucous membrane pemphigoid, multiple organ failure, myasthenia gravis, myelodysplastic syndrome, myocarditis, nerve root disorders, neuropathy, non-A non-B hepatitis, optic neuritis, osteolysis, ovarian cancer,

pauciarticuiar JRA, peripheral artery occlusive disease (PAOD), peripheral vascular disease (PVD), peripheral artery disease (PAD), phlebitis, polyarteritis nodosa (or periarteritis nodosa), polychondritis, polymyalgia rheuraatica, poliosis, polyarticular JRA, polyendocrine deficiency syndrome, polymyositis, polymyalgia rheuniatica (PMR), post-pump syndrome, primary Parkinsonism, prostate and rectal cancer and hematopoietic malignancies (leukemia and lymphoma), prostatitis, pure red cell aplasia, primary adrenal insufficiency, recurrent neuromyelitis optica, restenosis, rheumatic heart disease, sapho (synovitis, acne, pustulosis, hyperostosis, and osteitis), scleroderma, secondary amyloidosis, shock lung, scieritis, sciatica, secondary adrenal insufficiency, silicone associated connective tissue disease, Sneddon-Wilkinson dermatosis, spondylitis ankylosans, Stevens-Johnson syndrome (SJS), systemic inflammatory response syndrome, temporal arteritis, ioxopiasinic retinitis, ioxic epidermal necrolysis, transverse myelitis, TRAPS (tumor necrosis factor receptor associated periodic syndrome), type 1 allergic reaction, type II diabetes, urticaria, usual interstitial pneumonia (UIP), vasculitis, vernal conjunctivitis, viral retinitis, Vogt-Koyanagi-Harada syndrome (VKH syndrome), wet macular degeneration, wound healing, yersinia or salmonella associated arthropathy.

[00472] Various receptor for advanced glycation endproducts (RAGE) diseases may be treated with the pharmaceutical compositions, AAV particles, of the present invention. As a non-limiting example, the disease may be Amyotrophic Lateral Sclerosis, Brachial Plexus Injury, Brain Injury, including traumatic brain injury, Cerebral Palsy, Friedrich's Ataxia, Guillain Barre, Leukodystrophies, Multiple Sclerosis, Post Polio, Spina Bifida, Spinal Cord injury. Spinal Muscle Atrophy, Spinal Tumors, Stroke, Transverse Myelitis, dementia, senile dementia, mild cognitive impairment, Alzheimer-related dementia, Huntington's chorea, tardive dyskinesia, hyperkinesias, manias, Morbus Parkinson, steel-Richard syndrome, Down's syndrome, myasthenia gravis, nerve trauma, vascular amyloidosis, cerebral hemorrhage I with amyloidosis, brain inflammation, Friedrich's ataxia, acute confusion disorder, amyotrophic lateral sclerosis, glaucoma, Alzheimer's disease, diabetic nephropathy, sepsis, rheumatoid arthritis and related inflammatory diseases.

[00473] Various neurite degenerative diseases may be treated with the pharmaceutical compositions, AAV particles, of the present invention. As a non-limiting example, the disease may be multiple sclerosis, Parkinson's disease, Alzheimer's disease, Tay-Sachs disease, Niemann-Piek disease, Gaucher's disease, Hurler's syndrome, Huntington's disease, amyotrophic lateral sclerosis, idiopathic inflammatory denweimating diseases, vitamin B12 deficiency, central pontine myelinolysis, tabes dorsalis, transverse myelitis, Devic's disease, progressive

multifocal ieukoencephaiopathy , optic neuritis, traumatic injury to the CNS, an ischemic cerebral stroke, glaucoma, diabetic retinopathy, age-dependent macular degeneration, and a leukodystrophy.

[00474] Various neurological diseases may be treated with the pharmaceutical compositions, AAV particles, of the present invention. As a non-limiting example, the disease may be Amyotrophic Lateral Sclerosis, Brachial Plexus Injur}', Brain injury, including traumatic brain injury, Cerebral Palsy, Guillain Barre, Leukodystrophies, Multiple Sclerosis, Post Polio, Spina Bifida, Spinal Cord Injury, Spinal Muscle Atrophy, Spinal Tumors, Stroke, Transverse Myelitis; dementia, senile dementia, mild cognitive impairment, Alzheimer-related dementia, Huntington's chorea, tardive dyskinesia, hyperkinesias, manias, Morbus Parkinson, steel-Richard syndrome, Down's syndrome, myasthenia gravis, nerve trauma, vascular amyloidosis, cerebral hemorrhage I with amyloidosis, brain inflammation, acute confusion disorder, amyotrophic lateral sclerosis, glaucoma and Alzheimer's disease.

|00475] Various cancers may be treated with pharmaceutical compositions, AAV particles, of the present invention. As used herein, the term "cancer" refers to any of various malignant neoplasms characterized by the proliferation of anaplastic cells that tend to invade surrounding tissue and metastasize to new body sites and also refers to the pathological condition characterized by such malignant neoplastic growths. Cancers may be tumors or hematological malignancies, and include but are not limited to, ail types of iymphomas/leukemias, carcinomas and sarcomas, such as those cancers or tumors found in the anus, bladder, bile duct, bone, brain, breast, cervix, colon/rectum, endometrium, esophagus, eye, gallbladder, head and neck, liver, kidney, larynx, lung, mediastinum (chest), mouth, ovaries, pancreas, penis, prostate, skin, small intest ne, stomach, spinal marrow, tailbone, testicles, thyroid and uterus.

[00476] Types of carcinomas which may be treated with the AAV particles of the present invention include, but are not limited to, papilloma'carcmonia, choriocarcinoma, endodermal sinus tumor, teratoma, adenoma-'adenocarcinoma, melanoma, fibroma, lipoma, leiomyoma, rhabdomyoma, mesothelioma, angioma, osteoma, chondroma, glioma, lyraphomaleukeraia, squamous ceil carcinoma, small cell carcinoma, large cell undifferentiated carcinomas, basal cell carcinoma and sinonasal undifferentiated carcinoma.

[00477] Types of sarcomas which may be treated with the AAV particles of the present invention include, but are not limited to, soft tissue sarcoma such as alveolar soft part sarcoma, angiosarcoma, dermatofibrosarcoma, desmoid tumor, desmopiastie small round cell tumor, exiraskeietal chondrosarcoma, exiraskeietal osteosarcoma, fibrosarcoma, hemangiopericytoma, hemangiosarcoma, Kaposi's sarcoma, leiomyosarcoma, liposarcoma, lyraphangi osarcoma,

lymphosarcoma, malignant fibrous histiocytoma, neurofibrosarcoma, rhabdomyosarcoma, synovial sarcoma, and Askin's tumor, Ewing's sarcoma (primitive neuroectodermal tumor), malignant hemangioendothelioma, malignant schwannoma, osteosarcoma, and chondrosarcoma

[00478] As a non-limiting example, the cancer which may be treated may be Acute granulocytic leukemia. Acute lymphocytic leukemia. Acute myelogenous leukemia, Adenocarcinoma, Adenosarcoma Adrenal cancer. Adrenocortical carcinoma. Anal cancer, Anaplastic astrocytoma, Angiosarcoma, Appendix cancer, Astrocytoma, Basal cell carcinoma, B-Cell lymphoma), Bile duct cancer. Bladder cancer, Bone cancer, Bowel cancer, Brain cancer, Brain stern glioma, Brain tumor. Breast cancer, Carcinoid tumors, Cervical cancer, Cholangiocarcinoma. Chondrosarcoma, Chronic lymphocytic leukemia. Chronic myelogenous leukemia, Colon cancer. Colorectal cancer. Craniopharyngioma, Cutaneous lymphoma, Cutaneous melanoma, Diffuse astrocytoma, Ductal carcinoma in situ, Endometrial cancer, Ependymoma, Epithelioid sarcoma, Esophageal cancer, Ewing sarcoma, Extrahepatic bile duct cancer. Eye cancer. Fallopian tube cancer, Fibrosarcoma, Gallbladder cancer, Gastric cancer, Gastrointestinal cancer. Gastrointestinal carcinoid cancer, Gastrointestinal stromal tumors. General, Germ cell tumor, Glioblastoma multiforme. Glioma, Hairy cell leukemia. Head and neck cancer. Hemangioendothelioma, Hodgkin lymphoma, Hodgkin's disease, Hodgkin's lymphoma, Hypopharyngeal cancer, Infiltrating ductal carcinoma, Infiltrating lobular carcinoma, Inflammatory breast cancer, intestinal Cancer, intrahepatic bile duct cancer. Invasive / infiltrating breast cancer. Islet cell cancer. Jaw cancer, Kaposi sarcoma, Kidney cancer, Laryngeal cancer, Leiomyosarcoma, Leptomeningeai metastases. Leukemia, Lip cancer, Liposarcoma, Liver cancer, Lobular carcinoma in situ, Low-grade astrocytoma, Lung cancer. Lymph node cancer, Lymphoma, Male breast cancer, Medullary carcinoma, Medullobl astoma, Melanoma, Meningioma, Merkel cell carcinoma, Mesenchymal chondrosarcoma, Mesenchymous, Mesothelioma, Metastatic breast cancer, Metastatic melanoma. Metastatic squamous neck cancer, Mixed gliomas, Mourn cancer, Mucinous carcinoma, Mucosal melanoma. Multiple myeloma, Nasal cavity cancer, Nasopharyngeal cancer, Neck cancer, Neuroblastoma, Neuroendocrine tumors, Non-Hodgkin lymphoma, Non-Hodgkin's lymphoma, Non-smail cell lung cancer, Oat cell cancer, Ocular cancer, Ocular melanoma, Oligodendroglioma, Oral cancer, Oral cavity cancer, Oropharyngeal cancer, Osteogenic sarcoma. Osteosarcoma Ovarian cancer. Ovarian epithelial cancer. Ovarian germ cell tumor, Ovarian primary peritoneal carcinoma, Ovarian sex cord stromal tumor, Paget's disease, Pancreatic cancer. Papillary carcinoma. Paranasal sinus cancer. Parathyroid cancer. Pelvic cancer. Penile cancer, Peripheral nerve cancer. Peritoneal cancer, Pharyngeal cancer.

Pheochromocytoma, Pilocytic astrocytoma. Pineal region tumor, Pineobiastoma, Pitmtary giand cancer, Primary central nervous system lymphoma, Prostate cancer, Rectal cancer, Renal cell cancer, Renal pelvis cancer, Rhabdomyosarcoma, Salivary gland cancer, Sarcoma, Sarcoma, bone, Sarcoma, soft tissue, Sarcoma, uterine, Sinus cancer, Skin cancer. Small cell lung cancer, Small intestine cancer, Soft tissue sarcoma. Spinal cancer. Spinal column cancer. Spinal cord cancer. Spinal tumor, Squamous cell carcinoma. Stomach cancer, Synovial sarcoma, T-ceS lymphoma), Testicular cancer, Throat cancer, ¾ymonWthymic carcinoma. Thyroid cancer, Tongue cancer. Tonsil cancer, Transitional cell cancer, Transitional cell cancer, Transitional cell cancer, Triple-negative breast cancer. Tubal cancer, Tubular carcinoma. Ureteral cancer. Ureteral cancer, Urethral cancer. Uterine adenocarcinoma, Uterine cancer, Uterine sarcoma, Vaginal cancer, and Vulvar cancer.

Diagnostic applications

[00479] The AAV particles of the present invention may be used for diagnostic purposes or as diagnostic tools for any of the aforementioned diseases or disorders. As a non-limiting example, the AAV particles of the present invention or the antibodies encoded within the viral genome therein may be used as a biomarker for disease diagnosis. As a second non-limiting example, the AAV particles of the present invention or the antibodies encoded within the viral genome therein may be used for diagnostic imaging purposes, e.g., MRL PET, CT or ultrasound.

Preventative applications

[00480] The AAV particles of the present invention or the antibodies encoded by the viral genome therein may be used to prevent disease or stabilize the progression of disease. In one embodiment, the AAV particles of the present invention are used to as a prophylactic to prevent a disease or disorder in the future. In one embodiment, the AAV particles of the present invention are used to halt further progression of a disease or disorder. As a non-limiting example, the AAV particles of the invention may be used in a manner similar to that of a vaccine.

Research applications

[00481] The AAV particles of the present invention or the antibodies encoded by the viral genome therein may also be used as research tools. The AAV particles of the invention may be used as in any research experiment, e.g., *in vivo* or *in vitro* experiments. In a non-limiting example, the AAV particles of the invention may be used in cultured cells. The cultured cells may be derived from any origin known to one with skill in the art, and may be as non-limiting examples, derived from a stable ceil line, an animal model or a human patient or control subject. In a non-limiting example, the AAV particles of the invention may be used in *in vivo*

experiments in animal models (i.e., mouse, rat, rabbit, dog, cat, non-human primate, guinea pig, ferret, c-elegans, drosophila, zehrafish, or any other animal used for research purposes, known in the art). In another non-limiting example, the AAV particles of the invention may be used in human research experiments or human clinical trials.

Combination applications

[00482] The AAV particles of the invention may be used as a combination therapy with any other therapeutic molecule known in the art. The therapeutic molecule may be approved by the US Food and Drug Administration or may be in clinical trial or at the preclinical research stage. The therapeutic molecule may utilize any therapeutic modality known in the art, with non-limiting examples including gene silencing or interference (i.e., miRN.A, siRNA, RN Ai, shRNA), gene editing (i.e., TALEN, CRISPR/Cas9 systems, zinc finger nucleases), and gene, protein or enzyme replacement.

Therapeutic applications

[00483] The present disclosure additionally provides a method for treating non-infectious diseases and/or disorders in a mammalian subject, including a human subject, comprising administering to the subject any of the AAV particles or pharmaceutical compositions of the invention. In some embodiments, non-infectious diseases and/or disorders treated according to the methods described herein include, but are not limited to, Parkinson's Disease (PD), Dementia with Lewy Bodies (DLB), Multiple System Atrophy (MSA), Decreased muscle mass. Spinal muscular atrophy (SMA) Alzheimer's disease (AD), Amyotrophic lateral sclerosis (ALS), Huntington's Disease (HD), Multiple sclerosis (MS), Stroke, Migraine, Pain, Neuropathies, Psychiatric disorders including schizophrenia, bipolar disorder, and autism. Cancer, ocular diseases, systemic diseases of the blood, heart and bone, immune system and Autoimmune diseases and Inflammatory diseases.

[00484] In some embodiments, methods of treating non-infectious diseases and/or disorders in a subject in need thereof may comprise the steps of: (1) deriving, generating and/or selecting an antibody, antibody-based composition or fragment thereof that targets the antigen of interest; (2) producing an AAV particle with a viral genome that includes a payioad region encoding the selected antibody of (1); and (3) administering the AAV particie (or pharmaceutical composition thereof) to the subject.

[00485] The present disclosure provides a method for administering to a subject in need thereof, including a human subject, a therapeutically effective amount of the AAV particles of the invention to slow, stop or reverse disease progression. As anon-limiting example, disease progression may be measured by tests or diagnostic tool(s) known to those skilled in the art. As

another non-limiting example, disease progression may be measured by change in the pathological features of the brain, CSF or other tissues of the subject.

Parkinson's Disease

[00486] Parkinson's Disease (PD) is a progressive disorder of the nervous system affecting especially the substantia nigra of the brain. PD develops are a result of the loss of dopamine producing brain ceils. Typical early symptoms of PD include shaking or trembling of a limb, e.g. hands, arms, legs, feet and face. Additional characteristic symptoms are stiffness of the limbs and torso, slow movement or an inability to move, impaired balance and coordination, cognitional changes, and psychiatric conditions e.g. depression and visual hallucinations. PD has both familial and idiopathic forms and it is suggestion to be involved with genetic and environmental causes. PD affects more than 4 million people worldwide. In the US, approximately 60, 000 cases are identified annually. Generally, PD begins at the age of 50 or older. An early-onset form of the condition begins at age younger than 50, and juvenile-onset PD begins before age of 20.

[00487] Death of dopamine producing brain cells related to PD has been associated with aggregation, deposition and dysfunction of alpha-synuclein protein (see, e.g. Marques and Outeiro, 2012, *Cell Death Dis.* 3:e350, Jenner, 1989. *J Neurol Neurosurg Psychiatry.* Special Supplement, 22-28, and references therein). Studies have suggested that alpha-synuclein has a role in presynaptic signaling, membrane trafficking and regulation of dopamine release and transport. Alpha-synuclein aggregates, e.g. in forms of oligomers, have been suggested to be species responsible for neuronal dysfunction and death. Mutations of the alpha-synuclein gene (SNCA) have been identified in the familial forms of PD, but also environmental factors, e.g. neurotoxin affect alpha-synuclein aggregation. Other suggested causes of brain cell death in PD are dysfunction of proteosomai and lysosomal systems, reduced mitochondrial activity.

[00488] PD is related to other diseases related to alpha-synuclein aggregation, referred to as "synucleinopathies." Such diseases include, but are not limited to, Parkinson's Disease Dementia (PDD), multiple system atrophy (MSA), dementia with Lewy bodies, juvenile-onset generalized neuroaxonal dystrophy (Hallervorden-Spatz disease), pure autonomic failure (PAF), neurodegeneration with brain iron accumulation type-1 (NBIA-1) and combined Alzheimer's and Parkinson's disease.

[00489] As of today, no cure or prevention therapy for PD has been identified. A variety of drug therapies available provide relief to the symptoms. Non-limiting examples of symptomatic medical treatments include carbidopa and Ievodopa combination reducing stiffness and slow-movement, and anticholinergics to reduce trembling and stiffness. Other optional therapies

include e.g. deep brain stimulation and surgery. There remains a need for therapy affecting the underlying pathophysiology. For example, antibodies targeting alpha-synuclein protein, or other proteins relevant for brain cell death in PD, may be used to prevent and/or treat PD.

[00490] In some embodiment, methods of the present invention may be used to treat subjects suffering from PD and other synucleinopathies. In some cases, methods of the present invention may be used to treat subjects suspected of developing PD and other synucleinopathies.

[00491] AAV Particles and methods of using the AAV particles described in the present invention may be used to prevent, manage and/or treat PD. As anon-limiting example, the AAV particles of the present invention comprise a nucleic acid sequence encoding at least one of the sequences described in Table 3 (SEQ ID NO: 2948-17938).

Dementia with Lewy Bodies

[00492] Dementia with Lewy Bodies (DLB), also known as diffuse Lewy body disease, is a form of progressive dementia, characterized by cognitive decline, fluctuating alertness and attention, visual hallucinations and parkinsonian motor symptoms. DLB may be inherited by an autosomal dominant pattern. DLB affects more than 1 million individuals in the US. The condition typically shows symptoms at the age of 50 or older.

[00493] DLB is caused by the abnormal build-up of Lewy bodies, aggregates of the alpha-synuclem protein, in the cytoplasm of neurons in the brain areas controlling memory and motor control. The pathophysiology of these aggregates is very similar to aggregates observed in Parkinson's disease and DLB also has similarities to Alzheimer's disease. Inherited DLB has been associated with gene mutations in SNCA and SNCB genes, producing synuclein proteins.

[00494] As of today, there is no cure or prevention therapy for DLB. A variety of drug therapies available are aimed at managing the cognitive, psychiatric and motor control symptoms of the condition. Non-limiting examples of symptomatic medical treatments include e.g. acetylcholinesterase inhibitors to reduce cognitive symptoms, and ievodopa to reduce stiffness and loss of movement. There remains a need for therapy affecting the underlying pathophysiology. Antibodies targeting alpha-synuclein protein may be used to prevent and/or treat DLB.

[00495] In some embodiment, methods of the present invention may be used to treat subjects suffering from DLB. In some cases, methods of the present invention may be used to treat subjects suspected of developing DLB.

[00496] AAV Particles and methods of using the AAV particles described in the present invention may be used to prevent, manage and'or treat DLB. As a non-limiting example, the

AAV particles of the present invention comprise a nucleic acid sequence encoding at least one of the sequences described in Table 3 (SEQ ID NO: 2948-17938).

Multiple system atrophy

[00497] Multiple system atrophy (MSA), also known as Shy-Drager Syndrome, is a progressive neurodegenerative disorder. The characteristic symptoms are associated with failure of autonomic nervous system causing dizziness, fainting, bladder control problems, and problems regulating heart rate, blood pressure and breathing, accompanied by motor control symptoms similar to Parkinson's disease, e.g. tremor, rigidity and loss of muscle coordination. The symptoms are a reflection of the loss of nerve cells in certain areas of the brain and spinal cord. The disease typically develops around ages of 50 or 60 years. MSA affects approximately 50,000 individuals in the US.

[00498] MSA belongs to the synueleinopathies and is characterized by the appearance of glial cytoplasmic inclusions (GCIs) in oligodendrocytes, which are the myelin producing support cells of the central nervous system (see, e.g. Bleasel *et al.* 2014, *Acta Ne.uropathologica Communications.* 2014, 2:15, and references therein). GCIs comprise insoluble proteinaceous filaments composed of the alpha-synuclem protein. Also, tau proteins have been identified in GCIs. The pathophysiology of the CGIs is not yet fully understood but alpha-synuclein and tau proteins are suggested to have a role in the development and progression of SMA.

[00499] As of today, there is no cure or prevention therapy for MSA. A variety of drug therapies available are aimed at managing the symptoms. Non-limiting examples of symptomatic medical treatments include those used for Parkinson's disease to relief symptoms related motor movement, increased salt intake and steroid hormones for increasing blood pressure. There remains a need for therapy affecting the underlying pathophysiology. Antibodies targeting tau and alpha-synuclem proteins may be used to prevent and/or treat MSA.

[00500] In some embodiment, methods of the present invention may be used to treat subjects suffering from MSA. In some cases, methods of the present invention may be used to treat subjects suspected of developing MSA.

[00501] AAV Particles and methods of using the AAV particles described in the present invention may be used to prevent, manage and/or treat MSA. As a non-limiting example, the AAV particles of the present invention comprise a nucleic acid sequence encoding at least one of the sequences described in Table 6 (SEQ ID NO: SEQ ID NO: 2948-2970, 3018-3046. 3056-3076, 3110-3130, 3132-3177, 3181-3196, 3242-3268, 3275-3285, 3315-3336, 3338-3371, 3375-3382, 4268-4494).

Decreased muscle mass, muscle strength and muscle function

[00502] A number of diseases, disorders and condition are associated with muscle weakness, which refers to reduced muscle mass, muscle strength and muscle function. For example, such disorders include myopathies, which are neuromuscular disorders characterized by muscle weakness due to dysfunction of muscle fiber. Myopathies include, but are not limited to, congenital myopathies, muscular dystrophies, mitochondrial myopathies, glycogen storage diseases of muscle, myoglobinurias, dermatomyositis, myositis ossificans, familial periodic paralysis, polymyositis, inclusion body myositis, and related myopathies, neuromyotonia, stiff-man syndrome, common muscle cramps and stiffness, and tetany. Muscle weakness may also be caused by ageing, diabetes, obesity, chronic pain, peripheral vascular disease, chronic lung diseases, heart diseases, cancers, anemia, arthritis, chronic renal failure and renal diseases, chrome obstructive pulmonary disease, multiple sclerosis (MS), stroke, muscular dystrophy, motor neuron neuropathy, amyotrophic lateral sclerosis (ALS), Parkinson's disease, osteoporosis, osteoarthritis, fatty acid liver disease, liver cirrhosis, Addison's disease. Cushing's syndrome, acute respiratory distress syndrome, steroid induced muscle wasting, myositis, scoliosis, or infections e.g influenza, Epstein-Barr virus infection, HIV/AIDS, Lyme disease, and hepatitis C infection. Muscle weakness may occur after surgery, burn trauma, medical treatment, or trauma through an injury. Severity of muscle weakness varies. In many cases the condition reduces the quality of life significantly, or may be even life-threatening.

[00503] A regulator protein associated with muscles is myostatin (MSTNT), also known as growth and differentiation factor 8 (GDF-8). Myostatin is a protein encoded by the MSTN gene, released in the myocytes. Myostatin and myostatin receptors (e.g. ACVR2A and ACVR2B), have a role in suppressing the growth and development of muscle tissue in the body.

[00504] Treatment of muscle weakness depends on the underlying disease or condition, and may include e.g. drug therapy, good nutrition, physiotherapy, mechanical support for weakened muscles and/or surgery. However, efficient therapy to treat a combination of loss of muscle mass, muscle strength and muscle function are needed. Antibodies targeting myostatin may be used in the treatment and prophylaxis of diseases associated with such conditions. For example, bimagrumab (developed by Novartis) is a monoclonal antibody targeting ACVR2B myostatin receptor, and used for therapy of musculoskeletal diseases and domagrozumab (developed by Pfizer) is an antibody targeting myostatin, and used for therapy of muscle degeneration and muscle weakness.

[ΘΘ505] In some embodiment, methods of the present invention may be used to treat subjects suffering from loss of muscle mass, muscle strength and muscle function. In some cases,

methods of the present invention may be used to treat subjects suspected of developing such conditions.

[00506] AAV Particles and methods of using the AAV particles described in the present invention may be used to prevent, manage and/or treat MSA. As a non-limiting example, the AAV particles of the present invention comprise a nucleic acid sequence encoding at least one of the sequences described in Table 6 (SEQ ID NO: SEQ ID NO: 2948-2970. 3018-3046, 3056-3076, 3110-3130, 3132-3177, 3181-3196, 3242-3268, 3275-3285, 3315-3336, 3338-3371, 3375-3382, 4268-4494).

Spinal muscular atrophy

[ΘΘ507] Spinal muscular atrophy (SMA) is a hereditary disease causing weakness and wasting of the voluntary muscles in the arms and legs of infants and children. SMA is associated with abnormalities in the protein production of the survival motor neuron gene I (SMN1). Lack of the protein affects degeneration and death of lower motor neurons. Typical symptoms include floppy limbs and trunk, feeble movement of the arms and legs, difficulties in swallowing and eating, and impaired breathing. SMA is the most common genetic disorder leading to death of children under 2 years of age. SMA affects one in 6,000 to 10,000 people.

[00508] As of today, there is no cure for SMA. Therapies available are aimed at management of the symptoms and prevention of additional complications. Such therapies are associated e.g. with cardiology, movement management, respiratory care and mental health. There remains a need for therapy affecting the underlying pathophysiology of SMA.

[00509] In some embodiment, methods of the present invention may be used to treat subjects suffering from SMA. In some cases, methods of the present invention may be used to treat subjects suspected of developing SMA.

[00510] AAV Particies and methods of using the AAV particles described in the present invention may be used to prevent, manage and/or treat SMA. As a non-limiting example, the AAV particies of the present invention comprise a nucleic acid sequence encoding at least one of the sequences described in Table 6 (SEQ ID NO: SEQ ID NO: 2948-2970, 3018-3046, 3056-3076, 3110-3130, 3132-3177, 3181-3196, 3242-32.68, 3275-3285, 3315-3336, 3338-3371, 3375-3382, 4268-4494).

Alzheimer's Disease

[00511] Alzheimer's Disease (AD) is a debilitating neurodegenerative disease and the most common form of dementia affecting the memory, thinking and behavior. Typical early symptom is difficulty of remembering newly learned information. As the disease advances, symptoms include disorientation, changes in sleep, changes in mood and behavior, confusion, unfound

suspicions and eventually difficulty to speak, swallow and walk. AD currently afflicts more than 35 million people worldwide, with that number expected to double in coming decades.

[00512] As of today, no cure or prevention therapy for AD has been identified. Drug therapy to treat memory loss, behavioral changes and sleep changes, and to slow down the progression of AD are available. However, these symptomatic treatments do not address the underlying pathophysiology.

[00513] The AD brain is characterized by dual aggregates, the extracellular β-amyloid plaques and the intracellular neurofibrillary tangles (NFT) of misfoided, hyperphosphorylated microtubule associated, tau proteins. The β-amyioid plaques may lead to pathological cascades that are associated with a number of proteins, such as, but not limited to, APP (amyloid beta (A4) precursor protein), A beta (amyloid beta), BACE (Beta-secretases), and APOE (apolipoprotein E). Historically, it has been thought that amyloid pathology precedes the appearance of NFT. and therefore, that tau pathology in the form of aggregates is symbolic of impending cell death (Selkoe, D.J., 2001, *Physiological Reviews,* 81(2):741-66). However, clinical trials addressing amyloid pathology have largely failed thus far and advances in the field suggest that targeting tau aggregates may be advantageous and lead to improved cognitive ability.

[00514] In some embodiment, methods of the present invention may be used to treat subjects suffering from AD. In some cases, methods of the present invention may be used to treat subjects suspected of developing AD.

[00515] AAV Particles and methods of using the AAV particles described in the present invention may be used to prevent, manage and/or treat AD. As a non-limiting example, the AAV particles of the present invention comprise a nucleic acid sequence encoding at least one of the sequences described in Table 4 (SEQ ID NO: 2948-2970, 2977-2998, 3018-3046, 3056-3076, 3110-3177, 3181-3196, 3205-3226, 3242-3268, 3275-3285, 3315-3371, 3375-3382, 3385-4258).

Huntington's disease

[00516] Huntington's disease (HD) is a rare, inherited disorder causing degeneration of neurons in the motor control region of the brain, as well as other areas. Typical symptoms of the disease include uncontrolled movements (chorea), abnormal postures, impaired coordination, slurred speech and difficulty of feeding and swallowing accompanied by changes in behavior, judgment and cognition. HD is caused by mutations in the gene associated with the huniingtin (HTT) protein. The mutation causes the (CAG) blocks of DNAto repeat abnormally many times. HD affects approximately 30, 000 individuals in the US.

[00517] HD is characterized by mutations of the huntingtin (HTT) protein with abnormal expansions of polyglutamine tracts, e.g. expansion of the length of glutamine residues encoded by CAG repeats. The expansion threshold for occurrence of the disease is considered to be approximately 35-40 residues. HD is also associated with beta sheet rich aggregates in striatal neurons formed by N-termimal region of HTT. The expansions and aggregates lead to gradual loss of neurons as HD progresses. Additionally, the cell death in HD is associated with death receptor 6 (DR6) which is known to induce apoptosis.

[00518] As of today, there is no therapy to cure, or prevent the progression of the disease. Drug therapies available are aimed at management of the symptoms. For example, FDA has approved tetrabenezine to be prescribed for prevention of chorea. Additionally, e.g. antipsychotic drugs may help to control delusions, hallucinations and violent outbursts. There remains a need for therapy affecting the underlying pathophysiology, such as antibody therapies targeting the HTT protein, DR6 protein, and/or other HD associated proteins.

[00519] In some embodiment, methods of the present invention may be used to treat subjects suffering from HD. In some cases, methods of the present invention may be used to treat subjects suspected of developing HD.

[00520] AAV Particles and methods of using the AAV particles described in the present invention may be used to prevent, manage and/or treat HD. As a non-limiting example, the AAV particles of the present invention comprise a nucleic acid sequence encoding at least one of the sequences described in Table 5 (SEQ ID NO: 2948-2970, 3018-3021, 3031-3046, 3056-3076, 3110-3130, 3132-3160, 3164-3177, 3181-3196, 3242-3246, 3257-3268, 3275-3285, 3315-3336, 3338-3371, 3375-3382, 4259-4267).

Multiple sclerosis

[00521] Multiple sclerosis is a disease of the central nervous system (CNS). The typical early symptoms occurring between the ages of 20 to 40 include blurring vision, red-green color distortion, partial blindness, extreme muscle weakness, feeling of numbness or prickling, difficulties with coordination and balance. In severe cases MS may lead to a partial or complete paralysis. MS is believed to be an autoimmune disease as the communication between the brain and other parts of the body being disrupted as the immune system causes an inflammation within the central nervous system. MS is caused by both genetic and environmental factors, e.g. viral infections. MS is the most common neurological condition of young adults globally, affecting more than 2.3 million individuals.

[00522] At present time, the pathophysiology of MS is not fully understood. The disease is associated with a complex combination related to formation of lesions in the central nervous

system, inflammation and demyeiination (destruction of the protective myehn surrounding the nerve fibers) in white matter and cortex, and axon destruction (see, e.g. Longbrake *et al.*, 2013, *Curr Neurol Neurosci Rep.,* 13(11), and references therein). A number of myelin inhibitory proteins have been characterized in association with MS, including, but not limited to, NogoA ((Neurite outgrowth inhibitor A), Nogo receptor-1 (NgRl), myelin associated glycoprotein (MAG), oligodendrocyte glycoprotein (OM-gp), LINGO-l (Leucine rich repeat and immunogiobin-like domain-containing protein 1), and MAI (myelin associated inhibitor). MS is also affiliated with many immune response related proteins. Non-limiting examples of such proteins include e.g. B-cell and T-cell associated proteins, such as, but not limited to, leukocyte surface antigen CD52, alpha chain of the IL-2 receptor CD25, B-cell surface molecule CD20, T helper cell CD4, and/or cytokine 1L-12/23. Alpha 4-integrin, has been associated with inflammation of CNS, as it has a role in leukocyte adhesion and migration to the inflamed CNS. Additionally, MS patients have been characterized with elevated tumor necrosis factor (TNF) levels.

[00523] As of today, there is no prevention therapy or cure for MS. Patients in need of medical therapy may be treated with e.g. synthetic form of myelin basic protein, (Copaxone, copolymer ï), antiviral proteins known as interferons, or immunosuppressant drugs e.g. mitoxantore. Some drugs are aimed at treating a symptom of MS, such as dalapridine, which is aimed at improving walking of individuals with MS. Antibodies for MS have been developed. For example, natalizumab is a monoclonal antibody targeting alpha 4 integrin, (developed by Elan Pharmaceuticals and Biogen) approved by the FDA for treatment of relapsing MS under treatment guidelines to monitor patients by physicians. Other non-limiting examples for MS antibody drugs include alcmtuzumab (CD52), daciizumab (CD25), rituximab (CD20), ocrelizumab (CD20), ofatumumab (CD20), (see. e.g. Longbrake *et al.,* 2013, *Curr Neurol Neurosci Rep.,* 13(11), and references therein). However, many current medications have serious side effects, and there remains a need for therapy affecting the underlying pathophysiology, such as improved antibody therapies.

[00524] In some embodiment, methods of the present invention may be used to treat subjects suffering from MS. In some cases, methods of the present invention may be used to treat subjects suspected of developing MS.

[00525] AAV Particles and methods of using the AAV particles described in the present invention may be used to prevent, manage and/or treat MS. As a non-limiting example, the AAV particles of the present invention comprise a nucleic acid sequence encoding at least one of the

sequences described in Table 6 (SEQ ID NO: 2948-2970, 3018-3046, 3056-3076, 3110-3130, 3132-3177, 3181-3196, 3242-3268, 3275-3285, 3315-3336, 3338-3371, 3375-3382, 4268-4494).

Amyotrophic Lateral Sclerosis

[00526] Amyotrophic Lateral Sclerosis (ALS), also known as Lou Gehrig's disease or classical motor neuron disease, is a rapidly progressive and fatal neurological disease. ALS is associaied with cell degeneration and death of the upper and lower motor neurons, leading to enablement of muscle movement, weakening, wasting and loss of control over voluntary muscle movement Early symptoms include muscle weakness of hands, legs and swallowing muscles, eventually progressing to inability to breathe due to diaphragm failure. According to Centers for Disease Control and Prevention (CDC), ALS affects an estimated 12, 000-15, 000 individuals in the US. About 5-10% of cases are familial.

[00527] ALS, as other non-infectious neurodegenerative diseases, has been characterized by presence of misfolded proteins, including, but not limited to, tau, amyloid- beta (A beta), alpha-synuclein, HTT (huntingtin) or SOD1 (superoxide dismutase 1 protein), and myelin associated inhibitors and their receptors, (see, e.g., Krishnamurthy and Sigurdsson, 2011, *N Biotechnol.* 28(5):511-7, and Musaro, 2013, FEES J.;280(17):4315-22, and references therein). Familial ALS has been associated with mutations of TAR DNA-binding protein 43 (TDP-43) and RNA-binding protein FUS/TLS. Some proteins have been identified to slow down progression of ALS, such as, but not limited, to growth factors, e.g. insulin-like growth factor 1 (IGF-1), glial cell line-derived growth factor, brain-derived growth factor, vascular endothelial growth factor and ciliary neurotrophic factor, or growth factors promoting muscle growth, e.g. myostatin.

[00528] As of today, there is no prevention or cure for ALS. FDA approved drug riluzole has been approved to prolong the life, but does not have an effect on symptoms. Additionally, drugs and medical devices are available to tolerate pain and attacks associated with ALS. There remains a need for therapy affecting the underlying pathophysiology.

[00529] In some embodiment, methods of the present invention may be used to treat subjects suffering from ALS. In some cases, methods of the present invention may be used to treat subjects suspected of developing ALS.

[00530] AAV Particles and methods of using the AAV particles described in the present invention may be used to prevent, manage and/or treat MS. As a non-limiting example, the AAV particles of the present invention comprise a nucleic acid sequence encoding at least one of the sequences described in Table 6 (SEQ ID NO: 2948-2970, 3018-3046, 3056-3076, 3110-3130, 3132-3177, 3181-3196, 3242-3268, 3275-3285, 3315-3336, 3338-3371, 3375-3382, 4268-4494).

Stroke

[00531] Stroke is a medical emergency characterized by a burst of a blood vessel in the brain, referred to as hemorrhagic stroke, or an interruption of blood supply in the brain, referred to as ischemic stroke. Stroke triggers an inflammation, and causes brain cell death, as the oxygen and nutrient supply is impaired suddenly. Typical symptoms include numbness or weakness, especially on one side of the body, confusion, trouble speaking and understanding speech, vision problems, dizziness and loss of balance. Typically, patients recovering from stroke have permanent disabilities, e.g. affecting movement, speech, coordination, vision and balance. Medical conditions, e.g. diabetes, high blood pressure, high cholesterol, and obesity, as well as, cigarette smoking and poor nutrition, increase susceptibility to a stroke. According to CDC, stroke affects about 800,000 people in the US annually and is the fifth most common cause of death.

[00532] Typical recover/ from a stroke is slow or impartial. The inability of the central nervous system to repair after injury has been associated with inhibitory proteins associated with CNS. For example, myelin associated proteins, such as, but not limited to, myelin associated glycoprotein (MAG), myelm associated inhibitor (MAI), and their receptors, proteoglycans, versican V2, oligodendrocyte myelin glycoprotein (Omgp), and neurits outgrowth inhibitor (Nogo) have been identified to inhibit neurite outgrowth (see, e.g. Yu *et al.*, 2013, *Trans! Stroke Res,* 4(5):477-83, and references therein). Cell death in ischemic stroke has been associated with excessive activation of glutamate receptors, involved with glutamaie receptors such as, but not limited to, N-raethyl-D-aspartic acid (NMDA) receptors and DL-a-amino-3~hydroxy-5-methyl-4-isoxazole propionic acid (AMPA). inflammatory signaling triggered after stroke has been associated with adhesion molecules of the endothelial cells, such as, but not limited to, selectm family, intercellular adhesion molecule-l (ICAM-1, also known as CD54), and fi2-integrins.

[00533] Therapies to prevent stroke are typically focused on treatment of underlying medical conditions. Acute treatment after stroke involves dissolving blood clot in the case of an ischemic stroke e.g. by antiplatelet agents, anticoagulants and thrombolytics, or quenching of bleeding in the case of a hemorrhagic stroke. As of today, there is no effective prevention therapy for a stroke. There remains a need for therapy affecting the underlying pathophysiology of a stroke. Antibodies targeting the stroke associated proteins have been developed. For example. Refanezumab is a monoclonal antibody targeting myelm-associated glycoprotein, MAG, for improvement and recover}' of motor function after stroke.

[00534] In some embodiment, methods of the present invention may be used to prevent a stroke, or treat individuals recovering from a stroke.

[00535] AAV Particles and methods of using the AAV particles described in the present invention may be used to prevent, manage and/or treat stroke. As a non-limiting example, the AAV particles of the present invention comprise a nucleic acid sequence encoding at least one of the sequences described herein.

Migraine

[00536] Migraine is a neurological condition characterized by reoccurring attacks of severe headache, accompanied by nausea, light visions, and sensitivity to light, sound and movement. Migraine attacks may last from hours to days. The cause of migraine is unknown, but it is associated with some underlying diseases, as well as environmental and genetic factors. Migraine affects about 12 % of population in the US.

[00537] Present methods for management and treatment of migraine include medical therapies (e.g. analgesics, triptans, ergotamines), surgery, and neurostimulation. As of today, there is no therapy to prevent or cure migraine, and a need for medical therapy focusing on the pathophysiology of migraine remains. CGRP (calcitonin gene-related peptide) vasodilatation has been associated with migraine and photophobia, which is a typical symptom of a migraine attach. Antibodies targeting CGRP may be used for treatment and/or management of migraine, e.g. as described in US Patents US9115194, and US9102731, and US Patent application US20120294802, the contents of which are herein incorporated by reference in their entirety.

[00538] In some embodiment, methods of the present invention may be used to treat subjects suffering from migraine. In some cases, methods of the present invention may be used to treat subjects suspected of developing migraine.

[00539] AAV Particles and methods of using the AAV particles described in the present invention may be used to prevent, manage and/or treat migraine. As anon-limiting example, the AAV particles of the present invention comprise a nucleic acid sequence encoding at least one of the sequences described in Table 10 (SEQ ID NO: 3453-3459, 3856, 3890-3898, 4232-4237, 5220-5239, 6406-6429, 6454-6639, 6955-6956, 7905, 8797-8821, 8842-9026, 9288, 17659-17755).

Pain

[00540] Pain is a complex symptom associated with a variety of diseases and disorders and may be acute or chronic. Pain is challenging to treat, and many anti-pain medications have side effects, and/or they can be addictive. There remains a need for pain medications affecting the underlying pathophysiology of a pain. Antibodies for treatment for pain are on the market. For example, fasinumab (developed by Regeneron Pharmaceuticals Inc.), Fulranumab (developed by Johnson & Johnson) and tanezuraab (developed by Pfizer) are antibodies against NGF (nerve

growth factor) for treaiment of pain, such as, osteoarthritis knee pain, chronic low back pain, bone cancer pain and/or pain associated with interstitial cystitis.

[00541] In some embodiment, methods of the present invention may be used to treat subjects suffering from pain. In some cases, methods of the present invention may be used to treat subjects suspected of developing pain.

[00542] AAV Particles and methods of using the AAV particles described in the present invention may be used to prevent, manage and/or treat pain. As a nondimiting example, the AAV particles of the present invention comprise a nucleic acid sequence encoding at least one of the sequences described in Table 10 (SEQ ID NO: 3453-3459, 38.56, 3890-3898, 4232-4237, 5220-5239, 6406-6429, 6454-6639, 6955-6956, 7905, 8797-8821, 8842-9026, 9288, 17659-17755).

Neuropathies

[00543] Neuropathies are a group of diseases or conditions affecting the nerves. Typical symptoms of neuropathies include impaired movement and sensation, cramping, pain and abnormal organ functions. Neuropathies include e.g. diabetic neuropathy, cisplatin-induced neuropathy, mononeuropathy, pyridoxine-induced neuropathy, peripheral neuropathy, small fiber peripheral neuropathy, polyneuropathy and cisplatin/pyridoxine-induced neuropathy.

[00544] As of today, there is no prevention or treatment therapy specific for neuropathies on the market. Typical treatment involves with treatment of underlying diseases, e.g. diabetes, or management of the symptoms. Therefore, there remains a need for therapy affecting the underlying pathophysiology of neuropathies, such as efficient antibody therapies. Tyrosine kinases, such as Trk receptors, have a role in regulation of the nervous system, neuronal survival and signal cascades. Antibodies targeting e.g. Trk C may be used for prevention, treatment and/or management of neuropathies, as described in US Patent US 7615383, the contents of which are herein incorporated by reference in their entirety.

[00545] In some embodiment, methods of the present invention may be used to treat subjects suffering from neuropathies. In some cases, methods of the present invention may be used to treat subjects suspected of developing neuropathies.

[00546] AAV Particles and methods of using the AAV particles described in the present invention may be used to prevent, manage and/or treat neuropathies. As a non-limiting example, the AAV particles of the present invention comprise a nucleic acid sequence encoding at least one of the sequences described in Table 7 (SEQ ID NO: 3040-3046, 3076, 3124-3130, 3164-3177, 3262-3268, 3285, 3329-3336, 3358-3371, 4495-4500).

Psychiatric disorders

[00547] Psychiatric disorders are characterized by behavioral or mental condition that affects individual's ordinary ability to function. Common psychiatric disorders include, but are not limited to, Tourette syndrome, bipolar disorder, schizophrenia, anxiety, depression, panic disorder, obsessive-compulsive disorder (OCD), eating disorders (e.g. anorexia, bulimia, orihorexia, obesity), substance abuse (e.g. alcohol or drug), addiction, psychosis, phobias, mood disorders, manic-depression disorder, insomnia and other sleep disorders. Psychiatric disorders may significantly affect individual's quality of life, and in severe cases lead to harmful behavior, such as suicidal or homicidal behavior. The diseases are typically managed and treated with psychotherapy, behavioral therapy, medical therapy (e.g. antipsychotic drugs), and/or other therapies. There remains a need for improved medical therapies affecting the underlying pathophysiology of psychiatric disorders, such as antibodies targeting proteins associated with such disorders.

[00548] For example, ghrelin hormone has been associated with eating disorders, including obesity and anorexia. Antibodies targeting ghrelin may be used for prevention, management and/or treatment of eating disorders, e.g. as described in US Patent application US20060233788, the contents of which are herein incorporated by reference in their entirety.

[00549] Depression has been associated with an inhibition of peripheral cytokine activity, especially TNFa (tumor necrosis factor alpha). Antibodies targeting TNF alpha may be used for prevention, management and/or treatment of depression, e.g. as described in US Patent application US20140296493, the contents of which are herein incorporated by reference in their entirety.

[00550] OCD and OCD related diseases have been associated T-cell activation. Anx-A1 (annexin .41) is a protein promoting T-celi activation, and antibodies binding Annexin-1 may be used for prevention, management and/or treatment of OCD and related diseases, e.g. as described in US Patent application US20150004164, the contents of which are herein incorporated by reference in their entirety.

[00551] In some embodiment, methods of the present invention may be used to treat subjects suffering from a psychiatric disorder. In some cases, methods of the present invention may be used to treat subjects suspected of developing a psychiatric disorder.

[00552] AAV Particles and methods of using the AAV particles described in the present invention may be used to prevent, manage and/or treat psychiatric disorder. As a non-limiting example, the AAV particles of the present invention comprise a nucleic acid sequence encoding at least one of the sequences described in Table 8 (SEQ ID NO: 2977-2998, 3152-3177, 3205-3226, 3350-3371, 4501-4568).

Cancer

[00553] Cancer is a group of more than 100 diseases associated with abnormal division and cell growth with characteristic spreading in the body. Many cancers are in the form of tumors, e.g. breast cancer, lung cancer, colon cancer, ovarian cancer, renal cancer, prostate cancer, head and neck cancer, pancreas cancer, bone cancer, and thyroid cancer. Cancers associated with blood and lymphoid tissues may be referred to as liquid tumors, e.g. leukemia, lymphoma and myeloma. Cancer is caused by failure of tissue growth regulation. Genes associated with cancer include oncogenes, that promote cell growth and reproduction, and tumor suppressor genes, that inhibit cell division. Oncogenes include, but are not limited to, growth factors, receptor and cytoplasmic tyrosine kinases, transcription factors, serine/threonine kinases and regulatory GTPases. Tumor protein p53 is the most common tumor suppressor protein found in more than half of cancer types. Susceptibility to cancer is involved with environmental factors, as well as genetic. Though progress with prevention, diagnosis and treatment of cancer has been tremendous, cancer still remains a severe and life-threatening disease. According to American Cancer Society, an estimated 1.6 cancers are diagnosed annually in the US, leading to more than a half a million deaths.

[00554] Therapies associated with cancer treatment include surgery, chemotherapy, radiation and antibody therapies. Antibodies for treatment and/or prevention of cancers have been on the market for nearly two decades, and are considered as one of the most important strategies for treatment of e.g. hematological malignancies and solid tumors. A number of cancer-associated antigens have been identified for treatment of cancers. Antibodies targeting such antigens may be used to diagnose, prevent and/or treat the associated cancers (see, e.g. Scott *et al*, 2012, *Nature Reviews Cancer* 12, 278-287, and references therein).

[00555] Some solid cancer tumors are associated with expressed glycoproteins antigens. Such antigens include, but are not limited to, EPCAM (Epithelial cell adhesion molecule), CEA (Carcmoembryonic antigen), gpA33 (Glycoprotein A33 (Transmembrane)), mucins, TAG-72 (Tumor-associated glycoprotein 72), CAIX (Carbonic anhydrase IX), PSMA (Prostate-specific membrane antigen), and FBP (Foiate-binding protein). Antibodies targeting the expressed glycoproteins may be used to treat associated tumors. Such solid tumors include, but are not limited to, breast, colon cancer, lung, colorectal, ovarian, renal cell, and/or prostate tumors.

[00556] Some solid cancer tumors are associated with growth factor and differentiation signaling associated antigens. Such antigens include, but are not limited to, EGFR/ERBB1/HER.1 (epidermal growth factor receptor 1), ERBB2 (epidermal growth factor receptor 2), ERBB3 (epidermal growth factor receptor 3), MET (Tyrosine-Protein Kinase Met),

IGF1R (insuiin-like growth factor 1 receptor), EPHA3 (EPH Receptor A3), TRAILR1. (Death receptor 4), and (Receptor activator of nuclear factor kappa-B ligand). Cancers that may he treated with antibodies targeting the growth factor and differentiation signaling include, but are not limited to, breast, colon, lung, ovarian, prostate, head and neck, pancreas, thyroid, kidney, and colon tumors, melanoma, glioma, bone metastases, and hematological malignancies.

[00557] Some cancer tumors are associated with antigens of stromal and extracellular matrix. Such antigens include, but are not limited to, tenascin and FAP (Fibroblast Activation Protein, Alpha). Cancers that may be treated with antibodies targeting the stromal and extracellular matrix antibodies include, but are not limited to, breast, prostate, colon, lung, pancreas and head and neck tumors and glioma.

[00558] Some cancer tumors are associated with such as Lewis -Y Le(y) antigen. Le(y) antigen has been found expressed on a number of cancers, such as, but not limited to, ovarian, breast, colon, lung and prostate cancer. Antibodies targeting Le(y) antigen may be used to treat the associated cancers.

[00559] Some cancer tumors are associated with glycolipid antigens. Such antigens include, but are not limited to, gangliosides, such as GD2, GD3, and GM2 (monosialotetrahexosyigangiioside 2). Cancers that may be treated with antibodies targeting the glycolipid antigens include, but are not limited to, epithelial tumors (e.g. breast, colon and lung tumors) and neuroectodermal tumors (tumors of the central and peripheral nervous system).

[00560] The vasculature of solid tumors is abnormal, compared to normal vasculature. Antigens supporting the formation of abnormal mierovaseiilature and progress of cancer include, but are not limited to, VEGF (Vascular endothelial growth factor), VEGFR (vascular endothelial growth factor receptor), integrin $\alpha v \beta 3$ and integnn $\alpha 5 \beta 1$. Antibodies targeting such antigens may be used to treat a number of solid tumors such as, but not limited to, lung, breast, renal, brain, eye, colorectal, melanoma, ovarian, and/or other tumors, by preventing the formation of abnormal vasculature.

[00561] Hematopoietic and lymphoid malignancies are cancers affecting the blood, bone marrow, lymphs and lymphatic system. Such cancers include e.g. leukemias (acute and chronic lymphoblastic leukemia, acute and chronic myelogenous leukemia), lymphomas (Hodgkin's lymphoma, Non-Hodgkin's lymphoma) and myelomas. Tumors of the hematopoietic and lymphoid tissues are closely related to immune systems. Hematological tumors may be caused by chromosomal abnormalities derived from the myeloid and lymphoid cell lines. The lymphoid cell line produces T and B cells, whereas myeloid cell line produces granulocytes, erythrocytes, thrombocytes, macrophages and mast ceils. T and B cell associated hematopoietic differentiation

antigens are glycoproteins thai are usually from cluster of differentiation (CD) group, such as, but not limited to, CD20, CD30, CD33 and CD.52. Antibodies targeting such antigens may be used for prevention and/or treatment of hematopoietic and lymphoid cancers.

[00562] In some embodiment, methods of the present invention may be used to treat subjects suffering from a cancer. In some cases, methods of the present invention may be used to treat subjects suspected of developing a cancer.

[00563] In some embodiments, methods of the present invention may be used for inimuno-oncology (I-ü) applications. AAV particles or pharmaceutical compsitions of the present invention may be used to develop an immunotherapy or as an immunotherapy in an T-0 treatment of a subject suffering from cancer. Non-limiting examples of 1-0 applications include active, passive or hybrid immunotherapies, checkpoint blockade, adoptive cell transfer (ACT), cancer vaccines, CAR or CAR-T therapies, dendritic ceil therapy, stem ceil therapies, natural killer (NK) cell-based therapies, and interferon or interleukin based methods.

|00564] AAV Particles and methods of using the AAV particles described in the present invention may be used to prevent, manage and/or treat cancer. As anon-limiting example, the AAV particles of the present invention comprise a nucleic acid sequence encoding at least one of the sequences described in Table 9 (SEQ ID NO: 2977-2998, 3031-3039, 3060-3076, 3129-3147, 3181-3196, 3205-3226, 3277-3285, 3335-3345, 3375-3382, 3453-3459, 3856, 3890-3898, 4232-4237, 4308, 4323, 4420. 4431, 4501-4504, 4512-4527, 4535-17658).

Ocular diseases

|00565] Eye is an organ comprising a number of components, including the cornea, aqueous humor, lens, vitreous humor, retina, the retinal pigment epithelium, and choroid. Ocular diseases are conditions affecting the different tissues of the eye. A number of diseases and disorders affect the different components of the eye, and may cause impaired vision, full or partial blindness, irritation, dryness, sensitivity, photophobia, and/or light aversion.

[00566] Complement in the eye has an important role in protecting the eye from infections and in modulation of the immune and inflammatory responses. In normal eye, the complement activity is at low level and is regulated by membrane bound and soluble intraocular complement regulatory proteins. Disturbance of the balance between compiement activation and complement inhibition may lead to damage to self-tissue (see, e.gg, Jb&ei *al.*, 2007, *Mol Immunol.;* 44(16): 3901-3908, and references therein). The complement system may be activated in three pathways. The classical pathway is activated by immune complexes or substances and involves e.g. complement components CI, C2, C3, C4, C3a, €5, C5a, C5b, €6, C7, C8, C9 and C5b-9. The alternative pathway activates complement component € 3 when in interaction with e.g.

zymosan, or lipopolysaccharide surfaces, additionally involving, e.g. Factor B, Factor Ba, Factor Bb, Factor D, and Factor P. The third activation pathway is the lectin pathway, and is related to interaction of certain serum lectins, e.g. mannose binding lectin (MBL), raannose and N-acetyl glucosamine residues present in bacterial cell walls. Complement activation is associated with a number of ocular diseases, such as, but not related, age-related macular degeneration (AMD), diabetic retinopathy, choroidal neovascularization (CNV), uveitis, diabetic macular edema, pathological myopia, von Hippel-Lindau disease, histoplasmosis of the eye, Central Retinal Vein Occlusion (CRVO), corneal neovascularization, and retinal neovascularkation, choroidal neovascularization, and other ocular conditions involving complement activation. Antibodies targeting the associated complement components may be used to diagnose, manage and/or treat such ocular diseases.

[00567] Age-related macular degeneration (AMD) is a major cause of irreversible loss of central vision in the elderly worldwide. AMD leads to gradually worsening vision. AMD does not result in blindness, but may affect daily life. Wet AMD is caused by abnormal blood vessels behind the retina grow under the macida and leak blood and fluid that damage the macula. Wet AMD may be treated with laser coagulation and medication to reverse or stop the growth of blood vessels. Dry AMD is caused by break down of the light sensitive cells in the macula. As of today, there is no treatment for dry AMD.

[00568] There remains a need for prevention, management and treatment therapies for wet and dry AMD. AMD is associated with complement components, as described above. In addition, AMD is associated with proteins such as, but not limited to, VEGF (Vascular endothelial growth factor), EPO (Erythropoietin), EPOR (EPO receptor), Inteiieukms IL-1β, IL-17A, Il-K), TNFa (tumor necrosis factor alpha), or FGFR2 (Fibroblast Growth Factor Receptor). Antibodies targeting the AMD associated complement and growth proteins may be used to treat AMD. For example, bevacizumab and ranibizuniab (developed by Genentech Inc.) are antibodies targeting VEGF-A to slow down growth of new blood vessels.

[00569] Corneal diseases affect the cornea and the conjunctiva Cornea and conjunctiva form the outer surface of the eye, which is exposed to external environment, and are susceptible to infection agents, trauma, and/or exposure to chemicals, toxins, allergens etc. Cornea is also affected by autoimmune conditions, nutritional deficiencies and cancer. Corneal diseases may cause e.g. loss of vision, blurred vision, tearing, light sensitivity and pain. Diseases affecting cornea include, but are not limited to, keratitis, corneal dystrophy, corneal degeneration, Fucfis' dystrophy, cancer of cornea, and keratoconj uctivitis. Though surgical and medical treatment therapies for corneal diseases exist, in some cases, the diseases still remain severe and may cause

blindness. There remains a need to efficient therapies for prevention, management and treatment of corneal diseases. Complement components of the cornea and the conjunctiva present in a normal eye include, but are not limited to, C1, C2, C3, C4, C5, C6, C7, Factor P (properdin) and factor B. Complement may have a role in corneal diseases, and antibodies targeting complement components of the eye may be used for prevention, treatment and/or management of corneal diseases.

[00570] Uveitis is an inflammation of the uvea, comprising the iris, choroids, and ciliary body. Early symptoms include eye redness, pain, irritation and blurred vision. Uveitis may lead to transient or permanent loss of vision. Uveitis may be associated with other diseases and conditions, such as infections, systemic diseases, non-infectious and autoimmune diseases. Complement components associated with an autoimmune form of uveitis include C3b and C4b. Uveitis may be managed or treated with vitrectomy, immunosuppressive drugs, corticosteroids or cytotoxic medication. However, despite the existing therapies, autoimmune uveitis is a serious condition and may lead to full or partial blindness. There remains a need for therapies for prevention, management, and treatment of uveitis targeting pathophysiology of the disease.

[00571] Retinopathy is a disease resulting from neovascularization (excessive growth of blood vessels) in the light-sensitive tissue of the eye, retina. Retinopathy may result in impaired vision or partial or full blindness. Retinopathy may be caused by systemic diseases, e.g. diabetes, or hypertension, trauma, excessive sun light exposure or ionizing radiation. Retinopathy is often treated with laser therapy. Medical treatments, such as antibodies, to control the growth of blood vessels, are also applied. However, despite the existing treatment methods, retinopathy is still a severe condition and may lead to blindness. Diabetic retinopathy is one of the leading causes of vision loss in middle-aged individuals. There remains a need for new therapies for prevention, management and/or treatment of retinopathy. For example, antibodies targeting blood vessel growth (e.g. vascular endothelial growth factor (VEGF), complement components (e.g. €3, C4, C1q, C9, C4b), and cluster of differentiation proteins (e.g. CD55, CD59) may be used for prevention, management and/or treatment of different retinopathies.

[00572] Photophobia is a condition referring to abnormal sensitivity or aversion to light. Photophobia is related to a number of ocular and nervous system diseases and disorders. Photophobia may be caused by damage to cornea or retina, albinism, overstimulation of the photoreceptors, excessive electric pulses to the central nervous system, or optic nerve. Photophobia may be associated with migraine, nervous system disorders (e.g. autism, dyslexia, encephalitis), infections (e.g. rabies, Lyme disease, mononucleosis), eye disorders (e.g. uveitis, corneal diseases, retinal diseases, scarring or trauma to cornea). As of today, there is no medical

treatment for photophobia on the market. Piiotophobia is associated with calcitonin gene related peptide (CGRP) and CGRP receptors, and antibodies targeting CGRP may be used to prevent and/or treat photophobia, as described in US Patent application US20120294802, the contents of which are herein incorporated by their reference.

[00573] In some embodiment, methods of the present invention may be used to treat subjects suffering from ocular diseases. In some cases, methods of the present invention may be used to treat subjects suspected of developing ocular diseases.

[00574] AAV Particles and methods of using the AAV particles described in the present invention may be used to prevent, manage and/or treat psychiatric disorder. As a non-limiting example, the AAV particles of the present invention comprise a nucleic acid sequence encoding at least one of the sequences described in Table 11 (SEQ ID NO: 3124-3125, 3164-3177, 3329-3330, 3358-3371, 4308, 4323, 4420, 4431, 4680-4682, 4685-4728, 4735-4772, 4779-4781 , 4783, 6792-6919, 7022-7024, 7271-7274, 7389-7392, 7396-7439, 7446-7496, 7503-7505, 9142-9255, 9257-9269, 9350, 9466-9468, 9617-9624, 9630-9633, 9655-9677, 17666-17670, 17672-17680, 17723-17736, 17756-17875).

Systemic diseases of the blood, heart and bone

[00575] Systemic diseases are a category of conditions affecting the whole body, or many tissues and organs of the body. Systemic conditions associated with the blood, blood vessels, and heart, include, but are not limited to, heart failure, acute coronary syndrome, atherosclerosis, hypertension, lung disease, cardiomyopathy, hyperlipidemia, hypercholesterolemia, hypertriglyceridemia, blood clotting, cardiopulmonary bypass, myocardial infection, platelet aggregation and hemolytic diseases. In general, such conditions affect individual's quality of life and may be life-threatening. Cardiovascular diseases, referring to heart and blood vessels related conditions, are the leading cause of death worldwide. There remains a need for therapies affecting the pathophysiology of systemic heart, blood and blood circulation diseases. Antibodies for treating such conditions have been developed, targeting proteins such as, but not limited to, selectin P, integrin αIIbβ3, GPIIb/IIIa, RHD (Rh blood group, D antigen), PCSK9 (proprotein convertase subtihsin/kexin type 9), oxLDL (Oxidized low-density lipoprotein), CD20 (B-lymphocyte antigen), ANGPTL3 (Angiopoietin-Like 3). F9 (human factor 9), F10 (human factor 10), TFPI (Tissue Factor Pathway Inhibitor (Lipoprotein- Associated Coagulation Inhibitor)), CD41 (integrin, Alpha 2b (Platelet Glycoprotein IIb Of IIb/IIIa Complex. Antigen CD41)).

[00576] In some embodiment, methods of the present invention may be used to treat subjects suffering from blood, blood circulation and heart related systemic diseases. In some cases,

methods of the present invention may be used to treat subjects suspected of developing systemic blood, blood circulation and heart related systemic diseases.

[00577] Osteoporosis is a disease characterized by a reduced bone mineral density, and disrupted bone microarchitecture. Individuals with osteoporosis have a high susceptibility to bone fractures. Osteoporosis causes disability especially in the elderly, and may be fatal.

[00578] There are medical therapies for management of the osteoporosis, and other conditions associated with reduced bone density, such as calcitonin, bisphosphonates, estrogen replacement and selective estrogen modulators for prevention of bone loss, and anabolic agents to increase bone mass and bone mineral density. However, the present medical therapies have side effects and/or require frequent administration. There remains a need for efficient and long lasting medical therapy affecting the pathophysiology of osteoporosis and other conditions associated with reduced bone density, such as antibody therapies. Antibodies for treatment of osteoporosis are on the market, e.g. blosozumab (developed by Eli Lilly and Co.) targeting sclerostin (SOST) for increasing bone density, and denosumab (developed by Amgen) targeting TNFSF11 (Tumor Necrosis Factor (Ligand) Superfamily, Member 11) for treatment of bone loss.

[00579] In some embodiment, methods of the present invention may be used to treat subjects suffering from osteoporosis and/or other conditions associated with reduced bone density. In some cases, methods of the present invention may be used to treat subjects suspected of developing osteoporosis and/or other conditions associated with reduced bone density.

[00580] AAV Particles and methods of using the AAV particles described in the present invention may be used to prevent, manage and/or treat systemic diseases of the blood, heart and/or bone. As a non-limiting example, the AAV particles of the present invention comprise a nucleic acid sequence encoding at least one of the sequences described in Table 12 (SEQ ID NO: 7124, 7127, 7291-7293, 9394, 9397, 9485-9487, 17876-17938).

Immune System & Autoimmune Disease

[00581] Human immune system is a complex mechanism for identifying and removing harmful environmental agents and repairing the harm and damage caused by them. The basis of the immune system is ability to identify body's own substances from substances acquired. The immune response system can be divided into innate and adaptive systems. The innate system is present at all times and includes macrophages, dendritic cells, myeloid ceils (neutrophils, mast cells, basophils, eosinophils) NK cells, complement factors and cytokines. The adaptive system responses to infectious agents, and include T and B lymphocytes, antibodies and cytokines. Activation of T and B cells in the absence of an infectious agents leads to autoimmune diseases (see, e.g. Mackay *et al.*, 2001, *N Engl J Med*, Vol. 345, No. 5, and references therein).

Autoimmune diseases may affect a number of body's tissues and functions, e.g. joints, skin, blood vessels, muscles, organs, intestine etc. Autoimmune diseases arise from and overactive and misguided immune response to body's natural tissues and species. Autoimmune diseases and conditions include, but are not limited to, rheumatoid arthritis, diabetes type 1, systemic lupus erythematosus, celiac sprue, psoriasis. Graves" disease, and Lyme disease. Autoimmune diseases may be caused by infections, drugs, environmental irritants, toxins, and/or genetic factors. Autoimmune diseases affect up to 50 million individuals in the US. Two most common autoimmune diseases are rheumatoid arthritis and autoimmune thyroiditis, together affecting approximately 5 % of population in Western countries.

[00582] Though medical therapies for autoimmune diseases exits, the diseases may still significantly lower the quality of life, or even be fatal. There remains a need for medical therapies affecting the pathophysiology of autoimmune diseases. Autoimmune disease pathophysiology is associated with a number of factors and may be prevented and/or treated by antibodies targeting associated proteins. Such targets include, but are not limited to, infectious agents; environmental triggers (e.g. gliadin); targets affecting cytokinone production or signaling (e.g. TNFa (tumor necrosis factor alpha),IL-I (mterieukin 1-receptor), IL-2 (inter! eukm-2), IL-2R (interleukin-2 receptor), IL-7 (interleukin-T), IL-!O(interleukm-10), IL-!OR (interieukm-I O receptor), interferon-y, STAT-3 (Signal transducer and activator of transcription 3), STAT-4 (Signal transducer a id activator of transcription 4), TGF beta (transforming growth factor beta), T cell trans TGF beta); T ceil regulators (e.g. CTLA4 (Cytotoxic T-Lyraphocyte-Associated Protein 4)); complement components (e.g. C1 and C4); TNFa (tumor necrosis factor alpha) and TNFb (tumor necrosis factor beta); T ceil regulators (e.g. CD1); epitopes of B and T ceils; and/or other targets, such as those associated with B and C cells. (see, e.g. Mackay *et al., 2001, N Engl J Med*, Vol. 345, No. 5, and references therein).

[00583] In some embodiment, methods of the present invention may be used to treat subjects suffering from an autoimmune disease. In some cases, methods of the present invention may be used to treat subjects suspected of developing an autoimmune disease.

[00584] AAV Particles and methods of using the AAV particles described in the present invention may be used to prevent, manage aid/or treat immune system a id autoimmune disease. As a non-limiting example, the AAV particles of the present invention comprise a nucleic acid sequence encoding at least one of the sequences described in Table 9 (SEQ ID NO: 2977-2998. 3031-3039, 3060-3076, 3129-3147, 3181-3196, 3205-3226, 3277-3285, 3335-3345, 3375-3382, 3453-3459, 3856, 3890-3898. 4232-4237, 4308, 4323, 4420, 4431, 4501-4504, 4512-4527, 4535-17658).

Inflammatory disorders and Inflammation

[00585] Inflammation is a natural response of the body to an irritation e.g. by infection, damaged cells or other harmful agents. The purpose of the inflammation is to remove the cause of irritation and necrotic cells and damaged tissues and initiate cell and tissue repair. inflammation has a role in majority of diseases. inflammatory disorders are abnormalities in the body's ability to regulate inflammation. Over 1.00 disorders associated with high level of inflammation have been identified, including, but not limited to, Alzheimer's, ankylosing spondylitis, arthritis (osteoarthritis, rheumatoid arthritis (RA), psoriatic arthritis), asthma, atherosclerosis, Crohn's disease, colitis, dermatitis, diverticulitis, fibromyalgia, hepatitis, irritable bowel syndrome (IBS), systemic lupus erythematous (SLE), nephritis, Parkinson's disease, and ulcerative colitis. Many inflammatory disorders are severe, and even life-threatening. Antibodies targeting proteins associated with inflammation may be used to prevent, manage or treat inflammatory disorders as well as inflammation associated diseases.

|00586] A large number of proteins are associated in inflammation, including, but not limited to, TNF (anti-tumor necrosis factor), IL-1 R (Imerleukin-I receptor), IL-6R (Imerleukin-6 receptor), Alpha integrin subunit, CTL.A4 (Cytotoxic T-Lymphocyte- Associated Protein 4), and CD20 (see, e.g. Kotsovilis and Andreakos, 2014, Michael Steinitz (ed.). Human Monoclonal Antibodies: Methods and Protocols, *Methods in Molecular Biology,* vol. 1060, and references therein). For example, adalimumab (developed by Abbot Laboratories) is a TNF-targeting antibody for rheumatoid arthritis and other arthritises, psoriasis, and Crohn's disease and Nataiizumab (developed by Biogen idee) is an antibody targeting alpha 4 -integrmg for treatment of Crohn's disease. Additionally, plethora of cytokines, chemokines, adhesion and co-stimulatory molecules, receptors, as well as diverse ceil types, may have a role in inflammatory diseases.

[00587] In some embodiment, methods of the present invention may be used to treat subjects suffering from an inflammatory disease. In some cases, methods of the present invention may be used to treat subjects suspected of developing an inflammatory disease.

[00588] AAV Particles and methods of using the AAV particles described in the present invention may be used to prevent, manage and/or treat inflammatory disorders and inflammation. As a non-limiting example, the AAV particles of the present invention comprise a nucleic acid sequence encoding at least one of the sequences described in Table 9 (SEQ ID NO: 2977-2998, 3031-3039, 3060-3076, 3129-3147, 3181-3196, 3205-3226, 3277-3285, 3335-3345, 3375-3382, 3453.3459, 3856, 3890-3898. 4232-4237, 4308, 4323, 4420, 4431, 4501-4504, 4512-4527, 4535-17658).

Other therapeutic targets

[00589] The AAV particles or pharmaceutical compositions of the present invention useful in preventing or treating tauopathies or tau-associated diseases may alternatively, or in combination, encode an antibody that does not bind to the tau protein (e.g., the antigen is a polypeptide other than tau). Non-iiniiting examples of other target antigens include any of the following, including fragments or variants thereof, α-synuclein (monomers, oligomers, aggregates, fragments), ABCA1 (ATP-bindmg cassette, sub-family A, member 1), ABCA4 (ATP-binding cassette, sub-famiiy A, member 4), ABCB1 (ATP-binding cassette, sub-family B, member 1), ACE (angiotensin I converting enzyme), ACKR1 (atypical chamokine receptor 1 (Duffy blood group)), AMPA (DL-a-amino-3-hydroxy-5-ɒ ethyl-4-isoxazo]e propionic acid). ACTH (Adrenocorticotropic Hormone), ACVR2A (Activin receptor type-2A), ACVR2B (Activin receptor type-2B), ADDL (Adduciri-Like Protein 70), ADORA2A (adenosine A2a receptor), ADRA2A (adrenoceptor alpha 2A), AIFM1 (apoptosis-inducing factor), AKT 1 (RAO alpha serine/threomne-piOtein kinase), ALK-1 (activin receptor-like kinase 1), Alpha beta fibril, alpha subunit (basic heiix-loop-helix transcription factor), AMT (Aminomethyltransferase), Amyloid β (monomers, oligomers, aggregates, fragments), amyloid or amyloid-like proteins, AN&PTL3 (Angiopoietin-Like 3), ANGTP1 (angiopoitin 1), ANGTP2 (angiopoietin 2), ANK3 (ankyrin 3), ANKG (ankyrin G), Annexin IV , phospholipid, Anx-Al (annexin Al), APOE (apoiipoprotein E), APP (amyloid beta precursor protem), ARSD (Arylsulfatase D), ATM (Ataxia Telangiectasia Mutated serine/threonine kinase), ATXN1 (ataxin 1). ATXN2 (ataxin 2), ATXN3 (ataxm 3), ATXN7 (ataxin 7), B Lymphocyte Stimulator, BBNF (brain-derived neurotrophic iactor), beta A4 peptide/Alpha beta 4. beta A4 peptide, Alpha beta 5, bAlpha beta 6. Alpha beta **7,** Alpha beta 8. Alpha beta 9. Beta-secretases (RACE), BRAF (B-RafProto-Oncogene. Serine/Threonine Kinase), Properdin (factor P), Factors Ba and Bb. C1, C1q (complement component 1, subcomponent q), C2, C3, C4, C3a, C3b, C5, C5a, C5b, C6, C7, C8, C9 and C5b-9 (complement components), CALX (Carbonic anhydrase IX) , CA 125 (cancer antigen 125), CACNA1A (calcium channel voltage-dependent P/Q type alpha 1A subunit), cadherins, CA-IX (carbonic anhydrase 9), CALCA (calcitonin-related polypeptide alpha), CCKBR (cholecystokmin B receptor), CCL1 1 (eotaxin-1), CCL2 (Chemokine (C-C Motif) Ligand 2), CD 11 (integrin alpha component), CD147 (basigin). CD154 (CD40L), CD19 (Cluster of Differentiation 19), CD2 (cluster of differentiation 2), CD20 (B-lymphocyte antigen), CD200 (cluster of differentiation 200), CD22 (cluster of differentiation 22), CD221 (insulin-like growth factor f (IGF-1) receptor). CD248 (EndosiaHn), CD26 (Dipeptidyl peptidase-4), CD27 (antigen precursor), CD274 (cluster of differentiation 274), CD28 (Cluster of Differentiation 28). CD29

(Integrin, Beta 1), CDS (cluster of differentiation 3), CD30 (cluster of differentiation 30), CD31 (cluster of differentiation 31), CD33 (cluster of differentiation 33), CD37 (Leukocyte antigen), CD38 (cyclic ADP ribose hydrolase), CD3E (T-Cell Surface Antigen T3/Leu-4 Epsilon Chain), CD4 (T-Cell Surface Antigen T4/Leu-3), CD40 (CD40 Molecule, TNF Receptor Superfamily Member 5), CD41 (Integrin, Alpha 2b (Platelet Glycoprotein lib Of`llb/IIIa Complex, Antigen CD41)), CD44 (cluster of differentiation 44), CD51 (integrin alpha 1), CD52 (Human Epididymis-Specific Protein 5), CD55 (Decay Accelerating Factor For Complement (Cromer Blood Group)), CD58 (lymphocyte function-associated antigen 3), CD59 (MAC-inhibitory protein), CD6 (cluster of differentiation 6), CD70 (cluster of differentiation 70, ligand for CD27), CD74 (HLA class II histocompatibility antigen gamma chain), CD79B (immunogiobulin-associated beta), CEA (Carcinoembiyonic antigen), CFHR1 (Complement Factor H-Related 1), CGRP (Calcitonin gene-related peptide), CHMP2B (charged multivesicular body protein 2B), CHRNA4 (cholinergic receptor nicotinic alpha 4 (neuronal)), CHRNB2 (cholinergic receptor nicotinic beta 2 (neuronal)), CISD2 (CDGSH iron sulfur domain 2), CLEC16A (C-type lectin domain family 16 member A), CLRN1 (clarin 1), CNRl (cannabmoid receptor 1), CNTNAP2 (contactm associated protein-like 2), COMT (catechol~0-methyltransferase), CRB1 (crumbs family member 1, photoreceptor morphogenesis associated), CRX (cone-rod homeobox), CRY (crystallin), CSF1R (Colony Stimulating Factor 1 Receptor) , CSF2 (Colony Stimulating Factor 2 (Granulocyte-Macrophage)), CSF2RA (Colony Stimulating Factor 2 Receptor, Alpha, Low-Affinity), CTGF (Connective Tissue Growth Factor), CTLA4 (Cytotoxic T-Lymphocyte- Associated Protein 4), CXC (chemokine receptor type 4), CXCL10 (Chemokine (C-X-C Motif) Ligand 10), DDC (dopa decarboxylase (aromatic L-amino acid decarboxylase)), DIABLO (lAP-Binding Mitochondrial Protein), differentiation factor 8 (GDF8), DISCI (disrupted in schizophrenia 1), DLL3 (Delta-Like 3 (Drosophila)) , DLL4 (Delta-Like 4 (Drosophila)) , DPP4 (dipeptyl-peptidase 4), DPP6 (dipeptidyl-peptidase 6), DR6 (Death receptor 6), DRD1 (dopamine receptor D1), DRD2 (dopamine receptor D2), DRD4 (dopamine receptor D4), DRD.5 (dopamine receptor 5), DRD.5 (dopamine receptor D.5), DTNBP1 (dystrobrevin binding protein 1), EAGl (Ether-A-Go-Go Potassium Channel 1), EDB (fibronectin extra domam-B), EDNRA (endothelm receptor type A). EFNA1 (Ephrm-Al) , EGFL7 (EGF-Like-Domain, Multiple 7), EGFR/ERBB1/HER 1 (epidermal growth factor receptor 1), EN2 (Engrailed Homeobox 2), EPCAM (Epithelial cell adhesion molecule), EPHA3 (EPH Receptor A3), episialin (a carcinoma-associated mucin, MUC-i), ERBB2. (epidermal growth factor receptor 2). ERBB3 (epidermal growth factor receptor 3), ESR1 (estrogen receptor 1), F3 (coagulation factor III), F9 (human factor 9), F10 (human factor 10), FAAH (fatty acid

amide hydrolase), Factor D C3 proactivator convertase), humanized IgG1, humanized IgG2, FAP (Fibroblast Activation Protein, Alpha), FBN2 (fibrillin 2), FBP (Folate-binding protein), FcγRIIB (Fc receptor gamma B), FcγRIIIA (Fc receptor gamma A), FLT1 (Fms-Related Tyrosine Kinase 1), FOLR1 (folate receptor alpha), Fnzzled receptor, FXN (frataxin), FUS/TLS (RNA binding protein), G protein-coupied, GAA (glueosidase aipha acid), Gc-globulin (Vitamin **D** binding protein), Gangliosides, GD2 (ganglioside G2), GD3 (gangiioside g3), GM2 (monosialotetraliexosylganglioside 2) **(GDF-8** (niyostatin), GDNF (glial ceil derived neurotrophic factor), GDNF (glial cell derived neurotrophic factor), GFAP (glial fibrillary acidic protein), GFRa3 (GDNF family receptor alpha-3), gbrelin, GIT1 (G protein-coupled receptor kinase interacting ArfGAP 1), GJA (Gap junction protein), GLDC Glycine Dehydrogenase (Decarboxylating), glycoprotein NMB (GPNMB), gpA33 (Glycoprotein A33 (Transmembrane)), GPC3 (glypican 3), GRTN2B (glutaraate receptor ionotropic N-methyl D-aspartate 2B), GRN (granulin), GDF8 (growth differentiation factor 8), GTPases (guanosine triphosphate), GSTP1 (glutathione S-transferase pi 1), GUCA1A (guanylate cyclase activator 1A (retina), GUCY2C (anti-G€C), HMCN1 (hemicentin 1), HGF (Hepaiocyte Growth Factor), HIF1A (hypoxia inducible factor 1, HINT1 (histidine triad nucleotide binding protein 1), HIST3H3 (Histone H3), histone, HLA-DQB1 (major histo compatibility complex class II DQ beta 1), HLA-DR (MHC class K ceil surface receptor), HLA-DRB1 (major histocompatibility complex class 11 DR beta 1), hNav1.7 (sodium ion channel), HTRIA (5-hydroxytryptamine (serotonin) receptor 1A G protein-coupled), HTR2A (5-hydroxytrv'ptamine (serotonin) receptor 2A, FITR2A (5-hydimytryptamine (serotonin) receptor 2A G protein-coupled), HIT (huntingtin), lAP-binding mitochondrial protein, iFNAR1 (Interferon (Alpha, Beta And Omega) Receptor 1), IFNB1 (interferon beta 1 fibroblast), IFN-y (Interferon gamma), IGF-I receptor, IGF1R (insulin-like growth factor 1 receptor), IGF-i (insulin-like growth factor 1), IGGI (immunoglobulin subclass 1), igG2. (immunoglobulin subclass 2), IgG4 (immunoglobulin subclass 4), IGHE (immunoglobulin Heavy (Constant Epsiion) , IL 1B (interieukin 1 beta), IL12 (interleukin 12), IL12B (interleukin 12B), IL13 (interleukin S3), IL17α% (interleukin 17A), IL17F (interieukin 17F), ILIA (interieukin lA), IL1B (interleukin 1 beta), ILl-Ri (Interleukin 1 receptor, type 1), 1L20 (interleukin 20), IL23A (interleukin 23A), IL-23p19 subunit (interieukin 23 subunit p19), IL2RA (interleukin 2 receptor alpha), IL4R (interieukin 4 receptor alpha, IL6 (interieukin 6), IL6R (interleukin 6 receptor), IL7R (interleukin 7 receptor), ILGF2 (insulin like growth factor 2), INS (insulin), integrin $\alpha_5\beta_1$, integrin $\alpha V\beta_3$, mtegrin αIIbβ3/GPIIb/Hia , IP6K2 (inositol hexakisphosphate kinase 2), ITGA4 (Integrin, Alpha 4 (Antigen CD49D, Alpha 4 Subunit Of VLA-4 Receptor)), ITGB7 (Integrin, Alpha 7 (Antigen **CD49D,** Alpha 4 Subunit Of VLA-7

Receptor)), ITGAL (integrin alpha L chain), ITGAY ((Vitronectin Receptor, Alpha Polypeptide, Antigen CD51), ITGB3 (integrin aipha-V/beta-3), KCNQ2 (potassium channel voltage gated KQT-like subfamily Q member 2), KDR (Kinase insert Domain Receptor), KIR2D (killer immunogiobulin-like receptor (KIR) 2D subtype), KLRC1 (Killer Cell Lectin-Like Receptor Subfamily C, Member 1), LAG-3 (Lymphocyte-activation gene 3), Le (y) (Lewis y) antigen, LINGO (Leucine rich repeat and Immunoglobin-like domain-containing protein 1), LOXL2 (Lysyl oxidase homolog 2), LPG (iysophosphatidylglucoside), LPS (Lipopolysacchandes), LRP1 (low density lipoprotein receptor-related protein 1), LRRC6 (Leucine Rich Repeat Containing 6), LRRK2 (leucine-rich repeat kinase 2), LTA **(Lymphotoxin** Alpha), MAF (rnaf avian **musculoaponeurotic** fibrosarcoma oncogene homolog), MAG (Myelin Associated Glycoprotein), MAI (myelin associated inhibitor), MAOB (monoamine oxidase B), MAPT (mierotubuie-assoeiated protein tan), MBP (myelin basic protein), MCAF (monocyte chemotactic and activating factor), MCP-i (Monocyte chemoattractant protein-1), MBL (mannose binding lectin), mannose, MET (Tyrosine-Protein Kinase Met), MIF (Macrophage Migration inhibitory Factor (Glycosylation-inhihiting Factor), MS4A1 (Membrane-Spanning 4-Domains, Subfamily A, Member 1), MSLN (Mesothelin), MST1R (Macrophage Stimulating 1 Receptor), MSTN (myostatin), MUC1/Episiaiin , MUC5AC (Mucin SAC, OHgomeric Mucus/Gei-Forming), mucin CanAg (glycoform **MUC-1**), Mucins, myostatin, myostatin antagonists, N-acetyl glucosamine, NCAM1 (Neural Cell Adhesion Molecule 1) , Neu5Gc/ NGN A (Neurogenin A), neureguhn (NRG), neurokinin B, NGF (Nerve growth factor), NMD A (N-niethyhD-aspartate), NOGO (Neunte outgrowth inhibitor), NOGO receptor-1, Nogo-66, NOGOA/NiG (Neurits Outgrowth Inhibitory Fragments of NOGO A), Notch receptor, NOTCH-1 (Notch homolog 1, translocati on-associated (Drosophila)), NRGi (neureguhn I), NRP1 (Neuropilin I), NT-3 trkC ligand, N-terminal region of Aβ8-χ peptide, OGG1 (8-oxoguanine DNA glyeosyiase), oligomers of N-terminal truncated Aβ, OPA2 (Optic Atrophy 2), OPA3 (Optic Atrophy 3), oxLDL (Oxidized low-density lipoprotein), P75 (Low-affinity Nerve Growth Factor Receptor), PAND1 9Panic disorder 1), PAND2 (Panic disorder 2), PAND3 9Panic disorder 3), PARK2 (parkin RBR E3 ubiquitin protein ligase), PCSK9 (proprotein convertase subtilisin/kexin ty pe 9), PD-1 (Programmed cell death protein 1), PD-2 (Programmed cell death protein 2), PD-3 (Programmed cell death protein 3), PD-4 (Programmed cell death protein 4), PD-5 (Programmed cell death protein 5), PD-6 (Programmed cell death protein 6), PD-7 (Programmed cell death protein 7), PD-8 (Programmed cell death protein 8), PDGFRA (Platelet-derived growth factor receptor alpha), PDGFRB (Platelet-derived growth factor receptor beta), PD-L1 (Programmed cell death protein i ligand), PEX7 ((Peroxisomal Biogenesis Factor 7),

PHOBS (phobia specific), PhosphatidyL-serine, chimeric IgG1, Phosphatide L-serine, Chimeric TgG2, PINK1 (PTEN induced putative kinase 1), platelet-derived growth factor receptor beta PDGFRR, PLAU (plasminogen activator urokinase), PLP (protelopid protein), PMP22 (peripheral myelin protein 22), POLG (polymerase (DNA directed) gamma), PRDM16 (PR domain containing 16), Prion proteins, PrP, PrPC, PrPSc, PRKCG (protein kinase C gamma), PSENl (presenilin 1), PSEN2 (presenilin 2). PSMA (Prostate-specific membrane antigen), PTGS2 (prostagiandin-endoperoxide synthase 2 (prostaglandin G/H synthase and cyc!ooxygenase)), PTPN11 (Tyrosme-protein phosphatase non-receptor type 11), PVRL4 (Poliovirus Receptor-Related 4) , PVRL5 (Poiiovirus Receptor-Related 5), pyroglutamated A β, RAfl (proto-oncogene serine/threonine-protein kinase), RAGE protein, RANKL (Receptor activator of nuclear factor kappa-B ligand), RCANT (regulator of calcineurin 1), RDh12 (retinol dehydrogenase 12 (all-trans/9-cis/l 1-cis)), RGM A (Repulsive guidance molecule A), RHD (Rh blood group, D antigen), RH0 (rhodopsin), RPE65 (retinal pigment epithelium-specific protein 65kDa), RTN4 (Reticulon-4, NOGO), S1GOB (calcium-binding protein B), S1P4 (Type 4 sphingosine 1-phosphate G protein-coupled receptor), SCNIA (Sodium Channel, Voltage Gated, Type I Alpha Subunit) , SDC1 (Syndecan 1), selectin P, SHANK3 (SH3 And Multiple Ankyrin Repeat Domains 3), SLAMF7 (SLAM Family Member ?) , SIX 18A2 (solute carrier family 18 (vesicular monoamine transporter, member 2), SLC1A2 (solute carrier family 1 (glial high affinity g!utamate transporter, member 2), SLC34A2 (Solute Carrier Family 34 (Type II Sodium/Phosphate Cotransporter), SLC6A3 (solute carrier family 6 (neurotransmitter transporter) member 3), SLC6A4 (Solute Carrier Family 6 (Neurotransmitter Transporter), SMNl (survival of motor neuron 1 teiomenc), SMN2 (survival of motor neuron 2 centromenc), SNCA (synuclein alpha (non A4 component of amyloid precursor)), SNCA (synuclein alpha (non A4 component of amyloid precursor), SNCB (synuclein beta), SODl (superoxide dismutase 1 soluble), SOST (Sclerostin), sphingosine-1-phosphate, SQSTM1 (sequestosome 1), STEAPl (Six Trans membrane Epithelial Antigen Of The Prostate 1), SULF2 (Sulfatase 2), TACR1 (tachykinin receptor 1), TAG-72 (Tumor-associated glycoprotein 72), TARDBP (TAR DNA binding protein), tau antigen, tau protein, tau pS422, TDP-43, tenascin, tenascm C, TFPX (Tissue Factor Pathway Inhibitor (Lipoprotein- Associated Coagulation inhibitor)), TGF beta (Transforming growth factor beta), TH (Tyrosine hydroxylase), TkrC (Tropomyosin receptor kinase C), TMEFF2 (Transmembrane Protein With EiGF-Like And Two Follistatin-Eike Domains 2), TMEFF3 (Transmembrane Protein With EGF-Like And Two Follistatin-Like Domains 3), TNF (tumor necrosis factor). TNFa (tumor necrosis factor alpha), TNFRSF1 OB (Tumor Necrosis Factor Receptor Superfaroily, Member 1Ob), TNFRSF12A (Tumor Necrosis

Factor Receptor Superfamiiy, Member 12A), TNFRSF8 (Tumor Necrosis Factor Receptor Superfaraily, Member 8), TNFRSF9 (Tumor Necrosis Factor Receptor Superfamiiy, Member 9), TNFSFil (Tumor Necrosis Factor Receptor Superfamiiy, Member 11), TNFSF13B (Tumor Necrosis Factor Receptor Superfamiiy, Member 13b), TNF-α (Tumor Necrosis Factor alpha)), TNNT2 (troponin T type 2), TORI A (torsin family 1 member A (torsin A)), TPBG (Trophoblast Glycoprotein), TPH2 (tryptophan hydroxylase 2), TRAILRI (Death receptor 4), **TRA1LR2** (Death receptor 5), TrkA (Tropomyosin receptor kinase A), TRPV4 (Transient Receptor Potential Cation Channel, Subfamily V, Member 4). TSC2 (tuberous sclerosis 2), TIJLP1 (tubby like protein 1), tumor necrosis factor related protein 5 , tumor specific glycosylation of MUC 1, tumor-associated calcium signal transducer 2, tumor protein p53, TYRP1 (glycoprotein 75), UCHil (ubiquitm carboxyl-terminal esterase L1 (ubiquitin thioiesterase)), UNC-13A (imc-13 homolog A), USH1C (Usher Syndrome 1C), USH2A (Usher Syndrome 2A (Autosomal Recessive, Mild), VEGF (Vascular endothelial growth factor), VEGF A (Vascular endothelial growth factor A), C5, Factor P, Factor D, EPO (Erythropoietin), EPOR (EPO receptor), Interieukins, iL- Iβ, IL-17A, 1l-10, TNFa, FGFR2 (Fibroblast Cirowth Factor Receptor 2), VEGFR (vascular endothelial growth factor receptor), VEGFR2 (vascular endothelial growth factor receptor 2), viraentin, voltage gated ion channels, VWF (Von Willebrand Factor), WFSl (Wolfram syndrome 1 (wolfrarnin)), YES 1 (Yamaguchi Sarcoma Viral Oncogene Homolog 1).

[00590] In one embodiment, the AAV particle of the present invention, useful in treating a non-infectious disease, targets an antigen considered to be useful in the treatment of a different disease. As a non-limiting example, an AAV particle or pharmaceutical composition thereof used for the treatment of cancer, immune system dysfunctions or inflammatory disease may likewise be used for the treatment of a neurodegenerative disorder such as, but not limited to, AD, PD, HD, ALS, SMA, or DLB.

V. KITS AND DEVICES

Kits

[00591] In one embodiment, the invention provides a variety of kits for conveniently and/or effectively carrying out methods of the present invention. Typically, kits will comprise sufficient amounts and/or numbers of components to allow a user to perform multiple treatments of a subjeci(s) and/or to perform multiple experiments.

[00592] Any of the AAV particles of the present invention may be comprised in a kit. In some embodiments, kits may further include reagents and/or instructions for creating and/or synthesizing compounds and/or compositions of the present invention. In some embodiments, kits may also include one or more buffers. in some embodiments, kits of the invention may

include components for making protein or nucleic acid arrays or libraries and thus, may include, for example, solid supports.

[00593] In some embodiments, kit components may he packaged either in aqueous media or in lyophilized form. The container means of the kits will generally include at least one vial, test tube, flask, bottle, syringe or other container means, into which a component may be placed, and preferably, suitably aliquoted. Where there is more than one kit component, (labeling reagent and label may be packaged together), kits may also generally contain second, third or other additional containers into which additional components may be separately placed. In some embodiments, kits may also comprise second container means for containing sterile, pharmaceutically acceptable buffers and/or other diluents. In some embodiments, various combinations of components may be comprised in one or more vial. Kits of the present invention may also typically include means for containing compounds and/or compositions of the present invention, e.g., proteins, nucleic acids, and any other reagent containers in close confinement for commercial sale. Such containers may include injection or blow-molded plastic containers into which desired vials are retained.

[00594] In some embodiments, kit components are provided in one and/or more liquid solutions. In some embodiments, liquid solutions are aqueous solutions, with sterile aqueous solutions being particularly preferred. In some embodiments, kit components may be provided as dried powder(s). When reagents and/or components are provided as dry powders, such powders may be reconstituted by the addition of suitable volumes of solvent. In some embodiments, it is envisioned that solvents may also be provided in another container means. In some embodiments, labeling dyes are provided as dried powders. In some embodiments, it is contemplated that 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 120, 120, 130, 140, 150, 160, 170, 180, 190, 200, 300, 400, 500, 600, 700, 800, 900, 1000 micrograms or at least or at most those amounts of dried dye are provided in kits of the invention. In such embodiments, dye may then be resuspended in any suitable solvent, such as DMSO.

[00595] In some embodiments, kits may include instructions for employing kit components as well the use of any other reagent not included in the kit. Instructions may include variations that may be implemented.

Devices

[00596] In one embodiment, the AAV particles may delivered to a subject using a device to deliver the AAV particles and a head fixation assembly. The head fixation assembly may be, but is not limited to, any of the head fixation assemblies sold by MRI interventions. As a non-limiting example, the head fixation assembly may be any of the assemblies described in US

Patent Nos. 8,099,150, 8,548,569 and 9,031,636 and International Patent Publication Nos. WO201 108495 and WO201 40 14585, the contents of each of which are incorporated by reference in their entireties. A head fixation assembly may be used in combination with an MRI compatible drill such as, but not limited to, the Mill compatible drills described in international Patent Publication No. WO2013181008 and US Patent Publication No. US20130325012, the contents of which are herein incorporated by reference in its entirely.

[00597] In one embodiment, the AAV particles may be delivered using a method, system and/or computer program for positioning apparatus to a target point on a subject to deliver the AAV particles. As anon-limiting example, the method, system and/or computer program may be the methods, systems and/or computer programs described in US Patent No. 8, 340,743. the contents of which are herein incorporated by reference in its entirety. The method may include: determining a target point in the body and a reference point, wherein the target point and the reference point define a planned trajectory line (PTL) extending through each; determining a visualization plane, wherein the PTL intersects the visualization plane at a sighting point; mounting the guide device relative to the body to move with respect to the PTL, wherein the guide device does not intersect the visualization plane; determining a point of intersection (GPP) between the guide axis and the visualization plane; and aligning the GPP with the sighting point in the visualization plane.

[00598] In one embodiment, the AAV particles may be delivered to a subject using a convention-enhanced delivery device. Non-limiting examples of targeted delivery of drugs using convection are described in US Patent Publication Nos. US20100217228, US20130035574 and US201 30035660 and international Patent Publication No. WO2013019830 and WO2008144585, the contents of each of which are herein incorporated by reference in their entireties.

[ΘΘ599] In one embodiment, a subject may be imaged prior to, during and/or after delivery of the AAV particles. The imaging method may be a method known in the art and/or described herein, such as but not limited to, magnetic resonance imaging (MRI). As a non-iimiting example, imaging may he used to assess therapeutic effect. As another non-limiting example, imaging may be used for assisted deliver}' of AAV particles.

[00600] In one embodiment, the AAV particles may be delivered using an MRI-guided device. Non-limiting examples of MRI-guided devices are described in US Patent Nos. 9,055,884, 9,042,958, 8,886,288, 8.768,433, 8,396,532, 8.369,930, 8,374,677 and 8,175,677 and US Patent Application No. US20140024927 the contents of each of which are herein incorporated by-reference in their entireties. As a non-limiting exanvple, the MRI-guided device may be able to provide data in real time such as those described in US Patent Nos. 8,886.288 and 8,768.433, the

contents of each of which is herein incorporated by reference in its entirety. As another non-limiting example, the MRI-guided device or system may be used with a targeting cannula such as the systems described in US Patent Nos. 8,175.677 and 8,374.677, the contents of each of which are herein incorporated by reference in their entireties. As yet another non-limiting example, the MRI-guided device includes a trajectory guide frame for guiding an interventional device as described, for example, in US Patent No. 9,055,884 and US Patent Application No. US20140024927, the contents of each of which are herein incorporated by reference in their entireties.

[00601] In one embodiment, the AAV particles may be delivered using an MRI-compatible tip assembly. Non-limiting examples of MRI-compatible tip assemblies are described in US Patent Publication No. US20140275980, the contents of which is herein incorporated by reference in its entirety.

[00602] In one embodiment, the AAV particles may be delivered using a cannula which is MRI-compatible. Non-limiting examples of MRI-compatible cannulas include those taught in International Patent Publication No. WO2011130107, the contents of which are herein incorporated by reference in its entirety.

[00603] In one embodiment, the AAV particles may be delivered using a catheter which is Mill-compatible. Non-limiting examples of MRI-compatible catheters include those taught in International Patent Publication No. WO20121 16265, US Patent Publication No. 8.825,133 and US Patent Publication No. US201 40024909, the contents of each of which are herein incorporated by reference in their entireties.

[00604] In one embodiment, the AAV particles may be delivered using a device with an elongated tubular body and a diaphragm as described in US Patent Publication Nos. US201 40276582 and US20 14027661 4, the contents of each of which are herein incorporated by reference in their entireties.

[00605] In one embodiment, the AAV particles may be delivered using an MRI compatible localization and/or guidance system such as, but not limited to, those described in US Patent Publication Nos. US20150223905 and US20150230871, the contents of each of which are herein incorporated by reference in their entireties. As anon-limiting example, the MRI compatible localization and/or guidance systems may comprise a mount adapted for fixation to a patient, a targeting cannula with a lumen configured to attach to the mount so as to be able to controliably translate in at least three dimensions, and an elongate probe configured to snugly advance via slide and retract in the targeting cannula lumen, the elongate probe comprising at least one of a stimulation or recording electrode.

[00606] In one embodiment, the AAV particles may be delivered to a subject using a trajectory frame as described in US Patent Publication Nos. IJS20150031 982 and US20140066750 and international Patent Publication Nos. WO20 15057807 and WO2014039481, the contents of each of which are herein incorporated by reference in their entireties.

[00607] In one embodiment, the AAV particles may be delivered to a subject using a gene gun.

VI. DEFINITIONS

[00608] At various places in the present specification, substituents of compounds of the present disclosure are disclosed in groups or in ranges. It is specifically intended that the present disclosure include each and every individual subcombination of the members of such groups and ranges.

[00609] *About:* As used herein, the term "about" means +/- 10% of the recited value.

[00610] *Adeno-associaied virus:* The term "adeno-associated virus" or "AAV" as used herein refers to members of the dependovirus genus comprising any particle, sequence, gene, protein, or component derived therefrom.

[00611] *AAV Particle:* As used herein, an "AAV particle" is a virus which comprises a viral genome with at least one payload region and at least one ITR region. AAV vectors of the present disclosure may be produced recombmantiy and may be based on adeno-associated virus (AAV) parent or reference sequences. AAV particle may be derived from any serotype, described herein or known in the art, including combinations of serotypes (i.e., "pseudotyped" AAV) or from various genomes (e.g., single stranded or self-complementary). In addition, the AAV particle may be replication defective and/or targeted.

[00612] *Activity:* As used herein, the term "activity" refers to the condition in which things are happening or being done. Compositions of the invention may have activity and this activity may involve one or more biological events.

[00613] *Administered in combination:* As used herein, the term "administered in combination" or "combined administration" means that two or more agents are administered to a subject at the same time or within an interval such that there may be an overlap of an effect of each agent on the patient. In some embodiments, they are administered within about 60, 30, 15, 10, 5, or 1 minute of one another. In some embodiments, the administrations of the agents are spaced sufficiently closely together such that a combinatorial *(e.g.,* a synergistic) effect is achieved.

[00614] *Amelioration:* As used herein, the term "amelioration" or "ameliorating" refers to a lessening of severity of at least one indicator of a condition or disease. For example, in the context of neurodegeneration disorder, amelioration includes the reduction of neuron loss.

[00615] *Animal:* As used herein, the term "animal" refers to any member of the animal kingdom In some embodiments, "animal" refers to humans at any stage of development. In some embodiments, "animal" refers to non-huntan ammals at any stage of development. In certain embodiments, the non-human animal is a mammal *(e.g.,* a rodent, a mouse, a rat, a rabbit, a monkey, a dog, a cat, a sheep, cattle, a primate, or a pig). In some embodiments, animals include, but are not limited to, mammals, birds, reptiles, amphibians, fish, and worms. In some embodiments, the animal is a transgenic animal, genetically-engineered animal, or a clone.

[00616] *Antibody:* As used herein, the term "antibody" is referred to in the broadest sense and specifically covers various embodiments including, but not limited to monoclonal antibodies, polyclonal antibodies, multispecific antibodies (e.g. bispecific antibodies formed from at least two intact antibodies), and antibody fragments (e.g., diabodies) so long as they exhibit a desired biological activity (e.g., "functional"). Antibodies are primarily amino-acid based molecules but may also comprise one or more modifications (including, but not limited to the addition of sugar moieties, fluorescent moieties, chemical tags, etc.). Non-limiting examples of antibodies or fragments thereof include V_H and V_L domains, scFvs, Fab, Fab', F(ab')2, Fv fragment, diabodies, linear antibodies, single chain antibody molecules, multispecific antibodies, bispecific antibodies, intrabodies, monoclonal antibodies, polyclonal antibodies, humanized antibodies, codon-optiniized antibodies, tandem scFv antibodies, bispecific T-ceii engagers, mAb2 antibodies, chimeric antigen receptors (CAR), tetravalent bispecific antibodies, biosynthetic antibodies, native antibodies, miniaturized antibodies, unibodies, maxibodies, antibodies to senescent cells, antibodies to conformers, antibodies to disease specific epitopes or antibodies to innate defense molecules.

[00617] *Antibody-based composition:* As used herein, "antibody-based" or "antibody-derived" compositions are monomelic or rnulti-meric polypeptides which comprise at least one amino-acid region derived from a known or parental antibody sequence and at least one amino acid region derived from a non-antibody sequence, e.g., mammalian protein.

[00618] *Approximately:* As used herein, the term "approximately" or "about," as applied to one or more values of interest, refers to a value that is similar to a stated reference value. In certain embodiments, the term "approximately" or "about" refers to a range of values that fall within 25%, 20%, 19%, 18%, 17%, 16%, 15%, 14%, 13%, 12%, 11%, 10%, 9%, 8%, 7%, 6%, 5%, 4%, 3%, 2%, 1%, or less in either direction (greater than or less than) of the stated reference value unless otherwise stated or otherwise evident from the context (except where such number would exceed 100% of a possible value).

[00619] *Associated with:* As used herein, the terms "associated with," "conjugated," "linked," "attached/' and "tethered," when used with respect to two or more moieties, means that the moieties are physical!)) associated or connected with one another, either directly or via one or more additional moieties that serves as a linking agent, to form a structure that is sufficiently stable so that the moieties remain physically associated under the conditions in which the structure is used, *e.g.,* physiological conditions. An "association" need not be strictly through direct covaient chemical bonding. It may also suggest ionic or hydrogen bonding or a hybridization based connectivity sufficiently stable such that the "associated" entities remain physically associated.

[00620] *Bifimctional:* As used herein, the term "bifunctional" refers to any substance, molecule or moiety which is capable of or maintains at least two functions. The functions may effect the same outcome or a different outcome. The structure that produces the function may be the same or different.

[00621] *Biocompatible:* As used herein, the term "biocompatible" means compatible with living cells, tissues, organs or systems posing little to no risk of injury, toxicity or rejection by the immune system.

[00622] *Biodegradable:* As used herein, the term "biodegradable" means capable of being broken down into innocuous products by the action of living things.

[00623] *Biologically active:* As used herein, the phrase "biologically active" refers to a characteristic of any substance that has activity in a biological system and/or organism. For instance, a substance that, when administered to an organism, has a biological effect on that organism, is considered to be biologically active. In particular embodiments, an AAV particle of the present invention may be considered biologically active if even a portion of the encoded payload is biologically active or mimics an activity considered biologically relevant.

[00624] *Capsid:* As used herein, the term "capsid" refers to the protein shell of a virus particle.

[00625] *Chimeric antigen receptor (CAR):* As used herein, the term "chimeric antigen receptor" or "CAR" refers to an artificial chimeric protein comprising at least one antigen specific targeting region {ASTR), a transmembrane domain and an intracellular signaling domain, wherein the antigen specific targeting region comprises a full-length antibody or a fragment thereof. As a non-limiting example the ASTR of a CAR may he any of the antibodies listed in Tables 3-12, antibody-based compositions or fragments thereof. Any molecule that is capable of binding a target antigen with high affinity can be used in the ASTR of a CAR. The CAR may optionally have an extracellular spacer domain and/or a co-stimulatory domain. A CAR may also be used to generate a cytotoxic cell earning the CAR.

[00626] *Complementary and substantially complementary:* As used herein, the term "complementary" refers to the ability of polynucleotides to form base pairs with one another. Base pairs are typically formed by hydrogen bonds between nucleotide units in aniiparallei polynucleotide strands. Complementary polynucleotide strands can form base pair in the Watson-Crick manner (e.g.. A to T, A to U, C to G), or in any other manner that allows for the formation of duplexes. As persons skilled in the art are aware, when using RNA as opposed to DNA, uracil rather thai thymine is the base that is considered to be complementary to adenosine. However, when a U is denoted in the context of the present invention, the ability to substitute a T is implied, unless otherwise stated. Perfect complementarity or 100% complementarity refers to the situation in which each nucleotide unit of one polynucleotide strand can form hydrogen bond with a nucleotide unit of a second polynucleotide strand. Less than perfect complementarity refers to the situation in which some, but not all, nucleotide units of two strands can form hydrogen bond with each other. For example, for two 20-mers, if only two base pairs on each strand can form hydrogen bond with each other, the polynucleotide strands exhibit 10% complementarity. In the same example, if 18 base pairs on each strand can form hydrogen bonds with each other, the polynucleotide strands exhibit 90% complementarity. As used herein, the term "substantially complementary" means that the siRNA has a sequence (e.g., in the antisense strand) which is sufficient to bind the desired target mRNA, and to trigger the RNA silencing of the target mRNA.

[ΘΘ627] *Compound:* Compounds of the present disclosure include all of the isotopes of the atoms occurring in the intermediate or final compounds. "Isotopes" refers to atoms having the same atomic number but different mass numbers resulting from a different number of neutrons in the nuclei. For example, isotopes of hydrogen include tritium and deuterium.

[00628] The compounds and salts of the present disclosure can be prepared in combination with solvent or water molecules to form solvates and hydrates by routine methods.

[00629] *Comprehensive Positional Evolution (CPE™):* As used herein, the term "comprehensive positional evolution" refers to an antibody evolution technology that allows for mapping of the effects of amino acid changes at every position along an antibody variable domain's sequence. This comprehensive mutagenesis technology can be used to enhance one or more antibody properties or characteristics.

[00630] *Comprehensive Protein Synthesis (CPS™):* As used herein, the term "comprehensive protein synthesis" refers to a combinatorial protein synthesis technology that can be used to optimize antibody properties or characteristics by combining the best properties into a new, high-performance antibody.

[00631] *Conditionally active:* As used herein, the term "conditionally active" refers to a mutant or variant of a wild-type polypeptide, wherein the mutant or variant is more or less active at physiological conditions than the parent polypeptide. Further, the conditionally active polypeptide may have increased or decreased activity at aberrant conditions as compared to the parent polypeptide. A conditionally active polypeptide may be reversibly or irreversibly inactivated at normal physiological conditions or aberrant conditions.

[00632] *Conserved:* As used herein, the term "conserved" refers to nucleotides or amino acid residues of a polynucleotide sequence or polypeptide sequence, respectively, that are those that occur unaltered in the same position of two or more sequences being compared. Nucleotides or amino acids that are relatively conserved are those that are conserved amongst more related sequences than nucleotides or amino acids appearing elsewhere in the sequences.

[00633] In some embodiments, two or more sequences are said to be "completely conserved" if they are 100% identical to one another. In some embodiments, two or more sequences are said to be "highly conserved" if they are at least 70% identical, at least 80% identical, at least 90% identical, or at least 95% identical to one another. In some embodiments, two or more sequences are said to be "highly conserved" if they are about 70% identical, about 80% identical, about 90% identical, about 95%, about 98%, or about 99% identical to one another. In some embodiments, two or more sequences are said to be "conserved" if they are at least 30% identical, at least 40% identical, at least 50% identical, at least 60% identical, at least 70% identical, at least 80% identical, at least 90% identical, or at least 95% identical to one another. In some embodiments, two or more sequences are said to be "conserved" if they are about 30% identical, about 40% identical, about 50% identical, about 60% identical, about 70% identical, about 80% identical, about 90% identical, about 95% identical, about 98% identical, or about 99% identical to one another. Conservation of sequence may apply to the entire length of an polynucleotide or polypeptide or may apply to a portion, region or feature thereof.

[00634] *Control Elements:* As used herein, "control elements", "regulatory control elements" or "regulatory sequences" refers to promoter regions, polyadenylation signals, transcription termination sequences, upstream regulatory domains, origins of replication, internal ribosome entry sites ("IRES"), enhancers, and the like, which provide for the replication, transcription and translation of a coding sequence in a recipient cell. Not all of these control elements need always be present as long as the selected coding sequence is capable of being replicated, transcribed and/or translated in an appropriate host ceil.

[00635] *Controlled Release:* As used herein, the term "controlled release" refers to a pharmaceutical composition or compound release profile that conforms to a particular pattern of release to effect a therapeutic outcome.

[00636] *Cytostatic:* As used herein, "cytostatic" refers to inhibiting, reducing, suppressing the growth, division, or multiplication of a cell *(e.g.,* a mammalian cell *(e.g.,* a human ceil)), bacterium, virus, fungus, protozoan, parasite, prion, or a combination thereof

[00637] *Cytotoxic:* As used herein, "cytotoxic" refers to killing or causing injurious, toxic, or deadly effect on a cell *(e.g.,* a mammalian cell *(e.g.,* a human cell)), bacterium, virus, fungus, protozoan, parasite, prion, or a combination thereof.

[00638] *Delivery:* As used herein, "deliver}" refers to the act or manner of delivering an AAV particle, a compound, substance, entity, moiety, cargo or payload.

[00639] *Delivery Agent:* As used herein, "delivery agent" refers to any substance which facilitates, at least in part, the *in vivo* deliver}' of an AAV particle to targeted cells.

[00640] *Destabilized:* As used herein, the term "destabie," "destabilize," or "destabilizing region" means a region or molecule that is less stable than a starting, wild-type or native form of the same region or molecule.

[00641] *Detectable label:* As used herein, "detectable label" refers to one or more markers, signals, or moieties which are attached, incorporated or associated with another entity that is readily detected by methods known in the art including radiography, fluorescence, chemiluminescence, enzymatíc activity, absorbance and the like. Detectabie labels include radioisotopes, fluorophores, chroniophores, enzymes, dyes, metal ions, ligands such as biotin, avidin, streptavidm and haptens, quantum dots, and the like. Detectable labels may be located at any position in the peptides or proteins disclosed herein. They may be within the amino acids, the peptides, or proteins, or located at the N- or C~termini.

[00642] *Digest:* As used herein, the term "digest" means to break apart into smaller pieces or components. When referring to polypeptides or proteins, digestion results in the production of peptides.

[00643] *Distal:* As used herein, the term "distal" means situated away from the center or away from a point or region of interest.

[00644] *Dosing regimen:* As used herein, a "dosing regimen" is a schedule of administration or physician determined regimen of treatment, prophylaxis, or palliative care.

[00645] *Encapsulate:* As used herein, the term "encapsulate" means to enclose, surround or encase.

[00646] *Engineered:* As used herein, embodiments of the invention are -'engineered" when they are designed to have a feature or properly, whether structural or chemical, that varies from a starting point, wild type or native molecule.

[00647] *Effective Amount:* As used herein, the term "'effective amount'' of an agent is that amount sufficient to effect beneficial or desired results, for example, clinical results, and, as such, an "effective amount" depends upon the context in which it is being applied. For example, in the context of administering an agent that treats cancer, an effective amount of an agent is, for example, an amount sufficient to achieve treatment, as defined herein, of cancer, as compared to the response obtained without administration of the agent.

[00648] *Epitope:* As used herein, an "epitope" refers to a surface or region on a molecule that is capable of interacting with a biomolecule. For example, a protein may contain one or more amino acids, e.g., an epitope, which interacts with an antibody, e.g., a biomolecule. In some embodiments, when referring to a protein or protein module, an epitope may comprise a linear stretch of amino acids or a three-dimensional structure formed by folded amino acid chains.

[00649] EvoMap™: As used herein, an EvoMap™ refers to a map of a polypeptide, wherein detailed informatics are presented about the effects of single amino acid mutations within the length of the polypeptide and their influence on the properties and characteristics of that polypeptide.

[00650] *Expression:* As used herein, "expression" of a nucleic acid sequence refers to one or more of the following events: (1) production of an RNA template from a DNA sequence *(e.g.,* by transcription); (2) processing of an RNA transcript (e.g., by splicing, editing, 5' cap formation, and/or 3' end processing), (3) translation of an RNA into a polypeptide or protein, and (4) post-translational modification of a polypeptide or protein.

[00651] *Feature:* As used herein, a "feature" refers to a characteristic, a property, or a distinctive element.

[00652] *Formulation:* As used herein, a "formulation" includes at least one AAV particle and a delivery agent.

[00653] *Fragment:* A "fragment," as used herein, refers to a portion. For example, fragments of proteins may comprise polypeptides obtained by digesting full-length protein isolated from cultured cells.

[00654] *Functional:* As used herein, a "functional" biological molecule is a biological molecule in a form in which it exhibits a properly and/or activity by which it is characterized.

[00655] *Gene expression:* The term "gene expression" refers to the process by which a nucleic acid sequence undergoes successful transcription and in most instances translation to produce a

protein or peptide. For clarity, when reference is made to measurement of "gene expression", this should be understood to mean that measurements may be of the nucleic acid product of transcription, e.g., RNA or mRNA or of the amino acid product of translation, e.g., polypeptides or peptides. Methods of measuring the amount or levels of RNA, mRNA, polypeptides and peptides are well known in the art.

[00656] *Homology:* As used herein, the term "homology" refers to the overall relatedness between polymeric molecules, *e.g.* between polynucleotide molecules *(e.g.* DNA molecules and/or RNA molecules) and/or between polypeptide molecules. In some embodiments, polymeric molecules are considered to be "homologous" to one another if their sequences are at least 25%, 30%, 35%, 40%, 45%. 50%, 55%, 60%, 65%. 70%, 75%, 80%. 85%, 90%, 95%, or 99% identical or similar. The term "homologous" necessarily refers to a comparison between at least two sequences (polynucleotide or polypeptide sequences). In accordance with the invention, two polynucleotide sequences are considered to be homologous if the polypeptides they encode are at least about 50%, 60%, 70%, 80%, 90%, 95%, or even 99% for at least one stretch of at least about 20 amino acids. In some embodiments, homologous polynucleotide sequences are characterized by the ability to encode a stretch of at least 4-5 uniquely specified amino acids. For polynucleotide sequences less than 60 nucleotides in length, homology is determined by the ability to encode a stretch of at least 4-5 uniquely specified amino acids. In accordance with the invention, two protein sequences are considered to be homologous if the proteins are at least about 50%, 60%, 70%, 80%, or 90% identical for at least one stretch of at least about 20 amino acids.

[00657] *Heterologous Region:* As used herein the term "heterologous region" refers to a region which would not be considered a homologous region.

[00658] *Homologous Region:* As used herein the term "homologous region" refers to a region which is similar in position, structure, evolution origin, character, form or function.

[00659] *Identity.* As used herein, the term "identity" refers to the overall relatedness between polymeric molecules, *e.g.,* between polynucleotide molecules *(e.g.* DNA molecules and/or RNA molecules) and'or between polypeptide molecules. Calculation of the percent identity of two polynucleotide sequences, for example, can be performed by aligning the two sequences for optimal comparison purposes *(e.g.,* gaps can be introduced in one or both of a first and a second nucleic acid sequences for optimal alignment and non-identical sequences can be disregarded for comparison purposes). In certain embodiments, the length of a sequence aligned for comparison purposes is at least 30%, at least 40%, at least 50%, at least 60%, at least 70%, at least 80%, at least 90%, at least 95%, or 100% of the length of the reference sequence. The nucleotides at

corresponding nucleotide positions are then compared. When a position in the first sequence is occupied by the same nucleotide as the corresponding position in the second sequence, then the molecules are identical at that position. The percent identity between the two sequences is a function of the number of identical positions shared by the sequences, taking into account the number of gaps, and the length of each gap, which needs to be introduced for optimal alignment of the two sequences. The comparison of sequences and determination of percent identity between two sequences can be accomplished using a mathematical algorithm. For example, the percent identity between two nucleotide sequences can be determined using methods such as those described in Computational Molecular Biology, Lesk, A. M., ed., Oxford University Press, New York, 1988; Biocomputing: informatics and Genome Projects. Smith. D. W., ed., Academic Press, New York, 1993; Sequence Analysis in Molecular Biology, von Heinje, G., Academic Press. 1987; Computer Analysis of Sequence Data, Part I, Griffin, A. M., and Griffin, H. G., eds., Humana Press, New Jersey, 1994; and Sequence Analysis Primer, Gribskov, M. and Devereux, I , eds., M Stockton Press, New York, 1991; each of which is incorporated herein by reference. For example, the percent identity between two nucleotide sequences can be determined using the algorithm of Meyers and Miller (CABIOS, 1989. 4:11-17), which has been incorporated into the ALIGN program (version 2.0) using a PAM120 weight residue table, a gap length penalty of 12 and a gap penalty of 4. The percent identity between two nucleotide sequences can, alternatively, be determined using the GAP program in the GCG software package using an NWSgapdna. CMP matrix. Methods commonly employed to determine percent identity between sequences include, but are not limited to those disclosed in Carillo, H., and Lipman, D., SIAM J Applied Math.. 48:1073 (1988); incorporated herein by reference. Techniques for determining identity are codified in publicly available computer programs. Exemplary computer software to determine homology between two sequences include, but are not limited to, GCG program package, Devereux, j., *et al , Nucleic Acids Research,* 12(1), 387 (1984)). BLASTP, BLASTN, and FASTA Aitschui, S. F. *et al. , J. Mo!ec. Biol,* 215, 403 (1990)).

|00660] *Inhibit expression of a gene:* As used herein, the phrase 'inhibit expression of a gene'' means to cause a reduction in the amount of an expression product of the gene. The expression product can be an RNA transcribed from the gene *(e.g.* , an mRNA) or a polypeptide translated from an mRNA transcribed from the gene. Typically, a reduction in the level of an mRNA results in a reduction in the level of a polypeptide translated therefrom. The level of expression may be determined using standard techniques for measuring mRNA or protein.

[00661] *In vitro:* As used herein, the term "*in vitro*" refers to events that occur in an artificial environment, *e.g.*, in a test tube or reaction vessel, in cell culture, in a Petri dish, *etc.*, rather than within an organism *(e.g.*, animal, plant, or microbe).

[00662] *In vivo:* As used herein, the term "*in vivo*" refers to events that occur within an organism *(e.g.*, animal, plant, or microbe or cell or tissue thereof).

[00663] *Isolated:* As used herein, the term "isolated" refers to a substance or entity that has been separated from at least some of the components with which it was associated (whether in nature or in an experimental setting). Isolated substances may have varying levels of purity in reference to the substances from which they have been associated. Isolated substances and/or entities may be separated from at least about 10%, about 20%, about 30%, about 40%, about 50%, about 60%, about 70%, about 80%, about 90%, or more of the other components with which they were initially associated. In some embodiments, isolated agents are more than about 80%, about 85%, about 90%, about 91%, about 92%, about 93%, about 94%, about 95%, about 96%, about 97%, about 98%, about 99%, or more than about 99% pure. As used herein, a substance is "pure" if it is substantially free of other components.

[00664] *Substantially isolated:* By "substantially isolated" is meant that a substance is substantially separated from the environment in which it was formed or detected. Partial separation can mciude, for example, a composition enriched in the substance or AAV particles of the present disclosure. Substantial separation can include compositions containing at least about 50%, at least about 60%, at least about 70%, at least about 80%, at least about 90%, at least about 95%, at least about 97%, or at least about 99% by weight of the compound of the present disclosure, or salt thereof. Methods for isolating compounds and their salts are routine in the art.

[00665] *Linker:* As used herein "linker" refers to a molecule or group of molecules which connects two molecules, such as a V_H chain and V_L chain or an antibody. A linker may be a nucleic acid sequence connecting two nucleic acid sequences encoding two different polypeptides. The linker may or may not be translated. The linker may be a cleavabie linker.

[00666] *MicroRNA (miRNA) binding site:* As used herein, a microRNA (miRNA) binding site represents a nucleotide location or region of a nucleic acid transcript to which at least the "seed" region of a miRNA binds.

[00667] *Modified:* As used herein "modified" refers to a changed state or structure of a molecule of the invention. Molecules may be modified in many ways including chemically, structurally, and functionally.

[00668] *Naturally Occurring:* As used herein, "naturally occurring" or "wild-type" means existing in nature without artificial aid, or involvement of the hand of man.

[00669] *Non-human vertebrate:* As used herein, a "non-human vertebrate" includes ah vertebrates except *Homo sapiens*, including wild and domesticated species. Examples of non-human vertebrates include, but are not limited to, mammals, such as alpaca, banteng, bison, camel, cat, cattle, deer, dog, donkey, gayal, goat, guinea pig, horse, llama, mule, pig, rabbit, reindeer, sheep water buffalo, and yak.

[00670] *Off-target: As* used herein, "off target" refers to any unintended effect on any one or more target, gene, or cellular transcript.

[00671] *Open reading frame:* As used herein, "open reading frame" or "**ORF**" refers to a sequence which does not contain a stop codon in a given reading frame.

[00672] *Operably linked:* As used herein, the phrase "operably linked" refers to a functional connection between two or more molecules, constructs, transcripts, entities, moieties or the like.

[00673] *Particle:* As used herein, a "particle" is a virus comprised of at least two components, a protein capsid and a polynucleotide sequence enclosed within the capsid.

[00674] *Patient:* As used herein, "patient" refers to a subject who may seek or be in need of treatment, requires treatment, is receiving treatment, wiii receive treatment, or a subject who is under care by a trained professional for a particular disease or condition.

[00675] *Payload:* As used herein, "payload" or "payload region" refers to one or more polynucleotides or polynucleotide regions encoded by or within a viral genome or an expression product of such polynucleotide or polynucleotide region, e.g., a transgene, a polynucleotide encoding a polypeptide or multi-polypeptide or a modulatory nucleic acid or regulatory nucleic acid.

[00676] *Payload construct:* As used herein, "payload construct" is one or more polynucleotide regions encoding or comprising a payload that is flanked on one or both sides by an inverted terminal repeat (ITR) sequence. The payload construct is a template that is replicated in a viral production cell to produce a viral genome.

[00677] *Payload construct vector:* As used herein, "payload construct vector" is a vector encoding or comprising a payload construct, and regulatory regions for replication and expression in bacterial ceils.

[00678] *Payload construct expression vector:* As used herein, a "payload construct expression vector" is a vector encoding or comprising a payload construct and which further comprises one or more polynucleotide regions encoding or comprising components for viral expression in a viral replication ceil.

[00679] *Peptide:* As used herein, "peptide" is less than or equal to 50 amino acids long, e.g., about 5, 10, 15, 20, 25, 30, 35, 40, 45, or 50 amino acids long.

[00680] *Pharmaceutically acceptable:* The phrase "pharmaceutically acceptable" is employed herein to refer to those compounds, materials, compositions, and/or dosage forms which are, within the scope of sound medical judgment, suitable for use in contact with the tissues of human beings and animals without excessive toxicity, irritation, allergic response, or other problem or complication, commensurate with a reasonable benefit/risk ratio.

[00681] *Pharmaceutically acceptable excipients:* The phrase "pharmaceutically acceptable excipient," as used herein, refers any ingredient other than the compounds described herein (for example, a vehicle capable of suspending or dissolving the active compound) and having the properties of being substantially nontoxic and non-inflammatory in a patient. Excipients may include, for example: antiadherents, antioxidants, binders, coatings, compression aids, disintegrants, dyes (colors), emollients, eniuisifiers, fillers (diluents), film formers or coatings, flavors, fragrances, glidants (flow enhancers), lubricants, preservatives, printing inks, sorbents, suspensing or dispersing agents, sweeteners, and waters of hydration. Exemplary excipients include, but are not limited to: bufyiated hydroxytoluene (BHT), calcium carbonate, calcium phosphate (dibasic), calcium stearate, croscarmeiiose, crosslmked polyvinyl pyrrolidone, citric acid, crospovidone, cysteine, ethylcelhilose, gelatin, hydroxypropyl cellulose, hydroxypropyl methyiceilulose, lactose, magnesium stearate, maltitoi, mannitol, methionine, methyl cellulose, methyl paraben, mierocrystalme cellulose, polyethylene glycol, polyvinyl pyrrolidone, povidone, pregelatimzed starch, propyl paraben, retinyl palmitate, shellac, silicon dioxide, sodium carboxymethyl cellulose, sodium citrate, sodium starch giycolate, sorbitol, starch (corn), stearic acid, sucrose, talc, titanium dioxide, vitamin A, vitamin E, vitamin C, and xyiitol.

[00682] *Pharmaceutically acceptable salts:* The present disclosure also includes pharmaceutically acceptable salts of the compounds described herein. As used herein, "pharmaceutically acceptable salts" refers to derivatives of the disclosed compounds wherein the parent compound is modified by converting an existing acid or base moiety to its salt form (e.g., by reacting the free base group with a suitable organic acid). Examples of pharmaceutically acceptable salts include, but are not limited to, mineral or organic acid salts of basic residues such as amines; alkali or organic salts of acidic residues such as carboxylic acids; and the like. Representative acid addition salts include acetate, acetic acid, adipate, alginate, ascorbate, aspartate, benzenesulfonate, benzene sulfonic acid, benzoate, bisulfate, borate, butyrate, camphorate, camphorsulfonate, citrate, cyclopentanepropionate, digluconate, dodecylsulfate, ethanesuifonate, fumarate, giucoheptonate, glycerophosphate, hemisulfate, heptonate, hexanoate, hydrobromide, hydrochloride, hydroiodide, 2-hydroxy-ethanesuifonate, lactobionate, lactate, laurate, laury! sulfate, malate, maleate, malonate, methanesulfonate, 2-naphthaienesulfonate,

nicotinate, nitrate, oleate, oxalate, palmitate, pamoate, pectinate, persulfate, 3-phenylpropionate, phosphate, picrate, pivalate, propionate, stearate, succinate, sulfate, tartrate, thiocyanate, toluenesulfonate, undecanoate, valerate salts, and the like. Representative alkali or alkaline earth metal salts include sodium, lithium, potassium, calcium, magnesium, and the like, as well as nontoxic ammonium, quaternary ammonium, and amine cations, including, but not limited to ammonium, tetramethyl ammonium, tetraethylammonium, methylamine, dimetbyiamine, tnniethylannne, triethylamine, ethylamine, and the like. The pharmaceutically acceptable salts of the present disclosure include the conventional non-toxic salts of the parent compound formed, for example, from non-toxic inorganic or organic acids. The pharmaceutically acceptable salts of the present disclosure can be synthesized from the parent compound which contains a basic or acidic moiety by conventional chemical methods. Generally, such salts can be prepared by reacting the free acid or base forms of these compounds with a stoichiometric amount of the appropriate base or acid in water or in an organic solvent, or in a mixture of the two; generally, nonaqueous media like ether, ethyl acetate, ethanol, isopropanoi, or acetonitnle are preferred. Lists of suitable salts are found in *Remington's Pharmaceutical Sciences,* 17th ed., Mack Publishing Company, Easton, Pa., 1985, p. 1418, *Pharmaceutical Salts: Properties, Selection. and Use,* P.H. Stahl and C.G. Werrnuth (eds.), Wiley-VCH, 2008, and Berge et al., *Journal of Pharmaceutical. Science,* 66, 1-19 (1977), each of which is incorporated herein by reference in its entirety.

[ΘΘ683] *Pharmaceutically acceptable solvate:* The term "pharmaceutically acceptable solvate," as used herein, means a compound of the invention wherein molecules of a suitable solvent are incorporated in the crystal lattice. A suitable solvent is physiologically tolerable at the dosage administered. For example, solvates may be prepared by crystallization, recrystallization, or precipitation from a solution that includes organic solvents, water, or a mixture thereof. Examples of suitable solvents are ethanol, water (for example, mono-, di-, and tri-hydrates), *N*-methylpyiTolidinone (NMP), dimethyl sulfoxide (DMSO), *N,N'*-dimethy fformamide (DMF), *NJV'*-diraethylacetami de (DMAC), 1,3~dimethyl~2~iimdazolidinone (DMEU), 1,3-diraethyl-3,4,5,6-tetrahydro-2-(lH)-pyriinidinone (DMPU), acetonitnle (ACN), propylene glycol, ethyl acetate, benzyl alcohol, 2-pyrrolidone, benzyl benzoate, and the like. When water is the solvent, the solvate is referred to as a "hydrate."

[00684] *Pharmacokinetic:* As used herein, "pharmacokinetic" refers to any one or more properties of a molecule or compound as it relates to the determination of the fate of substances administered to a living organism. Pharmacokinetics is divided into several areas including the extent and rate of absorption, distribution, metabolism and excretion. This is commonly referred

to as ADME where: (A) Absorption is the process of a substance entering the blood circulation; (D) Distribution is the dispersion or dissemination of substances throughout the fluids and tissues of the body; (M) Metabolism (or Biotransformation) is the irreversible transformation of parent compounds into daughter metabolites; and (E) Excretion (or Elimination) refers to the elimination of the substances from the body. In rare cases, some drugs irreversibly accumulate in body tissue.

[00685] *Physicochemical:* As used herein, "physicocheniical" means of or relating to a physical and/or chemical property.

[00686] *Preventing:* As used herein, the term "preventing" refers to partially or completely delaying onset of an infection, disease, disorder and/or condition; partially or completely delaying onset of one or more symptoms, features, or clinical manifestations of a particular infection, disease, disorder, and/or condition, partially or completely delaying onset of one or more symptoms, features, or manifestations of a particular infection, disease, disorder, and/or condition; partially or completely delaying progression from an infection, a particular disease, disorder and/or condition; and/or decreasing the risk of developing pathology associated with the infection, the disease, disorder, and/or condition.

[00687] *Proliferate:* As used herein, the term "proliferate" means to grow, expand or increase or cause to grow, expand or increase rapidly. "Proliferative" means having the ability to proliferate. "Anti-proliferative" means having properties counter to or inapposite to proliferative properties.

[00688] *Prophylactic:* As used herein, "prophylactic" refers to a therapeutic or course of action used to prevent the spread of disease.

[00689] *Prophylaxis:* As used herein, a "prophylaxis" refers to a measure taken to maintain health and prevent the spread of disease.

[00690] *Protein of interest:* As used herein, the terms "proteins of interest" or "desired proteins" include those provided herein and fragments, mutants, variants, and alterations thereof.

[00691] *Proximal:* As used herein, the term "proximal" means situated nearer to the center or to a point or region of interest.

[00692] *Purified:* As used herein, "purify," "purified," "purification" means to make substantially pure or clear from unwanted components, material defilement, admixture or imperfection. "Purified" refers to the state of being pure. "Purification" refers to the process of making pure.

[00693] *Region:* As used herein, the term "region" refers to a zone or general area. In some embodiments, when referring to a protein or protein module, a region may comprise a linear

sequence of amino acids along the protein or protein module or may comprise a three-dimensional area, an epitope and/or a cluster of epitopes. In some embodiments, regions comprise terminal regions. As used herein, the term "terminal region" refers to regions located at the ends or termini of a given agent. When referring to proteins, terminal regions may comprise N- and/or C-termini. N-termini refer to the end of a protein comprising an amino acid with a free amino group. C-termini refer to the end of a protein comprising an amino acid with a free carboxyi group. N- and/or C-terminal regions may there for comprise the N- and/or C-teraiiiii as well as surrounding amino acids. In some embodiments, N- and/or C-terminal regions comprise from about 3 amino acid to about 30 amino acids, from about 5 amino acids to about 40 amino acids, from about 10 amino acids to about 50 amino acids, from about 20 amino acids to about 100 amino acids and/or at least 100 amino acids. In some embodiments, N-terminal regions may comprise any length of amino acids that includes tbeN-terminus, but does not include the C-terminus. In some embodiments, C-terminal regions may comprise any length of amino acids, which include the C-terminus, but do not comprise the N-termmus.

[00694] In some embodiments, when referring to a polynucleotide, a region may comprise a linear sequence of nucleic acids along the polynucleotide or may comprise a three-dimensional area, secondary structure, or tertiary structure. In some embodiments, regions comprise terminal regions. As used herein, the term "terminal region" refers to regions located at the ends or termini of a given agent. When referring to polynucleotides, terminal regions may comprise 5' and 3' termini. 5' termini refer to the end of a polynucleotide comprising a nucleic acid with a free phosphate group. 3' termini refer to the end of a polynucleotide comprising a nucleic acid with a free hydroxy! group. 5' and 3' regions may there for comprise the 5' and 3' termini as well as surrounding nucleic acids. In some embodiments, 5' and 3' terminal regions comprise from about 9 nucleic acids to about 90 nucleic acids, from about 15 nucleic acids to about 120 nucleic acids, from about 30 nucleic acids to about 150 nucleic acids, from about 60 nucleic acids to about 300 nucleic acids and/or at least 300 nucleic acids. In some embodiments, 5' regions may comprise any length of nucleic acids that includes the 5' terminus, but does not include the 3' terminus. In some embodiments, 3' regions may comprise any length of nucleic acids, which include the 3' terminus, but does not comprise the 5' terminus.

[00695] *UNA or UNA molecule: As* used herein, the term "RNA" or "RNA molecule" or "ribonucleic acid molecule" refers to a polymer of ribonucleotides; the term "DNA" or "DNA molecule" or "deoxyribonucleic acid molecule" refers to a polymer of deoxyribonucieotides. DNA and RNA can be synthesized naturally, e.g., by DNA replication and transcription of DNA, respectively; or be chemically synthesized. DNA and RNA can be single-stranded (i.e., ssRNA

or ssDNA, respectively) or mu!ti-stranded (e.g., double stranded, i.e., dsRNA and dsDNA, respectively). The tenn "mRNA" or "messenger RNA", as used herein, refers to a single stranded RNA that encodes the amino acid sequence of one or more polypeptide chains.

[00696] *Sampie:* As used herein, the term "sample" or "biological sample" refers to a subset of its tissues, cells or component parts (e.g. body fluids, including but not limited to blood, mucus, lymphatic fluid, synovial fluid, cerebrospinal fluid, saliva, amniotic fluid, amniotic cord blood, urine, vaginal fluid and semen). A sample further may include a homogenate, lysate or extract prepared from a whole organism or a subset of its tissues, cells or component pails, or a fraction or portion thereof, including but not limited to, for example, plasma, serum, spinal fluid, lymph fluid, the external sections of the skin, respirator}', intestinal, and genitourinary tracts, tears, saliva, milk, blood ceils, tumors, organs. A sampie further refers to a medium, such as a nutrient broth or gel. which may contain cellular components, such as proteins or nucleic acid molecule.

[00697] *Self-completnentary viral particle:* As used herein, a "self-complementary viral particle" is a particle comprised of at least two components, a protein capsid and a polynucleotide sequence encoding a self-complementary genome enclosed within the capsid.

[00698] *Signal Sequences:* As used herein, the phrase "signal sequences" refers to a sequence which can direct the transport or localization of a protein.

[00699] *Single unit dose:* As used herein, a "single unit dose" is a dose of any therapeutic administered in one dose/at one time/single route/single point of contact, i.e., single administration event. In some embodiments, a single unit dose is provided as a discrete dosage form (e.g., a tablet, capsule, patch, loaded syringe, vial, etc.).

[00700] *Similarity.* As used herein, the term "similarity" refers to the overall relatedness between polymeric molecules, *e.g.* between polynucleotide molecules *(e.g.* DNA molecules and/or RNA molecules) and/or between polypeptide molecules. Calculation of percent similarity of polymeric molecules to one another can be performed in the same manner as a calculation of percent identity, except that calculation of percent similarity takes into account conservative substitutions as is understood in the art.

[00701] *Split dose:* As used herein, a "split dose" is the division of single unit close or total daily dose into two or more doses.

[00702] *Stable:* As used herein "stable" refers to a compound that is sufficiently robust to survive isolation to a useful degree of purity from a reaction mixture, and preferably capable of formulation into an efficacious therapeutic agent.

[00703] *Stabilized:* As used herein, the term "stabilize", "stabilized," "stabilized region" means to make or become stable.

[00704] *Subject:* As used herein, the term "subject" or "patient" refers to any organism to which a composition in accordance with the invention may be administered, *e.g.*, for experimental, diagnostic, prophylactic, and/or therapeutic purposes. Typical subjects include animals *(e.g.*, mammals such as mice, rats, rabbits, non-human primates, and humans) and/or plants.

[00705] *Substantially:* As used herein, the terra "substantially" refers to the qualitative condition of exhibiting total or near-total extent or degree of a characteristic or property of interest. One of ordinary skill in the biological arts will understand that biological and chemical phenomena rarely, if ever, go to completion and/or proceed to completeness or achieve or avoid an absolute result. The term "substantially" is therefore used herein to capture the potential lack of completeness inherent in many biological and chemical phenomena.

[00706] *Substantially equal:* As used herein as it relates to time differences between doses, the term means plus/minus 2%.

[00707] *Substantially simultaneously:* As used herein and as it relates to plurality of doses, the term means within 2 seconds.

[00708] *Suffering from:* An individual who is "suffering from" a disease, disorder, and/or condition has been diagnosed with or displays one or more symptoms of a disease, disorder, and/or condition.

[00709] *Susceptible to:* An individual who is "susceptible to" a disease, disorder, and/or condition has not been diagnosed with and/or may not exhibit symptoms of the disease, disorder, and/or condition but harbors a propensity to develop a disease or its symptoms. In some embodiments, an individual who is susceptible to a disease, disorder, and/or condition (for example, cancer) may be characterized by one or more of the following: (1) a genetic mutation associated with development of the disease, disorder, and/or condition; (2) a genetic polymorphism associated with development of the disease, disorder, and'or condition; (3) increased and/or decreased expression and/or activity of a protein and/or nucleic acid associated with the disease, disorder, and/or condition; (4) habits and/or lifestyles associated with development of the disease, disorder, and 'or condition; (5) a family history of the disease, disorder, and/or condition; and (6) exposure to and/or infection with a microbe associated with development of the disease, disorder, and/or condition. In some embodiments, an individual who is susceptible to a disease, disorder, and/or condition will develop the disease, disorder, and/or condition. In some embodiments, an individual who is susceptible to a disease, disorder, and/or condition will not develop the disease, disorder, and'or condition.

[00710] *Sustained release:* As used herein, the term "sustained release" refers to a pharmaceutical composition or compound release profile that conforms to a release rate over a specific period of time.

[00711] *Synthetic:* The term "synthetic" means produced, prepared, and/or manufactured by the hand of man. Synthesis of polynucleotides or polypeptides or other molecules of the present invention may be chemical or enzymatic.

[00712] *Targeting:* As used herein, "targeting" means the process of design and selection of nucleic acid sequence that will hybridize to a target nucleic acid and induce a desired effect.

[00713] *Targeted Cells:* As used herein, "targeted cells" refers to any one or more cells of interest. The cells may be found *in vitro, in vivo, in situ* or in the tissue or organ of an organism. The organism may be an animal, preferably a mammal, more preferably a human and most preferably a patient.

[00714] *Therapeutic Agent:* The term "therapeutic agent" refers to any agent that, when administered to a subject, has a therapeutic, diagnostic, and/or prophylactic effect and/or elicits a desired biological and/or pharmacological effect.

[00715] *Tnerapeuiicalty effective amount:* As used herein, the term "therapeutically effective amount" means an amount of an agent to be delivered *(e.g.,* nucleic acid, drug, therapeutic agent, diagnostic agent, prophylactic agent, *etc.)* that is sufficient, when administered to a subject suffering from or susceptible to an infection, disease, disorder, and/or condition, to treat, improve symptoms of, diagnose, prevent, and/or delay the onset of the infection, disease, disorder, and/or condition. In some embodiments, a therapeutically effective amount is provided in a single dose. In some embodiments, a therapeutically effective amount is administered in a dosage regimen comprising a plurality of doses. Those skilled in the art will appreciate that in some embodiments, a unit dosage form may be considered to comprise a therapeutically effective amount of a particular agent or entity if it comprises an amount that is effective when administered as part of such a dosage regimen.

[00716] *Therapeutically effective outcome:* As used herein, the term "therapeutically effective outcome" means an outcome that is sufficient in a subject suffering from or susceptible to an infection, disease, disorder, and/or condition, to treat, improve symptoms of, diagnose, prevent, and/or delay the onset of the infection, disease, disorder, and/or condition.

[00717] *Total daily dose:* As used herein, a "total daily dose" is an amount given or prescribed in 2.4 hr period. It may be administered as a single unit dose.

[00718] *lYansfeciion:* As used herein, the term "transfection" refers to methods to introduce exogenous nucleic acids into a cell Methods of transfection include, but are not limited to, chemical methods, physical treatments and cationic lipids or mixtures.

[00719] *Treating:* As used herein, the term "treating" refers to partially or completely alleviating, ameliorating, improving, relieving, delaying onset of, inhibiting progression of, reducing severity of, and/or reducing incidence of one or more symptoms or features of a particular infection, disease, disorder, and/or condition. For example, "treating" cancer may refer to inhibiting survival, growth, and/or spread of a tumor. Treatment may be administered to a subject who does not exhibit signs of a disease, disorder, and/or condition and/or to a subject who exhibits only early signs of a disease, disorder, and/or condition for the purpose of decreasing the risk of developing pathology, associated with the disease, disorder, and/or condition.

[00720] *Unmodified: As* used herein, "unmodified" refers to any substance, compound or molecule prior to being changed in any way. Unmodified may, but does not always, refer to the wild type or native form of a biomoiecule. Molecules may undergo a series of modifications whereby each modified molecule may serve as the "unmodified" starting molecule for a subsequen t modification.

[00721] *Vector:* As used herein, a "vector" is any molecule or moiety which transports, transduces or otherwise acts as a earner of a heterologous molecule. Vectors of the present invention may be produced recorahinantly and may be based on and/or may comprise adeno-associated virus (AAV) parent or reference sequence. Such parent or reference AAV sequences may serve as an original, second, third or subsequent sequence for engineering vectors. In non-limiting examples, such parent or reference AAV sequences may comprise any one or more of the following sequences: a polynucleotide sequence encoding a polypeptide or multi-polypeptide, which sequence may be wild-type or modified from wild-type and which sequence may encode full-length or partial sequence of a protein, protein domain, or one or more subunits of a protein; a polynucleotide comprising a modulatory or regulatory nucleic acid which sequence may be wild-type or modified from wild-type: and a transgene that may or may not be modified from wild-type sequence . These AAV sequences may serve as either the "donor" sequence of one or more codons (at the nucleic acid level) or amino acids (at the polypeptide level) or "acceptor" sequences of one or more codons (at the nucleic acid level) or amino acids (at the polypeptide level).

[00722] *Viral genome:* As used herein, a "Viral genome" or "vector genome" is a polynucleotide comprising at least one inverted terminal repeat (ITR) and at least one encoded pay load. A viral genome encodes at least one copy of the payload.

[00723] Described herein are compositions, methods, processes, kits and devices for the design, preparation, manufacture and/or formulation of AAV particles. In some embodiments, payloads, such as but not limited to AAV polynucleotides, may be encoded by payload constructs or contained within plasmids or vectors or recombinant adeno-associated viruses (AAVs).

[00724] The details of one or more embodiments of the invention are set forth in the accompanying description below. Although any materials and methods similar or equivalent to those described herein can be used in the practice or testing of the present invention, the preferred materials and methods are now described. Other features, objects and advantages of the invention will be apparent from the description. In the description, the singular forms also include the plural unless the context clearly dictates otherwise. Unless defined otherwise, all technical and scientific terms used herein have the same meaning as commonly understood by one of ordinary skill in the art to which this invention belongs. In the case of conflict, the present description will control

[00725] The present invention is further illustrated by the following non-limiting examples.

VII. EXAMPLES

EXAMPLE **1. Production** and **Purification** of AAV particles

[00726] AAV particles described herein may be produced using methods known in the art, such as, for example, triple transfection or baculovirus mediated virus production. Any suitable permissive or packaging cell known in the art may be employed to produce the vectors. Mammalian cells are often preferred. Also preferred are trans-complementing packaging cell lines that provide functions deleted from a replication-defective helper virus, e.g., 293 cells or other Ela trans-complementing cells.

[00727] The gene cassette may contain some or all of the parvovirus (e.g., AAV) cap and rep genes. Preferably, however, some or all of the cap and rep functions are provided in trans by introducing a packaging vector(s) encoding the capsid and/or Rep proteins into the cell. Most preferably, the gene cassette does not encode the capsid or Rep proteins. Alternatively, a packaging cell line is used that is stably transformed to express the cap and/or rep genes

[00728] Recombinant AAV virus particles are, in some cases, produced and purified from culture supernatants according to the procedure as described in US2GI60032254, the contents of which are incorporated by reference. Production may also involve methods known in the art

including those using 293T cell, sf9 insect cells, triple transfection or any suitable production method.

[00729] In some cases, 293 cells are transfected with CaPO4 with plasmids required for production of AAV, i.e., AAV2 rep, an adenoviral helper construct and a ITR flanked transgene cassette. The AAY2 rep plasmid also contains the cap sequence of the particular virus being studied. Twenty-four hours after transfection, which occurs in serum containing DMEM, the medium is replaced with fresh medium with or without serum. Three **(3)** days after transfection, a sample is taken from the culture medium of the 293 adherent cells. Subsequently cells are scraped and transferred into a receptacle. After centrifugation to remove cellular pellet, a second sample is taken from the supernatant after scraping. Next cell lysis is achieved by three consecutive freeze-thaw cycles (-80C. to 37C). Cellular debris is removed and sample 3 is taken from the medium. The samples are quantified for AAV particles by DNase resistant genome titration by Taqman.TM. PGR. The total production yield from such a transfection is equal to the particle concentration from sample 3.

[00730] AAV vector titers are measured according to genome copy number (genome particles per milliliter). Genome particle concentrations are based on Taqman.RTM. PGR of the vector DNA as previously reported (Clark et al. (1999) Hum. Gene Ther., 10:1031-1039; Veldwijk et ai. (2002) Moi. Ther., 6:272-278).

EXAMPLE *2.* **Tissue specific** expression

[00731] To evaluate the expression of various encoded antibody payloads in tissues, a series of AAV particles carrying the encoded antibody sequences driven by a panel of ubiquitous and tissue-specific promoters are made. These particles are administered to the specific tissue, e.g., intramuscularly, via an appropriate route, e.g., a single injection in the gastrocnemius muscle and expression is monitored to determine the relative expression potential of the payload as well as of each promoter in this target tissue. Measurement of antibody production is performed using standard techniques, for example by ELISA.

[ΘΘ732] In some cases, the cytomegalovirus immediate early promoter (CMV), chimeric chicken-beta-actin (CAG), and ubiquitin C (UBC), CBA, H1 promoters provide robust expression.

EXAMPLE 3. Generation of **antibodies**

Antibody production by hybridoma technology

[ΘΘ733] Host animals (e.g. mice, rabbits, goats, and llamas) are immunized by an injection with an antigenic protein to elicit lymphocytes that specifically bind to the antigen. Lymphocytes are collected and fused with immortalized cell lines to generate hybridomas. Hybridomas are

cultured in a suitable culture medium that is enriched with appropriate selection agents to promote growth.

[00734] Antibodies produced by the cultured hybndomas are subjected to analysis to determine binding specificity of the antibodies for the target antigen. Once antibodies with desirable characteristics are identified, corresponding hybridomas are subcloned through limiting dilution procedures and grown by standard methods. Antibodies produced by these cells are isolated and purified using standard immunoglobulin purification procedures.

Recombinant antibody production

[00735] Recombinant antibodies are produced using heavy and light chain variable region cDNA sequences selected from hybridomas or from other sources. Sequences encoding antibody variable domains expressed by hybridomas are determined by extracting RNA molecules from antibody-producing hybridoma cells and producing cDNA by reverse transcriptase polymerase chain reaction (FCR). PGR is used to amplify cDNA using primers specific for heavy and Sight chain sequences. PGR products are then subcloned into plasmids for sequence analysis. Antibodies are produced by insertion of resulting variable domain sequences into expression vectors.

Recombinant antibodies are also produced using phage display technology. Target antigens are screened, in vitro, using phage display libraries having millions to billions of phage particles expressing unique single chain variable fragments (scFvs) on their viral coat. Precipitated phage particles are analyzed and sequences encoding expressed scFvs are determined. Sequences encoding antibody variable domains and/or CDRs are inserted into expression vectors for antibody production.

Recombinant antibodies are further produced using yeast surface display technology, wherein antibody variable domain sequences are expressed on the cell surface of *Saccharomyces cerevisiae.* Recombinant antibodies are developed by displaying the antibody fragment of interest as a fusion to e.g. Aga2p protein on the surface of the yeast, where the protein interacts with proteins and small molecules in a solution. scFvs with affinity towards desired receptors are isolated from the yeast surface using magnetic separation and flow cytometry. Several cycles of yeast surface display and isolation will be done to attain scFvs with desired properties through directed evolution.

EXAMPLE *4,* Optimization of the encoded **Antibody**

[00736] To design an optimal framework for the expression of an antibody, the heavy and light chains of several antibodies separated by an F2A self-processing peptide sequence are cloned into a mammalian expression vector under the control of the CMV promoter. 293T cells or any

suitable cell line transfected with these vectors exhibit secretion of hitman IgG into the culture supernatant that is then detected by ELISA.

[00737] To increase expression, the antibody chains and/or the processing peptide are codon optimized for mammalian expression. in some instances, a furin cleavage site at the N-terminus is inserted for better processing.

[00738] To improve secretion of the antibody, the endogenous signal sequences are replaced with a sequence which may or may not be codon optimized, derived from any gene. In some cases, the hitman growth hormone signal sequence is used. Any of the heavy, light or both chains may be driven by any signal sequence, whether the same or different. Antibody expression is confirmed using standard immunohistochemical techniques, including ELTSA.

EXAMPLE 5. Vectored **Antibodies**

[00739] Viral genomes are designed for AAV delivery of antibodies to cells. The viral genome comprises a payioad region and at least one inverted terminal repeat (ITR) region. The payioad region may optionally encode regulatory elements e.g., a promoter region, an intronic region, or a poiyadenyiation sequence. The payioad region comprises a sequence encoding one or more polypeptides selected from the group consisting of those listed in Table 3. An exemplary payioad region comprises a sequence encoding an antibody heavy chain, a region encoding an antibody light chain and a region encoding a linker connecting the heavy and light chain sequences or polypeptides before further processing. A promoter is selected to target the desired tissue or for desired regulation of expression, or both. The promoter may be selected from human EFla, CMV, CBA, and its derivative CAG, GUSB, TBC, or any other promoter known to one with skill in the art, or combinations thereof. The 5' and 3' ITRs may or may not be of the same serotype as the capsid of the AAV particle.

[00740] Payioad regions may optionally encode a linker between light and heavy antibody chain sequences or polypeptides. Sequence encoding linkers are derived from an internal ribosome entry site (IRES; SEQ ID NO: 899), foot and mouth disease virus 2A (F2A; SEQ ID NO: 900), porcine teschovirus-1 virus 2A (P2A; SEQ TD NO: 901), afurin cleavage site (F; SEQ ID NO: 902), or a 5xG4S (SEQ ID NO: 903) linker sequence. In various payioad regions, the order of heavy and light chains is alternated with respect to 5' to 3' direction. Payloads are further designed to encode protein signal sequences (to aid in protein processing, localization, and/or secretion) as well as an untranslated poly A tail.

[00741] Each viral genome is then incorporated into an AAV cloning vector to create payioad expression vectors.

[00742] The payload expression vectors are expressed in e.g. Expi 293 cells. The supernatants are collected and expressed antibodies are purified using protein A/G beads. Supernatants are diluted with a loading buffer and applied to a column prepared with A/G beads. Unbound proteins are washed through with loading buffer. Elution buffer is added to the column, fractions collected, and fractions containing proteins of interest are identified with absorption spectroscopy technique, pooled together, and neutralized. Western blotting techniques are used to identify payload regions producing the antibody proteins of interest. Purified antibodies are then tested for their affinity to their specific target by e.g. ELISA essay technique and antibodies with the highest affinity are identified and selected.

[00743] Finally, the rAAVs are produced using, for example, HEK293T cells. The cells are transfected simultaneously with the viral genome of the present invention, a viral genome encoding helper proteins and a viral genome encoding replication and capsid proteins.

EXAMPLE 6, In **Vivo Expression** and efficacy of antibody **payloads**

[00744] To determine the efficacy or comparative expression of encoded antibodies, dose-dependent expression is determined at a series of time points. Samples from mice treated with AAV particles encoding antibodies or lucrfera.se at various levels are examined for expression using standard techniques such as nucleic acid analyses for **RNA** levels, protein analyses for antibody levels and compared to the expression of the luciferase control.

EXAMPLE 7. Treatment **of Non-Infectious** disease

[00745] AAV particles of the current invention encoding an antibody are administered to a patient who has been diagnosed with a non-infectious disease, disorder or condition. The non-infectious disease, disorder or condition may be e.g. a central nervous system disease, muscular disease, neuropathy, psychiatric disorder, ocular disease, pain disorder, migraine, cancer, systemic disease, inflammation, or an immune system disease. The purpose of the treatment may be aimed to manage the disease, prevent or slow the progression of the disease, treat the symptoms associated with the disease and/or cure the disease.

[00746] The AAV particles may be administered through an intramuscular injection to the skeletal muscle. The administration may include one or more injections over a period of time. The level and distribution of AAV particles and antibody expression is monitored by standard diagnostic techniques known in the art. Such diagnostic techniques include e.g. (e.g. from blood, urine, or saliva), cerebrospinal fluid (CSF) testing, or any other testing useful for monitoring antibody levels in the body.

[00747] Additionally, the progression of the disease and the health of the patient is monitored by standard diagnostic techniques known in the art. Such techniques may include diagnostic

imaging (e.g. X-ray, MRA scans. Ultrasound scans, PET scans. Nuclear scans, mammography), biopsy, laboratory tests (e.g. from blood, urine, or saliva), cerebrospinal fluid (CSF) testing, vital signs, clinical tests (cognitive, motor or reflex tests) and other relevant techniques. Treatment with the AAV particles may results in cure of the non-infectious disease, slowing down or stabilizing the progression of the disease, or have no effect on the progression of the disease. Additionally, the treatment may reduce severity of one or more symptoms associated with the disease, eliminate one or more symptoms associated with the disease or have no effect on the symptoms.

VIII. EQUIVALENTS AND SCOPE

[00748] Those skilled in the art will recognize, or be able to ascertain using no more than routine experimentation, many equivalents to the specific embodiments in accordance with the invention described herein. The scope of the present invention is not intended to be limited to the above Description, but rather is as set forth in the appended claims.

[00749] In the claims, articles such as "a," "an," and "the" may mean one or more than one unless indicated to the contrary or otherwise evident from the context. Claims or descriptions that include "or" between one or more members of a group are considered satisfied if one, more than one, or all of the group members are present in, employed in, or otherwise relevant to a given product or process unless indicated to the contrary or otherwise evident from the context. The invention includes embodiments in which exactly one member of the group is present in, employed in, or otherwise relevant to a given product or process. The invention includes embodiments in which more than one, or the entire group members are present in, employed in, or otherwise relevant to a given product or process.

[00750] It is also noted that the term "comprising" is intended to be open and permits but does not require the inclusion of additional elements or steps. When the term "comprising" is used herem, the term "consisting of" is thus also encompassed and disclosed.

[00751] Where ranges are given, endpoints are included. Furthermore, it is to be understood that unless otherwise indicated or otherwise evident from the context and understanding of one of ordinary skill in the art, values that are expressed as ranges can assume any specific value or subrange within the stated ranges in different embodiments of the invention, to the tenth of the unit of the lower limit of the range, unless the context clearly dictates otherwise.

[00752] In addition, it is to be understood that any particular embodiment of the present invention that fails within the prior art may be explicitly excluded from any one or more of the claims. Since such embodiments are deemed to be known to one of ordinary skill in the art, they may be excluded even if the exclusion is not set forth explicitly herein. Any particular

embodiment of the compositions of the invention (e.g., any antibiotic, therapeutic or active ingredient; any method of production; any method of use, etc) can he excluded from any one or more claims, for any reason, whether or not related to the existence of prior art.

[00753] It is to be understood that the words which have been used are words of description rather than limitation, and that changes may be made within the purview of the appended claims without departing from the true scope and spirit of the invention in its broader aspects.

[00754] While the present invention has been described at some length and with some particularity with respect to the several described embodiments, it is not intended that it should be limited to any such particulars or embodiments or any particular embodiment, hut it is to be construed with reference to the appended claims so as to provide the broadest possible interpretation of such claims in view of the prior art and, therefore, to effectively encompass the intended scope of the invention.

CLAIMS

1. An AAV particle comprising a capsid and a viral genome, said viral genome comprising at least one inverted terminal repeat (ITR) region and a payload region, said payload region comprising a regulatory sequence operably linked to at least a first nucleic acid segment, said first nucleic acid segment encoding one or more polypeptides selected from the group consisting of SEQ ID NO: 2948-17938, and fragments thereof.
2. The AAV particle of claim 1, wherein the capsid is a serotype selected from the group of consisting of SEQ ID NO: 1-898.
3. The AAV particle of claim 2, wherein the regulator}' sequence comprises a promoter.
4. The AAV particle of claim 3, wherein the promoter is selected from the group consisting of human elongation factor la-subunit (EFla), cytomegalovirus (CMV) immediate-early enhancer and/or promoter, chicken β-actin (CBA) and its derivative CAG, β glucuronidase (GUSB), or ubiquitin C (UBC). Tissue-specific expression elements can be used to restrict expression to certain cell types such as, but not limited to, muscle specific promoters, B cell promoters, monocyte promoters, leukocyte promoters, macrophage promoters, pancreatic acinar cell promoters, endothelial cell promoters, lung tissue promoters, astrocyte promoters, or nervous system promoters which can be used to restrict expression to neurons, astrocytes, or oligodendrocytes.
5. The AAV particle of claim 1, wherein the viral genome is single stranded.
6. The AAV particle of claim I, wherein the viral genome is self-complementary.
7. The AAV particle of claim 1, wherein at least one region of the viral genome is codon-optimized.
8. The AAV particle of claim 7, wherein the first nucleic acid segment is codon-optimized.
9. The AAV particle of any of claims 1-8, wherein the first nucleic acid segment encodes one or more polypeptides selected from the group consisting of an antibody heavy chain, an antibody light chain, a linker, and combinations thereof.
10. The AAV particle of claim 9, wherein any of the polypeptides encoded by first nucleic acid segment of the payload region is humanized.
11. The AAV particle of claim 9, wherein the linker is selected from one or more of the members of the group given in Table 2.

12. The AAV particle of claim 9, wherein the first nucleic acid segment encodes from 5' to 3', an antibody heavy chain, a linker, and an antibody light chain.
13. The AAV particle of claim 9, wherein the first nucleic acid segment encodes from 5' to 3', an antibody light chain, a linker, and an antibody heavy chain.
14. The AAV particle of claim 9, wherein the first nucleic acid segment encodes one or more antibody heavy chains.
15. The AAV particle of claim 14, wherein the first nucleic acid segment encodes one or more antibody heavy chains selected from SEQ ID NO: 2948-17938, and fragments thereof.
16. The AAV particle of claim 9, wherein the first nucleic acid segment encodes one or more antibody light chains.
17. The AAV particle of claim 16, wherein the first nucleic acid segment encodes one or more antibody light chains selected from SEQ ID NO: 2948-17938, and fragments thereof.
18. The AAV particle of claim 9, wherein the first nucleic acid segment encodes one or more antibody heavy chains and one or more antibody light chains and, optionally one or more linkers.
19. The AAV particle of any of claims 9-18, wherein said linker is selected from the group consisting of Table 2 and combinations thereof.
20. The AAV particle of claim 1, wherein the first nucleic acid segment encodes an antibody, having at least 95% identity to any of the sequences selected from the group consisting of SEQ ID NO: 2948-17938.
21. An AAV particle comprising a capsid and a viral genome, said viral genome comprising at least one inverted terminal repeat (ITR) region and a payload region comprising a regulatory sequence operabiy linked to at least a first nucleic acid segment, said first nucleic acid segment encoding a bispecific antibody derived from SEQ ID NO: 2948-17938 or portions or fragments thereof.
22. The AAV particle of claim 21, wherein the bispecific antibody comprises a light and a heavy chain selected from two different starting antibodies selected from the group consisting of SEQ ID NO: 2948-17938.
23. A method of producing a functional antibody in a subject in need thereof, comprising administering to said subject the AAV particle of any of claims 1-22.

24. The method of claim 23, wherein the level or amount of the functional antibody in the target cell or tissue after administration to the subject is from about .00 1 ug/raL to 100 mg/mL.
25. The method of claim 23, wherein the functional antibody is encoded by a single first nucleic acid segment of a viral genome within said AAV particle.
26. The method of claim 23, wherein the functional antibody is encoded by two different viral genomes, said two different viral genomes packaged in separate capsids.
27. A pharmaceutical composition comprising an AAV particle of any of the preceding claims in a pharmaceutically acceptable excipient.
28. The pharmaceutical composition of claim 27, wherein the pharmaceutically acceptable excipient is saline.
29. The pharmaceutical composition of claim 27, wherein the pharmaceutically acceptable excipient is 0.001% pluronic in saline.
30. A method of expressing an antibody in a cell or tissue comprising administering the AAV particle of any of claims 1-29 via a delivery route selected from the group consisting of enteral (into the intestine), gastroenteral, epidural (into the dura mater), oral (by way of the mouth), transdermal, intracerebral (into the cerebrum), intracerebroventricular (into the cerebral ventricles), epicutaneous (application onto the skin), intradermal, (into the skin itself), subcutaneous (under the skin), nasal administration (through the nose), intravenous (into a vein), intravenous bolus, intravenous drip, intra-arteriai (into an artery), intramuscular (mto a muscle), intracardiac (into the heart), intraosseous infusion (into the bone marrow), intrathecal (into the spinal canal), intraparenchymal (into brain tissue), intraperitoneal, (infusion or injection into the peritoneum), intravesical infusion, intravitreal, (through the eye), intracavernous injection (into a pathologic cavity) intracavitary (into the base of the penis), intravaginal administration, intrauterine, extra-amniotic administration, iransdermal (difiusion through the intact skin for systemic distribution), transmucosal (diffusion through a mucous membrane), transvaginal, insufflation (snorting), sublingual, sublabial, enema, eye drops (onto the conjunctiva), or in ear drops, auricular (in or by way of the ear), buccal (directed toward the cheek), conjunctival, cutaneous, dental (to a tooth or teeth), electro-osmosis, endocervical, endosinusial, endotracheal, extracorporeal, hemodialysis, infiltration, interstitial, intra-abdominal, intra-amniotic, intra-articular, intrabiliary, intrabronchial, intrabursal, intracartilaginous (within a cartilage), intracaudal (within the cauda equine),

intracisternal (within the cisterna magna cerebeliomedularis), intracorneal (within the cornea), dental intracoronal, intracoronary (within the coronary arteries), intracorporus cavemosum (within the dilatable spaces of the corporus cavernosa of the penis), intradiscal (within a disc), intraductal (within a duct of a gland), intraduodenal (within the duodenum), intradural (within or beneath the dura), intraepidermal (to the epidermis), intraesophageal (to the esophagus), intragastric (within the stomach), intragingival (within the gingivae), intraileai (withm the distal portion of the small intestine), intralesional (within or introduced directly to a localized lesion), intraluminal (within a lumen of a tube), intralymphatic (within the lymph), intramedullary (within the marrow cavity of a bone), intrameningeal (withm the meninges), intramyocardiai (within the myocardium), intraocular (within the eye), intraovarian (within the ovary), intrapericardial (within the pericardium), intrapleural (within the pleura), intraprostatic (within the prostate gland), intrapuinionary (within the lungs or its bronchi), mtrasmal (within the nasal or periorbital sinuses), intraspinal (within the vertebral column), intrasynovial (within the synovial cavity of a joint), intratendinous (within a tendon), intratesticular (within the testicle), intrathecal (within the cerebrospinal fluid at any level of the cerebrospinal axis), intrathoracic (within the thorax), intratubular (within the tubules of an organ), intratumor (within a tumor), intratympanic (within the aurus media), intravascular (within a vessel or vessels), intraventricular (within a ventricle), iontophoresis (by means of electric current where ions of soluble salts migrate into the tissues of the body), irrigation (to bathe or flush open wounds or body cavities), laryngeal (directly upon the larynx), nasogastric (through the nose and into the stomach), occlusive dressing technique (topical route administration which is then covered by a dressing which occludes the area), ophthalmic (to the external eye), oropharyngeal (directly to the mouth and pharynx), parenteral, percutaneous, periarticular, peridural, perineural, periodontal, rectal, respiratory (within the respiratory tract by inhaling orally or nasally for local or systemic effect), retrobulbar (behind the pons or behind the eyeball), soft tissue, subarachnoid, subconjunctival, submucosal, topical, transplacental (through or across the placenta), transtracheal (through the wall of the trachea), transtympanic (across or through the tympanic cavity), ureteral (to the ureter), urethral (to the urethra), vaginal, caudal block, diagnostic, nerve block, biliary perfusion, cardiac perfusion, photopheresis and spinal.

31. The method of claim 30, wherein the deliver}' route is intramuscular.

32. The method of claim 31, wherein the intramuscular administration is to at least one limb.
33. The method of claim 30, wherein the delivery route is intravascular.
34. The method of claim 30, wherein the delivery route is intrathecal.
35. The method of claim 30, wherein the delivery route is intracerebroventricular.
36. The method of claim 30, wherein the deliver}' route is intraparenchymal.
37. The method of claim 30, wherein the AAV particle is encapsulated in a nanoparticle.
38. The method of claim 30, wherein the AAV particle is delivered by a device.
39. The method of claim 38, wherein the device is a gene gun.
40. A method of preventing a disease or disorder in a subject comprising administering to said subject the pharmaceutical composition of any of claims 27-29.
41. The method of claim 40, wherein the administration is at a prophylactically effective dose.
42. The method of claim 41, wherein the dose is from about 1 ug/mL to about 500 ug/mL of expressed polypeptide or Ixl0e4 to Ixl0el6 VG/mL from the pharmaceutical composition.
43. The method of claim 42, wherein the pharmaceutical composition is administered once.
44. The method of claim 42, wherein the pharmaceutical composition is administered more than once.
45. The method of claim 42, wherein the pharmaceutical composition is administered daily, weekly, monthly or yearly.
46. The method of claim 42, wherein the pharmaceutical composition is co-administered as part of a combination therapy.
47. A method of treating a disease or disorder in a subject in need thereof comprising administering to said subject the pharmaceutical composition of any of claims 27-29.
48. The method of claim 47, wherein said disease or disorder is selected from the group consisting of Parkinson's Disease, Dementia with Lewy Bodies, multiple system atrophy, decreased muscle mass, decreased muscle strength, decreased muscle function, spinal muscular atrophy, Alzheimer's Disease, Huntington's Disease, multiple sclerosis, amyotrophic lateral sclerosis, stroke, migraine, pain, neuropathies, psychiatric disorders, cancer, ocular diseases, systemic diseases of the blood, systemic diseases of the heart, systemic diseases of the bone, immune system, autoimmune disease, inflammation disorders and inflammation.

49. The AAV particle of claim 1, wherein the viral genome comprises 2 ITR regions.
50. The AAV particle of claim 1, wherein the at least one TTR region is derived from the same parental serotype as the capsid.
51. The AAV particle of claim 1, wherein the at least one ITR region is derived from a different serotype as the capsid.
52. The AAV particle of claim 1, wherein the at least one ITR region is derived from AAV2.
53. The AAV particle of claim 1, wherein the at least one ITR region is 100-150 nucleotides in length.
54. The AAV particle of claim 1, wherein the at least one ITR region is 102 nucleotides in length.
55. The AAV particle of claim 1, wherein the at least one ITR region is 140-142 nucleotides in length.
56. The AAV particle of claim 1, wherein the at least one ITR region is 140 nucleotides in length.
57. The AAV particle of claim I, wherein the at least one ITR region is 141 nucleotides in length.
58. The AAV particle of claim 1, wherein the at least one ITR region is 142 nucleotides in length.
59. The AAV particle of claim 1, wherein the viral genome furiher comprises an intron or staffer sequence.
60. A method of producing an antibody in a subject comprising administering the AAV particle of claim 1 to said subject, with the proviso that the antibody is not a virus neutralizing antibody.
61. A method of producing an antibody in a subject comprising administering the AAV particle of claim 1 to said subject, with the proviso that the antibody is not an HIV or HCV virus neutralizing antibody.
62. The AAV particle of claim 1, wherein the payload region of the viral genome comprises a second nucleic acid segment, said second nucleic acid segment encoding an aptamer, siRNA, saRNA, ribozyme, microRNA, mRNA or combination thereof.
63. The AAV particle of claim 62, wherein the second nucleic acid segment encodes an siRNA and said siRNA is designed to target the mRNA that encodes the target of the antibody encoded by the first nucleic acid segment.

64. The AAV particle of claim 62, wherein the second nucleic acid segment encodes a microRNA and said microRNA is selected to target the mRNA that encodes the target of the antibody encoded by the first nucleic acid segment.

65. The AAV particle of claim 62, wherein the second nucleic acid segment encodes an mRNA and said mRNA encodes one or more peptides inhibitors of the same target of the antibody encoded by the first nucleic acid segment.

66. The AAV particle of claim 1 or 62, wherein the payload region of the viral genome comprises a third nucleic acid segment.

67. The **AAV** particle **of claim** 66, wherein the third nucleic acid segment encodes **a** nuclear export signal.

68. The AAV particle of claim 66, wherein the third nucleic acid segment encodes a polynucleotide or polypeptide which acts as a regulator of expression of the viral genome **in** which **it** is encoded.

69. The AAV particle of claim 66, wherein the third nucleic acid segment encodes a polynucleotide or polypeptide which acts as a regulator of expression of the payload region of the viral genome in which it is encoded.

70. The AAV particle of claim 66, wherein the third nucleic acid segment encodes a polynucleotide or polypeptide which acts as a regulator of expression of the first nucleic acid segment of the payload region of the viral genome in which it is encoded.

FIG. 1

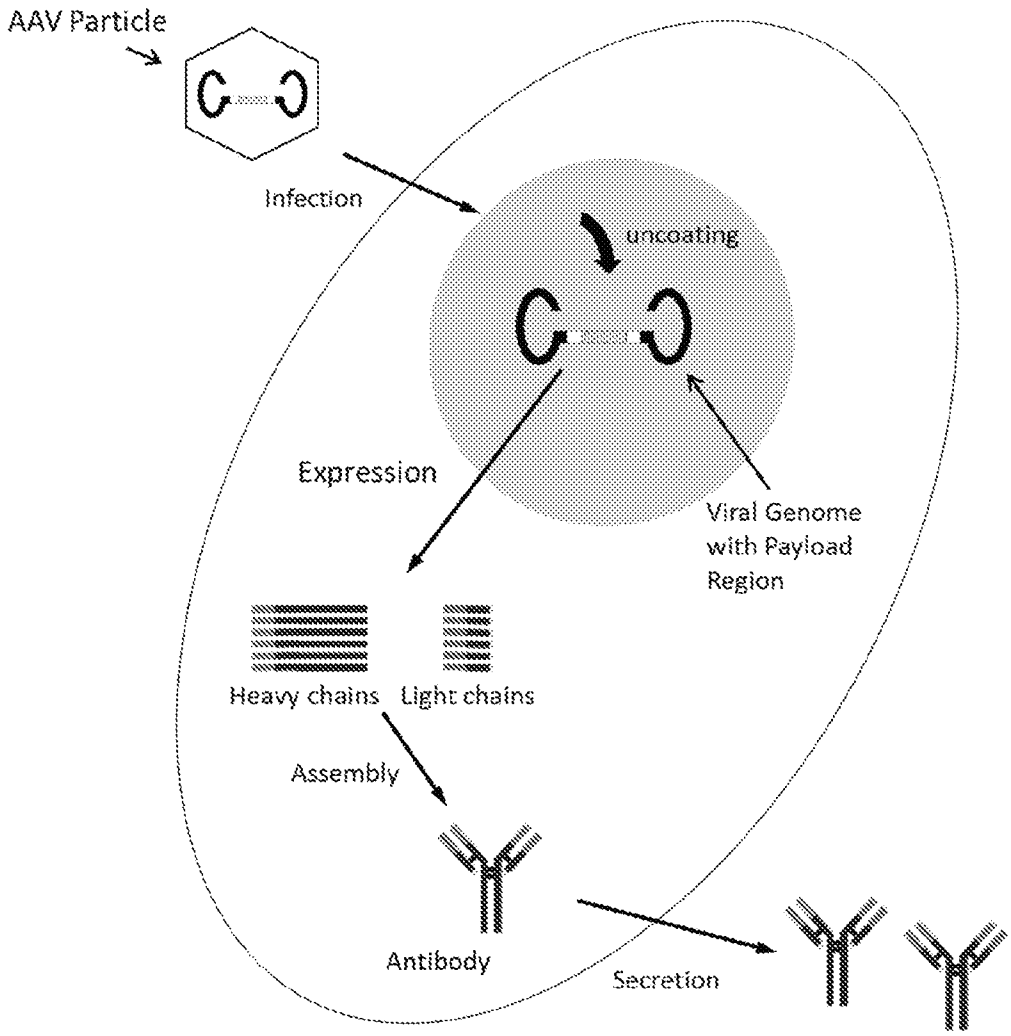

AAV Particle
Infection
uncoating
Expression
Viral Genome with Payload Region
Heavy chains
Light chains
Assembly
Antibody
Secretion

FIG. 2

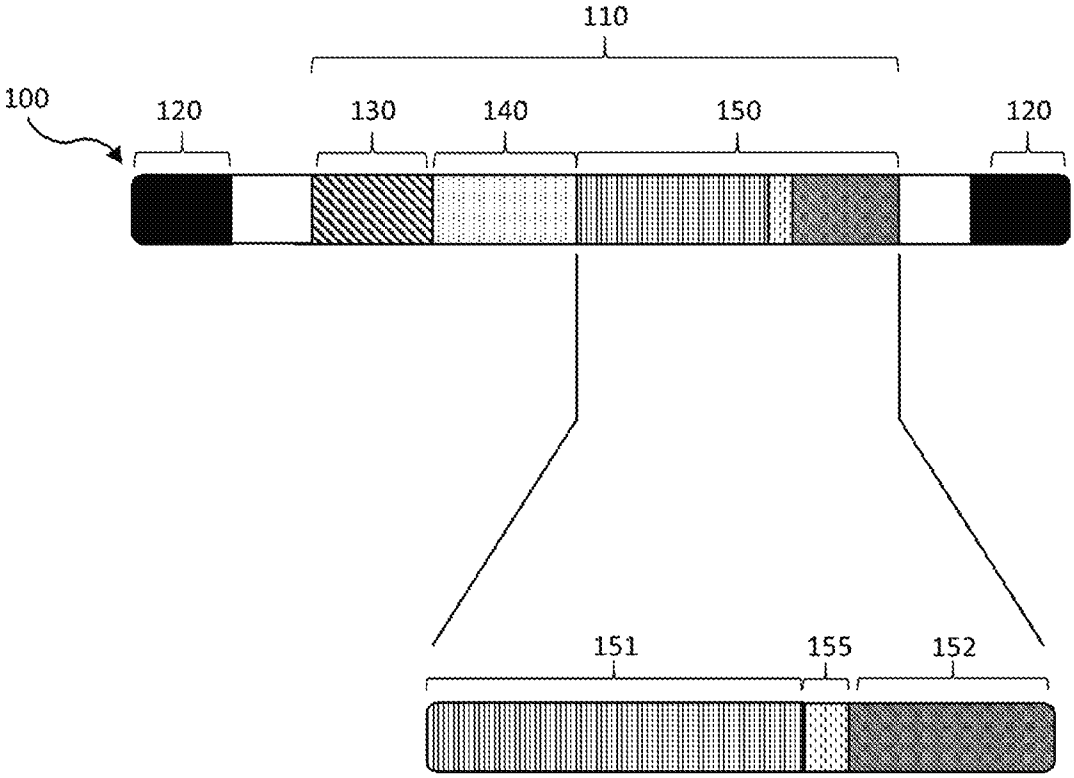
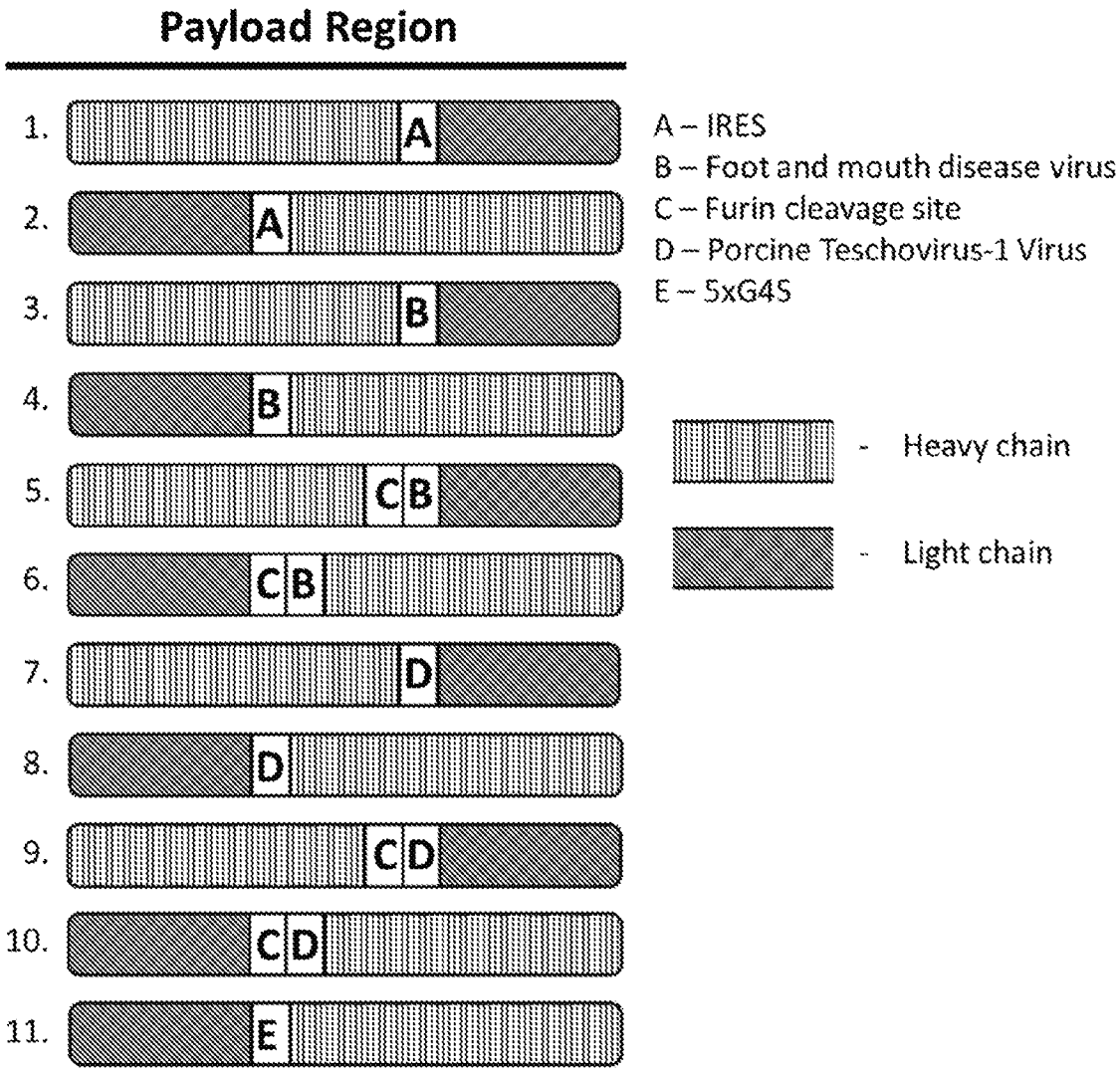


FIG. 3


Payload Region
1.
A
2.
A
3.
B
4.
B
5.
C B
6.
C B
7.
D
8.
D
9.
C D
10.
C D
11.
E
A – IRES
B – Foot and mouth disease virus
C – Furin cleavage site
D – Porcine Teschovirus-1 Virus
E – 5xG4S
- Heavy chain
- Light chain

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 17/30054

A. CLASSIFICATION OF SUBJECT MATTER

IPC - C07K 14/005, 14/47; A61K 48/00; C12N 15/09, 15/86 (2017.01)
CPC - C12N 15/09, 15/86; C07K 14/005, 14/47, A61K 48/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
See Search History document

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
See Search History document

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
See Search History document

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2015/0010578 A1 (CALIFORNIA INSITUTE OF TECHNOLOGY) January 8, 2015; paragraphs [0009]-[0010], [0015], [0019], [0020], [0038], [0042], [0075], [0082], [0113], [0208], [0218], claim 1	1-8, 9/1-8, 10/9/1-8, 14/9/1-8, 15/14/9/1-8, 20-21, 49, 50-61
Y	WO 2015/191508 A1 (VOYAGER THERAPEUTICS, INC.) December 17, 2015; paragraphs [0009], [0026], [00148], [00249], [00265], [00275]	1, 62, 66/1, 66/62, 67/66/1, 67/66/62
Y	US 2010/0035973 A1 (WALKER, C) February 11, 2010; paragraphs [0010], [0040], [0056], [0059], [0073], [0089]; Claims 1, 4, 14	1, 62
Y	WO 2013/082114 A1 (NEUROPHAGE PHARMACEUTICALS) June 6, 2013; paragraph [018]; figure 2A	1-8, 9/1-8, 10/9/1-8, 14/9/1-8, 15/14/9/1-8, 20-21, 49-63, 66/1, 66/62, 67/66/1, 67/66/62
Y	WO 2000/28061 (THE TRUSTEES OF THE UNIVERSITY OF PENNSYLVANIA) May 18, 2000; claim 10	2-4, 9/2-4, 10/9/2-4, 14/9/2-4, 15/14/9/2-4

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
13 September 2017 (13.09.2017)	04 OCT 2017

Name and mailing address of the ISA/	Authorized officer
Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-8300	Shane Thomas PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US17/30054

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 7,105,345 (WILSON, JM et al.) September 12, 2006; column 8, lines 47-60	50-51
Y	US 6,936,466 B2 (FELDHAUS, AL) August 30, 2005; column 7, lines 8-17	54-58
Y	WO 2016/007741 A1 (THE REGENTS OF THE UNIVERSITY OF CALIFORNIA) January 14, 2016; claims 33, 57-58	63
Y	US 2011/0071214 A1 (ALLEN, GJ) March 24, 2011; paragraphs [0020], [0070]	67/66/1, 67/66/62
A	US 2014/0044794 A1 (OKADA, T et al.) February 13, 2014; abstract	68/66/1, 68/66/62, 69/66/1, 69/66/62, 70/66/1, 70/66/62
A	CN 101186925 A (SUN, D et al.) May 28, 2008; claim 1	11/9/1-8
A	(BARUCH, K et al.) PD-1 Immune Checkpoint Blockade Reduces Pathology and Improves Memory in Mouse Models of Alzheimer's Disease. Nature Medicine. 18 January 2016, Vol. 22; pages 135-137; abstract; DOI:10.1038/nm.4022	1, 62

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 17/30054

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☒ Claims Nos.: 19, 23-48
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. Ill Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
-"'-Please See Supplemental Page-***-

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1-1 1, 14-15, 20-21, 49-70 (all in-part); SEQ ID NO: 1 (capsid serotype); SEQ ID NO: 899 (linker); SEQ ID NO: 2948 (polypeptide)

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/US1 7/30054

-"•-Continuation of Box No. Ill - Observations where unity of invention is lacking-"*-

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Groups I+, Claims 1-18, 20-22, 49-70; SEQ ID NO: 1 (capsid serotype); SEQ ID NO: 899 (linker); SEQ ID NO: 2948 (polypeptide) are directed toward AAV particles having viral genomes encoding one or more antibodies or antibody fragments, and methods of producing antibodies in a subject therewith.

The AAV particles and methods will be searched to the extent that they comprise a capsid serotype encompassing SEQ ID NO: 1 (first exemplary capsid serotype); a linker encompassing SEQ ID NO: 899 (first exemplary linker); and a binding polypeptide encompassing SEQ ID NO: 2948 (first exemplary binding polypeptide). Applicant is invited to elect additional polypeptide sequence(s), with specified SEQ ID NO: for each, and/or linker sequence(s), with specified SEQ ID NO: for each; and/or linker serotype sequence(s), with specified SEQ ID NO: for each, to be searched. Additional polypeptide, linker, and/or serotype sequence(s) will be searched upon the payment of additional fees. It is believed that claims 1 (in-part), 2 (in-part), 3 (in-part), 4 (in-part), 5 (in-part), 6 (in-part), 7 (in-part), 8 (in-part), 9 (in-part), 10 (in-part), 11 (in-part), 14 (in-part), 15 (in-part), 20 (in-part), 21 (in-part), 49, (in-part), 50 (in-part), 51 (in-part), 52 (in-part), 53 (in-part), 54 (in-part), 55 (in-part), 56 (in-part), 57 (in-part), 58 (in-part), 59 (in-part), 60 (in-part), 61 (in-part), 62 (in-part), 63 (in-part), 64 (in-part), 65 (in-part), 66 (in-part), 67 (in-part), 68 (in-part), 69 (in-part) and 70 (in-part) encompass this first named invention and thus these claims will be searched without fee to the extent that they encompass SEQ ID NO: 1 (capsid serotype); SEQ ID NO: 899 (linker); and SEQ ID NO: 2948 (polypeptide). Applicants must specify the claims that encompass any additionally elected polypeptide, linker, and/or serotype sequence(s). Applicants must further indicate, if applicable, the claims which encompass the first named invention, if different than what was indicated above for this group. Failure to clearly identify how any paid additional invention fees are to be applied to the "+" group(s) will result in only the first claimed invention to be searched/examined. An exemplary election would be an AAV particle encompassing SEQ ID NO: 2 (first exemplary elected capsid serotype).

No technical features are shared between the capsid serotype and/or linker, and/or binding polypeptide sequences of Groups I+ and, accordingly, these groups lack unity a priori.

Groups I+ share the technical features including: an AAV particle comprising a capsid and a viral genome, said viral genome comprising at least one inverted terminal repeat (ITR) region and a payload region, said payload region comprising a regulatory sequence operably linked to at least a first nucleic acid segment, said first nucleic acid segment encoding one or more polypeptides selected from the group consisting of SEQ ID NO: 2948-17938, and fragments thereof; an AAV particle comprising a capsid and a viral genome, said viral genome comprising at least one inverted terminal repeat (ITR) region and a payload region comprising a regulatory sequence operably linked to at least a first nucleic acid segment, said first nucleic acid segment encoding a bispecific antibody derived from SEQ ID NO: 2948-17938 or portions or fragments thereof; a method of producing an antibody in a subject comprising administering the AAV particle to said subject, with the proviso that the antibody is not a virus neutralizing antibody.

However, these shared technical features are previously shared by US 2015/0010578 A1 (CALIFORNIA INSTITUTE OF TECHNOLOGY) (hereinafter 'Caltech').

Caltech discloses an AAV particle comprising a capsid and a viral genome (AAV particle comprising a capsid and a viral genome; paragraphs [0038]-[0039]), said viral genome comprising at least one inverted terminal repeat (ITR) region (said viral genome comprising at least one inverted terminal repeat (ITR) region; paragraphs [0009], [0038]) and a payload region (region downstream of the promoter to allow insertion of polynucleotide encoding one or more proteins of interest (a payload region); paragraphs [0009]-[0010]), said payload region comprising a regulatory sequence operably linked to at least a first nucleic acid segment (said payload region comprising a regulatory sequence operably linked to at least a first nucleic acid segment; paragraphs [0009]-[0010]), said first nucleic acid segment encoding one or more polypeptides (paragraph [0010]); an AAV particle comprising a capsid and a viral genome (AAV particle comprising a capsid and a viral genome; paragraphs [0038]-[0039]), said viral genome comprising at least one inverted terminal repeat (ITR) region (said viral genome comprising at least one inverted terminal repeat (ITR) region; paragraphs [0009], [0038]) and a payload region comprising a regulatory sequence operably linked to at least a first nucleic acid segment (payload region comprising a regulatory sequence operably linked to at least a first nucleic acid segment; paragraphs [0009]-[0010]), said first nucleic acid segment encoding a bispecific antibody (paragraph [0075]; claim 1); a method of producing an antibody in a subject comprising administering said AAV particle to said subject (a method of producing an antibody in a subject comprising administering said AAV particle to said subject; claim 1), with the proviso that the antibody is not a virus neutralizing antibody (with the proviso that the antibody is not a virus neutralizing antibody); paragraph [0015]); a method of producing an antibody in a subject comprising administering said AAV particle to said subject (a method of producing an antibody in a subject comprising administering said AAV particle to said subject; claim 1), with the proviso that the antibody is not an HIV or HCV virus neutralizing antibody (neutralizes malaria (with the proviso that the antibody is not an HIV or HCV virus neutralizing antibody); paragraph [0015]).

Since none of the special technical features of the Groups I+ inventions is found in more than one of the inventions, and since all of the shared technical features are previously disclosed by the Caltech reference, unity of invention is lacking.