

**The Trustees of
Columbia University
in the City of New York**

**Report on Federal Awards in Accordance with
OMB Uniform Guidance**

June 30, 2020

Employer Identification Number 13-5598093

The Trustees of Columbia University in the City of New York

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Report of Independent Auditors

To The Trustees of Columbia University in the City of New York

We have audited the accompanying consolidated financial statements of The Trustees of Columbia University in the City of New York and its subsidiaries (the "University"), which comprise the consolidated statements of financial position as of June 30, 2020 and 2019 and the related consolidated statements of activities for the year ended June 30, 2020 and of cash flows for the years ended June 30, 2020 and 2019 and related notes to the financial statements.

Management's Responsibility for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation and maintenance of internal control relevant to the preparation and fair presentation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on the consolidated financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on our judgment, including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. In making those risk assessments, we consider internal control relevant to the University's preparation and fair presentation of the consolidated financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the University's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of The Trustees of Columbia University in the City of New York and its subsidiaries as of June 30, 2020 and 2019, and the changes in their net assets for the year ended June 30, 2020 and their cash flows for the years ended June 30, 2020 and 2019 in accordance with accounting principles generally accepted in the United States of America.

Other Matters

Other Matter

We previously audited the consolidated statement of financial position as of June 30, 2019, and the related consolidated statements of activities and of cash flows for the year then ended (the statement of activities is not presented herein), and in our report dated October 8, 2019, we expressed an unmodified opinion on those consolidated financial statements. In our opinion, the information set forth in the accompanying summarized financial information as of June 30, 2019 and for the year then ended is consistent, in all material respects, with the audited consolidated financial statements from which it has been derived.

Other Information

Our audit was conducted for the purpose of forming an opinion on the consolidated financial statements as a whole. The accompanying schedule of expenditures of federal awards for the year ended June 30, 2020 and schedule of financial responsibility data as of and for the year ended June 30, 2020 are presented for purposes of additional analysis as required by Title 2 U.S. *Code of Federal Regulations* Part 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* (Uniform Guidance) and the Department of Education, respectively, and are not a required part of the consolidated financial statements. The information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the consolidated financial statements. The information has been subjected to the auditing procedures applied in the audit of the consolidated financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the consolidated financial statements or to the consolidated financial statements themselves, and other additional procedures, in accordance with auditing standards generally accepted in the United States of America. In our opinion, the schedule of expenditures of federal awards and schedule of financial responsibility data are fairly stated, in all material respects, in relation to the consolidated financial statements taken as a whole.

Other Reporting Required by Government Auditing Standards

In accordance with *Government Auditing Standards*, we have also issued our report dated October 6, 2020 on our consideration of The Trustees of Columbia University in the City of New York and its subsidiaries' internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts and grant agreements and other matters. The purpose of that report is solely to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing and not to provide an opinion on the effectiveness of internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering The Trustees of Columbia University in the City of New York and its subsidiaries' internal control over financial reporting and compliance.

PricewaterhouseCoopers LLP

October 6, 2020, except for footnote 23 with respect to the consolidated financial statements and the opinion on the schedule of financial responsibility data, as to which the date is May 13, 2021.

The Trustees of Columbia University in the City of New York
Consolidated Statements of Financial Position
At June 30, 2020 and 2019
(in thousands of dollars)

	June 2020	June 2019
Assets		
Cash and cash equivalents	\$974,112	\$814,040
Accounts receivable, net	543,166	569,328
Receivable for securities sold	73,318	60,694
Securities held in trust by others	117	36,457
Pledges receivable, net	626,352	664,840
Investments, at fair value	12,324,012	11,562,591
Institutional real estate	930,216	897,719
Land, buildings, and equipment, net	4,908,522	4,714,266
Other assets	626,199	655,944
Total assets	\$21,006,014	\$19,975,879
Liabilities		
Accounts payable and accrued expenses	\$447,180	\$373,647
Liabilities for securities purchased	4,308	4,536
Deferred revenue and other prepayments	342,345	289,643
Capital lease obligations	131,275	126,127
Conditional asset retirement obligations	121,992	118,930
Accrued employee benefit liabilities	433,703	379,651
Federal student loan funds	62,400	79,862
Bonds and notes payable (including bond premium and issuance costs of \$299,198 and \$227,079) (see Note 16)	2,533,486	2,000,200
Other long-term liabilities	630,637	576,056
Total liabilities	4,707,326	3,948,652
Net assets		
Without donor restrictions	7,267,894	7,307,924
With donor restrictions	9,030,794	8,719,303
Total net assets	16,298,688	16,027,227
Total liabilities and net assets	\$21,006,014	\$19,975,879

See accompanying notes to the consolidated financial statements.

The Trustees of Columbia University in the City of New York
Consolidated Statements of Activities
For the Year Ended June 30, 2020, with Summarized Comparative 2019 Totals
(in thousands of dollars)

	Without Donor Restrictions	With Donor Restrictions	June 2020	June 2019
Operating activities				
Revenues and support				
Tuition and fees (net of \$492,512 and \$461,636 in financial aid grants, respectively)	\$1,238,700		\$1,238,700	\$1,201,922
Government grants and contracts:				
Direct	759,692		759,692	715,213
Indirect	259,185		259,185	242,234
Private gifts, grants and contracts:				
Direct	247,706	\$314,030	561,736	449,625
Indirect	32,718		32,718	32,464
Revenue from other educational and research activities	221,681		221,681	236,063
Patient care revenue	1,306,121		1,306,121	1,300,863
Investment income and gains utilized	429,001	228,083	657,084	662,465
Sales and services of auxiliary enterprises	164,916		164,916	191,086
Net assets released from restrictions	370,494	(370,494)		
Total operating revenues and support	5,030,214	171,619	5,201,833	5,031,935
Expenses				
Instruction and educational administration	2,061,981		2,061,981	1,971,252
Research	660,083		660,083	639,873
Patient care expense	1,215,438		1,215,438	1,099,268
Operation and maintenance of plant	305,676		305,676	284,831
Institutional support	287,176		287,176	304,040
Auxiliary enterprises	161,313		161,313	166,217
Depreciation	292,769		292,769	289,998
Interest	52,816		52,816	53,507
Total expenses	5,037,252		5,037,252	4,808,986
Change in net assets from operating activities	(7,038)	171,619	164,581	222,949
Nonoperating activities				
Endowment gifts		186,195	186,195	195,766
Current year realized and unrealized capital gains (losses)	205,610	340,301	545,911	357,895
Endowment appreciation utilized	(196,071)	(397,708)	(593,779)	(578,088)
Change in net assets held by CPMC Fund, Inc.	52	(408)	(356)	(19,772)
Change in funds held by others in perpetuity		(4,122)	(4,122)	2,040
Present value adjustment to split-interest agreements	669	4,158	4,827	9,236
Net periodic benefit cost other than service cost	8,658		8,658	8,532
Changes in pension and postretirement obligations	(38,894)		(38,894)	15,467
Other	(1,560)		(1,560)	17,858
Reclassification	(11,456)	11,456		
Change in net assets from nonoperating activities	(32,992)	139,872	106,880	8,934
Change in net assets	(40,030)	311,491	271,461	231,883
Net assets at beginning of year	7,307,924	8,719,303	16,027,227	15,795,344
Net assets at end of year	\$7,267,894	\$9,030,794	\$16,298,688	\$16,027,227

See accompanying notes to the consolidated financial statements.

The Trustees of Columbia University in the City of New York
Consolidated Statements of Cash Flows
For the Years Ended June 30, 2020 and 2019
(in thousands of dollars)

	June 2020	June 2019
Cash flows from operating activities		
(Includes adjustments to reconcile change in net assets to net cash provided by operating activities):		
Change in net assets	\$271,461	\$231,883
Depreciation expense	292,769	289,998
Interest on capital lease obligations and CARO	11,966	11,782
Institutional real estate depreciation	31,933	30,379
Realized and unrealized (gains) losses	(503,120)	(321,740)
Partnership distributions	529,379	487,020
Contributions restricted for permanent investment, plant, and split-interest agreements	(308,115)	(298,232)
Contributions other than cash	(731)	(1,422)
Present value adjustments and actuarial liability for split-interest agreements	(4,827)	(9,236)
Accreted interest on bonds	486	520
Change in unamortized bond premium and issuance costs	(24,219)	(23,256)
Change in fair value of net assets held by CPMC Fund, Inc.	356	19,772
Change in fair value of interest in perpetual trusts held by others	4,122	(2,040)
Change in operating assets and liabilities:		
Accounts receivable, net	26,162	(6,114)
Pledges receivable, net	38,488	62,373
Other assets	17,833	(46,793)
Accounts payable and accrued expenses	79,347	(1,338)
Deferred revenue and other prepayments	52,702	15,044
Accrued employee benefit liabilities	54,052	36,920
CARO and other long-term liabilities	20,391	10,547
Net cash provided by operating activities	590,435	486,067
Cash flows from investing activities		
Proceeds from sales of investments	2,481,179	3,011,545
Purchases of investments	(3,225,022)	(3,483,259)
Collections from student notes	11,586	13,268
Student notes issued	(2,428)	(2,526)
Proceeds from / (Investment in) cash and securities held in trust by others	36,340	75,614
Purchases of institutional real estate	(40,600)	(37,568)
Purchases of plant and equipment	(504,084)	(473,233)
Net cash used by investing activities	(1,243,029)	(896,159)
Cash flows from financing activities		
Proceeds from contributions for:		
Investment in endowment	247,887	243,158
Investment in plant	56,312	50,672
Investment in split-interest agreements	3,916	4,402
Investment income on split-interest agreements	3,726	3,753
Payments on split-interest agreements	(5,563)	(5,550)
Payments on capital lease obligations	(12,349)	(10,320)
Proceeds from taxable commercial paper issuance	150,000	
Repayment of bonds and notes payable	(64,319)	(61,349)
Proceeds from bond and note issuance	471,338	
Net change in federal student loan funds	(17,462)	1,142
Net cash provided by financing activities	833,486	225,908
Net change in cash and cash equivalents	180,892	(184,184)
Cash and cash equivalents at beginning of year	874,066	1,058,250
Cash and cash equivalents at end of year	\$1,054,958	\$874,066
Supplemental disclosures of cash flow information:		
Cash and cash equivalents as shown in the Statements of Financial Position	\$974,112	\$814,040
Cash included in Investments, at fair value (see Note 6)	80,846	60,026
Total cash and cash equivalents as shown on the Consolidated Statements of Cash Flows	\$1,054,958	\$874,066
Equipment and space acquired through capital leases	\$11,854	\$9,689
Cash paid during the year for interest	\$87,471	\$87,686

See accompanying notes to the consolidated financial statements.

The Trustees of Columbia University in the City of New York
Notes to the Consolidated Financial Statements
For the Years Ended June 30, 2020 and 2019
(in thousands of dollars, unless otherwise noted)

1. Organization

The Trustees of Columbia University in the City of New York (the “University”) is a private, nonsectarian, nonprofit institution of higher education whose activities are concentrated at two locations in New York City and extend around the globe. The University provides instruction through sixteen undergraduate, graduate, and professional schools. It operates a variety of research institutes and a library system to support its teaching, learning, and research activities. The University performs research, training, and other services under grants and contracts with agencies of the federal government and other sponsoring organizations. The University enrolls approximately 33,413 full-time and part-time students and employs approximately 18,430 full-time employees, including 6,662 full-time faculty members and research staff. Of these, 1,634 hold positions in the arts and sciences, 3,820 hold health science positions, and the remainder hold positions in the other professional schools.

The University is a New York nonprofit corporation recognized as tax exempt under Section 501(c)(3) of the Internal Revenue Code.

Columbia University Irving Medical Center

Columbia University Irving Medical Center (“CUIMC”), a division of the University, located in the Washington Heights section of northern Manhattan, is one of the largest academic medical centers in the United States. It is composed of four schools: Vagelos College of Physicians and Surgeons, Mailman School of Public Health, College of Dental Medicine, and School of Nursing.

CUIMC has three primary areas of focus: patient care, scientific research, and education. CUIMC offers a wide variety of degrees, certifications, and continuing education in health sciences. Faculty patient care services, sponsored research, tuition, endowment income, patent royalties, and gifts provide the majority of CUIMC’s revenues. Approximately 4,472 students are enrolled at CUIMC with a full-time faculty of 2,688 of whom approximately 331 are tenured. Additionally, CUIMC’s staff includes 2,649 part-time faculty instructors, 1,270 full-time and 269 part-time researchers, 196 post-doctoral research trainees, and 1,364 post-doctoral clinical trainees. Approximately 61 percent of the full-time faculty and 21 percent of the part-time faculty hold clinical appointments and have admitting privileges at New York-Presbyterian (“NYP”)/CUIMC Campus.

Patient care activities include patient visits performed by Columbia faculty through its medical faculty practice plan, as well as clinical, educational and administration services provided to hospitals and other health care institutions through contractual agreements for services.

CUIMC maintains several clinical and education affiliation agreements with other organizations. The most significant affiliation agreements are with NYP, Lawrence Hospital, and Harlem Hospital. Certain faculty physicians also provide patient care and supervision of residents at NYP network hospitals and other affiliates. In addition, through interinstitutional professional service agreements and medical service agreements, CUIMC faculty provide patient care in specialty and subspecialty areas at hospitals in the tristate area and occasionally in other parts of the country and the world.

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During the year ended June 30, 2020, the clinical faculty handled approximately 2.0 million outpatient and emergency room visits and participated in instruction and supervision of 597 University medical students and 955 residents and fellows at NYP. CUIMC physicians generated approximately 60,000 NYP hospital admissions during the year.

Payments for patient care services provided by the full-time faculty in both institutional and private office settings are derived mainly from third-party payers, including commercial insurance and managed care companies (63 percent), Medicare (19 percent), Medicaid (13 percent), commercial insurance (4 percent), and other (1 percent).

On October 1, 2019 the Attorney General of the State of New York approved the transfer of assets from the Aaron Diamond Research Center in the City of New York, Inc. (“ADARC”) to the University. ADARC is a medical research institution dedicated to development and exchange of scientific knowledge in the area of Acquired Immune Deficiency Syndrome (“AIDS”), Human Immunodeficiency Virus (“HIV”) and related diseases.

Pursuant to the Asset Transfer and Integration Agreement between the University and ADARC, where ADARC and the University mutually desire to combine their strengths to prevent HIV/AIDS and improve the lives of people living with HIV/AIDS worldwide, ADARC transferred certain assets to the University and the University assumed certain liabilities and hired employees of ADARC, subject to the terms and conditions of the Agreement.

Other Activities

The University holds a number of limited liability companies, not-for-profit corporations and international organizations, which are established to facilitate various program and research objectives, and the results of which are included in the University’s consolidated financial statements, including:

- Columbia Investment Management Company, LLC, a New York limited liability company formed by the University to manage the University’s investment assets under the supervision of a Board appointed by the Trustees of the University and subject to the oversight of the Committee on Finance of the Trustees.
- Reid Hall Inc., located in Paris, France, which was donated to the University in 1964. Reid Hall, Inc., a corporation organized under New York membership corporation law as an educational and charitable organization, operates Reid Hall to promote, facilitate, and aid the educational, cultural, and social interests of students studying in France.
- Columbia University Healthcare, Inc., a not-for-profit practice entity in which the University is the sole corporate member.
- Columbia Doctors of New Jersey, P.C, Columbia Doctors of Bergen County, P.C. and Columbia Doctors of Connecticut, which are professional corporations in which the University is the sole corporate member.

The University also provides investment custodial services and manages all of the assets of Columbia Presbyterian Medical Center Fund, Inc. (“CPMC Fund, Inc.”), a not-for-profit corporation that was created to hold and receive gifts for the University and NYP. The consolidated financial statements reflect the University’s interest in the net assets of CPMC Fund, Inc. as well as the assets and amounts due to NYP.

The Trustees of Columbia University in the City of New York
Notes to the Consolidated Financial Statements
For the Years Ended June 30, 2020 and 2019
(in thousands of dollars, unless otherwise noted)

2. Summary of Significant Accounting Policies

The significant accounting policies of the University are as follows:

Basis of Consolidation

The consolidated financial statements of the University include the accounts of all academic and administrative departments of the University.

All significant intercompany accounts have been eliminated in consolidation.

Basis of Presentation

The University maintains its accounts in accordance with the principles of fund accounting. Under this method of accounting, resources for various purposes are classified into funds that are consistent with activities or objectives specified by donors. Separate accounts are maintained for each fund.

For reporting purposes, the University prepares its consolidated financial statements in accordance with accounting principles generally accepted in the United States of America (“GAAP”), including the provisions of Financial Accounting Standards Board (“FASB”) Accounting Standards Codification (“ASC”) Topic 958 Not-for-Profit Entities that requires resources be classified for reporting purposes based on the existence or absence of donor-imposed restrictions. Accordingly, the University classifies fund balances as without donor restrictions or with donor restrictions.

The consolidated financial statements of the University have, in all material respects, been prepared on an accrual basis.

Revenues and Expenses

Revenues are reported as increases in net assets without donor restrictions unless the use of those assets is limited by donor-imposed restrictions. Expenses are reported as decreases in net assets without donor restrictions. Gains and losses on investments are reported as increases or decreases in net assets without donor restrictions, unless their use is restricted by explicit donor stipulation or by law.

Revenue Recognition

The University recognizes contributions in accordance with the revenue recognition provisions of ASC Topic 958-605, Not-for-Profit Entities. Revenue is considered a contribution if it is determined not to be an exchange transaction. Revenue related to exchange transactions is recognized under the provisions of the applicable ASC Topic, which is typically ASC Topic 606, Revenue from Contracts with Customers.

ASC Topic 606, Revenue from Contracts with Customers, requires performance of the following steps as part of the revenue recognition assessment:

- Step 1 – Identify the contract(s) with a customer
- Step 2 – Identify the performance obligation(s) in the contract
- Step 3 – Determine the transaction price
- Step 4 – Allocate the transaction price to the performance obligation(s) in the contract
- Step 5 – Recognize revenue when the entity satisfies a performance obligation

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(in thousands of dollars, unless otherwise noted)

Revenue recognition for the University's significant types of revenue is discussed below.

Tuition, Fees, Room and Board, and Financial Aid

Tuition and fees revenue is derived from degree programs and executive and continuing education programs and room and board revenue is derived from the provision of room and board services to students. Tuition and fees are recorded net of scholarships and other discounts and waivers ("Financial aid grants") and displayed in the consolidated statements of activities in "Tuition and fees". Room and board revenues are included as part of "Sales and services of auxiliary enterprises", however the recognition process mirrors that for tuition and fees. Each of these items is supported by separate contracts entered into between the University and the individual student.

Tuition and fees and room and board revenues are recognized as operating revenue in the period in which the University satisfies its performance obligations to its students. A performance obligation is a promise in a contract to transfer a distinct good or service to the customer and is the unit of accounting in ASC Topic 606. The University's performance obligations are to provide education to the student and, in certain instances, other items such as room and board. The University recognizes tuition and fees and room and board on a straight-line basis over each academic session based on gross price, net of explicit price concessions such as financial aid grants which are applied to tuition and fees. The value that is recognized for each performance obligation is set forth in publicly available University price lists and is codified in the individual contracts with each student. Individual contracts for tuition and fees and room and board display the transaction price on a standalone basis for each service to be provided to each specific student. Additionally, the contract will contain the price adjustment in the form of financial aid grants that are being awarded to the student. Given the timing of each year's academic sessions, nearly all performance obligations on behalf of the University are completed within the fiscal year.

The timing(s) of billings, cash collections and revenue recognition results in accounts receivable and deferred revenue and student deposits on the consolidated statements of financial position. Receivables are recognized only to the extent that it is probable that the University will collect substantially all of the consideration to which it is entitled in exchange for goods and services transferred to the student. Receipts received in advance of goods and services performed are recorded as deferred revenue or student deposits.

Contributions and Pledges Receivable

Contributions for University operations and plant, including unconditional promises to give ("pledges"), are recognized as operating revenue in the period earned. Contributions to endowment are recognized as nonoperating revenue in the period earned. Amounts expected to be collected in future years are recorded at the present value of estimated future cash flows, net of an allowance for uncollectable pledges. The discounts on those pledges are computed using an interest rate for the year in which the promise was received and considers market and credit risk as applicable. Subsequent years' accretion of the discount is included in contribution revenue. Conditional promises to give are not recognized as revenue until such time as the conditions are met.

Grant and Contract Income

The University receives sponsored program grant and contract income from governmental and private sources. The funding may represent a nonreciprocal transaction in which the resources provided are for the benefit of the University, the funding organization's mission, or the public at large or it may be a reciprocal transaction in exchange for an equivalent benefit in return.

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Revenues from exchange transactions are recognized as performance obligations are satisfied which in most cases mirrors the timing of when related costs are incurred. Revenues from non-exchange transactions may be subject to conditions in the form of both a barrier to entitlement and a refund of amounts paid (or a release from obligation to make future payments). The University recognizes revenue earned from conditional non-exchange transactions when the barrier is satisfied, typically as related costs are incurred. At June 30, 2020, the University has grants or contracts for which it has not yet met all obligations to recognize revenue, or the right to recognize revenue is dependent on future events. These open commitments total \$2.8 billion and it is expected that revenue will be recognized as the University fulfills its obligations over several years. In addition, the University has elected the simultaneous release option for conditional contributions that are also subject to purpose restrictions. Under this option, net assets without donor restrictions will include the donor-restricted contributions if the purpose restrictions are met in the same reporting year as the revenue is recognized.

Indirect cost recoveries on federally sponsored programs, such as the recovery of facilities and administrative (F&A) costs, are at reimbursement rates negotiated with the University's cognizant agency, the Department of Health and Human Services. The University entered into an agreement with the federal government which defines the rate at which the University can be reimbursed for F&A costs applicable to federal on-campus research effective July 1, 2018. This agreement will remain in place until such time a new agreement is reached.

Patient Care Revenue and Expense

Patient care activities relate to three distinct areas: medical faculty practice plans, affiliation agreements, and medical and professional service agreements.

Patient care expenses include direct expenses associated with providing patient care services, as well as administrative functions within the University's faculty practice organization. Patient care expense does not include rent or utilities in clinical space, as those costs are aggregated with all University space costs within "Operation and maintenance of plant".

The University provides medical care to patients via its ColumbiaDoctors faculty practice, primarily under agreements with third-party payers. The University determines performance obligations based on the nature of the services provided. Generally these performance obligations, regardless of whether the patient is receiving outpatient or inpatient services, are satisfied when the service is provided. The University bills third-party payers and patients after performance obligations are satisfied. For the limited number of patient service performance obligations that will be satisfied over a period of time, it is expected that these obligations will generally be completed soon after the end of the reporting period and the revenue related to the unsatisfied obligation will be deferred into the following fiscal year.

The University determines transaction price based on gross charges for services provided which are established on an annual basis and uniformly applied. The gross charges may be reduced by explicit price concessions, which include contractual adjustments based on agreements with third-party payers or by implicit price concessions provided to uninsured patients, which are reflected as an allowance for doubtful accounts. The University determines its allowance for doubtful accounts based on its historical collection experience with these classes of patients using a portfolio approach as a practical expedient to account for patients as a collective group rather than individually. The impact of using this practical expedient does not have a material effect on the financial statements.

The Trustees of Columbia University in the City of New York
Notes to the Consolidated Financial Statements
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(in thousands of dollars, unless otherwise noted)

The University maintains several clinical and education affiliation agreements with other organizations, the largest of which is with NYP. Under these affiliation agreements, the University has a performance obligation to provide medical, professional, and supervisory staff as well as other technical assistance and clinical services. Additionally, the University operates clinical departments for specific purposes, including administration, supervision, and teaching of the NYP resident staff as well as clinical programs that the University and NYP would like to see developed or expanded. The transaction price for the provision of these services is the result of an annual negotiation between the University and the other parties to the affiliation agreements that takes the form of a joint budget agreement. All material services are performed by the University, based on the terms of the agreements, within the University's fiscal year and the related revenue is recognized accordingly in the financial statements. The revenues and expenses from these agreements are accounted for in patient care and education categories of the operating activity in the consolidated statements of activities.

Research and Development

The University engages in numerous research and development projects, which may be partially or fully sponsored by governmental and private funds. These costs are charged to operating expense as incurred. The University periodically funds and develops patents for certain technologies, then licenses the usage of these patents to companies for a specified period of time. The revenue, net of payments due to third parties, is recorded in "Revenue from other educational and research activities" in the consolidated statements of activities. Costs incurred with developing and maintaining these patents are expensed as incurred.

Institutional Support

Institutional support expense includes central administrative functions and expenses that support the management of the University. This category also includes any net operating surplus or deficit of the University's benefit pool, as recoveries from units across the University may be less than or greater than benefits paid in a given year.

Cash and Cash Equivalents

Cash and cash equivalents are recorded at fair value and include several depository accounts, checking accounts, institutional money market funds, and similar temporary investments with maturities of three months or less at the date of purchase. The University has elected to classify cash equivalents that are part of the University's investment portfolio as short-term investments.

Investments

The University's investments, consisting primarily of publicly traded fixed income and equity securities, alternative investments, and cash held for reinvestment, are stated at fair value as of June 30, 2020 and 2019. Alternative investments include investments in absolute return strategy funds, private equity funds, and real asset funds. The management of each respective fund provides the fair value of the investment. The University reflects its share of the partnerships or corporations in the consolidated financial statements.

Fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. The University believes that the net asset value of its alternative investments is a reasonable estimate of fair value as of June 30, 2020 and 2019. Because alternative investment funds are not marketable, the estimated value is subject to uncertainty and, therefore, may differ from the value that would have been used had a

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ready market for the investment existed. Such differences could be material. The amount of gain or loss associated with these investments is reflected in the consolidated financial statements based on the University's proportionate share in the net assets of these investments.

The University's presentation in the consolidated statements of cash flows for limited liability partnerships, limited liability corporations, and other similarly structured investments is consistent with the accounting for equity method investments as it represents the underlying nature of these investments in which the University has a capital account.

The University records purchases and sales of securities on a trade-date basis. Realized gains and losses are determined on the basis of average cost of securities sold and are reflected in the consolidated statements of activities. Dividend income is recorded on the ex-dividend date, and interest income is recorded on an accrual basis.

Split-Interest Agreements

The University's split-interest agreements with donors consist primarily of charitable gift annuities, pooled income funds, and irrevocable charitable remainder trusts for which the University serves as custodian and trustee. Assets are invested and payments are made to donors and/or other beneficiaries in accordance with the respective agreements. In the case of irrevocable split-interest agreements whose assets are held in trusts not administered by the University (third-party charitable trusts), the University will recognize its beneficial interest when it receives sufficient reliable information and documentation that establishes the trust's existence, the University's beneficial interest, and the value of that interest.

Contribution revenues for split-interest agreements are recognized at the dates the agreements are established net of the present value of the estimated future payments to be made to the beneficiaries, if applicable, under these agreements. The discounts on those agreements are computed using an interest rate for the year in which the contribution was received and considers market and credit risk as applicable. Assets related to these agreements are recorded in "Investments, at fair value" and the liability for the present value of the estimated future payments to be made to the beneficiaries is recorded in "Other long-term liabilities" in the consolidated statements of financial position. Adjustments to the fair value of these agreements are recorded in the consolidated statements of activities under "Present value adjustment to split-interest agreements".

Institutional Real Estate

Institutional real estate consists primarily of properties proximate to the University's Morningside and Washington Heights campuses, the primary purpose of which is to house faculty, staff, and graduate students. The income earned on this investment is used primarily to finance operating expenditures. The properties are valued at cost and depreciated over useful lives ranging from twelve and one half to fifty years.

Land, Buildings, and Equipment

Land, buildings, and equipment are stated at cost net of accumulated depreciation. Depreciation is calculated on a straight-line basis over useful lives ranging from ten to one hundred years for buildings and building improvements and two to twenty years for equipment, consistent with the method used for government cost reimbursement purposes. Capitalized software costs are amortized over seven years. Upon disposal of assets, the costs and accumulated depreciation are removed from the accounts, and the resulting gain or loss is included in nonoperating activities.

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Collections

The University's collections include works of art, literary works, historical treasures and artifacts maintained in the University's libraries and museums. These collections are protected and preserved for public exhibition, education, research, and the furtherance of public service. Proceeds realized from deaccessioning collection items are to be used for the acquisition of new items for the University's collection and/or enhancing the life, usefulness or quality of the existing collection through long-term direct care and preservation, which includes conservation care, cataloging and documenting and proper access and use of the collection. Accordingly, such collections are not capitalized and contributed items are not recognized as revenue for financial statement purposes.

Interest in Perpetual Trusts Held by Others

The University is the beneficiary of certain perpetual trusts administered by others. These trusts are recognized as contributions with donor restrictions when the University receives sufficient reliable information and documentation that establishes the trust's existence, the University's beneficial interest, and the value of that interest. The fair value of the interest in these perpetual trusts is based on the University's proportional share of the fair value of assets reported by the trust, and is recorded in "Other assets" in the consolidated statements of financial position. Adjustments to the fair value of the University's interest are reported as "Change in funds held by others in perpetuity" in nonoperating activity in the consolidated statements of activities.

Capital Lease Obligations

Capital lease obligations are recognized for equipment and space where substantially all of the risks of ownership have been transferred to the University. The obligations extend up to seven years for equipment and up to fifty years for space.

Conditional Asset Retirement Obligations

Conditional asset retirement obligations ("CARO") are recognized for remediation or disposal of asbestos, underground storage tanks, soil, and radioactive sources and equipment as required by law. The fair value of the liability for a conditional asset retirement obligation is recognized in the period in which it occurred, provided that it can be reasonably estimated.

Other Long-Term Liabilities

Other long-term liabilities are obligations that extend beyond one year, or operating cycle, whichever is longer. The obligations for medical malpractice liabilities, self-insurance reserves, the fixed payer interest rate swap agreement, split-interest agreement liabilities, and other commitments are categorized in other long-term liabilities.

Use of Estimates

The preparation of consolidated financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates. The most significant estimates include valuation of investments without readily determinable prices in active markets, estimated useful lives of buildings, building improvements, and equipment, actuarially determined costs associated with split-interest agreements, pension, postemployment and postretirement benefits, explicit and

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implicit price concessions for patient and other receivables, insurance obligations, and conditional asset retirement obligations.

2019 Presentation

While comparative information is not required under GAAP, the University believes that this information is useful and has included comparative financial information from the consolidated financial statements for 2019. Within the consolidated statements of activities, prior year presentation of net asset categorization has been condensed for comparative purposes.

This summarized information is not intended to be a full presentation in conformity with GAAP, which would require certain additional information. Accordingly, such information should be read in conjunction with the University's audited consolidated financial statements for the year ended June 30, 2019. Certain prior year information has been reclassified to conform to current year presentation.

New Authoritative Pronouncements Adopted by the University

In August 2016, the FASB issued Accounting Standards Update ("ASU") No. 2016-15, Statement of Cash Flows (Topic 230), Classification of Certain Cash Receipts and Cash Payments. Changes include revisions to the presentation of cash flows related to the settlement of debt instruments with coupon rates that are insignificant in relation to the effective interest rate of the borrowing and distributions received from equity method investees. The University adopted ASU 2016-15 for the fiscal year ended June 30, 2020. Adoption did not have a material impact on the University's consolidated financial statements.

In November 2016, the FASB issued ASU No. 2016-18, Statement of Cash Flows (Topic 230), Restricted Cash. This ASU clarifies how entities should present restricted cash and restricted cash equivalents in the consolidated statements of cash flows and requires entities to present changes in the total of cash, cash equivalents, restricted cash and restricted cash equivalents in the statement as well. The University adopted ASU 2016-18 for the fiscal year ended June 30, 2020 and applied it retroactively. Adoption did not have a material impact on the University's consolidated financial statements.

In March 2019, the FASB issued ASU No. 2019-03, Not-for-Profit Entities (Topic 958), Updating the Definition of Collections. This ASU modifies the term "Collections", which in turn may change collection recognition policies, and also adds certain disclosure requirements. The University adopted ASU 2019-03 for the fiscal year ended June 30, 2020. Adoption did not have a material impact on the University's consolidated financial statements.

New Authoritative Pronouncements Not Yet Adopted by the University

In February 2016, the FASB issued ASU No. 2016-02, Leases (Topic 842). The new ASU establishes a right-of-use ("ROU") model that requires a lessee to record a ROU asset and a lease liability on the statement of financial position for all leases with terms longer than 12 months. In June 2020, the FASB issued ASU No. 2020-05, Revenue from Contracts with Customers (Topic 606) and Leases (Topic 842): Effective Dates for Certain Entities. As per this update the effective date for the adoption of Leases (Topic 842) is fiscal years beginning after December 15, 2019 with early adoption permissible. Adoption is expected to result in the recognition of a ROU asset and related liability on the consolidated statements of financial position, which the University is currently in the process of quantifying.

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In August 2018, the FASB issued ASU No. 2018-13, Fair Value Measurement: Disclosure Framework – Changes to the Disclosure Requirements for Fair Value Measurement (Topic 820). The new ASU eliminates, adds and modifies certain disclosure requirements related to fair value measurement. This ASU is effective for fiscal years beginning after December 15, 2019, with early adoption permissible. The University is evaluating the impact of the new standard on the University's consolidated financial statements.

3. Net Assets

The University classifies its net assets as without donor restrictions or with donor restrictions. Periodically, donor redesignations may result in reclassifications of net assets. Descriptions of the two net asset categories and the types of transactions affecting each category follow.

Without Donor Restrictions—Net assets that are not subject to explicit donor-imposed restrictions. This category includes funds designated by the Board of Trustees to function as endowment and other undesignated funds such as tuition and other current funds, gifts without restrictions (including gifts whose donor-imposed restrictions were met during the fiscal year), net investment in plant, and student loan funds.

With Donor Restrictions—Net assets that are subject to explicit donor-imposed stipulations. This includes net assets with donor restrictions that will be satisfied by actions of the University, the passage of time, or both. These net assets include gifts for which the donor-imposed restriction(s) have not been met in the year of receipt (including gifts for capital projects not yet placed in service), pledges, split-interest agreements, and net assets from donor-restricted endowments not yet appropriated for spending. Once the restrictions are satisfied, or have been deemed to have been satisfied, net assets with donor restrictions are reclassified to net assets without donor restrictions.

Also included in this category are net assets with donor restrictions that require these to be maintained permanently by the University and invested to provide a perpetual source of income. Net assets with donor restrictions that are permanent include (a) the original value of gifts donated to the permanent endowment, (b) the original value of subsequent gifts to the permanent endowment, and (c) realized and unrealized gains and losses to the permanent endowment when stipulated by the donor gift instrument.

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The composition of the University's net assets as of June 30 are as follows:

	<u>2020</u>	<u>2019</u>
With Donor Restrictions		
Endowment funds	\$ 7,691,614	\$ 7,422,159
Unexpended capital and other ^(a)	600,189	523,690
Pledges receivable	626,352	664,840
Annuity and life income funds	112,639	108,614
Total, Net Assets With Donor Restrictions	<u>9,030,794</u>	<u>8,719,303</u>
Without Donor Restrictions		
Board designated endowment	3,565,407	3,528,579
Undesignated	3,702,487	3,779,345
Total, Net Assets Without Donor Restrictions	<u>7,267,894</u>	<u>7,307,924</u>
Total Net Assets	<u>\$ 16,298,688</u>	<u>\$ 16,027,227</u>

^(a) Includes capital gifts not yet released from restriction, unspent gift and endowment income balances, and student loan funds.

4. Operating Measurement

The University divides its consolidated statements of activities into operating and nonoperating activities. The operating activities of the University include all income and expenses related to carrying out its mission focused on education, research, and patient care. Operating revenues include investment income and endowment appreciation utilized to fund current operations, the largest portion of which is the distribution of funds budgeted in accordance with the endowment spending rule.

Nonoperating activities include current year realized and unrealized gains and losses on investments, including realized gain distributions from fund investments, less amounts withdrawn from endowment appreciation to fund operations. Nonoperating activities also include new gifts to donor-restricted endowments that the University must hold in perpetuity, changes in net assets held by CPMC Fund, Inc., changes in funds held by others in perpetuity, present value adjustments to split-interest agreements, net periodic benefit cost other than service cost, changes in pension and postretirement obligations, other items, and reclassifications.

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5. Patient Care Revenue

The University's affiliation agreements with area hospitals generated \$436.3 million and \$380.7 million of revenue for the years ended June 30, 2020 and 2019, respectively. As of June 30, 2020 and 2019, "Accounts receivable, net" includes \$133.2 million and \$111.6 million, respectively, relating to these agreements.

Medical faculty practice revenue is reported at the estimated net realizable amounts from patients, third-party payers, and others for services rendered. Medical faculty practice revenues are \$760.3 million and \$822.4 million for the years ended June 30, 2020 and 2019, respectively. As of June 30, 2020 and 2019, patient accounts receivable amounts to \$84.0 million and \$123.0 million, respectively. Medical service agreements generated \$33.7 million and \$30.0 million of revenue for the years ended June 30, 2020 and 2019, respectively, and other patient care activities generated \$75.9 million and \$67.8 million of revenue for the years ended June 30, 2020 and 2019, respectively.

6. Long-Term Investments and Fair Value

The University values its investments in accordance with GAAP and consistent with the FASB official pronouncement on *Fair Value Measurements* for financial assets and liabilities. The pronouncement defines fair value as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. GAAP establishes a hierarchy of valuation inputs based on the extent to which the inputs are observable in the marketplace. Observable inputs reflect market data obtained from sources independent of the reporting entity. Unobservable inputs reflect the entity's own assumptions about how market participants would value an asset or liability based on the best information available. Valuation techniques used to measure fair value utilize relevant observable inputs and minimize the use of unobservable inputs.

The University follows a fair value hierarchy based on three levels of inputs, described below:

Fair value for Level 1 is based on quoted prices in active markets that the University has the ability to access for identical assets and liabilities. Market price data is generally obtained from exchange or dealer markets. The University does not adjust the quoted price for such assets and liabilities.

Fair value for Level 2 is based on quoted prices for similar instruments in active markets, quoted prices for identical or similar instruments in markets that are not active, or inputs other than quoted prices that are observable.

Fair value for Level 3 is based on valuation techniques that use significant inputs that are unobservable as they are not actively traded.

A financial instrument's categorization within the valuation hierarchy is based upon the lowest level of input that is significant to the fair value measurement. In determining the categorization of the University's investments within the fair value hierarchy, the University has considered market information including observable net asset values and the length of time until the investment will become redeemable. Investments for which fair value is measured using net asset values ("NAV") as a practical expedient are excluded from the hierarchy and have been reported separately within

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the table below. The categorization of a financial instrument within the hierarchy is based upon the pricing transparency of that instrument and does not necessarily correspond to the University's perceived risk of that instrument.

From time to time, the University may hold direct real estate investments. These investments are categorized as Level 3 within the fair value hierarchy. Valuation for material directly held real estate investments is determined from periodic valuations prepared by independent appraisers or broker opinions.

The University holds certain investments for which fair value is determined generally by using the unadjusted NAV per share as provided by the fund management as a practical expedient. Investments categorized as NAV include the University's ownership in funds that invest in alternative assets (i.e. absolute return strategy funds, private equity funds, and real asset funds) and funds that invest in equity and fixed income strategies for which observable net asset values are not available. The value of the University's investments in these funds represents the University's ownership interest in the net asset value of the respective fund. Items classified as NAV do not have a quoted price in an active market place. As a practical expedient, the University is permitted under GAAP to estimate the fair value of an investment at the measurement date using the NAV reported by the fund manager without further adjustment, provided the NAV has been calculated in accordance with or in a manner consistent with GAAP, and provided further that the University does not expect to sell the investment at a value other than NAV. The University has various processes and controls in place to ensure investment fair value is reasonable and performs various due diligence procedures over its investments including an assessment of applicable accounting policies, a review of the valuation procedures employed, and consideration of redemption features and price transparency.

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The following tables present assets and liabilities measured at fair value and NAV at June 30, 2020 and June 30, 2019.

Assets	2020				
	Level 1	Level 2	Level 3	NAV	Total
Investments:					
Cash and short-term investments	\$ 1,145,525	\$ 397,134			\$ 1,542,659
Global equities	982,288	24,556	\$ 1,229	\$ 1,705,137	2,713,210
Fixed income	23,995	738	16	280,953	305,702
Absolute return strategies		382,878		3,363,353	3,746,231
Private equity	11,207		196,634	2,219,528	2,427,369
Real assets	5,852	847	22,360	1,559,782	1,588,841
Investments, at fair value	<u>2,168,867</u>	<u>806,153</u>	<u>220,239</u>	<u>9,128,753</u>	<u>12,324,012</u>
Interest in perpetual trusts held by others			177,810		177,810
Total assets at fair value	<u>\$ 2,168,867</u>	<u>\$ 806,153</u>	<u>\$ 398,049</u>	<u>\$ 9,128,753</u>	<u>\$ 12,501,822</u>
Liabilities					
Swaps payable		\$ 110,676			\$ 110,676
Total liabilities at fair value		<u>\$ 110,676</u>			<u>\$ 110,676</u>

Note: The fair value of the NAV investments as of June 30, 2020 is inclusive of \$150 million of receivables for investment subscriptions entered into during the year ended June 30, 2020, with an effective date subsequent to June 30, 2020.

Assets	2019				
	Level 1	Level 2	Level 3	NAV	Total
Investments:					
Cash and short-term investments	\$ 691,257	\$ 340,676			\$ 1,031,933
Global equities	1,086,958	78,814	\$ 1,040	\$ 1,174,241	2,341,053
Fixed income	1,612	710	4	322,184	324,510
Absolute return strategies	30,275	6,134		3,621,495	3,657,904
Private equity	72,080	-	112,021	2,056,544	2,240,645
Real assets	2,811	(983)	30,300	1,934,418	1,966,546
Investments, at fair value	<u>1,884,993</u>	<u>425,351</u>	<u>143,365</u>	<u>9,108,882</u>	<u>11,562,591</u>
Interest in perpetual trusts held by others			181,115	11,836	192,951
Total assets at fair value	<u>\$ 1,884,993</u>	<u>\$ 425,351</u>	<u>\$ 324,480</u>	<u>\$ 9,120,718</u>	<u>\$ 11,755,542</u>
Liabilities					
Swaps payable		\$ 76,072			\$ 76,072
Total liabilities at fair value		<u>\$ 76,072</u>			<u>\$ 76,072</u>

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Cash and Short-Term Investments

Cash and short-term investments include government securities and money market instruments and are valued at amortized cost, which approximates fair value.

Global Equities and Fixed Income

Global equities and fixed income consist of investments in publicly traded U.S. and foreign common and preferred equities, funds that invest in equity and fixed income based strategies, and cash held in separate accounts committed to these strategies. The fair value of these investments is based on quoted market prices. Investments that are listed on an exchange are valued, in general, at the last reported sale price (or, if there is no sales price, at the last reported bid price, or, in the absence of reported bid prices, at the mean between the last reported bid and asked prices thereof). Fund investments in equity and fixed income based strategies are valued in accordance with NAV provided by the investment managers of the underlying funds. If the University has valued the investment based on NAV as a practical expedient, the investment has been excluded from the fair value hierarchy and will be categorized as NAV. If the valuation does not meet the practical expedient criteria and the University has the ability to redeem from a fund up to 180 days beyond the measurement date, the investment is categorized as Level 2. If the redemption period extends beyond 180 days, the investment is categorized as Level 3.

Alternative Investments

Alternative investments include absolute return strategies, private equity, and real assets. Holdings in these strategies may be in funds or in separate accounts with direct investments in listed equities and fixed income, as well as cash committed to fund these investments. Private equity funds include large market, leveraged buyout, and venture capital based strategies. The University values these investments in accordance with valuations provided by the investment managers of the underlying funds. Investments in securities that are publicly traded, whether held by a fund or in a separate account, are generally valued based on observable market prices unless a restriction exists. In addition, interests in a private equity fund may be publicly traded and valued based on observable market prices.

As a general rule, alternative investments are valued based upon the best information available for a given circumstance and may incorporate assumptions that are the best estimate after consideration of a variety of internal and external factors. The fair value of investments categorized as Level 1 are based on quoted prices on a public market. If no public market exists for the investments, the fair value is determined by taking into consideration, among other things, the last reported bid price obtained from pricing sources or broker quotes, the cost of the investment, prices of recent significant placements of similar investments of the same issuer, and subsequent developments concerning the companies to which the investments relate. The University's management may consider other factors in assessing the fair value of these investments. If the University has valued these alternative investments based on NAV as a practical expedient, the investment is excluded from the fair value hierarchy and will be categorized as NAV. For investments in absolute return strategies, if the valuation does not meet the practical expedient criteria and the University has the ability to redeem from the investment up to 180 days beyond the measurement date, the investment is categorized as Level 2. If the redemption period extends beyond 180 days, the investment is categorized as Level 3. For private equity funds and real asset funds, if the valuation does not meet the practical expedient criteria, the investments are categorized as Level 3 given that the University does not have discretion for timing of withdrawal.

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The fair value of the alternative investment funds in the table above represents the amount the University would expect to receive at June 30, 2020 and 2019, if it had liquidated its investments on these dates. The University has performed due diligence around these investments and believes that the NAV of its alternative investments is a reasonable estimate of fair value as of June 30, 2020 and 2019. Alternative investments may allocate a high percentage of their assets in specific sectors of the market in order to achieve a potentially greater investment return. As a result, the investments may be susceptible to economic, political, and regulatory developments in a particular sector of the market, positive or negative, and may experience increased volatility in net asset values.

Perpetual Trusts

The fair value of interest in perpetual trusts held by others is based on the University's share of the income generated by the trust, ascribed to the fair value of the assets reported by the trust.

Derivatives

Investment fund managers may invest in derivatives, and the value of these positions is reflected in the NAV of the respective funds. Separately, the University employs derivatives primarily to hedge its risks and to rebalance its market exposures. Derivatives used may include futures, swaps, options, and forward contracts and are reflected at fair value following the definition of Level 1 and Level 2 assets as described above. Certain derivative positions held within the endowment portfolio are subject to master netting agreements included within an International Swap and Derivatives Association, Inc. ("ISDA") master agreement with each of the counterparties.

The following positions are reflected on a net basis within "Investments, at fair value" on the consolidated statements of financial position and are summarized below.

Derivative Instruments	Notional Exposure		Gross		Net Fair Value	Collateral Posted
	Long	Short	Asset	Liability		
June 30, 2020						
Equity	\$ 220,172		\$ 17,326	\$ (301)	\$ 17,025	\$ 5,600
Currency*			6,646	(2,172)	4,474	
June 30, 2019						
Equity	\$ 260,754	\$ 57,511	\$ 33,713	\$ (413)	\$ 33,300	\$ 7,869
Currency*			6,006	(9,270)	(3,264)	

*The University held currency derivative contracts with an aggregate notional amount of \$1,190.4 million and \$1,220.2 million as of June 30, 2020 and 2019, respectively.

Outside of the endowment portfolio, the University entered into a fixed payer interest rate swap as described in Note 16. The estimated fair value of the agreement is reported as a liability of \$110.7 million and \$76.1 million at June 30, 2020 and 2019, respectively, and is included in "Swaps payable" in tables on the preceding pages. The derivatives are reflected as a receivable or payable, as appropriate, on the consolidated statements of financial position. Unrealized gain or loss from derivative investments is a component of the "Current year realized and unrealized capital gains (losses)" in the consolidated statements of activities.

The methods described above may produce a fair value calculation that may not be indicative of net realizable value or reflective of future fair values. Furthermore, while the University believes its valuation methods are appropriate and consistent with other market participants, the use of different

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methodologies or assumptions to determine the fair value of certain financial instruments could result in a different estimate of fair value at the reporting date.

The following tables roll forward the amounts reported in the consolidated statements of financial position for financial instruments classified by the University within Level 3 of the fair value hierarchy defined above at June 30, 2020 and 2019.

	June 30, 2019	Transfers In/Out	Purchases	Sales	Realized gain/loss	Unrealized gain/loss	June 30, 2020
Global equities	\$ 1,040			\$ (52)		\$ 241	\$ 1,229
Fixed income	4					12	16
Private equity	112,021	(1,499)	21,569	(1,314)	\$ 24	65,833	196,634
Real assets	30,300		1,875	(9,478)	(17,558)	17,221	22,360
Total level 3 investments	\$ 143,365	\$ (1,499)	\$ 23,444	\$ (10,844)	\$ (17,534)	\$ 83,307	\$ 220,239

	June 30, 2019	Transfers In/Out	Disburse- ments	Realized/ Unrealized gain/loss, net	June 30, 2020
Interest in perpetual trusts held by others	\$ 181,115	\$ 32	\$ (7,291)	\$ 3,954	\$ 177,810

	June 30, 2018	Transfers In/Out	Purchases	Sales	Realized gain/loss	Unrealized gain/loss	June 30, 2019
Global equities	\$ 1,520	\$ (456)		\$ (413)		\$ 389	\$ 1,040
Fixed income	11		1	\$ (10)		2	4
Private equity	86,055	(1,741)	13,862	(3,714)	\$ 178	17,381	112,021
Real assets	27,697		1,633		(20,080)	21,050	30,300
Total level 3 investments	\$ 115,283	\$ (2,197)	\$ 15,496	\$ (4,137)	\$ (19,902)	\$ 38,822	\$ 143,365

	June 30, 2018	Transfers In/Out	Disburse- ments	Realized/ Unrealized gain/loss, net	June 30, 2019
Interest in perpetual trusts held by others	\$ 178,956		\$ (7,496)	\$ 9,655	\$ 181,115

All net realized and unrealized gains (losses) in the tables above are reflected in the consolidated statements of activities. Net unrealized gains (losses) relate to those financial instruments held by the University at June 30, 2020 and 2019. The University's policy is to recognize transfers in and transfers out as of the end of the period. Transfers between Level 3 and Level 1, Level 3 and Level 2 as well as between Level 3 and NAV are reported at gross, due to the criteria described above. There were no significant transfers between Level 1 and Level 2 for the years ended June 30, 2020 and 2019. There were transfers between NAV and Level 2 of \$383.2 million and \$0 for the years ended June 30, 2020 and 2019, respectively.

Certain investments in global equities and alternative investments may be subject to restrictions that (i) limit the University's ability to withdraw capital after such investment and (ii) limit the amount that may be withdrawn as of a given redemption date. The redemption terms of the University's investments in absolute return strategy funds vary from daily to triennial, with a portion of these investments designated as "illiquid" in "sidepockets" and that portion may not be available for

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withdrawal until liquidated by the investing fund and redemption notice periods range from 0 days to 180 days. Generally, as noted above, the University has no discretion as to withdrawal of its investment in private equity and real asset funds; distributions are made when sales of assets are made within the funds. The remaining life of these private equity and real asset funds is up to 12 years.

The University is obligated under certain investment fund agreements to advance additional funding up to specified levels over a period of several years. These commitments have fixed expiration dates and other termination clauses. At June 30, 2020, the University had unfunded commitments of approximately \$2.1 billion as follows:

Asset class (\$ in millions)	Remaining life of fund	Unfunded commitments	Timing to draw commitments
Global equities	N/A	\$ 1	1 to 8 years
Absolute return strategies	N/A	124	1 to 5 years
Private equity	1 to 12 years	1,142	1 to 12 years
Real assets	1 to 12 years	808	1 to 12 years
Total		\$ 2,075	

The University’s estimate of the lives of the funds could vary significantly depending on the investment decisions of the external fund managers, changes in the University’s portfolio, and other circumstances. Furthermore, the University’s obligation to fund the commitments noted above may be waived by the fund manager for a variety of reasons including market conditions and/or changes in investment strategy.

The University has various sources of internal liquidity at its disposal, including cash, short-term investments, marketable debt and equity securities, and lines of credit, which are available to fund the committed drawdowns.

Investment Return

Investment income and gains utilized on the consolidated statements of activities contains endowment appreciation utilized to fund the spending rule, institutional real estate revenue net of operating expenses and depreciation, and other investment income. Endowment appreciation utilized was \$593.8 million and \$578.1 million during 2020 and 2019, respectively. “Current year realized and unrealized capital gains (losses)” reported in nonoperating activities reflect investment returns net of external and direct internal investment costs, reduced by endowment appreciation utilized to fund the spending rule.

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7. Endowment Funds

The University's endowment consists of approximately 5,900 separate funds established over many years for a wide variety of purposes, which include support of specific schools or departments of the University, professorships, research, faculty support, scholarships and fellowships, library, building construction, and other purposes. The endowment includes donor-restricted endowments and funds designated by the Board of Trustees to function as endowments. As required by GAAP, net assets associated with endowment funds, including funds designated by the Board of Trustees to function as endowments, are classified and reported based on the existence or absence of donor-imposed restrictions.

The University employs a market value unit method of accounting for pooled general investments. Each participating fund enters and withdraws from the pooled investment account based on monthly unit market values. Changes in the market value of investments are distributed proportionately to each fund that participates in the investment pool. Net investment income distributed during the year is allocated on a per unit basis to each participating fund.

Relevant Law

Under NYPMIFA, the University may appropriate so much of a donor-restricted endowment fund as it deems prudent, considering the specific factors set forth in NYPMIFA and subject to the intent of the donor as expressed in the gift instrument. Unless stated otherwise in the gift instrument, the earnings in an endowment fund are considered to have donor restrictions until appropriated.

The University continues to classify as net assets with donor restrictions (a) the original value of gifts donated to the permanent endowment, (b) the original value of subsequent gifts to the permanent endowment, and (c) accumulations to the endowment made in accordance with the direction of the applicable donor gift instrument at the time the accumulation is added to the fund. Accumulated appreciation on donor-restricted endowment funds is also included as net assets with donor restrictions until those amounts are appropriated for expenditure by the University in a manner consistent with the standard of prudence prescribed by NYPMIFA.

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The composition and changes in the University's endowment net assets as of June 30, 2020 and 2019, are as follows:

	2020		
	Without Donor Restrictions	With Donor Restrictions	Total
Changes in University endowment net assets			
Opening balance - June 30, 2019	\$ 3,528,579	\$ 7,422,159	\$ 10,950,738
Investment return	203,356	359,346	562,702
New gifts	3,775	278,811	282,586
Appropriation for expenditure	(241,258)	(416,147)	(657,405)
Other changes:			
Transfers to create endowments	79,094	39,306	118,400
Other / Reclassifications	(8,139)	8,139	-
	<u>70,955</u>	<u>47,445</u>	<u>118,400</u>
Closing balance - June 30, 2020	<u>\$ 3,565,407</u>	<u>\$ 7,691,614</u>	<u>\$ 11,257,021</u>
University endowment composition			
Donor-restricted endowment funds:			
Restricted in perpetuity		\$ 3,661,726	\$ 3,661,726
Appreciation		3,441,964	3,441,964
Board designated endowment:			
Departmental funds	\$ 1,413,017	395,321	1,808,338
University funds	1,476,882		1,476,882
Institutional real estate, net	675,508		675,508
CPMC Fund, Inc.		14,793	14,793
Interests in perpetual trusts held by others		177,810	177,810
University's endowment value	<u>\$ 3,565,407</u>	<u>\$ 7,691,614</u>	<u>\$ 11,257,021</u>

Note: The tables above do not include split-interest agreements, net of \$118,520 and pledges receivable, net of \$287,693.

Reconciliation to Investments, at fair value

Investments, at fair value		\$ 12,324,012
Add:		
Interests in perpetual trusts held by others	177,810	
CPMC Fund, Inc.	14,793	
Institutional real estate, net	675,508	
Investment receivables and payables	74,388	942,499
Subtract:		
Other long-term investments	(1,757,673)	
Split-interest agreements	(177,255)	
Funds held on behalf of others	(74,562)	(2,009,490)
University's endowment value		<u>\$ 11,257,021</u>

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	2019		
	Without Donor Restrictions	With Donor Restrictions	Total
Changes in University endowment net assets			
Opening balance - June 30, 2018	\$ 3,547,541	\$ 7,321,704	\$ 10,869,245
Investment return	171,717	246,699	418,416
New gifts	1,483	231,094	232,577
Appropriation for expenditure	(245,084)	(399,376)	(644,460)
Other changes:			
Transfers to create endowments	46,797	28,163	74,960
Other / Reclassifications	6,125	(6,125)	
	<u>52,922</u>	<u>22,038</u>	<u>74,960</u>
Closing balance - June 30, 2019	<u>\$ 3,528,579</u>	<u>\$ 7,422,159</u>	<u>\$ 10,950,738</u>
University endowment composition			
Donor-restricted endowment funds:			
Restricted in perpetuity		\$ 3,397,438	\$ 3,397,438
Appreciation		3,454,243	3,454,243
Board designated endowment:			
Departmental funds	\$ 1,414,680	362,378	1,777,058
University funds	1,490,061		1,490,061
Institutional real estate, net	623,838		623,838
CPMC Fund, Inc.		15,149	15,149
Interests in perpetual trusts held by others		192,951	192,951
University's endowment value	<u>\$ 3,528,579</u>	<u>\$ 7,422,159</u>	<u>\$ 10,950,738</u>

Note: The tables above do not include split-interest agreements, net of \$114,321 and pledges receivable, net of \$349,385.

Reconciliation to Investments, at fair value

Investments, at fair value		\$ 11,562,591
Add:		
Interests in perpetual trusts held by others	192,951	
CPMC Fund, Inc.	15,149	
Institutional real estate, net	623,838	
Investment receivables and payables	<u>73,675</u>	905,613
Subtract:		
Other long-term investments	(1,255,483)	
Split-interest agreements	(175,320)	
Funds held on behalf of others	<u>(86,663)</u>	<u>(1,517,466)</u>
University's endowment value		<u>\$ 10,950,738</u>

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Return Objectives and Risk Parameters

Endowment assets include those assets of donor-restricted funds that the University must hold in perpetuity or for a donor-specified period(s) as well as Board-designated funds. Under the University's investment policies, as approved by the Board of Trustees, the endowment assets are invested in a manner that is intended to produce performance which exceeds that of relevant indices for each asset class while assuming a moderate level of investment risk.

Strategies Employed for Achieving Objectives

The University relies on a total return strategy in which investment returns are achieved through both capital appreciation (realized and unrealized) and current yield (interest and dividends). The University targets a diversified asset allocation to achieve its long-term return objectives within prudent risk constraints.

Endowment Spending Rule

The endowment spending rule utilized by the University is designed to be directly responsive to both investment returns and the current level of price inflation. Its long-term objectives are:

- To protect the corpus of the endowment by spending no more than the real investment return;
- To cushion spending against market volatility; and
- To provide specific spending instructions and multiyear spending projections based on explicit future investment return assumptions.

The current endowment spending rule is based on two factors: first, the market value multiplied by a target spending rate that may range from 4.5 to 5.0 percent, which provides a response to investment market conditions; and second, the prior year's spending plus inflation, which ties spending increases to operating needs and cushions spending against market volatility. This allows the University to maintain the purchasing power of the endowment assets held in perpetuity or for a specified term as well as to provide additional real growth through new gifts and investment return.

As a general policy, each fiscal year's distribution is calculated by adding together the following:

- a. The market value of the endowment at a point twelve months prior to the beginning of the given fiscal year, multiplied by the target spending rate, multiplied by a 40 percent weighting; and
- b. Endowment spending in the year immediately preceding the given fiscal year, grown or reduced by an inflation factor, which is defined as the Higher Education Price Index ("HEPI"), multiplied by a 60 percent weighting.

The Trustees conduct a special review in any year in which either projected endowment distributions are 0.5 percent higher or lower than the target spending rate, or if the increase in endowment distributions over the previous year is more than 3 percentage points higher or lower than HEPI. Additionally, from time to time, management may recommend and the Trustees may approve a temporary override of the spending rule to ensure the University's ability to sustain the permanent nature of the endowment.

In addition to the base spending rate described above, an additional payout component was approved as a temporary measure by the Trustees in 2008. This component is 0.70 percent of the prior year beginning market value for certain endowments in categories key to the University's

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current development efforts, primarily endowments for purposes core to the University's educational and research mission, including financial aid and faculty support. This is reviewed by the Trustees regularly and has currently been extended through the end of fiscal year 2021.

Underwater Endowment Funds

From time to time, the fair value of assets associated with individual donor-restricted endowment funds may fall below the original gift value, which represents the total of the initial and subsequent donor contribution amounts. When this occurs, the deficit is classified as a reduction of donor-restricted net assets. As of June 30, 2020, deficits totaling \$2.7 million existed in funds which combined had an original gift value of \$181.6 million and a current market value of \$178.9 million. As of June 30, 2019, deficits totaling \$1.5 million existed in funds which combined had an original gift value of \$155.7 million and a current market value of \$154.2 million. The deficits resulted from market fluctuations that occurred after the investment of recent contributions and authorized appropriation from an endowment that was deemed prudent.

8. Accounts Receivable

Accounts receivable, net, consists of the following as of June 30:

	<u>2020</u>	<u>2019</u>
Patient receivables, net of contractual allowances	\$ 160,292	\$ 196,819
Government agencies	74,835	105,457
NewYork-Presbyterian Hospital	150,629	129,849
Patent and licensing	6,169	7,359
Student receivables	85,339	74,065
Investment income receivable	5,160	6,177
Other receivables	158,029	150,666
	<u>640,453</u>	<u>670,392</u>
Less: Allowance for doubtful accounts	(97,287)	(101,064)
Accounts receivable, net	<u>\$ 543,166</u>	<u>\$ 569,328</u>

Patient receivables for medical services are net of an allowance for contractual reserves in the amount of \$246.4 million and \$225.1 million at June 30, 2020 and 2019, respectively.

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9. Student Loans Receivable and Financial Aid

The University participates in various federal loan programs, in addition to administering institutional loan programs. Loans receivable from students as of June 30 are as follows:

	<u>2020</u>	<u>2019</u>
Government revolving loans	\$ 47,951	\$ 56,043
Institutional loans	<u>28,772</u>	<u>29,521</u>
Gross student loans	76,723	85,564
Less: Allowance for doubtful collections	<u>(2,494)</u>	<u>(2,177)</u>
Student loans receivable, net	<u>\$ 74,229</u>	<u>\$ 83,387</u>

Government revolving loans are funded principally with federal advances to the University under the Federal Perkins Loan Program and certain other programs. The Federal Perkins Loan Program expired on September 30, 2017 and no new disbursements were permitted after June 30, 2018, but there are outstanding balances from loans awarded in previous years. Balances under the Federal Perkins Loan Program totaled \$47.9 million and \$65.8 million and advances under the other federally sponsored loan programs are \$14.5 million and \$14.0 million as of June 30, 2020 and 2019, respectively. These advances are classified as liabilities on the consolidated statements of financial position. Interest earned on the revolving and institutional loan programs is reinvested to support additional loans. The repayment and interest rate terms of the institutional loans vary considerably.

Management regularly assesses the adequacy of the allowance for doubtful collections by performing ongoing evaluation of the student loan and student accounts receivable portfolios. Loans receivable under federally guaranteed student loan programs are subject to significant restrictions.

In addition to the loans identified above, the University processes and authorizes loans to students through the William D. Ford Federal Direct Loan Program. The amounts due under this loan program are not recorded in the University's consolidated financial statements since the University does not guarantee any federal loan funds related to this program. Loans issued under this program were \$275.2 million and \$291.1 million for the years ended June 30, 2020 and 2019, respectively.

Undergraduate financial aid represents grants and awards for all or part of a student's tuition and fees, and in certain other instances, items such as room and board. Graduate financial aid represents grants and awards for all or part of a student's tuition and fees. Funding from external sources is obtained through government and private grants and contracts as well as private gifts and payout from certain endowment funds.

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Financial aid granted to students is summarized as follows for the year ending June 30:

	2020			2019		
	University Sources	External Sources	Total Financial Aid	University Sources	External Sources	Total Financial Aid
Undergraduate	\$ 139,668	\$ 63,084	\$ 202,752	\$ 130,092	\$ 62,501	\$ 192,593
Graduate	198,659	91,101	289,760	183,136	85,907	269,043
Total financial aid grants	<u>\$ 338,327</u>	<u>\$ 154,185</u>	<u>\$ 492,512</u>	<u>\$ 313,228</u>	<u>\$ 148,408</u>	<u>\$ 461,636</u>

Agency activities such as tuition aid grants and Federal Pell Grant Program awards are not included in the University's consolidated financial statements. Both receipts and disbursements for these agency transactions were \$11.8 million and \$12.0 million in years ended June 30, 2020 and 2019, respectively.

10. Pledges Receivable

Unconditional promises to give appear as pledges receivable and revenue of the appropriate net asset category. Pledges are recorded net of an allowance for uncollectible contributions and a discount to reflect the net present value based on projected cash flows. Periodically unconditional promises to give are reviewed for collectability. As a result, the allowance for uncollectible contributions may be adjusted and some contributions may be adjusted or cancelled. Such changes will be reflected in the consolidated financial statements.

Unconditional promises, and their expected collection dates, were as follows at June 30:

	2020	2019
Less than one year	\$ 212,388	\$ 196,233
One to five years	351,737	441,797
More than five years	172,881	159,090
Total unconditional promises	737,006	797,120
Less: Allowance for doubtful contributions	(27,860)	(31,494)
Less: Net present value discount	(82,794)	(100,786)
Net pledges receivable	<u>\$ 626,352</u>	<u>\$ 664,840</u>

New pledges recorded in the years ended June 30, 2020 and 2019, were discounted at an average annual rate of 0.89 percent and 2.03 percent, respectively, using a rate that considers market and credit risk. Credit risk is also considered in the allowance for doubtful contributions.

Pledges receivable were intended for the following purposes as of June 30:

	2020	2019
Endowment for educational and general purposes	\$ 287,693	\$ 349,385
New construction and modernization of plant	166,711	136,648
Support of University operations	171,948	178,807
Net pledges receivable	<u>\$ 626,352</u>	<u>\$ 664,840</u>

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The University also has other outstanding pledges of \$122.8 million as of June 30, 2020. These pledges represent either gifts with donor-imposed conditions, containing both a barrier and a right of return/release, or other pledges that have not met the requirements for recognition.

11. Land, Buildings, and Equipment

Investments in land, buildings, and equipment, net, consisted of the following at June 30:

	2020			2019		
	Total Land, Buildings, and Equipment	Accumulated Depreciation	Net Land, Buildings, and Equipment	Total Land, Buildings, and Equipment	Accumulated Depreciation	Net Land, Buildings, and Equipment
Land	\$ 504,394	\$ -	\$ 504,394	\$ 478,254	\$ -	\$ 478,254
Building and building improvements	6,635,480	3,261,865	3,373,615	6,463,174	3,048,678	3,414,496
Construction in progress	794,765		794,765	600,301	-	600,301
Equipment	646,877	411,129	235,748	583,020	361,805	221,215
Total	\$ 8,581,516	\$ 3,672,994	\$ 4,908,522	\$ 8,124,749	\$ 3,410,483	\$ 4,714,266

The University uses componentized depreciation to calculate depreciation expense for buildings and building improvements for research facilities included in operations. The costs of research facilities are separated into the building shell, building service systems, and fixed equipment, and each component is separately depreciated.

Equipment includes physical assets owned by the University as well as capitalized software costs and moveable equipment acquired through capitalized leases.

Building and building improvements include physical assets owned by the University as well as leasehold improvements, capitalized space leases, and construction in progress. The net book value of capitalized space leases at June 30, 2020 and 2019, was \$68.1 million and \$70.7 million, respectively.

12. Accrued Employee Benefit Liabilities

Accrued employee benefit liabilities arise from employment at the University. These include liabilities for pension, postretirement benefits, postemployment benefits, unused vacation, and deferred compensation.

Postemployment benefits relating to workers' compensation, short-term disability, and continuation of medical benefits for those on long-term disability are provided to former or inactive employees after employment but before retirement. The University records the costs of such benefits on an accrual basis if the employee has provided the services from which those benefits are derived. As of June 30, 2020 and 2019, the actuarially computed liabilities on the University's consolidated statements of financial position are \$56.5 million and \$60.0 million, respectively.

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13. Pension and Other Postretirement Benefit Costs

Pension Plan Benefits

The University has four non-contributory pension plans (the “pension plans”) for supporting staff employees. All four pension plans are subject to collective bargaining agreements. Until December 31, 2018 the former employees of the Arden Conference Center, which closed in 2005, were covered under a fifth plan. As of January 1, 2019 this plan has been consolidated into the Retirement Plan for Supporting Staff of Columbia University. Two of the plans include defined benefits for past and future service. Two of the pension plans provide defined benefits for service prior to January 1 and July 1, 1976, respectively. For these two pension plans, future benefits are provided by defined contribution plans. Charges to expenditures for the defined contribution segments of the plans amounted to \$6.0 million and \$4.0 million for the years ended June 30, 2020 and 2019, respectively.

In addition, the University provides retirement benefits for full-time faculty, officers, and certain other employees under a separate defined contribution plan (the “officer plan”). University contributions for the officer plan reported in operating expenses were \$163.0 million and \$151.1 million for the years ended June 30, 2020 and 2019, respectively.

Postretirement Health Care and Life Insurance Benefits

The University provides postretirement health care and life insurance benefits for certain employees. The University accrues the estimated cost of these benefits over the years that eligible employees render service.

Obligations and Funded Status

The University follows authoritative guidance, which requires recognition on the consolidated statements of financial position of the difference between benefit obligations and any plan assets of the University’s defined benefit and other postretirement benefit plans. In addition, the authoritative guidance requires unamortized amounts (e.g., net actuarial gains or losses and prior service cost or credits) to be recognized as changes to net assets without donor restrictions and that those amounts be adjusted as they are subsequently recognized as components of net periodic pension cost.

Amounts recognized in net assets without donor restrictions are as follows:

	Pension Plan Benefits		Other Postretirement Benefits	
	2020	2019	2020	2019
Net actuarial (gain)/ loss	\$ 67,659	\$ 51,647	\$ (32,798)	\$ (55,745)
Prior service (credit) / cost	181	246		
Total amount recognized	<u>\$ 67,840</u>	<u>\$ 51,893</u>	<u>\$ (32,798)</u>	<u>\$ (55,745)</u>

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The components of accrued benefit costs for pension benefits and other postretirement benefits are as follows:

	Pension Plan Benefits		Other Postretirement Benefits	
	2020	2019	2020	2019
Change in benefit obligation:				
Benefit obligation, beginning of year	\$ 235,721	\$ 209,046	\$ 131,347	\$ 145,152
Service cost	9,624	7,916	6,644	6,241
Interest cost	9,177	9,046	5,284	5,734
Plan participants' contributions			6,001	6,103
Actuarial (gain) / loss	27,338	16,711	12,072	(22,676)
Federal subsidy			588	596
Net disbursements and transfers	(7,502)	(6,998)	(10,578)	(9,803)
Benefit obligation, end of year	<u>274,358</u>	<u>235,721</u>	<u>151,358</u>	<u>131,347</u>
Change in plan assets:				
Fair value of assets, beginning of year	199,232	176,906	211,319	200,805
Actual return on plan assets	18,730	18,846	4,983	14,214
Employer contributions	8,560	10,478		
Plan participants' contributions			6,001	6,103
Net disbursements and transfers	(7,502)	(6,998)	(10,578)	(9,803)
Fair value of assets, end of year	<u>219,020</u>	<u>199,232</u>	<u>211,725</u>	<u>211,319</u>
Net amount recognized	<u>\$ (55,338)</u>	<u>\$ (36,489)</u>	<u>\$ 60,367</u>	<u>\$ 79,972</u>

Weighted-average assumptions used to determine end of year benefit obligation

	2020	2019
Discount rate	2.15% to 3.15%	3.20% to 3.75%
Rate of compensation increase	3.00%	3.00%

The accumulated benefit obligations for the two underfunded pension plans at June 30, 2020 and 2019, were \$235.2 and \$203.4 million, respectively.

At June 30, 2020 and 2019, the projected benefit obligation exceeded the pension plan assets for two of the four plans. The projected benefit obligation for the pension plans with a benefit obligation in excess of plan assets were as follows:

End of year	2020	2019
Projected benefit obligation	\$ 263,240	\$ 224,753
Fair value of plan assets	205,345	185,578

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The accumulated postretirement benefit obligation for the other postretirement benefit plan and the fair value of plan assets with plan assets in excess of the accumulated postretirement benefit obligation was as follows:

End of year	2020	2019
Accumulated postretirement benefit obligation	\$ 151,358	\$ 131,347
Fair value of plan assets	211,725	211,319

A 6.50 percent annual rate of increase in the per capita cost of covered health care benefits for the other postretirement benefit plan was assumed for 2021. The rate was assumed to decrease gradually to 4.75 percent for year ended June 30, 2028 and remain at that level thereafter. Assumed health care cost trend rates have a significant effect on the amounts reported for the health care plans. A one-percentage-point change in assumed health care cost trend rates would have the following effect:

	1-% -point increase	1-% -point decrease
Effect on accumulated postretirement benefit obligation	\$ 20,185	\$ (16,147)

The asset allocation for the two defined benefit plans for both past and future service at June 30, 2020 and 2019, and the target allocation for 2021, by asset category, follows:

Asset category	Target allocation	Percentage of plan assets at year end	
	2021	2020	2019
U.S. large cap equity and global equity funds	26%	18%	18%
International equities (non-U.S.)	14%	21%	21%
High yield fixed income securities	10%	10%	10%
U.S. core fixed income	50%	51%	51%
	<u>100%</u>	<u>100%</u>	<u>100%</u>

The asset allocation for the two defined benefit plans for prior service only at June 30, 2020 and 2019, and the target allocation for 2021, by asset category, follows:

Asset category	Target allocation	Percentage of plan assets at year end	
	2021	2020	2019
U.S. large cap equity	10%	0%	6%
International equities (non-U.S.)	5%	4%	11%
High yield fixed income securities	5%	5%	1%
U.S. core fixed income	80%	91%	82%
	<u>100%</u>	<u>100%</u>	<u>100%</u>

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The following presents investments of the pension plans as of June 30, 2020. The Plans' investments in common collective trusts are valued at NAV as a practical expedient and are therefore excluded from the fair value hierarchy and are reported as NAV. Level 3 assets represent fixed income related investment contracts with a major life insurance company.

	<u>Level 1</u>	<u>Level 2</u>	<u>Level 3</u>	<u>NAV</u>	<u>Total</u>
Common collective trust funds					
Global equity				\$ 81,409	\$ 81,409
Fixed income				135,620	135,620
Fixed income investment contracts			\$ 1,991		1,991
Investments, at fair value	\$ -		\$ 1,991	\$ 217,029	\$ 219,020

The following table is a roll forward of the amounts for investments classified within Level 3 as described above.

	June 30, 2019	Purchases (Gross)	Sales (Gross)	Investment gain/(loss)	June 30, 2020
Investment contracts	\$ 2,061		\$ (170)	\$ 100	\$ 1,991
Total level 3 investments	\$ 2,061	\$ -	\$ (170)	\$ 100	\$ 1,991

The following presents investments of the pension plans as of June 30, 2019:

	<u>Level 1</u>	<u>Level 2</u>	<u>Level 3</u>	<u>NAV</u>	<u>Total</u>
Common collective trust funds					
Global equity				\$ 74,390	\$ 74,390
Fixed income				122,781	122,781
Fixed income investment contracts			\$ 2,061		2,061
Investments, at fair value	\$ -		\$ 2,061	\$ 197,171	\$ 199,232

The following table is a roll forward of the amounts for investments classified within Level 3 as described above.

	June 30, 2018	Purchases (Gross)	Sales (Gross)	Investment gain/(loss)	June 30, 2019
Investment contracts	\$ 2,113	\$ -	\$ (165)	\$ 113	\$ 2,061
Total level 3 investments	\$ 2,113	\$ -	\$ (165)	\$ 113	\$ 2,061

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The asset allocation for the other postretirement benefit plan at June 30, 2020 and 2019, and the target allocation for 2021, by asset category, follows:

Asset category	Target allocation	Percentage of plan assets at year's end	
	2021	2020	2019
U.S. large cap equity and global equity funds	52%	38%	49%
International equities (non-U.S.)	16%	30%	19%
U.S. fixed income	32%	32%	32%
	<u>100%</u>	<u>100%</u>	<u>100%</u>

The following presents investments of the other postretirement benefit plan as of June 30, 2020. The Plans' investments in common collective trusts are valued at NAV as a practical expedient and are therefore excluded from the fair value hierarchy and reported as NAV.

	Level 1	Level 2	Level 3	NAV	Total
Common collective trust funds					
Global equity				\$ 144,192	\$ 144,192
Fixed income				67,533	67,533
Investments, at fair value				<u>\$ 211,725</u>	<u>\$ 211,725</u>

The following presents investments of the other postretirement benefit plan as of June 30, 2019:

	Level 1	Level 2	Level 3	NAV	Total
Common collective trust funds					
Global equity				\$ 144,012	\$ 144,012
Fixed income				67,307	67,307
Investments, at fair value				<u>\$ 211,319</u>	<u>\$ 211,319</u>

Net Periodic Benefit Cost

The components of net periodic benefit cost for pension benefits and other postretirement benefits are as follows:

Components of net periodic benefit cost	Pension Plan Benefits		Other Postretirement Benefits	
	2020	2019	2020	2019
Service cost	\$ 9,624	\$ 7,916	\$ 6,644	\$ 6,242
Interest cost on projected benefit obligation	9,177	9,045	5,284	5,734
Expected return on assets	(10,459)	(10,203)	(13,037)	(12,374)
Amortization of prior service cost/(credit)	65	65		
Amortization of unrecognized net losses/(gain)	<u>3,055</u>	<u>1,820</u>	<u>(2,743)</u>	<u>(2,619)</u>
Net periodic benefit cost	<u>11,462</u>	<u>8,643</u>	<u>(3,852)</u>	<u>(3,017)</u>

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Amounts recognized in the Consolidated Statements of Activities

A summary of changes in plan assets and benefit obligations recognized in the consolidated statements of activities is as follows:

	Pension Plan Benefits		Other Postretirement Benefits	
	2020	2019	2020	2019
Summary of changes in plan assets and benefit obligations recognized in the Consolidated Statements of Activities				
Net periodic benefit cost - service cost	\$ 9,624	\$ 7,916	\$ 6,644	\$ 6,242
Total recognized in operating	<u>9,624</u>	<u>7,916</u>	<u>6,644</u>	<u>6,242</u>
Net periodic benefit cost other than service cost	1,838	727	(10,496)	(9,259)
Current year actuarial (gain)/loss	19,067	8,069	20,204	(24,270)
Amortization of actuarial gain/(loss)	(3,055)	(1,820)	2,743	2,619
Amortization of prior service credit/(cost)	(65)	(65)		
Total recognized in nonoperating	<u>17,785</u>	<u>6,911</u>	<u>12,451</u>	<u>(30,910)</u>
Total recognized in operating and nonoperating	<u>\$ 27,409</u>	<u>\$ 14,827</u>	<u>\$ 19,095</u>	<u>\$ (24,668)</u>

Amounts in net assets without donor restrictions expected to be recognized in net periodic benefit cost in fiscal year 2021 are as follows:

	Pension Plan Benefits	Other Postretirement Benefits
Actuarial (gain)/loss	\$ 4,127	\$ (1,175)
Prior service (credit)/cost	65	-
	<u>\$ 4,192</u>	<u>\$ (1,175)</u>

Weighted-average assumptions used to determine net periodic pension cost	2020	2019
Discount rate	3.20% to 3.75%	3.95% to 4.25%
Expected return on plan assets	3.75% to 5.50%	3.75% to 6.50%
Rate of compensation increase	3.00%	3.25%

To arrive at assumptions for expected long-term rates of return on assets in the pension plans and the postretirement benefit plan, the University considered historical returns and future expectations for returns in each asset class in the asset allocation for the previously described pension and postretirement benefit portfolios.

Assumed health care cost trend rates have a significant effect on the amounts reported for the other postretirement benefit plan. A one-percentage-point change in the assumed health care cost trend rates would have had the following effect:

	1-% point Increase	1-% point Decrease
Effect on total service and interest cost	\$ 2,290	\$ (1,758)

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Expected Cash Flows

Information about the expected cash flows for the plans is as follows:

	<u>Pension Plan Benefits</u>	<u>Other Postretirement Benefits</u>
Expected University contributions		
2021	\$ 11,285	\$ -
Expected benefit payments		
2021	7,873	5,404
2022	8,410	5,554
2023	8,990	5,707
2024	9,590	5,957
2025	10,213	6,130
2026-2030	60,429	36,979
Total	<u>\$ 105,505</u>	<u>\$ 65,731</u>

Total benefits expected to be paid include both the University's share of the benefit cost net of Medicare subsidies and the participants' share of the cost, which is funded by participant contributions to the other postretirement benefit plan. The University receives a Medicare Part D subsidy from the federal government as reimbursement for certain retiree health benefits paid to plan participants, which was approximately \$0.5 million in fiscal year 2020.

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14. Lease Obligations

The University is the lessee of various equipment and space under noncancelable operating and capital leases. Capital lease obligations at June 30, 2020 and 2019, were \$131.3 million and \$126.1 million, respectively. Operating lease rental expense for the years ended June 30, 2020 and 2019 was \$44.8 million and \$45.8 million, respectively. Space leases contain customary escalation clauses, which are included in annual aggregate minimum rentals.

Future aggregate minimum rental payments under operating and capital leases are as follows:

	<u>Operating</u>	<u>Capital</u>
Future minimum rental payments:		
2021	\$ 43,157	\$ 12,182
2022	36,795	11,265
2023	32,089	9,547
2024	30,716	8,377
2025	29,624	7,179
Thereafter	236,342	211,826
Less: Interest at 0.56 percent to 5.31 percent		<u>(129,101)</u>
Capital lease obligations at June 30, 2020		<u>\$ 131,275</u>

15. Conditional Asset Retirement Obligations

Conditional asset retirement obligations are a legal obligation to perform an asset retirement activity in which the timing and/or method of settlement are conditioned on a future event that may or may not be within the control of the University. GAAP requires that the fair value of a liability be recognized in the period in which it occurred if a reasonable estimate of fair value can be made. Uncertainty with respect to the timing and/or method of settlement of the asset retirement obligation does not defer recognition of a liability.

Conditional asset retirement obligations related to remediation or disposal of asbestos, underground storage tanks, soil, radioactive sources, equipment, and miscellaneous other items were \$122.0 million and \$118.9 million at June 30, 2020 and 2019, respectively.

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16. Bonds and Notes Payable

Bonds and notes payable outstanding are as follows at June 30:

	<u>2020</u>	<u>2019</u>
Dormitory Authority of the State of New York, tax exempt revenue bonds, Columbia University issues:		
Series 2020 A, 2.11%, maturing FY2051	\$ 150,000	\$ -
Series 2018 A, 2.45% to 3.41%, maturing FY2029 to FY2049	150,000	150,000
Series 2018 B, 2.98%, maturing FY2039	175,185	175,185
Series 2017 A, 2.40% to 3.49%, maturing FY2028 to FY2048	150,000	150,000
Series 2017 B, 1.96% to 2.61%, maturing FY2025 to FY2030	40,475	40,475
Series 2016 A-1, 1.67%, maturing FY2027	50,000	50,000
Series 2016 A-2, 1.35% to 2.89%, maturing FY2024 to FY2047	130,000	130,000
Series 2016 B, 0.91% to 2.04%, maturing FY2021 to FY2032	146,930	168,810
Series 2015 A, 1.95% to 3.00%, maturing FY2026 to FY2046	92,535	92,535
Series 2015 B, 1.30% to 1.88%, maturing FY2021 to FY2025	27,275	32,735
Series 2012 A, 1.60% to 1.92%, maturing FY2021 to FY2023	112,930	126,290
Series 2011 A, 3.19% to 4.88%, maturing FY2021 to FY2042	255,000	270,000
Series 2009 A, variable rate, 0.07%, maturing FY2039	117,000	117,000
Series 2003 B, variable rate, 0.09%, maturing FY2028	30,000	30,000
Series 2002 C, variable rates, 0.20% to 0.75%, maturing FY2027	23,300	23,300
Series 2020B Taxable Term Loan, 2.34%, maturing FY2024 to FY2030	75,000	
Series 2020C Taxable Term Loan, 2.00%, maturing FY2022 to FY2024	150,000	
Taxable Series 2015, 3.46%, maturing FY2046	75,000	75,000
Taxable Series 2012, 3.83%, maturing FY2043	100,000	100,000
New Jersey Economic Development Corporation, tax exempt		
Series 2002, variable rate, 0.20%, maturing FY2028	4,205	4,665
Medium-Term Notes, Taxable Series C 6.53% to 7.36%, maturing FY2021 to FY2022	6,049	13,308
Empire State Development Corporation issues:		
9.00%, maturing FY2029	5,304	5,718
Interest-free, due FY2021	8,100	8,100
Economic Development Corporation		
Interest-free, due FY2021	10,000	10,000
Taxable Commercial Paper, variable rate, 0.22% to 2.25%	150,000	
Subtotal, principal payments	<u>2,234,288</u>	<u>1,773,121</u>
Unamortized bond premium	304,027	231,758
Unamortized cost of issuance	(4,829)	(4,679)
Subtotal, bond premium and cost of issuance	<u>299,198</u>	<u>227,079</u>
Total bonds and notes payable	<u>\$ 2,533,486</u>	<u>\$ 2,000,200</u>

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Estimated principal payments on bonds and notes payable and taxable commercial paper are summarized below:

<u>Fiscal Year</u>	<u>Principal</u>
2021	\$ 91,426
2022	128,347
2023	131,692
2024	102,875
2025	64,988
Thereafter (through 2051)	<u>1,564,960</u>
Subtotal, Bonds and Notes Payable	\$ 2,084,288
Taxable Commercial Paper	<u>150,000</u>
Total, Principal Payments	<u>\$ 2,234,288</u>

The University issues most of its tax-exempt debt through the Dormitory Authority of the State of New York (“DASNY”). On March 4, 2020, the University issued \$150 million of Series 2020A tax-exempt fixed rate bonds. Series 2020A was issued at a premium of \$97.2 million which will be amortized over 30 years based on the maturity of the underlying bond. The proceeds from Series 2020A will be used to finance various construction and renovation projects.

On April 17, 2020, the University entered into a \$75 million Series 2020B taxable term loan with a commercial lender. The proceeds from Series 2020B will be used for general corporate purposes.

On May 15, 2020, the University entered into a \$150 million Series 2020C taxable term loan with a commercial lender. The proceeds from Series 2020C will be used for general corporate purposes.

The University recorded amortization of bond premium and issuance costs, net, of \$24.9 million and \$24.1 million for the years ended June 30, 2020 and 2019, respectively, as a reduction to interest expense.

The University has a \$150 million taxable commercial paper program. As of June 30, 2020 there was \$150 million outstanding as issued under the program. As of June 30, 2019, there was no commercial paper outstanding under this program.

As of June 30, 2020, the University had the following operating lines of credit: \$200 million expiring in October 2022; \$150 million, \$100 million, and \$50 million expiring in May 2021; and \$100 million expiring in November 2020. Additionally, the University had two \$100 million standby lines of credit supporting self-liquidity for variable rate debt outstanding, expiring in January 2022 and January 2023. The lines are provided by six different lending institution and, as of June 30, 2020, no balances were outstanding on the lines of credit.

The University has administrative covenants on its tax-exempt debt and lines of credit, with which it was in compliance as of June 30, 2020 and 2019.

On October 1, 2008, the University entered into a \$200 million notional value fixed payer interest rate swap agreement to protect against the risk of interest rate changes. The estimated fair value of the swap liability was \$110.7 million and \$76.1 million at June 30, 2020 and 2019, respectively.

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The fair value of the swap is obtained by taking the present value of all future cash flows on the swap implied by the forward curve.

Financing Activities Subsequent to June 30, 2020

In July and August 2020, the University repaid \$125 million of \$150 million outstanding under its taxable commercial paper program. The taxable commercial paper pays variable rates of interest.

In July 2020, the University entered into a \$100 million operating line of credit which expires in June 2022 and a \$50 million operating line of credit which expires in July 2021.

On July 27, 2020, the University issued \$125 million of Series 2021A taxable bonds. These bonds pay interest at 2.85% and mature in 2050. The proceeds from Series 2021A will be used for general corporate purposes.

On July 29, 2020, the University issued \$180 million of Series 2021B taxable bonds. These bonds pay interest at 1.52%, 2.43% and 2.59% and mature in 2030, 2044, and 2049, respectively. The proceeds from Series 2021B will be used for general corporate purposes.

17. Insurance

In connection with managing financial risks through various third-party insurance programs, the University is self-insured in certain areas. Funded self-insurance liabilities primarily cover deductibles on general liability, trustees and officers' liability, and property insurance claims. Self-insurance liabilities are actuarially calculated on an annual basis. The University's core liability coverage is purchased through Pinnacle RRG, a Vermont-based risk retention group with seventeen other universities.

The University obtains medical malpractice insurance through MCIC and MLMIC. MCIC is a group-captive insurance company owned by the University, The Johns Hopkins Hospital, The Johns Hopkins University, University of Rochester Medical Center, Weill Cornell Medical College, Yale New Haven Health, Yale University School of Medicine, and NYP. MLMIC is a mutual company where policyholders are owners with full voting rights to elect the company's Board of Directors, thereby having direct input into vital areas of operation. The governing Board is comprised primarily of practicing physicians, dentists, and hospital administrators. More than 2,000 of the University's faculty physicians and dentists are enrolled in MCIC or MLMIC. The University has recorded self-insurance and medical malpractice liabilities of approximately \$332.4 million and \$306.7 million as of June 30, 2020 and 2019, respectively in "Other long-term liabilities". The medical malpractice liabilities of approximately \$208.7 million and \$185.1 million as of June 30, 2020 and 2019, respectively, are reported gross with an offsetting receivable for anticipated recoveries of \$140.7 million and \$126.7 million, respectively, recorded in "Other assets".

18. Affiliations and Related Party Transactions

The University maintains several clinical and education affiliation agreements with other organizations. Revenues and expenses from these agreements are accounted for in the operating activities section of the consolidated statements of activities. The most significant affiliation agreement is with NYP.

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The University receives reimbursement from NYP for the provision of medical, professional, and supervisory staff services as well as other technical assistance. NYP provides funding to clinical departments for specific purposes including administration, supervision, and teaching of the NYP resident staff and salary support for faculty and staff providing services to NYP. In addition, NYP provides funding for clinical programs that the University and NYP would like to see developed or expanded. NYP also provides the departments with certain facilities and services (outpatient faculty practice offices, nursing, telecommunications, etc.) for which the University is invoiced on a monthly basis. Finally, the University and NYP collaborate and fund joint projects for which specific agreements are negotiated.

In addition, the University and NYP negotiate a joint budget, which forms the basis for the affiliation agreement. The fiscal year 2020 joint budget was approximately \$383.0 million. The payments to NYP for goods and services were \$100.9 million. The majority of revenues received pursuant to this agreement are reflected in the consolidated financial statements as a portion of “Patient care revenue” and the majority of the expenses related to this agreement are reflected in “Patient care expense”.

The University records both receivables from and payables to NYP on the consolidated statements of financial position. The University has no liability for obligations and debt incurred by NYP. The University and NYP operate a radiological imaging center, ColumbiaDoctors/NewYork-Presbyterian Imaging, Inc. (CDNYPI). CDNYPI is a not-for-profit membership corporation, which was incorporated to operate pursuant to the terms and provisions of Article 28 of the New York Public Health Law, whereby it provides a full range of general radiology and interventional radiology services. In order to provide for efficient delivery of services and to secure a high level of expertise from existing resources, CDNYPI has entered into clinical and administrative agreements with the University and NYP. The revenue generated from these agreements was \$33.3 million and \$24.1 million for the years ended June 30, 2020 and 2019, respectively. In addition, the University recorded an interest in CDNYPI in the amount of \$7.1 million and \$9.3 million as of June 30, 2020 and 2019, respectively.

The University controls a not-for-profit practice entity and three professional corporations and, as such, consolidates these entities into the University’s consolidated financial statements.

The University had a financial arrangement with Neurological Associates, P.C., a New York physician professional corporation (“PC”), whereby the University provides facilities and other services to the PC for a negotiated fee. This PC provides clinical services to patients and is owned and controlled by physicians who are also faculty members of the University. The non-controlled PC generated revenue of approximately \$41.8 million for the year ended June 30, 2019, which was not consolidated into the University’s consolidated financial statements. As of July 1, 2019, the University assumed control of this PC and has consolidated the activity of this PC subsequent to this date into the University’s consolidated financial statements.

From time to time endowment funds held for the benefit of the University may be transferred from the CPMC Fund, Inc. to the University pursuant to the consent of the Trustees of the CPMC Fund, Inc. There were no transfers during the year ending June 30, 2020. During the year ending June 30 2019, the CPMC Fund, Inc. transferred one endowment to the University. The value of the endowment at the time of transfer was \$18.5 million, with \$11.5 million being donor-restricted funds that the University must hold in perpetuity.

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19. Liquidity and Availability of Resources

As part of the University's liquidity management, financial assets are structured to be available as its general expenditures, liabilities, and other obligations come due. In addition, the University may invest cash in excess of daily requirements in short-term and/or liquid investments. To further help manage unanticipated liquidity needs, the University has committed bank lines of credit along with a taxable commercial paper program.

The University's financial assets and liquidity resources available for general expenditures within one year of the date of the consolidated statements of financial position are as follows:

	<u>2020</u>	<u>2019</u>
Financial Assets:		
Cash and cash equivalents	\$ 974,112	\$ 814,040
Accounts receivable, net	509,433	535,861
Pledges receivable for operations and plant, net	122,414	121,862
Operating investments	1,351,476	942,388
Approved endowment payout for subsequent year	551,907	563,663
Other financial assets	17,157	52,943
Total financial assets available within one year	<u>3,526,499</u>	<u>3,030,757</u>
Liquidity resources:		
Taxable commercial paper program	150,000	150,000
Less: Taxable commercial paper issued	(150,000)	
Bank lines of credit (undrawn)	800,000	500,000
Total liquidity resources available	<u>800,000</u>	<u>650,000</u>
Total financial assets and liquidity resources available within one year	<u>\$ 4,326,499</u>	<u>\$ 3,680,757</u>

Financing activities subsequent to June 30, 2020 increased the liquidity resources available to the University. See note 16 for additional information.

Additionally, the University has board-designated funds functioning as endowments of \$3.3 billion as of June 30, 2020 and 2019, respectively. Although the University does not intend to spend from these endowments other than amounts appropriated for general expenditure as part of its annual appropriation process, \$2.9 billion of these endowments without donor restrictions could be made available if necessary. However, both the funds functioning as endowment and donor-restricted endowments contain investments with lock-up provisions that reduce the total investments that could be made available (see Note 6 for disclosures about investments).

20. Contingencies and Commitments

From time to time, various claims and suits generally incident to the conduct of normal business are pending or may arise against the University.

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In the opinion of counsel and management of the University, after taking into account insurance coverage, losses, if any, from the resolution of pending litigation should not have a material effect on the University's financial position or results of operations.

All funds expended in connection with government grants and contracts are subject to audit by government agencies. While the ultimate liability, if any, from audits of government grants and contracts by government agencies, claims, and suits is presently not determinable, it should not, in the opinion of counsel and management, have a material effect on the University's financial position or results of activities.

The University is subject to laws and regulations concerning environmental remediation and will, from time to time, establish reserves for potential obligations that management considers probable and for which reasonable estimates can be made. As of June 30, 2020, the University has recorded \$122.0 million for conditional asset retirement obligations. These estimates may change depending upon the nature and extent of contamination, appropriate remediation technologies, and regulatory approvals. The University is not aware of any existing conditions that it currently believes are likely to have a material adverse effect on the University's financial position, changes in net assets, or cash flows.

The University's capital improvement program and related commitments include projects that address the major strategic objectives of the University. As part of the capital improvement program, the University has entered into contracts to purchase properties with an aggregate value of \$42.5 million. As of June 30, 2020, approximately \$41.6 million is still outstanding.

The University has made commitments related to its expansion in Manhattanville, certain of which are based upon events in the future which would result in cash and in-kind payments from the University. Those that are estimable have been recorded as liabilities.

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21. Expenses by Functional and Natural Classification

Expenses are reported for the University's primary program activities. The consolidated statements of activities also report certain categories of expenditures that support more than one major program of the University. These expenses include operation and maintenance of plant, depreciation expense, and interest expense.

Expenses by functional and natural classification for the years ended June 30, 2020 and 2019 are as follows:

	2020				
	Expenses per Statement of Activities	Allocation	Natural Classification post Allocation		Final Allocated Expenses
			Compensation and Benefits	Other	
Instruction and educational administration	\$ 2,061,981	\$ 293,874	\$ 1,619,619	\$ 736,236	\$ 2,355,855
Research	660,083	102,635	412,436	350,282	762,718
Patient care expense	1,215,438	85,699	1,020,797	280,340	1,301,137
Operation and maintenance of plant	305,676	(305,676)	-	-	-
Institutional support	287,176	50,978	213,249	124,905	338,154
Auxiliary enterprise	161,313	118,075	110,511	168,877	279,388
Depreciation expense	292,769	(292,769)	-	-	-
Interest expense	52,816	(52,816)	-	-	-
Total operating expenses	5,037,252	-	3,376,612	1,660,640	5,037,252
Net periodic benefit cost other than service cost	(8,658)	-	(8,658)	-	(8,658)
Total expenses	<u>\$ 5,028,594</u>	<u>\$ -</u>	<u>\$ 3,367,954</u>	<u>\$ 1,660,640</u>	<u>\$ 5,028,594</u>
			2019		
	Expenses per Statement of Activities	Allocation	Natural Classification post Allocation		Final Allocated Expenses
			Compensation and Benefits	Other	
Instruction and educational administration	\$ 1,971,252	\$ 292,400	\$ 1,510,668	\$ 752,984	\$ 2,263,652
Research	639,873	101,100	387,610	353,363	740,973
Patient care expense	1,099,268	79,572	924,060	254,780	1,178,840
Operation and maintenance of plant	284,831	(284,831)	-	-	-
Institutional support	304,040	51,000	208,339	146,701	355,040
Auxiliary enterprise	166,217	104,264	104,130	166,351	270,481
Depreciation expense	289,998	(289,998)	-	-	-
Interest expense	53,507	(53,507)	-	-	-
Total operating expenses	4,808,986	-	3,134,807	1,674,179	4,808,986
Net periodic benefit cost other than service cost	(8,532)	-	(8,532)	-	(8,532)
Total expenses	<u>\$ 4,800,454</u>	<u>\$ -</u>	<u>\$ 3,126,275</u>	<u>\$ 1,674,179</u>	<u>\$ 4,800,454</u>

The allocation of operation and maintenance of plant is based on square footage occupancy. Depreciation expense includes depreciation of buildings, building improvements, and equipment. The allocation of depreciation on buildings and building improvements is based on square footage occupancy. Depreciation on equipment is allocated to the programs for which the equipment was purchased. Interest expense is allocated according to the same methodologies used for building depreciation.

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22. Subsequent Events

The University has performed an evaluation of subsequent events through October 6, 2020, which is the date the consolidated financial statements were issued.

The outbreak of COVID-19 has caused domestic and global disruption in operations for institutions of higher education. In addition, COVID-19 has negatively impacted the financial markets and may continue to materially affect the returns on and value of the University's investments and/or endowment. Other adverse consequences of COVID-19 or any other similar outbreaks in the future may have a negative effect on the University's various revenue streams. The full impact of COVID-19 and the scope of any adverse impact on the University's finances and operations cannot be fully determined at this time.

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23. Financial Responsibility Standards

The University participates in federal Title IV student financial assistance programs, which require it to meet standards of financial responsibility based on criteria determined by the U.S. Department of Education (ED), as set forth in 34 CFR 668.171. The criteria for private institutions include the annual calculation by ED of a financial responsibility composite score, as further outlined in 34 CFR 668.172, using audited financial statements submitted through ED's eZ-Audit system. The composite score has been and will continue to be based on three ratios: Primary Reserve, Equity, and Net Income. These ratios utilize the following financial data of the Institution, which are not otherwise presented in the financial statements or other notes to the financial statements, as of and for the year ended June 30, 2020:

Required input per standards	Ratio(s) Uses	Input Amount	Related financial statement amount not used as input on supplementary schedule
Property, plant and equipment, net - pre-implementation	Primary reserve	\$ 5,302,038	
Property, plant and equipment, net - post-implementation with outstanding debt for original purchase	Primary reserve	326,390	
Property, plant and equipment, net - post-implementation with outstanding debt for original purchase	Primary reserve	10,099	
Construction in progress	Primary reserve	200,211	
Total property, plant, and equipment, net	N/A		\$ 5,838,738
Institutional real estate			\$ 930,216
Land, buildings, and equipment, net			4,908,522
Total property, plant, and equipment, net			\$ 5,838,738
Long-term debt - for long-term purposes pre-implementation	Primary reserve	\$ 2,034,263	
Long-term debt - for long-term purposes post-implementation	Primary reserve	160,167	
Subtotal long-term debt for the purchase of PPE	Primary reserve		\$ 2,194,430
Other long-term debt	N/A		470,331
Total long-term debt	N/A		\$ 2,664,761
Bonds and notes payable			\$ 2,533,486
Capital leases			131,275
Total long-term debt			\$ 2,664,761
Net assets with donor restrictions: restricted by purpose or time			
Annuities and life income funds with donor restrictions	Primary reserve	\$ 69,696	
Term endowments with donor restrictions	Primary reserve	3,845,723	
Pledges	N/A		\$ 338,659
Unexpended capital and other	N/A		591,665
Net assets with donor restrictions: restricted in perpetuity	Primary reserve	4,185,051	
Total net assets with donor restrictions			\$ 9,030,794
Unsecured related party receivable	Primary reserve; Equity	\$ 31,700	
Inputs directly from the statement of activities			
Total expenses without donor restrictions (operating)	Primary reserve	\$ 5,037,252	
Plus: non-operating expenses and other losses	Primary reserve	13,016	
Total expenses and losses without donor restrictions	Primary reserve	\$ 5,050,268	
Total operating revenue and other additions	Net income	\$ 5,030,214	
Less: investment return appropriated for spending	Net income	(196,071)	
Plus: non-operating revenues and other gains	Net income	214,989	
Total revenue and gains without donor restrictions	Net income	\$ 5,049,132	

Supplemental Schedules

The Trustees of Columbia University in the City of New York
Schedule of Expenditures of Federal Awards
For year ended June 30, 2020

R&D Cluster

<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
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Research & Development Cluster

Department of Health & Human Services

Direct Awards

Centers for Disease Control and Prevention/DHHS

Tuberculosis Trials Consortium	93	CDC 200-2009-32593			0	287,016
Tuberculosis Trials Consortium	93	CDC 200-2009-32593			0	97,751
					\$0	\$384,767
Columbia University CISA Center	93	CDC 200-2012-53665/0002			0	-5,539
					\$0	\$-5,539
Columbia University CISA (wheezing Study)	93	CDC 200-2012-53665-T004			0	-132
					\$0	\$-132
CISA Clinical Vaccine Safety Evaluation - Contributing Contractor	93	CDC 200-2012-53665/0005			0	17,617
CISA Clinical Vaccine Safety Evaluation - Contributing Contractor	93	CDC 200-2012-53665/0005			0	8,978
CISA Clinical Vaccine Safety Evaluation - Contributing Contractor	93	CDC 200-2012-53665/0005			0	5,837
CISA Clinical Vaccine Safety Evaluation - Contributing Contractor	93	CDC 200-2012-53665/0005			0	2,859
					\$0	\$35,291
Informing Pandemic Influenza Intervention Practice: Coordinated Modeling	93	CDC 75D30119C05930			0	361,604
					\$0	\$361,604

Food & Drug Administration

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

The Trustees of Columbia University in the City of New York
Schedule of Expenditures of Federal Awards
For year ended June 30, 2020

						R&D Cluster
<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Studies on Hair Loss (Alopecia)Associated with Use of Cosmetic Hair Products and Ingredients in These Products	93	HHSF223201810176P			0	92,601
					\$0	\$92,601
Neurodevelopmental outcomes in infants receiving opioid-replacement pharmacotherapy for neonatal opioid withdrawal syndrome	93	75F40119C10101			81,838	221,724
					\$81,838	\$221,724
					\$81,838	\$1,090,316

Training in General, Pediatric, and Public Health Dentistry

Predoctoral Training in General, Pediatric & Public Health Dentistry & Dental Hygeine	93.059	4D85HP20031 -09- 01			0	291,020
Predoctoral Training in General, Pediatric & Public Health Dentistry & Dental Hygeine	93.059	4D85HP20031 -09- 01			0	435
					\$0	\$291,455
Postdoctoral Training in General, Pediatric and Public Health Dentistry and Dental Hygiene	93.059	6D88HP20109-09-02			0	665,088
Postdoctoral Training in General, Pediatric and Public Health Dentistry and Dental Hygiene	93.059	6D88HP20109-09-02			0	41,641
Postdoctoral Training in General, Pediatric and Public Health Dentistry and Dental Hygiene	93.059	6D88HP20109-09-02			0	13,949
Postdoctoral Training in General, Pediatric and Public Health Dentistry and Dental Hygiene	93.059	6D88HP20109-09-02			0	11,456
					\$0	\$732,134
					\$0	\$1,023,589

Innovations in Applied Public Health Research

Novel extracellular vesicle and molecular biomarkers of environmental exposure and disease progression in ALS	93.061	5R01TS000285-02-00			0	190,635
Novel extracellular vesicle and molecular biomarkers of environmental exposure and disease progression in ALS	93.061	5R01TS000285-02-00			0	151,382
Novel extracellular vesicle and molecular biomarkers of environmental exposure and disease progression in ALS	93.061	5R01TS000285-02-00			0	79,696

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The Trustees of Columbia University in the City of New York
Schedule of Expenditures of Federal Awards
For year ended June 30, 2020

<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	R&D Cluster	
					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Novel extracellular vesicle and molecular biomarkers of environmental exposure and disease progression in ALS	93.061	5R01TS000285-02-00			0	46,973
Novel extracellular vesicle and molecular biomarkers of environmental exposure and disease progression in ALS	93.061	5R01TS000285-02-00			0	-11,076
					\$0	\$457,610
					\$0	\$457,610

Food and Drug Administration Research

Phase 2b Study of Denosumab to Prevent bone Loss in Idiopathic Osteoporosis in Premenopausal Women Treated with Teriparatide	93.103	5R01FD005114-04			21,329	420,310
Phase 2b Study of Denosumab to Prevent bone Loss in Idiopathic Osteoporosis in Premenopausal Women Treated with Teriparatide	93.103	5R01FD005114-04			64,923	64,923
Phase 2b Study of Denosumab to Prevent bone Loss in Idiopathic Osteoporosis in Premenopausal Women Treated with Teriparatide	93.103	5R01FD005114-04			0	-643
Phase 2b Study of Denosumab to Prevent bone Loss in Idiopathic Osteoporosis in Premenopausal Women Treated with Teriparatide	93.103	5R01FD005114-04			0	-21,641
					\$86,252	\$462,949
Pregnancy and lactation associated osteoporosis: Bone microstructure and metabolism, genotypic characteristics, natural history and biomarkers of disease severity.	93.103	5R01FD006007 04			0	311,572
Pregnancy and lactation associated osteoporosis: Bone microstructure and metabolism, genotypic characteristics, natural history and biomarkers of disease severity.	93.103	5R01FD006007 04			0	90,397
					\$0	\$401,969
Teriparatide for Idiopathic Osteoporosis in Premenopausal Women: A Phase 2 Study	93.103	5R01FD003902-07			0	323,195
					\$0	\$323,195
Phase 2 study of combination therapy with PLX3397 and sirolimus to target tumor-associated macrophages in malignant peripheral nerve sheath tumors	93.103	5R01FD005745-02			0	95,807
Phase 2 study of combination therapy with PLX3397 and sirolimus to target tumor-associated macrophages in malignant peripheral nerve sheath tumors	93.103	5R01FD005745-02			0	60,666
					\$0	\$156,473
Ph1 Study of T-Vec given endoscopically for advanced pancreatic cancer IN 17248 (11/21/2016)	93.103	5R01FD006108-03			14,023	220,328

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The Trustees of Columbia University in the City of New York
Schedule of Expenditures of Federal Awards
For year ended June 30, 2020

<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	R&D Cluster	
					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Ph1 Study of T-Vec given endoscopically for advanced pancreatic cancer IN 17248 (11/21/2016)	93.103	5R01FD006108-03			4,173	38,965
					\$18,196	\$259,293
Daily vitamin D for sickle-cell respiratory complications: Phase 2: IND107584 - 11/14/17	93.103	5R01FD006372-02			0	255,293
Daily vitamin D for sickle-cell respiratory complications: Phase 2: IND107584 - 11/14/17	93.103	5R01FD006372-02			0	1,080
					\$0	\$256,373
					\$104,448	\$1,860,252
Maternal and Child Health Federal Consolidated Programs						
Maternal and Child Health Field Initiated Research Program	93.110	1R40MC32879 01 00			0	99,051
					\$0	\$99,051
					\$0	\$99,051
Emergency Medical Services for Children						
EMSC Network Development Demonstrations Project (NDDP), Pediatric Emergency Medicine Northeast, West, and South (PEM-NEWS)	93.127	5U03MC00007 -20 -00			172,991	470,871
					\$172,991	\$470,871
					\$172,991	\$470,871
Injury Prevention and Control Research and State and Community Based Programs						
Columbia Injury Control Research Center	93.136	6R49CE002096-05-06			32,482	51,926
Columbia Injury Control Research Center	93.136	6R49CE002096-05-06			0	30,036
Columbia Injury Control Research Center	93.136	6R49CE002096-05-06			0	28,728
Columbia Injury Control Research Center	93.136	6R49CE002096-05-06			0	20,823
Columbia Injury Control Research Center	93.136	6R49CE002096-05-06			0	18,988

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The Trustees of Columbia University in the City of New York
Schedule of Expenditures of Federal Awards
For year ended June 30, 2020

<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	R&D Cluster
						<u>Total Expenditures (Includes Subrecipients)</u>
Columbia Injury Control Research Center	93.136	6R49CE002096-05-06			0	13,038
Columbia Injury Control Research Center	93.136	6R49CE002096-05-06			0	8,000
Columbia Injury Control Research Center	93.136	6R49CE002096-05-06			0	7,913
Columbia Injury Control Research Center	93.136	6R49CE002096-05-06			0	3,217
					\$32,482	\$182,669
The Columbia Center for Injury Science and Prevention (CCISP)	93.136	5R49CE003094-02-00			0	87,630
The Columbia Center for Injury Science and Prevention (CCISP)	93.136	5R49CE003094-02-00			0	84,083
The Columbia Center for Injury Science and Prevention (CCISP)	93.136	5R49CE003094-02-00			0	67,458
The Columbia Center for Injury Science and Prevention (CCISP)	93.136	5R49CE003094-02-00			0	64,624
The Columbia Center for Injury Science and Prevention (CCISP)	93.136	5R49CE003094-02-00			0	57,799
The Columbia Center for Injury Science and Prevention (CCISP)	93.136	5R49CE003094-02-00			0	42,839
The Columbia Center for Injury Science and Prevention (CCISP)	93.136	5R49CE003094-02-00			0	1,055
					\$0	\$405,488
					\$32,482	\$588,157
Health Program for Toxic Substances and Disease Registry						
Case-Control Studies Nested in National ALS Registry to Evaluate Environmental Risks	93.161	6R01TS000243-03-01			0	82,108
					\$0	\$82,108
					\$0	\$82,108

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The Trustees of Columbia University in the City of New York
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<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
R&D Cluster						
National Research Service Award in Primary Care Medicine						
NRSA for Primary Medical Care	93.186	5T32HP10260 -13- 00			0	164,662
					<u>\$0</u>	<u>\$164,662</u>
					\$0	\$164,662
National Research Service Awards Health Services Research Training						
Columbia University Patient Safety and Health Services Research Training	93.225	5T32HS026121-03			0	147,411
					<u>\$0</u>	<u>\$147,411</u>
					\$0	\$147,411
Research on Healthcare Costs, Quality and Outcomes						
Topical Vancomycin for Craniotomy Wound PRophylaxis	93.226	5R01HS022903-05			129,141	288,017
					<u>\$129,141</u>	<u>\$288,017</u>
Increasing the Uptake of the USPSTF Hypertension Screening Guidelines in Primary Care	93.226	5R01HS024262 05			0	144,164
Increasing the Uptake of the USPSTF Hypertension Screening Guidelines in Primary Care	93.226	5R01HS024262 05			20,291	43,552
					<u>\$20,291</u>	<u>\$187,716</u>
Developing ICD-11: Coding of Quality and Patient Safety Data to support health services and outcomes research in the US and internationally	93.226	5R13HS024891-03			0	1,766
					<u>\$0</u>	<u>\$1,766</u>
Providing Evidence and Developing a Toolkit to Accelerate the Adoption of Patient Photographs in Electronic Health Records	93.226	5R01HS024713-04			99,062	296,506
Providing Evidence and Developing a Toolkit to Accelerate the Adoption of Patient Photographs in Electronic Health Records	93.226	5R01HS024713-04			18,483	29,173
					<u>\$117,545</u>	<u>\$325,679</u>
TRANSFORM DEPCARE: A Theoretical approach to improving patient engagement and shared decision making for minorities in collaborative depression care	93.226	5R01HS025198-04			3,907	303,836

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The Trustees of Columbia University in the City of New York
Schedule of Expenditures of Federal Awards
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<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	R&D Cluster	
					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
TRANSFORM DEPCARE: A Theoretical approach to improving patient engagement and shared decision making for minorities in collaborative depression care	93.226	5R01HS025198-04			4,678	52,646
					\$8,585	\$356,482
Infection Control in Home Care and Predictive Risk Modeling	93.226	5R01HS024723-03			32,423	140,233
					\$32,423	\$140,233
Nursing Intensity of Patient Care Needs and Rates of Healthcare-associated Infections (NIC-HAI)	93.226	5R01HS024915-03			8,576	129,545
					\$8,576	\$129,545
The Wise App Trial for Improving Health Outcomes in PLWH	93.226	5R01HS025071-04			0	323,718
The Wise App Trial for Improving Health Outcomes in PLWH	93.226	5R01HS025071-04			13,151	142,294
					\$13,151	\$466,012
Develop and Validate Health IT Safety Measures to Capture Violations of the 5 Rights of Medication Safety	93.226	5R01HS024538-04			33,330	152,692
Develop and Validate Health IT Safety Measures to Capture Violations of the 5 Rights of Medication Safety	93.226	5R01HS024538-04			9,651	14,620
					\$42,981	\$167,312
Multilevel analysis of anesthesia safety and costs during labor and vaginal deliveries	93.226	1R03HS025787-01A1			0	12,850
					\$0	\$12,850
Validation of the Primary Care Team Creativity Tool (PCTC)	93.226	1R03HS027502-01			0	10,150
					\$0	\$10,150
Using eHealth to Expand Access to Cognitive Behavioral Therapy for Insomnia in Hispanic Primary Care Patients	93.226	5R01HS024274-03			0	208,832
					\$0	\$208,832
Prenatal Exposure to Anesthesia and Subsequent Neurodevelopmental Disorders	93.226	5R01HS026493-03			33,687	325,371
					\$33,687	\$325,371

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The Trustees of Columbia University in the City of New York
Schedule of Expenditures of Federal Awards
For year ended June 30, 2020

<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	R&D Cluster
						<u>Total Expenditures (Includes Subrecipients)</u>
Social Networks in Medical Homes and Impact on Patient Care and Outcomes	93.226	5R01HS025937-02			32,345	220,504
Social Networks in Medical Homes and Impact on Patient Care and Outcomes	93.226	5R01HS025937-02			22,982	118,310
					\$55,327	\$338,814
Simulation to Improve Infection Prevention and Patient Safety: The SIPPS Trial	93.226	5R18HS026418-02			27,339	245,850
Simulation to Improve Infection Prevention and Patient Safety: The SIPPS Trial	93.226	5R18HS026418-02			0	81,493
					\$27,339	\$327,343
A National Report of Nursing Home Quality Measures and Information Technology	93.226	5R01HS022497-06			0	19,205
					\$0	\$19,205
Practice Environments and Electronic Health Records Use in Primary Care: Reducing Nurse Practitioner Burnout	93.226	1R36HS027290-01			0	27,846
					\$0	\$27,846
					\$489,046	\$3,333,173
Occupational Safety and Health Program						
Impact of Patient Safety Climate on Infection Prevention Practices and Healthcare Worker and Patient Outcomes	93.262	6K01OH011186-03M001			0	27,587
					\$0	\$27,587
					\$0	\$27,587
Centers for Disease Control and Prevention Investigations and Technical Assistance						
Manhattan Vision Screening and Follow-Up Study in Vulnerable Populations	93.283	1U01DP006436-01-00			0	477,587
Manhattan Vision Screening and Follow-Up Study in Vulnerable Populations	93.283	1U01DP006436-01-00			0	1,577
					\$0	\$479,164
Coordinating Center for Community-Based Interventions with Vulnerable Populations	93.283	5U01DP006435-02-00			39,157	106,223
					\$39,157	\$106,223

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The Trustees of Columbia University in the City of New York
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						R&D Cluster
<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$39,157	\$585,387
Nurse Education, Practice Quality and Retention Grants						
Nurse Education, Practice, Quality, and Retention Practice	Interprofessional Collaborative	93.359	6UD7HP29872 02 04		0	506,963
Nurse Education, Practice, Quality, and Retention Practice	Interprofessional Collaborative	93.359	6UD7HP29872 02 04		-87	-87
					<u>\$-87</u>	<u>\$506,876</u>
					\$-87	\$506,876
CDC Undergraduate Public Health Scholars Program (CUPS): A Public Health Experience to Expose Undergraduates Interested in Minority Health to Public Health and the Public Health Professions						
CDC Undergraduate Public Health Scholars Program	93.456	5NU50MN000003-02-00			0	238,401
CDC Undergraduate Public Health Scholars Program	93.456	5NU50MN000003-02-00			0	164,144
CDC Undergraduate Public Health Scholars Program	93.456	5NU50MN000003-02-00			0	-7,441
					<u>\$0</u>	<u>\$395,104</u>
					\$0	\$395,104
Public Health Training Centers Program						
PUBLIC HEALTH TRAINING CENTERS - AFFORDABLE CARE ACT (ACA)	93.516	5UB6HP31686-03-00			298,730	739,761
PUBLIC HEALTH TRAINING CENTERS - AFFORDABLE CARE ACT (ACA)	93.516	5UB6HP31686-03-00			147,788	151,847
PUBLIC HEALTH TRAINING CENTERS - AFFORDABLE CARE ACT (ACA)	93.516	5UB6HP31686-03-00			0	16,406
					<u>\$446,518</u>	<u>\$908,014</u>
					\$446,518	\$908,014
Ryan White HIV/AIDS Dental Reimbursement and Community Based Dental Partnership Grants						
Ryan White HIV/AIDS Dental Reimbursement Program	93.924	1T22HA32262 01 00			0	-1

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The Trustees of Columbia University in the City of New York
Schedule of Expenditures of Federal Awards
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<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	R&D Cluster	
					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					<u>\$0</u>	<u>\$-1</u>
Ongoing and Updated Dental Training and Service for HIV/AIDS Populations	93.924	6H65HA00014-17-00			114,092	327,201
Ongoing and Updated Dental Training and Service for HIV/AIDS Populations	93.924	6H65HA00014-17-00			16,472	16,481
					<u>\$130,564</u>	<u>\$343,682</u>
					<u>\$130,564</u>	<u>\$343,681</u>
HIV Demonstration, Research, Public and Professional Education Projects						
Impact of Neighborhoods and Networks on HIV Prevention and Care Behaviors Among Black MSM in the Deep South	93.941	6U01PS005202-01-01			0	18,484
					<u>\$0</u>	<u>\$18,484</u>
					<u>\$0</u>	<u>\$18,484</u>
Primary Care Medicine and Dentistry Clinician Educator Career Development Awards						
Primary Care Medicine and Dentistry Clinician Educator Career Development Program	93.976	5K02HP30811 -04-00			0	121,044
Primary Care Medicine and Dentistry Clinician Educator Career Development Program	93.976	5K02HP30811 -04-00			0	7,936
					<u>\$0</u>	<u>\$128,980</u>
					<u>\$0</u>	<u>\$128,980</u>
Sexually Transmitted Diseases (STD) Prevention and Control Grants						
Region II PTC	93.977	6NU62PS924513-03-03			0	359,181
					<u>\$0</u>	<u>\$359,181</u>
					<u>\$0</u>	<u>\$359,181</u>
Sexually Transmitted Diseases (STD) Provider Education Grants						
National Network of Sexually Transmitted Diseases Clinical Prevention Training Centers (NNPTC)	93.978	6NU62PS924586-01-01			0	78,759
					<u>\$0</u>	<u>\$78,759</u>
					<u>\$0</u>	<u>\$78,759</u>

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Total Direct Award Programs					\$1,496,957	\$12,669,253
Pass-through Awards						
Biomedical Advanced Research and Development Authority						
Biodosimetry After Radiologic and Nuclear Events	93	ASELL PO 20170003.	PO 20170003	ASELL LLC.	0	253,368
					\$0	\$253,368
COVID-19 - A Multi-site, Randomized, DoubleBlind, Multi-Arm Historical Control, Comparative Trial of the Safety and Efficacy of Hydroxychloroquine, and the Combination of Hydroxychloroquine and Famotidine for th	93	COVID-19	75A50120C00078	FEINSTEIN INSTITUTE FOR MEDICAL RESEARCH	0	4,306
					\$0	\$4,306
Centers for Disease Control and Prevention/DHHS						
Tuberculosis Trials Consortium	93	DVAMC CU16-2550	15FED1511233-0003	Department of Veterans Affairs	0	238,162
					\$0	\$238,162
Targeted Mailing Pilot Intervention to Promote Arsenic Testing of High Risk Wells (Phase 2)	93	NJDEP CU18-0960	CDC CU18-0960	NEW JERSEY DEPT. OF ENVIRON. PROTECTION	0	3,618
					\$0	\$3,618
Pandemic Influenza Study TASK ORDER NO. 50345	93	ABTAI 50345	HHSD20002013M53890B/200-2013-F	ABT ASSOCIATES INC.	0	9,603
					\$0	\$9,603
Pandemic Influenza Study TASK ORDER NO. 50560	93	ABTAI 44717-50560	HHSD20002013M53890B/200-2013-F	ABT ASSOCIATES INC.	0	9,834
					\$0	\$9,834
ABTAI 44717-50886 Pandemic Influenza Study TASK ORDER NO. 50886	93	ABTAI 44717-51238	HHSD20002013M53890B/75D 30119F0	ABT ASSOCIATES INC.	0	44,918
					\$0	\$44,918
PWTA Follow-up Testing of High Arsenic Wells in New Jersey	93	NJDEP CU19-1475	CDC CU19-1475	NEW JERSEY DEPT. OF ENVIRON. PROTECTION	0	15,000
					\$0	\$15,000
Department of Health & Human Services						

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<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
R&D Cluster						
Alternative Dosing of Exemestane in Postmenopausal Women with Stage 0-II ER-Positive Breast Cancer a Randomized Presurgical Trial	93	UTMDA 00004054	HHSN261201200034I	UNIVERSITY OF TEXAS M.D. ANDERSON CANCERCENTER	0	32,620
Alternative Dosing of Exemestane in Postmenopausal Women with Stage 0-II ER-Positive Breast Cancer a Randomized Presurgical Trial	93	UTMDA 00004054	HHSN261201200034I	UNIVERSITY OF TEXAS M.D. ANDERSON CANCERCENTER	0	576
					\$0	\$33,196
Food & Drug Administration						
Queries and Epidemiologic Studies	93	IQVIA-Columbia-100231	HHSF223201810023I	IQVIA GOVERNMENT SOLUTIONS	0	476,850
					\$0	\$476,850
Actigraphy, a non-invasive device to facilitate PAH trials and drugs development	93	UCOL FY19.827.006	HHSF223201610046C	UNIVERSITY OF COLORADO	0	2,504
					\$0	\$2,504
Health Resources and Services Administration/DHHS						
MCHB HRSA T05	93	DUKE A030562	HSHS2502015000021	DUKE UNIVERSITY	0	-370
					\$0	-\$370
HRSA TO6-Evidence Review Group Member	93	DUKEU CU18-4137	HSHS25034006T	DUKE UNIVERSITY	0	12,490
					\$0	\$12,490
Substance Abuse & Mental Health ServicesAdministration						
National Suicide Prevention Evaluation	93	RFMH 26497	HHSS2832012000071/HHSS2 8342002	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	65,941
					\$0	\$65,941
					\$0	\$1,169,420
Food & Drug Administration						
Conduct Surveillance Activities for Safety and Effectiveness of Biologics	93.	IQVIA 100231	HHSF223201810023I	IQVIA GOVERNMENT SOLUTIONS	0	389,638
					\$0	\$389,638
					\$0	\$389,638

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Special Programs for the Aging, Title IV, and Title II, Discretionary Projects						
Addressing Oral Health and Effectiveness of Home Delivered Meals	93.048	LIVEON CU17-2560	90INNU0004-01-00	LIVEON NY	0	17,080
					<u>\$0</u>	<u>\$17,080</u>
					\$0	\$17,080
Chronic Diseases: Research, Control, and Prevention						
RENYC, Rare epilepsies in New York City: Epidemiology and health outcomes	93.068	CUMC 15081290-02	1U01DP006089-01	WEILL (JOAN AND SANFORD I.) MEDICAL COLLEGE OF CORNELL UNIVERSITY	0	1,307
					<u>\$0</u>	<u>\$1,307</u>
					\$0	\$1,307
Hospital Preparedness Program (HPP) and Public Health Emergency Preparedness (PHEP) Aligned Cooperative Agreements						
NYC DOHMH Performance Measure Development - Phase II	93.074	PHS 16-CU-02	NU90TP000546	Public Health Solutions	0	19
					<u>\$0</u>	<u>\$19</u>
NYC DOHMH - PMDP SOARS Inventory	93.074	PHS 16-CU-03	NU90TP000546	Public Health Solutions	0	3,449
					<u>\$0</u>	<u>\$3,449</u>
					\$0	\$3,468
Prevention of Disease, Disability, and Death by Infectious Diseases						
Northeast Regional Center for Excellence in Vector Borne Diseases	93.084	CU 81477-10822	6U01CK000509-01-06	CORNELL UNIVERSITY	0	243,442
Northeast Regional Center for Excellence in Vector Borne Diseases	93.084	CU 81477-10822	6U01CK000509-01-06	CORNELL UNIVERSITY	0	-10,945
					<u>\$0</u>	<u>\$232,497</u>
					\$0	\$232,497
Food and Drug Administration Research						
Phase 3 Trial of DCA in PDC Deficiency IND 028,625(02/04/15)	93.103	UFOCR00012069	1R01FD005407-01	UNIVERSITY OF FLORIDA	0	29,728

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					<u>\$0</u>	<u>\$29,728</u>
					\$0	\$29,728
Environmental Health						
Prenatal endocrine-disrupting chemicals and social/cognitive risk in mothers and infants: Potential biologic pathways	93.113	RFMH 26840	5R01ES027424	RESEARCH FOUNDATION FOR MENTAL HYGIENE INC	0	289,496
					<u>\$0</u>	<u>\$289,496</u>
A national birth cohort study of prenatal factors and neurodevelopmental psychiatric disorders	93.113	RFMH 147870	1R01ES030966-01A1	RESEARCH FOUNDATION FOR MENTAL HYGIENE INC	0	43,108
					<u>\$0</u>	<u>\$43,108</u>
					\$0	\$332,604
Centers for Research and Demonstration for Health Promotion and Disease Prevention						
Healthy Youth Development Prevention Research Center - SIP07-005	93.135	UMINN N006894501	3U48DP005022-04S5	UNIVERSITY OF MINNESOTA	0	98,064
					<u>\$0</u>	<u>\$98,064</u>
					\$0	\$98,064
Injury Prevention and Control Research and State and Community Based Programs						
Michigan Youth Violence Prevention Center (MI-YVPC) Community Engagement and Revitalization	93.136	UMICHG 3004386942	5U01CE002698-02	UNIVERSITY OF MICHIGAN	0	86,172
					<u>\$0</u>	<u>\$86,625</u>
Michigan Youth Violence Prevention Center (MI-YVPC) Community Engagement and Revitalization	93.136	UMICHG 3004386942	5U01CE002698-02	UNIVERSITY OF MICHIGAN	0	453
					<u>\$0</u>	<u>\$86,625</u>
Anti-bullying laws and youth in the United States: Alongitudinal evaluation of efficacy and implementation	93.136	UMINN PO06360101	1R01CE002913-01	UNIVERSITY OF MINNESOTA	0	59,867
					<u>\$0</u>	<u>\$59,867</u>
Randomized Controlled Trial of Relay NYC s Nonfatal Overdose Response Program	93.136	NYMC 19-A0-00-1003246	1R01CE003154-01	NEW YORK UNIVERSITY MEDICAL CENTER	0	24,103
					<u>\$0</u>	<u>\$24,103</u>
					\$0	\$170,595
Research on Healthcare Costs, Quality and Outcomes						

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Generalizability and Spread of an Evidenced-based Fall Prevention Toolkit: Fall TIPS (Tailoring Interventions for Patient Safety)	93.226	BWH 116930	1R18HS025128-01	BRIGHAM AND WOMEN'S HOSPITAL	0	87,923
					\$0	\$87,923
The effects of state sepsis mandates on hospital mortality, health care utilization, and costs	93.226	UPMC O0057761 (130289-1)	1R01HS025146-01A1	UNIVERSITY OF PITTSBURGH MEDICAL CENTER	0	19,088
					\$0	\$19,088
Preventing Wrong Drug and Wrong Patient Errors with Indication Alerts in CPOE Systems	93.226	NWU SP0037488-PROJ0010282	R01HS024945	NORTHWESTERN UNIVERSITY	0	207,187
					\$0	\$207,187
Ensuring Safe Performance of Electronic Health Records	93.226	BWH 111456	1R01HS023696-01	BRIGHAM AND WOMEN'S HOSPITAL	0	10,000
					\$0	\$10,000
Consumer Assessment of Healthcare Providers and Systems CAHPS V	93.226	YU GR108553 (CON-80002163)	5U18HS016978-13	YALE UNIVERSITY	0	5,719
					\$0	\$5,719
Finding the Safer Way: Novel Interaction Design Approaches to Health IT Safety	93.226	UPITT 0061498 (131173-2)	7R01HS023708-04	UNIVERSITY OF PITTSBURGH	0	7,409
					\$0	\$7,409
Ensuring safe performance of electronic health records	93.226	BWH 111456	1R01HS023696	BRIGHAM AND WOMEN'S HOSPITAL	0	6,166
					\$0	\$6,166
					\$0	\$343,492
Policy Research and Evaluation Grants						
Supporting the Development of the Poverty Research Center at the University of Wisconsin	93.239	UWIMAD 703K802	1H79AE000103-01	UNIVERSITY OF WISCONSIN MADISON	0	60,904
Supporting the Development of the Poverty Research Center at the University of Wisconsin	93.239	UWIMAD 703K802	1H79AE000103-01	UNIVERSITY OF WISCONSIN MADISON	0	19,640
					\$0	\$80,544
					\$0	\$80,544
Mental Health Research Grants						

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Structure and function of dopamine receptors	93.242	SRFMH 26468	5R01MH054137-19	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	6,344
					\$0	\$6,344
Adult Hippocampal Neuroplasticity and Depression	93.242	RFMH 25938	5R01MH083862-07	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	72,983
					\$0	\$72,983
Return to Work RCT: Counseling After Fatigue Treatment in HIV/AIDS	93.242	RFMH 25887	5R01MH102161-02	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	10,832
					\$0	\$10,832
2/2 Familial Early-Onset Suicide Attempt Biomarkers	93.242	RFMH 26230	1R01MH108032-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	78,265
					\$0	\$78,265
Developmental regulation of mood states by 5-HT1A heteroreceptors	93.242	SRFMH 26235	5R01MH105675-03	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	12,596
					\$0	\$12,596
Neural Mechanisms of Food Choice in Anorexia Nervosa	93.242	SRFMH 26227	5R01MH105452-04	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	67,871
					\$0	\$67,871
Integrating evidence-based MDD treatment in primary care: TB in Brazil as a model and point-of-entry	93.242	SRFMH 26431	5K01MH104514-04	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	21,469
					\$0	\$21,469
Mechanisms of Antidepressant NonResponse in Late Life Depression	93.242	RFMH 25816	5R01MH102293-05	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	36,421
					\$0	\$36,421
Functionally selective D2R s, striatal circuit function and motivation	93.242	RFMH 26444	5R01MH093672-08	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	213,667
					\$0	\$213,667
Hospital Discharge Planning and Transition to Outpatient Psychiatric Care	93.242	RFMH 26439	1R01MH106558-01A1	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	76,856
					\$0	\$76,856
Temporal Specification of neuronal function and its relevance to mental health	93.242	RFMH 26515	5R56MH106809-02	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	19,471

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$19,471
Three Generations at High and Low Risk for Depression Followed Longitudinally	93.242	RFMH 26658	2R1MH036197-29A1	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	98,423
					\$0	\$98,423
Longitudinal Assessment of Neural Circuits in Adolescents with Anorexia Nervosa	93.242	RFMH 26643	5R01MH110445-04	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	60,494
					\$0	\$60,494
PRIDE SSA - Partnerships in Research to Implement and Disseminate Sustainable and Scalable Evidence Based Practices in sub-Saharan Africa	93.242	RFMH 26657	5U19MH113203-02	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	46,916
PRIDE SSA - Partnerships in Research to Implement and Disseminate Sustainable and Scalable Evidence Based Practices in sub-Saharan Africa	93.242	RFMH 26657	5U19MH113203-02	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	-548
					\$0	\$46,368
Identifying Reproducible Brain Signatures of Obsessive Compulsive Profiles	93.242	RFMH 26719	1R01MH113250-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	85,762
					\$0	\$85,762
Cognitive and Neural Mechanisms of the Accelerated Aging Phenotype in PTSD	93.242	RFMH 26738	5R01MH111596-03	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	511,862
					\$0	\$511,862
The Neurobiology of Violence in a Psychosis-Risk Cohort	93.242	RFMH 26737	1R01MH113861-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	215,806
					\$0	\$215,806
2/5 Neurocognitive and neuroimaging biomarkers: predicting progression towards dementia in patients with treatment resistant late-life depression.	93.242	RFMH 26754	1R01MH114980-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	34,020
					\$0	\$34,020
Optimizing and Personalizing Interventions for Schizophrenia Across the Lifespan (OPAL)	93.242	RFMH 27373	5P50MH115843-03	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	65,760
Optimizing and Personalizing Interventions for Schizophrenia Across the Lifespan (OPAL)	93.242	RFMH 27373	5P50MH115843-03	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	61,399
Optimizing and Personalizing Interventions for Schizophrenia Across the Lifespan (OPAL)	93.242	RFMH 27373	5P50MH115843-03	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	61,398
Optimizing and Personalizing Interventions for Schizophrenia Across the Lifespan (OPAL)	93.242	RFMH 27373	5P50MH115843-03	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	39,951

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Optimizing and Personalizing Interventions for Schizophrenia Across the Lifespan (OPAL)	93.242	RFMH 27373	5P50MH115843-03	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	39,148
Optimizing and Personalizing Interventions for Schizophrenia Across the Lifespan (OPAL)	93.242	RFMH 27373	5P50MH115843-03	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	31,851
Optimizing and Personalizing Interventions for Schizophrenia Across the Lifespan (OPAL)	93.242	RFMH 27373	5P50MH115843-03	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	27,663
Optimizing and Personalizing Interventions for Schizophrenia Across the Lifespan (OPAL)	93.242	RFMH 27373	5P50MH115843-03	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	27,204
Optimizing and Personalizing Interventions for Schizophrenia Across the Lifespan (OPAL)	93.242	RFMH 27373	5P50MH115843-03	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	23,490
Optimizing and Personalizing Interventions for Schizophrenia Across the Lifespan (OPAL)	93.242	RFMH 27373	5P50MH115843-03	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	16,307
					\$0	\$394,171
HIV Center for Clinical and Behavioral Studies	93.242	RFMH 26913	2P30MH043520-30	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	52,151
HIV Center for Clinical and Behavioral Studies	93.242	RFMH 26913	2P30MH043520-30	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	44,149
					\$0	\$96,300
Gaze-contingent music reward therapy for social anxiety	93.242	RFMH 26951	1R61MH116089-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	8,278
					\$0	\$8,278
Pathways to successful aging among perinatally HIV-infected and exposed young adults. Risk resilience, and the role of HIV (CASA4)	93.242	RFMH 142647	2R01MH069133-16	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	62,867
					\$0	\$62,867
Thalamo-Prefrontal interactions in cognition: which cortical layers are involved?	93.242	RFMH 138638	R21MH117454-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	70,439
					\$0	\$70,439
HIV Center for Clinical and Behavioral Studies	93.242	SRFMH 147406	2P30MH043520-30	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	106,055
HIV Center for Clinical and Behavioral Studies	93.242	SRFMH 147406	2P30MH043520-30	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	46,526
					\$0	\$152,581

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						<u>Total Expenditures (Includes Subrecipients)</u>
Building a Coalition to Overcome Intersecting Stigmas and Improve HIV Prevention, Care Access, and Health Outcomes in New York City	93.242	SRFMH 147645	P30MH043520-31S1	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	13,036
					\$0	\$13,036
Antecedents of Suicidal Behavior Related Neurobiology	93.242	RFMH 143875	2P50MH090964-06	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	127,026
					\$0	\$127,026
HIV Center for Clinical and Behavioral Studies	93.242	RFMH CU 17-2581	2P30MH043520-30	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	52,760
HIV Center for Clinical and Behavioral Studies	93.242	RFMH CU 17-2581	2P30MH043520-30	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	27,837
					\$0	\$80,597
Maternal exposure to antidepressants and psychiatric outcomes among offspring in a national birth cohort	93.242	RFMH 141316	1R01MH118247-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	117,579
					\$0	\$117,579
Pathways to successful aging among perinatally HIV-infected and exposed young adults: Risk, resilience, and the role of perinatal HIV infection	93.242	RFMH 143069	2R01MH069133-16	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	27,263
					\$0	\$27,263
Antecedents of Suicidal Behavior Related Neurobiology	93.242	RFMH 27516	2P50MH090964-05	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	341,580
Antecedents of Suicidal Behavior Related Neurobiology	93.242	RFMH 27516	2P50MH090964-05	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	46,308
					\$0	\$387,888
Targeting cotransmission for circuit-specific pharmacotherapy	93.242	RFMH 27032	1R01MH117128-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	111,853
					\$0	\$111,853
Temporal Dynamics of Neurophysiological Patterns as Treatment Targets in SZ	93.242	RFMH 26985	7R01MH109289-04	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	104,222
					\$0	\$104,222
Early Cortical Processing in Schizophrenia	93.242	RFMH 27066	2R01MH049334-27A1	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	297,826
					\$0	\$297,826

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1/2 Task control circuit targets for obsessive compulsive behaviors in children	93.242	RFMH 27047	R01MH115024	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	77,345
					\$0	\$77,345
Deficient Belief Updating as a Convergent Computational Mechanism of Psychosis	93.242	RFMH 27033	5R01MH114965-02	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	97,354
					\$0	\$97,354
Does the Addition of Cognitive Remediation to Coordinated Specialty Care Services Improve Functional Outcome?	93.242	RFMH 27104	1R34MH118318-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	139,581
					\$0	\$139,581
Individualized Risk Prediction in Persons at Clinical High Risk for Psychosis Using Neuromelanin-Sensitive MRI	93.242	RFMH 27054	1R01MH117323-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	67,066
					\$0	\$67,066
HIV Center for Clinical and Behavioral Studies	93.242	RFMH 27385	5P30MH043520-31	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	63,485
					\$0	\$63,485
Deconstructing the cellular control of hippocampal functions related to mental health: a role for birth order.	93.242	RFMH 27114	1R01MH115215-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	143,298
					\$0	\$143,298
D-serine augmentation of neuroplasticity-based auditory learning in schizophrenia	93.242	RFMH 27132	1R60MH116093	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	80,765
					\$0	\$80,765
Application of Advanced Quantitative Methods to Schizophrenia Research in Macedonia	93.242	RFMH 27303	1R56MH117769-01A1	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	47,634
					\$0	\$47,634
OnTrackNY s Learning Healthcare System	93.242	RFMH 27327	1R01MH120597-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	6,647
					\$0	\$6,647
Optimizing and Personalizing Interventions for Schizophrenia Across the Lifespan (OPAL)	93.242	RFMH 27097	3P50MH115843-02S2	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	11,284
					\$0	\$11,284
The Neurobiology of Violence in a Psychosis Risk Cohort	93.242	RFMH 26737	3R01MH113861-03S1	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	54,975

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					Subrecipients	Total Expenditures (Includes Subrecipients)
					\$0	\$54,975
1/4 Leveraging EHR-linked biobanks for deep phenotyping, polygenic risk score modeling, and outcomes analysis in psychiatric disorders	93.242	RFMH 27354	1R01MH121921-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	53,624
					\$0	\$53,624
Uncovering the Risk Architecture of Suicidal Behaviors: a Representative Sample at High Risk	93.242	RFMH 27322	1R01MH117360-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	162,349
					\$0	\$162,349
Targeting Dopaminergic Mechanisms of Slowing to Improve Late Life Depression (R33 Phase)	93.242	SRFMH 27103	4R33MH110029-03	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	266,351
					\$0	\$266,351
Neural mechanisms for the genesis of conceptual information	93.242	SRFMH 144711	5K08MH115365-02	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	37,867
					\$0	\$37,867
Neural dynamics underlying rule based decision-making	93.242	SRFMH 145453	1K08MH120434-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	1,408
					\$0	\$1,408
Neural and Behavioral Mechanisms of Abstraction in Humans	93.242	SRFMH 146785	1K08MH121775-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	235
					\$0	\$235
Adolescence, Motivation and the Maturation of the Prefrontal Cortex	93.242	RFMH 27501	1R01MH123153-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	813
					\$0	\$813
					\$0	\$5,033,517

Substance Abuse and Mental Health Services Projects of Regional and National Significance

Improving Life Trajectories for Youth with Early Psychosis	93.243	RFMH 26005	5H79SM061900-03	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	14,079
					\$0	\$14,079
Integrated Healthcare + Housing	93.243	P2PPA CU62310-01	1H79SM062310-01	PATHWAYS TO HOUSING PA	0	32,374
					\$0	\$32,374
WORTH (Women on the Road to Health) Transitions Program	93.243	ROCHSTR 417018-G/URFAO	1H79TI080055-01	UNIVERSITY OF ROCHESTER MEDICAL CENTER	0	31,912

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					<u>\$0</u>	<u>\$31,912</u>
Providers Clinical Support System for Medication Assisted Treatment (PCSS-MAT) - Training and Implementation	93.243	AAAP PCSSMAT-16-5	1U79TI026556-01	AMERICAN ACADEMY OF ADDICTION PSYCHIATRY	0	31,588
					<u>\$0</u>	<u>\$31,588</u>
Medication Assisted Treatment Program at Project HOME	93.243	PROHOME CU18-3417	1H79TI081611-01	PROJECT H.O.M.E.	0	42,140
Medication Assisted Treatment Program at Project HOME	93.243	PROHOME CU18-3417	1H79TI081611-01	PROJECT H.O.M.E.	0	21,583
					<u>\$0</u>	<u>\$63,723</u>
2019 Providers Clinical Support System-Medicated Assisted Treatment	93.243	AAAP PCSSMAT19-15	1H79TI081968-01	AMERICAN ACADEMY OF ADDICTION PSYCHIATRY	0	92,464
					<u>\$0</u>	<u>\$92,464</u>
Mental Disorders Prevalence Study	93.243	RTI 2-312-0217186-65729L	1H79FG000030-01	RESEARCH TRIANGLE INSTITUTE	0	46,814
					<u>\$0</u>	<u>\$46,814</u>
					<u>\$0</u>	<u>\$312,954</u>
Advanced Nursing Education Workforce Grant Program						
HRSA Advanced Nursing Education Nurse Practitioner Residency (ANE-NPR) Program	93.247	BASSETT CU19-0741	HRSA 1T14HP33198-01-00	BASSETT HEALTHCARE NETWORK	0	93,702
					<u>\$0</u>	<u>\$93,702</u>
					<u>\$0</u>	<u>\$93,702</u>
Occupational Safety and Health Program						
Prenatal WTC Chemical Exposures, Birth Outcomes and CardiometabolicRisks	93.262	NYU 17-A1-00-006514-01	U01OH011299	NEW YORK UNIVERSITY MEDICAL CENTER	0	118,555
					<u>\$0</u>	<u>\$118,555</u>
Multimodal Neuroimaging of Cognitive and Emotional Networks in Young Adults Exposed to 9/11 as Children	93.262	RFMH 27019	1U01OH011694-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	16,586
					<u>\$0</u>	<u>\$16,586</u>
					<u>\$0</u>	<u>\$135,141</u>

Alcohol Research Programs

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HealthCall: Enhancing brief intervention for HIV primary care alcohol dependence	93.273	RFMH 25998	5R01AA023163-05	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	88,846
					\$0	\$88,846
Community I-STAR Mozambique : Community Implementation of SBIRT using Technology for Alcohol use Reduction in Mozambique	93.273	RFMH 27048	1R01AA025947-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	53,303
					\$0	\$53,303
					\$0	\$142,149
Drug Abuse and Addiction Research Programs						
DSM-IV and DSM-5 Alcohol/Substance Disorders: Reliability, Validity in NESARC-III	93.279	RFMH 25962	2R01DA018652-06A1	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	73,438
					\$0	\$73,438
Impulsivity in Cocaine Abusers: Relationship to Drug-Taking and Treatment Outcome	93.279	RFMH 25925	5R01DA035846-05	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	226,738
					\$0	\$226,738
Risk and Benefits of Overdose Education and Naloxone Prescribing to Heroin Users	93.279	SRFMH 25987	1R01DA035207-01A1	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	27,654
					\$0	\$27,654
Health and justice: a continuum of care for HIV and SU for justice involved youth	93.279	RFMH 130318	1 R01 DA043122-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	153,775
					\$0	\$153,775
Functional connectome analysis of amphetamine action at dopamine neuron synapses	93.279	RFMH 26054	R01DA038966	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	101,584
					\$0	\$101,584
The role of thalamic dopamine D2 receptors in cocaine intake	93.279	RFMH 26705	1R21DA044329-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	18,257
					\$0	\$18,257
Medication Development for Opioid and Alcohol Abuse: Laboratory Studies on Humans	93.279	RFMH 26686	5R01DA039169-02	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	68,139
					\$0	\$68,139
Evaluation of Safety and Pharmacokinetics of Naltrexone Implant	93.279	RFMH 27041	1UG3DA047720-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	120,535

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Evaluation of Safety and Pharmacokinetics of Naltrexone Implant	93.279	RFMH 27041	1UG3DA047720-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	115,006
					\$0	\$235,541
Web-based Addiction Treatment Cultural Adaptation with American Indians	93.279	RFMH 26748	1R34DA040831-01A1	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	11,816
					\$0	\$11,816
Impact of Medical and Recreational Marijuana Laws On Cannabis, Opioids And Psychiatric Medications: National Study of VA Patients, 2000 - 2024	93.279	1015578/1/27298	1R01DA048860-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	146,832
					\$0	\$146,832
Medical Marijuana Program Participation and Changes in Controlled Substance Use	93.279	RFMH 27031	R21DA045267-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	79,904
					\$0	\$79,904
Evaluation of safety and pharmacokinetics of naltrexone implant	93.279	RFMH 27041	1UG3DA047720-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	152,275
Evaluation of safety and pharmacokinetics of naltrexone implant	93.279	RFMH 27041	1UG3DA047720-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	14,668
					\$0	\$166,943
An ultra-long-acting oral treatment for opioid use disorder	93.279	RFMH 27347	1UG3DA047709-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	100,585
An ultra-long-acting oral treatment for opioid use disorder	93.279	RFMH 27347	1UG3DA047709-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	47,681
					\$0	\$148,266
Phase 1a/1b Clinical Trials of Multivalent Opioid Vaccine	93.279	RFMH 27040	5UG3DA047711-02	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	141,948
					\$0	\$141,948
Facilitating Opioid Care Connections: System level strategies to improve use of MAT and movement through the opioid care cascade for defendants in a new Opioid Court system	93.279	RFMH 27305	1UG1DA050071-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	121,358
Facilitating Opioid Care Connections: System level strategies to improve use of MAT and movement through the opioid care cascade for defendants in a new Opioid Court system	93.279	RFMH 27305	1UG1DA050071-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	64,994
Facilitating Opioid Care Connections: System level strategies to improve use of MAT and movement through the opioid care cascade for defendants in a new Opioid Court system	93.279	RFMH 27305	1UG1DA050071-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	14,411

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Facilitating Opioid Care Connections: System level strategies to improve use of MAT and movement through the opioid care cascade for defendants in a new Opioid Court system	93.279	RFMH 27305	1UG1DA050071-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	5,405
					<u>\$0</u>	<u>\$206,168</u>
					<u>\$0</u>	<u>\$1,807,003</u>
Centers for Disease Control and Prevention Investigations and Technical Assistance						
Wills Eye Community Intervention to Improve Glaucoma Detection and Follow-Up Care	93.283	WILLS CDC14086	U01DP005127	WILLS EYE HOSPITAL	0	20,237
					<u>\$0</u>	<u>\$20,237</u>
					<u>\$0</u>	<u>\$20,237</u>
Discovery and Applied Research for Technological Innovations to Improve Human Health						
Noninvasive Quantification of Brain Glucose Metabolism Using a Portable Positron Emission Tomography Camera.	93.286	RFMH 27000	1R01EB026481-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	96,507
					<u>\$0</u>	<u>\$96,507</u>
					<u>\$0</u>	<u>\$96,507</u>
Trans-NIH Research Support						
Breaking The Cycle Of Intergenerational Disadvantage: Neurodevelopment Among Puerto Rican Children	93.310	RFMH 27027	1UG3OD023328-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	190,924
Breaking The Cycle Of Intergenerational Disadvantage: Neurodevelopment Among Puerto Rican Children	93.310	RFMH 27027	1UG3OD023328-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	89,374
Breaking The Cycle Of Intergenerational Disadvantage: Neurodevelopment Among Puerto Rican Children	93.310	RFMH 27027	1UG3OD023328-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	38,311
Breaking The Cycle Of Intergenerational Disadvantage: Neurodevelopment Among Puerto Rican Children	93.310	RFMH 27027	1UG3OD023328-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	38,028
					<u>\$0</u>	<u>\$356,637</u>
					<u>\$0</u>	<u>\$356,637</u>
Sickle Cell Treatment Demonstration Program						
Northeast Region Sickle Cell Disease Treatment Demonstration Regional Collaborative Program	93.365	JH 2003735144	5U1EMC227864-06-00	JOHNS HOPKINS UNIVERSITY	0	26,704
					<u>\$0</u>	<u>\$26,704</u>

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$26,704
ACL National Institute on Disability, Independent Living, and Rehabilitation Research						
RERC on TECH. for the Deaf and Hard of Hearing	93.433	GU #25172	90RE5020-02-01	GALLAUDET UNIVERSITY	0	3,820
					<u>\$0</u>	<u>\$3,820</u>
					\$0	\$3,820
ADMINISTRATION FOR COMMUNITY LIVING						
Addressing Barriers to Quality Dental Care for Individuals with Developmental Disabilities	93.630	NJCDD 03ZZ19R	1801NJBSD	NJ COUNCIL ON DEVELOPMENTAL DISABILITIES	34,949	82,932
					<u>\$34,949</u>	<u>\$82,932</u>
					\$34,949	\$82,932
Opioid STR						
FY 2018 Opioid State Targeted Response Technical Assistance (STR TA)	93.788	AAAP States 16-2	1H79TI080816-01	AMERICAN ACADEMY OF ADDICTION PSYCHIATRY	0	46,716
FY 2018 Opioid State Targeted Response Technical Assistance (STR TA)	93.788	AAAP States 16-2	1H79TI080816-01	AMERICAN ACADEMY OF ADDICTION PSYCHIATRY	0	46,233
FY 2018 Opioid State Targeted Response Technical Assistance (STR TA)	93.788	AAAP States 16-2	1H79TI080816-01	AMERICAN ACADEMY OF ADDICTION PSYCHIATRY	0	37,209
					<u>\$0</u>	<u>\$130,158</u>
					\$0	\$130,158
Lung Diseases Research						
Sleep and Well-being in High Risk Youth	93.838	RFMH 26555	1R01HL134856-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	37,779
					<u>\$0</u>	<u>\$37,779</u>
					\$0	\$37,779
Child Health and Human Development Extramural Research						
Use of Novel Mobile Technology to Screen Sexual Partners for HIV and STIS	93.865	RFMH PO#128918	5R01HD088156-04	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	112,042

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					Subrecipients	Total Expenditures (Includes Subrecipients)
					\$0	\$112,042
Social convoys, cognitive reserve, and resilience across the lifespan	93.865	RFMH 27055	1R56AG059643-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	40,574
					\$0	\$40,574
					\$0	\$152,616
Aging Research						
Sensation and Psychiatry: Linking Age-Related Hearing Loss to LateLife Depression and Cognitive Decline	93.866	RFMH 138639	1R21AG059130-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	92,073
					\$0	\$92,073
Novel Cognitive and Functional Measures for Alzheimer s Disease Prevention Trials	93.866	SRFMH 139964	1R01AG051346-01A1	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	165,774
					\$0	\$165,774
Social convoys, cognitive reserve, and resilience across the lifespan	93.866	RFMH 140250	1R56AG059643-01	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	84,597
					\$0	\$84,597
Statistical method for neural mechanism mediating and moderating cognitive system in Alzheimer s disease and aging research.	93.866	RFMH 27412	1R01AG065278-01A1	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	8,189
					\$0	\$8,189
					\$0	\$350,633
National Bioterrorism Hospital Preparedness Program						
Performance Measure and Dashboard Development for NYC Healthcare System (HPP 44)	93.889	PUBHS 17-CU-01	NU90TP921922	Public Health Solutions	0	131
					\$0	\$131
					\$0	\$131
HIV Emergency Relief Project Grants						
RYAN WHITE PART A CONTRACT 93-EVL-4645 FOR PLANNING AND EVALUATION (BASE)	93.914	93-EVL-4645	H89HA00015	Public Health Solutions	0	980,142
					\$0	\$980,142
RYAN WHITE PART A CONTRACT 93-EVL-4645 FOR PLANNING AND EVALUATION (BASE)	93.914	PUBHS 93 EVL 4645	2H89HA00015-30-00	Public Health Solutions	0	113,071

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					<u>\$0</u>	<u>\$113,071</u>
					\$0	\$1,093,213
International Research and Research Training						
PALOP MH Implementation Research Training Program	93.989	RFMH 25941	5D43TW009675-02	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	11,727
					<u>\$0</u>	<u>\$11,727</u>
					\$0	\$11,727
Total Pass-through Programs					\$34,949	\$12,755,997
Total Department of Health & Human Services (Excluding NIH)					\$1,531,906	\$25,425,250
National Institute of Health						
Direct Awards						
Fogarty International Center/NIH/DHHS						
Building capacity to evaluate clean cooking in Ecuador	93	FIC CU18-2281			0	3,929
					<u>\$0</u>	<u>\$3,929</u>
Scaling the cleanest stack of cooking technologies	93	FIC CU19-1769			0	3,991
					<u>\$0</u>	<u>\$3,991</u>
National Cancer Institute/NIH/DHHS						
Large-scale research on clinical data for treatment pathways in cancer patients	93	HHSN261201700469P			0	-71
					<u>\$0</u>	<u>\$-71</u>
National Heart, Lung, and Blood Institute/NIH/DHHS						
MESA IV contract	93	75N92020D00002			0	231,457
					<u>\$0</u>	<u>\$231,457</u>
National Institute of Allergy and Infectious Diseases/NIH/DHHS						

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High throughput biodosimetry using a fully automated dicentric assay on commercial high content screening platforms.	93	HHSN272201600040C			0	320,220
					\$0	\$320,220
National Institute of Child Health and Human Development/NIH/DHHS						
A Multi-Center, Randomized Study to Evaluate the Pharmacokinetic and Pharmacodynamic Profile, Contraceptive Efficacy and Safety of Daily Oral Low Dose Ulipristal Acetate	93	HHSN2752013000101			73,980	137,133
A Multi-Center, Randomized Study to Evaluate the Pharmacokinetic and Pharmacodynamic Profile, Contraceptive Efficacy and Safety of Daily Oral Low Dose Ulipristal Acetate	93	HHSN2752013000101			0	11,562
					\$73,980	\$148,695
A Multicenter, Open Label Randomized Study on the Efficacy, Cycle Control and Safety of a Contraceptive Vaginal Ring Delivering a Daily Dose of Nestorone and Estradiol (NES E2 CVR)	93	HHSN275201300010I			0	154,339
					\$0	\$154,339
Clinical Evaluation of Long-Acting Reversible Contraceptives	93	HHSN275201300010I			0	76,552
					\$0	\$76,552
PK/PD Evaluation of Levonorgestrel Butanaote for Female Contraception	93	HHSN275201300010I			0	81,927
					\$0	\$81,927
					\$73,980	\$1,021,039
Family Smoking Prevention and Tobacco Control Act Regulatory Research						
Ventilation and Pulmonary Endothelium Toxicities (VaPE-Tox) of E-cigarettes: A Randomized Crossover Pilot Study	93.077	5R03HL132590-02			0	99
					\$0	\$99
Tracking Metals From E-cigarettes: From The Coil Into Lung Tissue	93.077	5R21ES029777-02			0	190,365
Tracking Metals From E-cigarettes: From The Coil Into Lung Tissue	93.077	5R21ES029777-02			0	6,794
					\$0	\$197,159
					\$0	\$197,258

Environmental Health

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Interdisciplinary Training in Climate and Health	93.113	5T32ES023770-05			0	156,774
					\$0	\$156,774
Undergraduate Research Program to Promote Diversity in EHS	93.113	5R25ES025505-05			2,335	51,409
					\$2,335	\$51,409
Arsenic Exposure, Impaired Respiratory Function, and Immunosuppression	93.113	5R01ES023888-04			97,109	110,044
					\$97,109	\$110,044
Training Program in Environmental Life Course Epidemiology	93.113	5T32ES023772-05			0	189,262
Training Program in Environmental Life Course Epidemiology	93.113	5T32ES023772-05			0	11,359
Training Program in Environmental Life Course Epidemiology	93.113	5T32ES023772-05			0	-3,689
Training Program in Environmental Life Course Epidemiology	93.113	5T32ES023772-05			0	-4,472
Training Program in Environmental Life Course Epidemiology	93.113	5T32ES023772-05			0	-7,547
					\$0	\$184,913
Pregnancy and Prenatal PAHs and other Environmental Exposures and Breast Cancer	93.113	5U01ES026122-05			0	426,199
Pregnancy and Prenatal PAHs and other Environmental Exposures and Breast Cancer	93.113	5U01ES026122-05			0	126,088
Pregnancy and Prenatal PAHs and other Environmental Exposures and Breast Cancer	93.113	5U01ES026122-05			16,478	20,930
Pregnancy and Prenatal PAHs and other Environmental Exposures and Breast Cancer	93.113	5U01ES026122-05			0	11,408
Pregnancy and Prenatal PAHs and other Environmental Exposures and Breast Cancer	93.113	5U01ES026122-05			0	3,606
					\$16,478	\$588,231

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Supplement (S1)	93.113	5P50ES009600-19			40,009	79,920
Supplement (S1)	93.113	5P50ES009600-19			0	47,742
Supplement (S1)	93.113	5P50ES009600-19			13,544	44,138
Supplement (S1)	93.113	5P50ES009600-19			0	24,726
Supplement (S1)	93.113	5P50ES009600-19			0	12,368
					\$53,553	\$208,894
Flame retardants, thyroid function, and psychomotor skills in children	93.113	7R21ES024841-02			0	-3,617
					\$0	-\$3,617
Understanding Adoption of Clean Cookstoves	93.113	5R01ES024489-05			81,296	166,897
					\$81,296	\$166,897
Early Exposure to Persistent Organic Pollutants, Breast Milk Extracellular Vesicles and Abnormal Cardiometabolic Programming	93.113	5R21ES027087-02			0	4,571
					\$0	\$4,571
Circulating microRNAs in Extracellular Vesicles, Air Particulate Pollution, and Lung Function in an Aging Cohort	93.113	5R01ES025225-06			164,044	497,080
					\$164,044	\$497,080
Multiparametric: Prediction of Vasospasm after Subarachnoid Hemorrhage	93.113	5K01ES026833-05			0	210,568
					\$0	\$210,568
Effects of Prenatal Exposure To Environmental Tobacco Smoke on Brain Function and Academic Skills	93.113	5K23ES026239-05			0	97,597
					\$0	\$97,597
Prenatal Factors in Autism and Other Psychiatric Outcomes in a National Birth Cohort	93.113	5R01ES028125-04			204,589	409,634
					\$204,589	\$409,634

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Center for Environmental Health in Northern Manhattan	93.113	5P30ES009089-22			0	303,856
Center for Environmental Health in Northern Manhattan	93.113	5P30ES009089-22			0	231,932
Center for Environmental Health in Northern Manhattan	93.113	5P30ES009089-22			0	187,638
Center for Environmental Health in Northern Manhattan	93.113	5P30ES009089-22			60,174	143,895
Center for Environmental Health in Northern Manhattan	93.113	5P30ES009089-22			0	128,034
Center for Environmental Health in Northern Manhattan	93.113	5P30ES009089-22			0	64,029
Center for Environmental Health in Northern Manhattan	93.113	5P30ES009089-22			0	51,135
Center for Environmental Health in Northern Manhattan	93.113	5P30ES009089-22			0	50,127
Center for Environmental Health in Northern Manhattan	93.113	5P30ES009089-22			0	40,000
Center for Environmental Health in Northern Manhattan	93.113	5P30ES009089-22			0	39,700
Center for Environmental Health in Northern Manhattan	93.113	5P30ES009089-22			0	37,851
Center for Environmental Health in Northern Manhattan	93.113	5P30ES009089-22			0	35,897
Center for Environmental Health in Northern Manhattan	93.113	5P30ES009089-22			0	33,843
Center for Environmental Health in Northern Manhattan	93.113	5P30ES009089-22			0	32,016
Center for Environmental Health in Northern Manhattan	93.113	5P30ES009089-22			0	26,956
Center for Environmental Health in Northern Manhattan	93.113	5P30ES009089-22			0	24,339

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Center for Environmental Health in Northern Manhattan	93.113	5P30ES009089-22			0	23,264
Center for Environmental Health in Northern Manhattan	93.113	5P30ES009089-22			0	12,398
Center for Environmental Health in Northern Manhattan	93.113	5P30ES009089-22			0	10,617
Center for Environmental Health in Northern Manhattan	93.113	5P30ES009089-22			0	9,788
Center for Environmental Health in Northern Manhattan	93.113	5P30ES009089-22			0	8,597
Center for Environmental Health in Northern Manhattan	93.113	5P30ES009089-22			0	6,526
Center for Environmental Health in Northern Manhattan	93.113	5P30ES009089-22			0	6,303
Center for Environmental Health in Northern Manhattan	93.113	5P30ES009089-22			0	3,539
Center for Environmental Health in Northern Manhattan	93.113	5P30ES009089-22			0	3,043
Center for Environmental Health in Northern Manhattan	93.113	5P30ES009089-22			0	1,450
Center for Environmental Health in Northern Manhattan	93.113	5P30ES009089-22			0	1,052
Center for Environmental Health in Northern Manhattan	93.113	5P30ES009089-22			0	601
					\$60,174	\$1,518,426
Principal Component Pursuit to Assess Exposure to Environmental Mixtures in Epidemiologic Studies	93.113	5R01ES028805-03			0	378,564
Principal Component Pursuit to Assess Exposure to Environmental Mixtures in Epidemiologic Studies	93.113	5R01ES028805-03			0	90,680
					\$0	\$469,244
Effects of Arsenic Exposure on 5-methylcytosine and 5-hydroxymethylcytosine, and Effect Modification by Nutritional Status	93.113	5F31ES029019-02			0	8,354

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Effects of Arsenic Exposure on 5-methylcytosine and 5-hydroxymethylcytosine, and Effect Modification by Nutritional Status	93.113	5F31ES029019-02			0	-5,454
					\$0	\$2,900
Air Pollution Exposure and Risk of Amyotrophic Lateral Sclerosis (ALS)	93.113	5R21ES028472-02			41,657	109,149
					\$41,657	\$109,149
Effects of Flame Retardants on brain function and attentional deficits in school-age children brain imaging, neurobehavioral, and gut microbiome studies in a longitudinal birth cohort	93.113	5R01ES027845-03			327,300	535,918
					\$327,300	\$535,918
Low-level Arsenic Exposure and Cardiovascular Disease in Multi-Ethnic Adults (MESA As)	93.113	5R01ES028758-03			73,866	711,993
Low-level Arsenic Exposure and Cardiovascular Disease in Multi-Ethnic Adults (MESA As)	93.113	5R01ES028758-03			0	137,249
					\$73,866	\$849,242
Arsenic Exposure in US Drinking Water: Spatial Patterns, Temporal Trends, and Related Mortalities	93.113	5F31ES029799-02			0	27,455
Arsenic Exposure in US Drinking Water: Spatial Patterns, Temporal Trends, and Related Mortalities	93.113	5F31ES029799-02			0	6,004
					\$0	\$33,459
Brain-Derived Extracellular Vesicles as a Novel Source of Biomarkers for Disease Progression and Environmental Exposure in ALS	93.113	1R56ES029971-01			0	15,288
					\$0	\$15,288
Assessing Current and Future Health Impacts of Fine Particulate Matter in China and the United States	93.113	5F31ES029372-02			0	29,523
Assessing Current and Future Health Impacts of Fine Particulate Matter in China and the United States	93.113	5F31ES029372-02			0	6,004
					\$0	\$35,527
Arsenic, Epigenetics and Incident Cardiovascular Disease in American Indian Communities	93.113	5R01ES025216-05			92,487	118,491
Arsenic, Epigenetics and Incident Cardiovascular Disease in American Indian Communities	93.113	5R01ES025216-05			13,157	13,721
					\$105,644	\$132,212

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						<u>Total Expenditures (Includes Subrecipients)</u>
Potential Inhaled Dose of Particulates, Biking and Cardiovascular Indicators	93.113	5R33ES024734-05			80,775	170,549
Potential Inhaled Dose of Particulates, Biking and Cardiovascular Indicators	93.113	5R33ES024734-05			0	141,741
Potential Inhaled Dose of Particulates, Biking and Cardiovascular Indicators	93.113	5R33ES024734-05			0	22,869
Potential Inhaled Dose of Particulates, Biking and Cardiovascular Indicators	93.113	5R33ES024734-05			0	22,803
Potential Inhaled Dose of Particulates, Biking and Cardiovascular Indicators	93.113	5R33ES024734-05			1,623	2,499
					\$82,398	\$360,461
Child Lung Development Following a Cookstove Intervention: Evidence from GRAPHS	93.113	5R01ES026991-04			385,653	451,039
Child Lung Development Following a Cookstove Intervention: Evidence from GRAPHS	93.113	5R01ES026991-04			0	101,384
					\$385,653	\$552,423
Interdisciplinary Training in Environmental Health	93.113	5T32ES007322-18			0	213,672
Interdisciplinary Training in Environmental Health	93.113	5T32ES007322-18			0	19,702
					\$0	\$233,374
Role of Lung and Gut Microbiome in Lung Inflammation and Emphysema	93.113	5R21ES029389-02			0	224,901
					\$0	\$224,901
A DATA SCIENCE APPROACH TO AIR TOXICS AND CHILDREN S ENVIRONMENTAL HEALTH	93.113	5R00ES027022-05			0	312,927
					\$0	\$312,927
Brain and Behavioral Indicators of Risk for Parkinsonism among Adolescents with Early Pesticide Exposure	93.113	5R01ES030039-02			44,484	527,332
					\$44,484	\$527,332
DNA Repair Phenotype the Missing Link in Breast Cancer Risk Assessment	93.113	5U01ES029660-03			0	318,735

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
DNA Repair Phenotype the Missing Link in Breast Cancer Risk Assessment	93.113	5U01ES029660-03			0	209,417
DNA Repair Phenotype the Missing Link in Breast Cancer Risk Assessment	93.113	5U01ES029660-03			145,057	146,857
					\$145,057	\$675,009
Bayesian exposure-response analysis for immunoassays data with measurement errors	93.113	5R21ES029668-02			31,092	104,754
					\$31,092	\$104,754
Rad52-dependent recombination in response to replication stress	93.113	5R21ES030447-02			0	193,992
					\$0	\$193,992
Vesicular Modulation of Dopamine Neuron Toxicity	93.113	7R01ES023839-05			0	346,046
Vesicular Modulation of Dopamine Neuron Toxicity	93.113	7R01ES023839-05			0	155,193
Vesicular Modulation of Dopamine Neuron Toxicity	93.113	7R01ES023839-05			0	1,768
					\$0	\$503,007
Crowd-Sourced Traffic Data: Predicting Air Pollution & Acute Ischemic Stroke	93.113	5R21ES030093-02			0	164,496
Crowd-Sourced Traffic Data: Predicting Air Pollution & Acute Ischemic Stroke	93.113	5R21ES030093-02			0	44,941
					\$0	\$209,437
The Impact of Unconventional Natural Gas Development on Maternal, Perinatal, and Childhood Health: an Electronic Health Record Approach	93.113	5R00ES027023-04			9,697	148,964
					\$9,697	\$148,964
To Maintain and Enrich Resource Infrastructure for Existing Environmental Epidemiology Cohorts	93.113	1R24ES029489-01A1			0	86,931
					\$0	\$86,931
Intrauterine Metal Exposure, Placental Gene Networks and Fetal Growth	93.113	4R00ES029571-03			0	53,563
					\$0	\$53,563

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Integrating Air Pollution Prediction Models: Uncertainty Quantification and Propagation in Health Studies	93.113	1R01ES030616-01A1			0	8,954
					\$0	\$8,954
Complex Mixtures of Endocrine Disrupting Chemicals in Relation to Cognitive Development	93.113	5F31ES030263-02			0	25,707
Complex Mixtures of Endocrine Disrupting Chemicals in Relation to Cognitive Development	93.113	5F31ES030263-02			0	9,372
					\$0	\$35,079
Effect of Early-Life Exposure to Metal Mixtures on Lung Function and Mitochondrial DNA in Children	93.113	5R01ES029974-02			4,622	275,843
					\$4,622	\$275,843
Micronutrient Deficiency, Arsenic Exposure, and Cognitive Function Outcomes in Adolescents	93.113	5F31ES029370-02			0	31,591
Micronutrient Deficiency, Arsenic Exposure, and Cognitive Function Outcomes in Adolescents	93.113	5F31ES029370-02			0	7,542
					\$0	\$39,133
Molecular Mechanisms Underlying the Prevention of BCC Resistanc	93.113	1R01ES030481-01A1			0	37,721
					\$0	\$37,721
Brain-derived extracellular vesicles as a novel source of biomarkers for disease progression and environmental exposure in ALS	93.113	1R01ES029971-01A1			0	97,123
					\$0	\$97,123
Undergraduate Research Program to Promote Diversity in EHS	93.113	2R25ES025505-06			0	17,924
					\$0	\$17,924
					\$1,931,048	\$11,083,212
Oral Diseases and Disorders Research						
MicroRNA-based prognostic model for early-stage oral cancer patients	93.121	5R01DE026801-04			0	395,309
					\$0	\$395,309

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
A combined genetic/epigenetic approach to study periodontitis susceptibility and pathobiology	93.121	1R56DE026487-01A1			0	14,310
A combined genetic/epigenetic approach to study periodontitis susceptibility and pathobiology	93.121	1R56DE026487-01A1			0	9,586
					\$0	\$23,896
Craniofacial Tissue Engineering	93.121	5R01DE016525-10			22,135	22,135
Craniofacial Tissue Engineering	93.121	5R01DE016525-10			0	-5,972
					\$22,135	\$16,163
Oral immune activation and alveolar bone loss in HIV-infected postmenopausal women	93.121	5R01DE026924-04			9,610	172,024
Oral immune activation and alveolar bone loss in HIV-infected postmenopausal women	93.121	5R01DE026924-04			0	117,327
Oral immune activation and alveolar bone loss in HIV-infected postmenopausal women	93.121	5R01DE026924-04			0	31,950
					\$9,610	\$321,301
Oral microbial signatures in perinatal HIV infection	93.121	5R01DE028135-03			434,463	635,302
					\$434,463	\$635,302
A Neuronal Basis for the Osteocalcin Regulation of Bone Mass	93.121	5R01DE027887-03			0	343,895
					\$0	\$343,895
Multivariate analysis of microbial absolute abundance in population-based studies.	93.121	5R03DE027773-02			90,243	145,229
					\$90,243	\$145,229
Randomized Efficacy Trial of MySmileBuddy, a Family-centered Behavioral Intervention to Reduce Early Childhood Caries	93.121	5U01DE026739-03			125,852	431,859
Randomized Efficacy Trial of MySmileBuddy, a Family-centered Behavioral Intervention to Reduce Early Childhood Caries	93.121	5U01DE026739-03			86,205	292,516
					\$212,057	\$724,375

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Dissecting cell composition and drug sensitivity in human adenoid cystic carcinomas (ACCs).	93.121	5R01DE028961-02			0	324,985
					\$0	\$324,985
Monocyte and Macrophage Signaling in the Pathogenesis of Periodontitis in Diabetes	93.121	1R03DE029546-01			0	49
					\$0	\$49
Improvement of Animal Models for TMJ Stem Cell-Based Regeneration	93.121	5R01DE029068-02			33,597	458,861
					\$33,597	\$458,861
					\$802,105	\$3,389,365

NIEHS Superfund Hazardous Substances_Basic Research and Education

Health Effects and Geochemistry of Arsenic	93.143	5P42ES010349-18			263,189	263,189
Health Effects and Geochemistry of Arsenic	93.143	5P42ES010349-18			10,000	179,152
Health Effects and Geochemistry of Arsenic	93.143	5P42ES010349-18			0	166,064
Health Effects and Geochemistry of Arsenic	93.143	5P42ES010349-18			18,000	86,245
Health Effects and Geochemistry of Arsenic	93.143	5P42ES010349-18			0	67,329
Health Effects and Geochemistry of Arsenic	93.143	5P42ES010349-18			0	64,596
Health Effects and Geochemistry of Arsenic	93.143	5P42ES010349-18			0	63,735
Health Effects and Geochemistry of Arsenic	93.143	5P42ES010349-18			0	60,720
Health Effects and Geochemistry of Arsenic	93.143	5P42ES010349-18			0	50,876
Health Effects and Geochemistry of Arsenic	93.143	5P42ES010349-18			7,524	41,775

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						<u>Total Expenditures (Includes Subrecipients)</u>
Health Effects and Geochemistry of Arsenic	93.143	5P42ES010349-18			0	40,029
Health Effects and Geochemistry of Arsenic	93.143	5P42ES010349-18			0	31,705
Health Effects and Geochemistry of Arsenic	93.143	5P42ES010349-18			0	21,639
Health Effects and Geochemistry of Arsenic	93.143	5P42ES010349-18			0	12,153
Health Effects and Geochemistry of Arsenic	93.143	5P42ES010349-18			0	8,035
Health Effects and Geochemistry of Arsenic	93.143	5P42ES010349-18			0	7,955
Health Effects and Geochemistry of Arsenic	93.143	5P42ES010349-18			0	-398
Health Effects and Geochemistry of Arsenic	93.143	5P42ES010349-18			0	-1,245
					\$298,713	\$1,163,554
					\$298,713	\$1,163,554

Human Genome Research

Develop quantile analysis tools for sequencing and eQTL studies	93.172	5R01HG008980-04			0	301,605
					\$0	\$301,605
Single Molecule Real Time Electronic Sequencing	93.172	5R01HG006882-04			0	86,403
					\$0	\$86,403
ELSI Biennial Congress	93.172	5U13HG010830-02			0	29,045
					\$0	\$29,045
Columbia GENIE (GENomic Integration with Ehr)	93.172	5U01HG008680-04			0	672,406

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Columbia GENIE (GENomic Integration with Ehr)	93.172	5U01HG008680-04			0	-221
					\$0	\$672,185
Massively parallel mapping of all molecular interactions in a single tube	93.172	5R01HG009065-05			0	366,410
					\$0	\$366,410
Enzyme-less DNA base discrimination using solid-state nanopores with highfrequency integrated detection electronics	93.172	5R01HG009189-03			28,127	28,127
					\$28,127	\$28,127
Computational tools for sequencebased large-scale epidemiology studies	93.172	7R01HG008972-04			189,476	288,019
					\$189,476	\$288,019
Development of recommendations and policies for genetic variant reclassification	93.172	5R01HG010365-03			138,699	740,999
					\$138,699	\$740,999
Investigating the role of transcription factors in the context variability of genetic variant effects	93.172	1F31HG010580-01A1			0	26,980
					\$0	\$26,980
Inferring gene regulatory circuitry from functional genomics data	93.172	5R01HG003008-15			132,983	443,306
					\$132,983	\$443,306
Center for Research on Ethical, Legal & Social Implications of Psychiatric, Neurologic & Behavioral Genetics	93.172	5RM1HG007257-08			115,146	986,695
Center for Research on Ethical, Legal & Social Implications of Psychiatric, Neurologic & Behavioral Genetics	93.172	5RM1HG007257-08			11,689	71,537
Center for Research on Ethical, Legal & Social Implications of Psychiatric, Neurologic & Behavioral Genetics	93.172	5RM1HG007257-08			0	25,189
Center for Research on Ethical, Legal & Social Implications of Psychiatric, Neurologic & Behavioral Genetics	93.172	5RM1HG007257-08			0	11,171
					\$126,835	\$1,094,592
The Ethics of Inclusion: Diversity in Precision Medicine Research	93.172	5R01HG010330-04			263,547	840,221

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$263,547	\$840,221
The Ethics of Inclusion: Conceptualizing Diversity in Genomics Research	93.172	5R03HG010178-03			0	70,104
					\$0	\$70,104
Novel approaches to map DNA replication traffic in a genome-wide scale	93.172	5R21HG010165-02			49,876	183,828
					\$49,876	\$183,828
Single-Molecule Electronic Nucleic Acid Sequencing-by-Synthesis Using Novel Tagged Nucleotides and Nanopore Constructs	93.172	1R56HG010514-01			0	219,382
					\$0	\$219,382
Understanding Implications of Genetic Attributions for Addiction	93.172	4R00HG010084-03			0	13,824
					\$0	\$13,824
					\$929,543	\$5,405,030
Research Related to Deafness and Communication Disorders						
Neurophysiology of robust speech perception in human superior temporal gyrus	93.173	5R01DC014279-05			0	358,601
					\$0	\$358,601
The Unfolded Protein Response as an Organizer of Chemosensory Response	93.173	5R01DC014144-05			0	12,546
The Unfolded Protein Response as an Organizer of Chemosensory Response	93.173	5R01DC014144-05			0	-2,090
					\$0	\$10,456
Neural Coding and Perception of Learned Vocalizations	93.173	5R01DC009810-10			0	222,055
					\$0	\$222,055
Deciphering the molecular principles of olfactory receptor gene choice	93.173	5R01DC015451-05			0	237,866
					\$0	\$237,866
Mechanisms for cancelling self-generated sounds in the mouse dorsal cochlear nucleus	93.173	5R01DC015449-05			0	283,681
					\$0	\$283,681

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						<u>Total Expenditures (Includes Subrecipients)</u>
Intracochlear Delivery of Therapeutics Across RWM via Microneedle Array	93.173	5R01DC014547-05			0	220,043
Intracochlear Delivery of Therapeutics Across RWM via Microneedle Array	93.173	5R01DC014547-05			0	132,101
					\$0	\$352,144
Auditory Mechanics and Cochlear Amplification	93.173	5R01DC015362-05			0	424,852
					\$0	\$424,852
Mechanisms for invariance in auditory cortex: Investigations with marmoset electrophysiology	93.173	5F32DC017628-02			0	36,296
Mechanisms for invariance in auditory cortex: Investigations with marmoset electrophysiology	93.173	5F32DC017628-02			0	25,415
					\$0	\$61,711
Translational control of sensory identity	93.173	5R21DC017823-02			0	156,736
					\$0	\$156,736
Circuit Mechanisms for the Cancellation of Self-Generated Sounds in the Dorsal Cochlear Nucleus	93.173	5F31DC016816-03			0	45,016
					\$0	\$45,016
Integrative Structural and Functional Characterization of Tip-Link Cadherins Deafness	93.173	5R01DC016960-03			261,249	529,485
					\$261,249	\$529,485
Developmentally dynamic chromatin architecture during neurogenesis	93.173	5F31DC016785-03			0	42,276
					\$0	\$42,276
The Perception of Odor Blends and Mixtures: Modulation, Inhibition and Enhancement of Olfactory Receptors Alters Perception of Complex Blends	93.173	2R01DC013553-06A1			0	234,682
					\$0	\$234,682
Identification of Autosomal Recessive Nonsyndromic Hearing Impairment Genes	93.173	5R01DC003594-18			0	275,303
					\$0	\$275,303

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						R&D Cluster
<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Localization Of Nonsyndromic Hearing Impairment Genes	93.173	5R01DC011651-11			0	230,289
					\$0	\$230,289
Innovative approaches to elucidate the genetic etiology of age-related hearing impairment and tinnitus	93.173	5R01DC017712-02			85,102	256,952
					\$85,102	\$256,952
Identification and Functional Evaluation of Autosomal Recessive Nonsyndromic Hearing Impairment Genes in sub-Saharan Africans	93.173	5R01DC016593-03			0	242,359
					\$0	\$242,359
Mechanisms of axon guidance in laryngeal reinnervation following injury of the recurrent laryngeal nerve	93.173	5R01DC018060-02			0	373,400
					\$0	\$373,400
Revealing the organization and functional significance of neural timescales in auditory cortex	93.173	1K99DC018051-01A1			0	6,106
					\$0	\$6,106
Principles of zonal olfactory receptor gene expression	93.173	1R01DC018745-01			0	331,927
					\$0	\$331,927
Olfactory receptor mRNAs as lncRNAs that regulate genomic interactions	93.173	1R01DC018744-01			0	330,517
					\$0	\$330,517
					\$346,351	\$5,006,414

Research and Training in Complementary and Integrative Health

Ginger s therapeutic potential in asthma	93.213	5R61AT009989-02			0	106,112
Ginger s therapeutic potential in asthma	93.213	5R61AT009989-02			15,614	95,345
Ginger s therapeutic potential in asthma	93.213	5R61AT009989-02			0	77,413
Ginger s therapeutic potential in asthma	93.213	5R61AT009989-02			14,540	47,354

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					<u>\$30,154</u>	<u>\$326,224</u>
					\$30,154	\$326,224
National Center on Sleep Disorders Research						
Poor Sleep, Sedentary Behavior, and Secondary Cardiovascular Risk in Stroke and TIA Patients	93.233	5R01HL141494-03			0	453,654
Poor Sleep, Sedentary Behavior, and Secondary Cardiovascular Risk in Stroke and TIA Patients	93.233	5R01HL141494-03			0	121,252
					<u>\$0</u>	<u>\$574,906</u>
Effect of long-term sleep restriction on energy balance	93.233	5R01HL128226-04			159,672	648,703
Effect of long-term sleep restriction on energy balance	93.233	5R01HL128226-04			0	59,095
Effect of long-term sleep restriction on energy balance	93.233	5R01HL128226-04			13,680	22,942
					<u>\$173,352</u>	<u>\$730,740</u>
Vascular Endothelial Activation in Sleep Apnea	93.233	5R01HL106041-08			0	539,225
					<u>\$0</u>	<u>\$539,225</u>
Nocturnal Hypertension and Sleep	93.233	5K23HL141682-02			0	133,215
Nocturnal Hypertension and Sleep	93.233	5K23HL141682-02			0	35,809
					<u>\$0</u>	<u>\$169,024</u>
					<u>\$173,352</u>	<u>\$2,013,895</u>
Mental Health Research Grants						
Hippocampal inhibitory control of contextual fear learning	93.242	5R01MH100631-05			0	30,616
					<u>\$0</u>	<u>\$30,616</u>
1/3-Identifying regulatory mutations that influence neuropsychiatric disease	93.242	5U01MH105670-05			6,011	33,003

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
1/3-Identifying regulatory mutations that influence neuropsychiatric disease	93.242	5U01MH105670-05			0	-372
					\$6,011	\$32,631
Integrative methods for the identification of causal variants in mental disorder	93.242	5R01MH106910-03			0	271,609
					\$0	\$271,609
Novel Methods for Evaluation and Implementation of Behavioral Intervention Technologies for Depression	93.242	5R01MH109496-04			9,517	211,869
					\$9,517	\$211,869
Building Multistage Treatment Regimens for Depression after Acute Coronary Syndrome	93.242	5R21MH108999-02			0	43,777
					\$0	\$43,777
Predicting Heterogeneous Neurodevelopmental Outcomes in School-age Children with Early Caregiving Adversities	93.242	5R01MH091864-09			132,644	760,364
					\$132,644	\$760,364
Serotonin 1A Receptor PET Imaging and SSRI Outcome in Bipolar Depression	93.242	5K23MH105688-05			0	79,747
					\$0	\$79,747
Behavioral Sciences Research in HIV Infection	93.242	5T32MH019139-30			0	487,625
Behavioral Sciences Research in HIV Infection	93.242	5T32MH019139-30			0	1,084
					\$0	\$488,709
Development of fluorescent false neurotransmitters	93.242	5R01MH108186-05			0	481,396
Development of fluorescent false neurotransmitters	93.242	5R01MH108186-05			0	49,857
					\$0	\$531,253
The Role of Place and Grid Cells in Human Spatial navigation and Memory	93.242	5R01MH104606-05			5,898	366,381
					\$5,898	\$366,381

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Vitamin-D- PRODH- &DTNBP1-Induced Hyperproliferemia:Schizophrenia Risk & Treatment	93.242	5R01MH100219-05			0	637
					\$0	\$637
Research Training in Late-Life Neuropsychiatric Disorders	93.242	5T32MH020004-20			0	-22,237
					\$0	\$-22,237
Research Training in Mood and Anxiety Disorders: From Animal Models to Patients	93.242	5T32MH015144-41			0	-18,473
					\$0	\$-18,473
IPrEP: A Combination Strategy for HIV Prevention among Young Female Sex Workers, Kisumu, Kenya	93.242	5R01MH110051-05			331,420	406,377
IPrEP: A Combination Strategy for HIV Prevention among Young Female Sex Workers, Kisumu, Kenya	93.242	5R01MH110051-05			-8,545	100,662
IPrEP: A Combination Strategy for HIV Prevention among Young Female Sex Workers, Kisumu, Kenya	93.242	5R01MH110051-05			0	10,172
					\$322,875	\$517,211
Research Training Program in Psychiatric Epidemiology	93.242	5T32MH013043-49			0	382,976
Research Training Program in Psychiatric Epidemiology	93.242	5T32MH013043-49			0	6,828
Research Training Program in Psychiatric Epidemiology	93.242	5T32MH013043-49			0	-12,770
					\$0	\$377,034
Stigma Associated with a High-Risk State for Psychosis among Adolescents and Young Adults: Impacts on Identity and Social Integration	93.242	4R01MH096027-05			0	82,375
					\$0	\$82,375
The role of the hippocampal CA2 region in neuropsychiatric disease	93.242	5R01MH106629-05			0	329,331
The role of the hippocampal CA2 region in neuropsychiatric disease	93.242	5R01MH106629-05			0	140,895
					\$0	\$470,226

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Role of the protocadherin alpha gene cluster in serotonergic circuitry formation and its implications in depressive disorders	93.242	5R01MH108579-05			0	131,820
					\$0	\$131,820
Training in Schizophrenia and Psychotic Disorders: From Animal Models to Patients	93.242	5T32MH018870-32			0	503,233
Training in Schizophrenia and Psychotic Disorders: From Animal Models to Patients	93.242	5T32MH018870-32			0	-531
Training in Schizophrenia and Psychotic Disorders: From Animal Models to Patients	93.242	5T32MH018870-32			0	-9,124
Training in Schizophrenia and Psychotic Disorders: From Animal Models to Patients	93.242	5T32MH018870-32			0	-16,302
					\$0	\$477,276
Translational Research Training in Child Psychiatry	93.242	5T32MH016434-40			0	415,949
Translational Research Training in Child Psychiatry	93.242	5T32MH016434-40			0	-1,365
Translational Research Training in Child Psychiatry	93.242	5T32MH016434-40			0	-1,517
					\$0	\$413,067
IDCS Augmentation of Cognitive Remediation in Schizophrenia	93.242	5R33MH099265-05			17,302	25,627
					\$17,302	\$25,627
Neurobiological Underpinnings of Two Suicidal Subtypes	93.242	5R01MH109326-05			66,266	292,974
					\$66,266	\$292,974
Functional analysis of the 22q11.2 schizophrenia susceptibility genes	93.242	5R01MH067068-15			0	278,163
					\$0	\$278,163
Translational Neuroscience Training Grant	93.242	5T32MH015174-44			0	230,502
Translational Neuroscience Training Grant	93.242	5T32MH015174-44			0	12,903

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$243,405
Zero Suicide Implementation and Evaluation in Outpatient Mental Health Clinics	93.242	5R01MH112139-05			431,181	642,004
					\$431,181	\$642,004
A Trial of 'Opening Doors to Recovery' for Persons with Serious Mental Illnesses	93.242	5R01MH101307-06			133,592	312,609
					\$133,592	\$312,609
Cellular and humoral immune mechanisms underlying neurovascular dysfunction in autoimmune encephalitis	93.242	5R01MH112849-04			138,920	541,467
					\$138,920	\$541,467
e-Connect: a service system intervention for justice youth at risk for suicide	93.242	5R01MH113599-04			150,229	382,278
					\$150,229	\$382,278
Predicting Internet-Based Treatment Response for Major Depression Disorder	93.242	7R56MH109566-03			0	159,093
					\$0	\$159,093
The role of the locus coeruleus in mediating pupil-linked arousal	93.242	5R01MH112267-04			0	539,391
					\$0	\$539,391
Decoding the neural basis of resting-state functional connectivity mapping	93.242	1RF1MH114276-01			0	688,511
					\$0	\$688,511
Memory compression in the hippocampus	93.242	5F31MH121058-02			0	45,016
					\$0	\$45,016
The interactive roles of the amygdala and orbitofrontal cortex during reversal learning	93.242	5R21MH116348-02			0	270,932
					\$0	\$270,932
Genetic targeting of hippocampal CA2 pyramidal neurons	93.242	5R01MH104602-07			0	744,929
					\$0	\$744,929

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Focused ultrasound for noninvasive brain stimulation	93.242	5R01MH112142-04			0	235,690
Focused ultrasound for noninvasive brain stimulation	93.242	5R01MH112142-04			0	112,724
					\$0	\$348,414
Neurobiology and dynamics of Active Sensing	93.242	5P50MH109429-04			1,336,958	1,642,423
Neurobiology and dynamics of Active Sensing	93.242	5P50MH109429-04			0	80,105
					\$1,336,958	\$1,722,528
Glutamate reducing interventions in schizophrenia	93.242	5R61MH112800-02			91,787	304,482
					\$91,787	\$304,482
Neural mechanisms of saccadic information seeking behavior	93.242	5R03MH115644-02			0	58,882
					\$0	\$58,882
Neurophysiology underlying neural representations of value	93.242	5R01MH082017-13			0	888,812
					\$0	\$888,812
Ventral hippocampal regulation of hypothalamic circuits in learned and innate threat processing	93.242	5F32MH114306-02			0	48,976
Ventral hippocampal regulation of hypothalamic circuits in learned and innate threat processing	93.242	5F32MH114306-02			0	16,193
Ventral hippocampal regulation of hypothalamic circuits in learned and innate threat processing	93.242	5F32MH114306-02			0	-8,138
					\$0	\$57,031
Functional mapping of arginine vasopressin receptor 1A circuits that promote anorexic behavior	93.242	5R01MH113353-03			0	398,215
					\$0	\$398,215
Implicit serial learning in monkeys and humans	93.242	5R01MH111703-03			0	362,444

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Implicit serial learning in monkeys and humans	93.242	5R01MH111703-03			0	106,843
					\$0	\$469,287
Impact of network oscillations on dendritic computation in hippocampal pyramidal neurons	93.242	5F31MH117892-02			0	45,016
					\$0	\$45,016
Dorsoventral functional divergence of the hippocampal CA3 circuit	93.242	1K01MH117444-01			0	325
					\$0	\$325
Neuromodulatory and astrocyte influences on hippocampal place cell plasticity	93.242	5F31MH117870-02			0	45,016
					\$0	\$45,016
Causally linking dendritic Ca2+ dynamics to CA1 circuit function and spatial learning using novel tools to precisely manipulate an endogenous Ca2+ buffering process	93.242	5F32MH118716-03			0	49,631
Causally linking dendritic Ca2+ dynamics to CA1 circuit function and spatial learning using novel tools to precisely manipulate an endogenous Ca2+ buffering process	93.242	5F32MH118716-03			0	15,317
					\$0	\$64,948
The role of dopaminergic and noradrenergic signaling in exploratory and exploitative behavioral states	93.242	5K99MH118412-02			0	148,140
					\$0	\$148,140
Unraveling constraints on motor cortical activity exploration and shaping during structural skilllearning using large-scale 2-photon imaging and holographic optogenetic stimulation	93.242	5F32MH118714-03			0	48,634
Unraveling constraints on motor cortical activity exploration and shaping during structural skilllearning using large-scale 2-photon imaging and holographic optogenetic stimulation	93.242	5F32MH118714-03			0	10,090
					\$0	\$58,724
Multiscale connectomic principles of resilience and susceptibility in mouse	93.242	5R01MH111918-05			0	423,260
					\$0	\$423,260
A Comparative Approach for Decomposing the Mammalian Brain Architectural Complexity	93.242	1DP2MH119423-01			0	562,787
					\$0	\$562,787

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Deciphering the role of histone methyltransfe	93.242	5R01MH112860-04			0	532,072
Deciphering the role of histone methyltransfe	93.242	5R01MH112860-04			0	121,701
					\$0	\$653,773
Identifying treatment targets: exploring and exploiting neural mechanisms of cognitive deficits in the 22q11.2 microdeletion	93.242	5R01MH096274-08			0	415,930
					\$0	\$415,930
MicroRNA Dysregulation in Pyschiatric Disorders and Cognitive Dysfunction	93.242	5R01MH097879-09			96,679	896,578
					\$96,679	\$896,578
Negative Symptoms in Clinical High Risk and First Episode Psychiatric Illness: Investigation of a New Candidate for Targeted Treatment.	93.242	5R21MH116515-02			45,430	192,395
					\$45,430	\$192,395
The structural basis of cis and trans protocadherin interactions	93.242	5R01MH114817-08			0	492,460
The structural basis of cis and trans protocadherin interactions	93.242	5R01MH114817-08			0	106,261
					\$0	\$598,721
Regulation of striatal maturation by dopamine and macroautophagy: implications for neuropsychiatric disorders	93.242	5F30MH114390-04			0	50,016
					\$0	\$50,016
Investigating the role of hilar mossy cells in anxiety-like behavior	93.242	5F30MH117927-03			0	50,016
					\$0	\$50,016
The effect of adolescent thalamic inhibition on adult prefrontal cortical function	93.242	5F31MH119691-02			0	50,016
					\$0	\$50,016
Integrative analysis of genetic variation and transcription factor networks to elucidate mechanisms of mental health disorders	93.242	2R01MH106842-04			0	107,212
Integrative analysis of genetic variation and transcription factor networks to elucidate mechanisms of mental health disorders	93.242	2R01MH106842-04			0	38,300

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$145,512
A potential novel role for hippocampal subregion ventral CA2 in sociability	93.242	1F30MH120922-01A1			0	15,040
					\$0	\$15,040
Structural Stigma and HIV Prevention Outcomes	93.242	5R01MH112384-04			240,414	634,878
					\$240,414	\$634,878
Statistical methods for the assessment of social engagement in psychosis using digital technologies	93.242	5K01MH118477-03			0	124,100
					\$0	\$124,100
A randomized trial of ImpACT+, a coping intervention to improve clinical and mental health outcomes among HIV-infected women with sexual trauma in South Africa	93.242	5R01MH118004-02			34,482	220,998
					\$34,482	\$220,998
PrEP Uptake and Adherence Among Young Black MSM: Neighborhood and Network Determinants	93.242	7R01MH112406-05			0	21,184
					\$0	\$21,184
Genetic analyses of complete circuit formation in Caenorhabditis elegans	93.242	5F32MH115438-03			0	47,124
					\$0	\$62,203
Genetic analyses of complete circuit formation in Caenorhabditis elegans	93.242	5F32MH115438-03			0	15,079
					\$0	\$24,905
Neural and Behavioral Mechanisms of Persistence to Setbacks in Children Exposed to Early Caregiving Adversities	93.242	5F31MH115686-02			0	23,426
					\$0	\$24,905
Neural and Behavioral Mechanisms of Persistence to Setbacks in Children Exposed to Early Caregiving Adversities	93.242	5F31MH115686-02			0	1,479
					\$0	\$24,905
Holographic Imprinting of Novelty Detection in Mice	93.242	5F31MH122137-02			0	42,752
					\$0	\$42,752
Differentiating Reward Seeking and Loss Avoidance with Reference-Dependent Learning Models	93.242	5R01MH121093-02			6,853	67,145
					\$6,853	\$67,145

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Discovery of small molecule cofactors of neurotrophin BDNF	93.242	5R21MH116275-02			65,708	194,123
					\$65,708	\$194,123
HIV Intervention Science Training Program for Underrepresented Investigators	93.242	5R25MH080665-11			0	128,482
HIV Intervention Science Training Program for Underrepresented Investigators	93.242	5R25MH080665-11			20,548	20,548
HIV Intervention Science Training Program for Underrepresented Investigators	93.242	5R25MH080665-11			0	3,046
					\$20,548	\$152,076
Novel Statistical methods for DNA Sequencing Data, and applications to Autism	93.242	5R01MH095797-07			35,261	263,363
					\$35,261	\$263,363
Integrative Learning to Combine Evidence for Personalized Treatment Strategies	93.242	5R21MH117458-02			0	129,823
					\$0	\$129,823
Suicide as a contagion: Modeling and forecasting emergent outbreaks	93.242	1R01MH121410-01			0	82,173
Suicide as a contagion: Modeling and forecasting emergent outbreaks	93.242	1R01MH121410-01			0	26,792
					\$0	\$108,965
Brain stimulation for cognitive enhancement based on modulation of cortical traveling waves	93.242	5R21MH117682-02			0	211,094
					\$0	\$211,094
mLab App for Improving Uptake of rapid HIV self-testing and Linking Youth to Care	93.242	5R01MH118151-02			368,456	612,422
					\$368,456	\$612,422
Developing a stem cell-based model to study MGE and CGE interneuron lineage specification	93.242	5R03MH119443-02			0	50,328
					\$0	\$50,328
Mothers' childhoods and the intergenerational transmission of mental health risk in the context of adversity	93.242	5K01MH117443-02			0	134,143

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$134,143
Research Training in Biobehavioral Disturbances of Eating Disorders	93.242	5T32MH096679-08			0	150,381
					\$0	\$150,381
A Trial of a Police Mental Health Linkage System for Jail Diversion and Reconnection to Care	93.242	5R01MH117191-03			24,952	690,567
					\$24,952	\$690,567
Intergenerational Transmission of deficits in Self-Regulatory Control	93.242	5R01MH117983-03			319,973	716,535
					\$319,973	\$716,535
Training and Mentoring in Neurocognitive Mechanisms of Eating Disorders	93.242	5K24MH113737-03			0	98,025
					\$0	\$98,025
Identifying Cellular and Molecular Substrates of Treatment-Resistant Depression	93.242	5R00MH108719-04			0	137,991
Identifying Cellular and Molecular Substrates of Treatment-Resistant Depression	93.242	5R00MH108719-04			0	52,354
					\$0	\$190,345
Research Training in Mood and Anxiety Disorders: From Animal Models to Patients	93.242	5T32MH015144-43			0	415,724
					\$0	\$415,724
Research Training in Late-Life NeuroPsychiatric Disorders	93.242	5T32MH020004-22			0	302,926
Research Training in Late-Life NeuroPsychiatric Disorders	93.242	5T32MH020004-22			0	10,045
					\$0	\$312,971
Reducing Duration of Untreated Psychosis through Early Detection in a Large Jail System	93.242	5R34MH117766-02			71,123	125,516
					\$71,123	\$125,516
Mapping Regulatory Networks of Autism Risk at Cellular Resolution during Neurodevelopment	93.242	7K08MH115164-04			0	87,313
					\$0	\$87,313

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<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	R&D Cluster	
					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Mechanistic clinical trial of individualized tDCS for hallucinations in schizophrenia	93.242	1K23MH119318-01A1			0	75,149
					\$0	\$75,149
Using RDoC Negative and Positive Valence Paradigms to Investigate the Mechanisms of Neuropsychiatric Symptoms (NPS) in Alzheimer s Disease and Related Dementias	93.242	5R01MH120794-02			0	240,987
					\$0	\$240,987
Probing human orientation and its neural representation via direct human brain recordings	93.242	5F32MH120990-02			0	58,892
					\$0	\$58,892
Medial Temporal Lobe Contributions to Episodic Memory	93.242	5R01MH074692-14			32,291	457,552
					\$32,291	\$457,552
Regulation of social aggression through hippocampal CA2 projections to lateral septum	93.242	5R01MH120292-02			0	379,797
					\$0	\$379,797
Yunnan-ADARC HIV Prevention Program: Developing and Testing a Model to Implement and Sustain PrEP Delivery in China	93.242	5R01MH119884-03			0	224,309
					\$0	\$224,309
Cortical Amygdala to medial Prefrontal Cortex Circuit Control of Olfactory Fear Memories	93.242	1F32MH122147-01A1			0	22,157
					\$0	\$22,157
The behavioral microstructure of a memory-guided food-caching behavior and its relationship to hippocampal replay	93.242	5F32MH123015-03			0	18,374
					\$0	\$18,374
Uncovering the neural architecture underlying decisions abstracted from movements	93.242	1R01MH122513-01			0	63,822
					\$0	\$63,822
Mapping the neural circuitry underlying walking	93.242	1F32MH123012-01			0	12,123
					\$0	\$12,123
Chemical Targeting of Sensors and Pharmacolog	93.242	1R01MH122470-01			0	10,884

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					<u>\$0</u>	<u>\$10,884</u>
Mitochondrial regulation of stress reactivity in humans	93.242	1R01MH122706-01			0	45,342
					<u>\$0</u>	<u>\$45,342</u>
					<u>\$4,205,350</u>	<u>\$26,527,422</u>
Alcohol Research Programs						
Prefrontal cortex and adolescent binge drinking: Role of HCN channels	93.273	5R01AA023531-05			0	233,089
Prefrontal cortex and adolescent binge drinking: Role of HCN channels	93.273	5R01AA023531-05			0	99,802
					<u>\$0</u>	<u>\$332,891</u>
Neural and Mobile Assessment of Behavior Change Among Problem Drinkers	93.273	5R01AA023653-03			201,338	478,338
					<u>\$201,338</u>	<u>\$478,338</u>
Testing associations among sexual identity, race/ethnicity, relationship characteristics, and hazard	93.273	5F32AA025816-03			0	58,497
Testing associations among sexual identity, race/ethnicity, relationship characteristics, and hazard	93.273	5F32AA025816-03			0	6,205
					<u>\$0</u>	<u>\$64,702</u>
Prefrontal Pathways Engaged in Excessive Alcohol Consumption	93.273	5K99AA024507-02			0	-14,945
					<u>\$0</u>	<u>\$-14,945</u>
The role of neuroimmune interactions in the pathogenesis of chronic pain	93.273	5R01AA027108-03			441,679	684,043
					<u>\$441,679</u>	<u>\$684,043</u>
Aldh2 and mitochondrial homeostasis in esophageal pathobiology	93.273	5R01AA026297-04			0	412,930
					<u>\$0</u>	<u>\$412,930</u>
Age, period, and cohort effects on gender differences in alcohol use and alcohol use disorders in 47 national, longitudinally-followed cohorts	93.273	5R01AA026861-03			134,975	374,027
					<u>\$134,975</u>	<u>\$374,027</u>

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Influences Of In-Person Social Networks,Digital Social Networks And Neighborhoods On Adolescent Alcohol Consumption	93.273	5K01AA026327-03			338	197,660
					\$338	\$197,660
Optimizing Configurations of Roadside Sobriety Testing Checkpoints to Reduce Alcohol Involved Crashes	93.273	5R21AA025749-03			61,005	245,905
					\$61,005	\$245,905
Improving measurement of alcohol consumption among HIV-affected youth in sub-Saharan Africa: evaluation and implementation of biomarkers	93.273	1K01AA026523-01A1			0	20,768
					\$0	\$20,768
Mechanisms of synaptic loss by the classical complement pathway in motor circuit development and disease	93.273	51R01AA027079-03			0	581,262
					\$0	\$581,262
Stress, hazardous drinking and intimate partner aggression in a diverse sample of women and their partners	93.273	5R01AA027252-02			59,469	220,119
					\$59,469	\$220,119
A Novel Personalized Approach Towards Treating Negative Symptoms and Reducing Alcohol Abuse in patients with Comorbid AUD and Schizophrenia.	93.273	5R21AA027392-02			0	50,948
					\$0	\$50,948
Alcohol, Retinoids and Pancreas Biology	93.273	5R21AA028110-02			0	120,266
					\$0	\$120,266
Identification of fetal alcohol-affected children: Alterations in imprinted gene expression and methylation as biomarkers of neurobehavioral and growth impairment.	93.273	5R01AA027916-02			14,145	129,725
					\$14,145	\$129,725
					\$912,949	\$3,898,639

Drug Abuse and Addiction Research Programs

State Medical Marijuana Laws and NSDUH Marijuana Use and Consequences Since 2004	93.279	5R01DA037866-05			21,321	271,465
State Medical Marijuana Laws and NSDUH Marijuana Use and Consequences Since 2004	93.279	5R01DA037866-05			0	17,590

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
State Medical Marijuana Laws and NSDUH Marijuana Use and Consequences Since 2004	93.279	5R01DA037866-05			0	17,338
					\$21,321	\$306,393
Enhanced Access to HIV Care for Drug Users in San Juan, Puerto Rico (Metsch/Santana-Bagur)	93.279	5R01DA035280-05			458,926	717,464
					\$458,926	\$717,464
Social Stress and Substance Use Disparities in Sexual Minority Youth	93.279	4K01DA032558-05			0	526
					\$0	\$526
Assessing the Impact of State-Level Policies on Drug Use and HIV Risk for YMSM	93.279	5K01DA039804-05			0	131,966
					\$0	\$131,966
Prescription Drug Use in the US Population: Gateway Effects and Family Patterns	93.279	5R01DA036748-04			0	38,954
					\$0	\$38,954
A Multimedia HIV/STI Intervention for Black Drug-involved Women on Probation	93.279	5R01DA038122-05			0	51,834
A Multimedia HIV/STI Intervention for Black Drug-involved Women on Probation	93.279	5R01DA038122-05			0	1,251
					\$0	\$53,085
Evaluating a Microfinance Intervention for High Risk Women in Kazakhstan	93.279	5R01DA036514-05			0	33
					\$0	\$33
Increasing Involvement of MSM in the Continuum of Care in Kazakhstan	93.279	5R01DA040513-05			0	784,030
					\$0	\$784,030
Preventing Drug Abuse among Hispanic Adolescents	93.279	4R01DA031477-05			0	78,929
					\$0	\$78,929
Using PET to Image the Neurochemistry of Addiction	93.279	5K02DA026525-10			0	64,042
					\$0	\$64,042

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
A Cluster RCT to Increase HIV Testing in Substance Use Treatment Programs	93.279	5R01DA043130-04			511,441	981,037
					\$511,441	\$981,037
Substance Abuse Epidemiology Training Program (SAETP) at Columbia University	93.279	5T32DA031099-09			0	421,308
Substance Abuse Epidemiology Training Program (SAETP) at Columbia University	93.279	5T32DA031099-09			0	-8,166
					\$0	\$413,142
Deciphering nuclear bodies and compartments that govern singular olfactory receptor expression.	93.279	5U01DA040582-05			142,454	225,917
Deciphering nuclear bodies and compartments that govern singular olfactory receptor expression.	93.279	5U01DA040582-05			0	219,476
Deciphering nuclear bodies and compartments that govern singular olfactory receptor expression.	93.279	5U01DA040582-05			0	99,089
Deciphering nuclear bodies and compartments that govern singular olfactory receptor expression.	93.279	5U01DA040582-05			39,845	39,845
Deciphering nuclear bodies and compartments that govern singular olfactory receptor expression.	93.279	5U01DA040582-05			0	29,776
Deciphering nuclear bodies and compartments that govern singular olfactory receptor expression.	93.279	5U01DA040582-05			0	-27,100
					\$182,299	\$587,003
The epigenetic impact of in utero opioid exposure on Generation Z	93.279	5R03DA040887-02			0	39,455
					\$0	\$39,455
Substance Abuse Treatment Development and Clinical Research Mentoring	93.279	5K24DA029647-10			0	149,333
					\$0	\$149,333
Non-Metabolized Pregnenolone Derivatives:New Treatment for Cannabis Use Disorder	93.279	5R01DA038875-02			129,370	182,943
					\$129,370	\$182,943
Health Care Policy and Substance Abuse Treatment Access	93.279	5R01DA039137-04			269,820	385,810

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					Subrecipients	Total Expenditures (Includes Subrecipients)
					\$269,820	\$385,810
Probing mechanisms of amphetamine action at plasma membrane and vesicular transporters in vitro and in vivo	93.279	5R01DA041510-04			290,431	567,442
					\$290,431	\$567,442
Research Fellowship in Substance Abuse Disorder	93.279	5T32DA007294-28			0	448,120
Research Fellowship in Substance Abuse Disorder	93.279	5T32DA007294-28			0	-24,236
					\$0	\$423,884
Improving HIV Service Delivery for People who Inject Drugs in Kazakhstan	93.279	5R01DA041063-05			0	828,777
					\$0	\$828,777
Neural signatures of learning complex environments in the amygdala-prefrontal network	93.279	5K99DA048748-02			0	143,144
					\$0	\$143,144
Gene Expression Programs in Maturing Dopamine Neurons: Temporal Regulation, Subcellular Localization, and Alteration by Amphetamine	93.279	5F30DA047775-02			0	28,425
Gene Expression Programs in Maturing Dopamine Neurons: Temporal Regulation, Subcellular Localization, and Alteration by Amphetamine	93.279	5F30DA047775-02			0	21,906
					\$0	\$50,331
A Multi-site Multi-Setting RCT of Integrated HIV Prevention and HCV Care for PWID	93.279	5R01DA045713-04			336,523	587,392
					\$336,523	\$587,392
Adolescent substance use as determinant and consequence of the school-to-prison pipeline: Disentangling individual risk, social determinants, and group disparities	93.279	5K01DA045955-02			0	168,417
					\$0	\$168,417
Preventing Drug Abuse among Sexual-Minority Youth	93.279	5R01DA043512-03			0	804,099
					\$0	\$804,099
A couple-based antiretroviral therapy adherence intervention for people who inject drugs in Kazakhstan	93.279	5K01DA044853-03			0	196,887
					\$0	\$196,887

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						<u>Total Expenditures (Includes Subrecipients)</u>
Chemistry and Biology of Mitragynine Alkaloids	93.279	5R01DA046487-03			364,704	598,094
Chemistry and Biology of Mitragynine Alkaloids	93.279	5R01DA046487-03			0	32,391
					\$364,704	\$630,485
Venues and Risk Networks: Context of Substance Use and HIV among High Risk Women	93.279	5K01DA041233-05			0	93,400
					\$0	\$93,400
Training Program on HIV and Substance Use in the Criminal Justice System	93.279	5T32DA037801-07			0	339,727
					\$0	\$339,727
Multi-level associations between medical marijuana laws and substance use disorder treatment	93.279	5K01DA045224-03			0	135,484
					\$0	\$135,484
As adolescent substance use declines, adolescent well being decreases: identifying high-risk substance using groups and the role of social media, parental supervision, and unsupervised time	93.279	5R01DA048853-02			39,131	375,894
					\$39,131	\$375,894
Mechanisms linking neighborhood poverty to problematic adolescent drug use	93.279	7R00DA042127-04			0	108,410
					\$0	\$108,410
Dopamine synapses and operant conditioning	93.279	5R01DA007418-25			0	531,784
Dopamine synapses and operant conditioning	93.279	5R01DA007418-25			0	35,456
Dopamine synapses and operant conditioning	93.279	5R01DA007418-25			0	17,474
					\$0	\$584,714
CHASE: An Innovative County-Level Public Health Response to the Opioid Epidemic in New York State	93.279	5UM1DA049415-02			1,645,711	5,079,391
CHASE: An Innovative County-Level Public Health Response to the Opioid Epidemic in New York State	93.279	5UM1DA049415-02			69,168	1,332,137

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					Subrecipients	Total Expenditures (Includes Subrecipients)
CHASE: An Innovative County-Level Public Health Response to the Opioid Epidemic in New York State	93.279	5UM1DA049415-02			0	434,586
CHASE: An Innovative County-Level Public Health Response to the Opioid Epidemic in New York State	93.279	5UM1DA049415-02			0	180,558
					\$1,714,879	\$7,026,672
					\$4,318,845	\$17,979,304

Discovery and Applied Research for Technological Innovations to Improve Human Health

Multi-tissue platform for modeling systemic pathologies	93.286	5UG3EB025765-02			141,288	141,288
Multi-tissue platform for modeling systemic pathologies	93.286	5UG3EB025765-02			0	6,692
Multi-tissue platform for modeling systemic pathologies	93.286	5UG3EB025765-02			0	-6,256
Multi-tissue platform for modeling systemic pathologies	93.286	5UG3EB025765-02			0	-24,214
					\$141,288	\$117,510
Radiological Research Accelerator Facility (RARAF)	93.286	5P41EB002033-23			0	281,844
Radiological Research Accelerator Facility (RARAF)	93.286	5P41EB002033-23			0	200,107
					\$0	\$481,951
Monitoring Particulate, PAH, Allergen and Microbial Exposures in Asthmatic Kids	93.286	1U01EB021983-01			0	143,755
Monitoring Particulate, PAH, Allergen and Microbial Exposures in Asthmatic Kids	93.286	1U01EB021983-01			38,510	121,760
Monitoring Particulate, PAH, Allergen and Microbial Exposures in Asthmatic Kids	93.286	1U01EB021983-01			0	18,308
Monitoring Particulate, PAH, Allergen and Microbial Exposures in Asthmatic Kids	93.286	1U01EB021983-01			0	10,922
					\$38,510	\$294,745

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Graft Engineering of Allogeneic Hematopoietic Stem Cell Products with Molecular Cascades	93.286	5R01EB025221-03			0	268,200
Graft Engineering of Allogeneic Hematopoietic Stem Cell Products with Molecular Cascades	93.286	5R01EB025221-03			0	234,218
Graft Engineering of Allogeneic Hematopoietic Stem Cell Products with Molecular Cascades	93.286	5R01EB025221-03			0	207,582
					\$0	\$710,000
Early Detection and Mapping of Ischemia Using Myocardial Elastography	93.286	5R01EB006042-11			0	319,398
					\$0	\$319,398
Next-Generation Calcium Imaging Analysis Methods	93.286	5R01EB022913-03			0	226,613
					\$0	\$226,613
Advanced Modeling Techniques for Brain Imaging Data with PET	93.286	5R01EB024526-04			41,495	159,567
					\$41,495	\$159,567
Mechanistic Monitoring of Ultrasound Neuromodulation	93.286	5R01EB027576-02			0	726,677
					\$0	\$726,677
Multi-tissue platform for modeling systemic pathologies	93.286	5UH3EB025765-04			35,200	629,679
Multi-tissue platform for modeling systemic pathologies	93.286	5UH3EB025765-04			48,633	220,950
Multi-tissue platform for modeling systemic pathologies	93.286	5UH3EB025765-04			0	131,786
					\$83,833	\$982,415
Tissue Engineering Resource Center	93.286	5P41EB027062-02			124,556	574,798
					\$124,556	\$574,798
A theranostic system for ultrasound-facilitated blood-brain barrier opening	93.286	1R01EB029338-01			0	15,305
					\$0	\$15,305

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						R&D Cluster
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High-resolution volumetric imaging of metabolic activity in tissues and its application to tumor metabolism	93.286	1R01EB029523-01			0	26,718
					\$0	\$26,718
					\$429,682	\$4,635,697
Minority Health and Health Disparities Research						
Ancestry, Genetic Risk and Health Disparities in Immune-Mediated Nephritis	93.307	5R01MD009223-05			0	192,294
Ancestry, Genetic Risk and Health Disparities in Immune-Mediated Nephritis	93.307	5R01MD009223-05			0	250
					\$0	\$192,544
Next Generation	93.307	5T37MD008637-05			0	6,214
					\$0	\$6,214
Cultural Script Interpretation and HIV Risk in a Diverse Sample of Young Urban MSM	93.307	5R01MD010529-04			45,929	375,248
					\$45,929	\$375,248
Impact of breast density information disclosure in racially diverse populations	93.307	5R01MD011506-05			0	573,337
					\$0	\$573,337
A Pragmatic Clinical Trial of MyPEEPS Mobile to Improve HIV prevention Behaviors in Diverse Adolescent MSM	93.307	5U01MD011279-03			641,466	1,379,044
A Pragmatic Clinical Trial of MyPEEPS Mobile to Improve HIV prevention Behaviors in Diverse Adolescent MSM	93.307	5U01MD011279-03			1,956	153,754
A Pragmatic Clinical Trial of MyPEEPS Mobile to Improve HIV prevention Behaviors in Diverse Adolescent MSM	93.307	5U01MD011279-03			0	4,885
					\$643,422	\$1,537,683
Racial Disparities, Influenza Like Illness and the Association between Short-term Exposure to Ambient Air Pollution and Cardiovascular Outcomes	93.307	5R21MD012451-02			0	117,945
					\$0	\$117,945
Racial and Ethnic Disparities in Chronic Disease Outcomes and Nurse Practitioner Practice	93.307	5R01 MD011514-04			165,571	816,939

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Racial and Ethnic Disparities in Chronic Disease Outcomes and Nurse Practitioner Practice	93.307	5R01 MD011514-04			20,495	229,602
					\$186,066	\$1,046,541
Exchange Sex and HIV Risk among MSM Online	93.307	5R01MD011587-04			0	482,547
					\$0	\$482,547
Acceptability of HIV Treatment as Prevention among MSM	93.307	1R21MD014701-01A1			0	4,922
					\$0	\$4,922
The COMIDITA study: urban Latino toddlers, diet intake and developmental outcomes	93.307	5R21MD013622-02			0	197,020
					\$0	\$197,020
Impact of Social Cohesion and Social Capital in PrEP Uptake and Adherence Among Transwomen of Color	93.307	7R01MD013554-03			0	412,862
					\$0	\$412,862
LINC: Leveraging IT for Neighborhoods in Childhood	93.307	1R01MD014872-01			0	23,669
					\$0	\$23,669
					\$875,417	\$4,970,532
Trans-NIH Research Support						
Novel sub-cellular chemical and mechanical nanoimaging	93.310	1DP2EB018657-01			0	-469
					\$0	\$-469
The internal states of neural circuits: data analysis, modeling and disease	93.310	5DP5OD019897-05			0	51,146
					\$0	\$51,146
Multi-platform Educational Program in Innovative Methods for the Behavioral and Social Sciences	93.310	3R25GM111757-04S1			0	4,320
					\$0	\$4,320
Geographic variation in the diverse tobacco retail environment and its impact on tobacco use disparities	93.310	5DP5OD023064-06			0	422,514
					\$0	\$422,514

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					Subrecipients	Total Expenditures (Includes Subrecipients)
Functional connectomics of the neocortical microcircuit	93.310	5DP1EY024503-05			0	69,252
					\$0	\$69,252
Foundational tools to study the impacts of sympathetic activity on the neuroanatomy and function of brown adipose tissue	93.310	1OT2OD023853-01			0	275,759
Foundational tools to study the impacts of sympathetic activity on the neuroanatomy and function of brown adipose tissue	93.310	1OT2OD023853-01			65,268	181,150
Foundational tools to study the impacts of sympathetic activity on the neuroanatomy and function of brown adipose tissue	93.310	1OT2OD023853-01			0	22
					\$65,268	\$456,931
New York City Consortium for Precision Medicine	93.310	3OT2OD026556-01S2			5,810,429	8,879,146
New York City Consortium for Precision Medicine	93.310	3OT2OD026556-01S2			0	1,431,189
New York City Consortium for Precision Medicine	93.310	3OT2OD026556-01S2			0	458,917
New York City Consortium for Precision Medicine	93.310	3OT2OD026556-01S2			0	426,638
New York City Consortium for Precision Medicine	93.310	3OT2OD026556-01S2			0	204,852
New York City Consortium for Precision Medicine	93.310	3OT2OD026556-01S2			0	204,066
					\$5,810,429	\$11,604,808
Hacking Epidemics: Unlocking The Drivers of Transmission Seasonality to Battle Vaccine-Preventable Diseases	93.310	5DP5OD023100-06			199,955	439,363
					\$199,955	\$439,363
Identifying Newborns at Risk of Adverse Neurodevelopmental Outcomes and Obesity from Air Pollution	93.310	5UH3OD023290-05			0	1,763,406
Identifying Newborns at Risk of Adverse Neurodevelopmental Outcomes and Obesity from Air Pollution	93.310	5UH3OD023290-05			14,570	471,673
					\$14,570	\$2,235,079

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

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						<u>Total Expenditures (Includes Subrecipients)</u>
Re-engineering Precision Therapeutics Through N-of-1 Trials	93.310	5R01LM012836-02			0	-4,488
					\$0	-\$4,488
Focused Ultrasound-mediated Delivery of Gene-editing Elements to the Brain for Neurodegenerative Disorders	93.310	5UG3NS115598-02			0	194,307
Focused Ultrasound-mediated Delivery of Gene-editing Elements to the Brain for Neurodegenerative Disorders	93.310	5UG3NS115598-02			0	36,570
Focused Ultrasound-mediated Delivery of Gene-editing Elements to the Brain for Neurodegenerative Disorders	93.310	5UG3NS115598-02			0	32,811
Focused Ultrasound-mediated Delivery of Gene-editing Elements to the Brain for Neurodegenerative Disorders	93.310	5UG3NS115598-02			0	28,844
					\$0	\$292,532
					\$6,090,222	\$15,570,988

National Center for Advancing Translational Sciences

Clinical and Translational Science Award	93.350	5UL1TR001873-05			0	1,341,675
Clinical and Translational Science Award	93.350	5UL1TR001873-05			0	1,310,495
Clinical and Translational Science Award	93.350	5UL1TR001873-05			0	937,860
Clinical and Translational Science Award	93.350	5UL1TR001873-05			0	926,495
Clinical and Translational Science Award	93.350	5UL1TR001873-05			0	902,835
Clinical and Translational Science Award	93.350	5UL1TR001873-05			0	881,116
Clinical and Translational Science Award	93.350	5UL1TR001873-05			0	859,434
Clinical and Translational Science Award	93.350	5UL1TR001873-05			5,264	673,781

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Clinical and Translational Science Award	93.350	5UL1TR001873-05			0	377,454
Clinical and Translational Science Award	93.350	5UL1TR001873-05			0	253,281
Clinical and Translational Science Award	93.350	5UL1TR001873-05			0	135,812
Clinical and Translational Science Award	93.350	5UL1TR001873-05			0	119,354
Clinical and Translational Science Award	93.350	5UL1TR001873-05			0	116,022
Clinical and Translational Science Award	93.350	5UL1TR001873-05			0	90,995
Clinical and Translational Science Award	93.350	5UL1TR001873-05			0	81,835
Clinical and Translational Science Award	93.350	5UL1TR001873-05			0	71,500
Clinical and Translational Science Award	93.350	5UL1TR001873-05			0	70,940
Clinical and Translational Science Award	93.350	5UL1TR001873-05			0	67,622
Clinical and Translational Science Award	93.350	5UL1TR001873-05			0	67,453
Clinical and Translational Science Award	93.350	5UL1TR001873-05			0	64,000
Clinical and Translational Science Award	93.350	5UL1TR001873-05			0	62,799
Clinical and Translational Science Award	93.350	5UL1TR001873-05			0	62,039
Clinical and Translational Science Award	93.350	5UL1TR001873-05			0	61,187
Clinical and Translational Science Award	93.350	5UL1TR001873-05			0	56,221

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Clinical and Translational Science Award	93.350	5UL1TR001873-05			0	50,718
Clinical and Translational Science Award	93.350	5UL1TR001873-05			0	49,067
Clinical and Translational Science Award	93.350	5UL1TR001873-05			0	47,725
Clinical and Translational Science Award	93.350	5UL1TR001873-05			0	44,082
Clinical and Translational Science Award	93.350	5UL1TR001873-05			0	19,295
Clinical and Translational Science Award	93.350	5UL1TR001873-05			0	18,718
Clinical and Translational Science Award	93.350	5UL1TR001873-05			0	12,569
Clinical and Translational Science Award	93.350	5UL1TR001873-05			0	8,493
Clinical and Translational Science Award	93.350	5UL1TR001873-05			0	-245
					\$5,264	\$9,842,627
NRSA Training Core	93.350	5TL1TR001875-05			0	78,464
NRSA Training Core	93.350	5TL1TR001875-05			0	70,547
NRSA Training Core	93.350	5TL1TR001875-05			0	67,645
NRSA Training Core	93.350	5TL1TR001875-05			0	67,142
NRSA Training Core	93.350	5TL1TR001875-05			0	63,730
NRSA Training Core	93.350	5TL1TR001875-05			0	58,379

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NRSA Training Core	93.350	5TL1TR001875-05			0	53,873
NRSA Training Core	93.350	5TL1TR001875-05			0	51,789
NRSA Training Core	93.350	5TL1TR001875-05			0	51,364
NRSA Training Core	93.350	5TL1TR001875-05			0	48,233
NRSA Training Core	93.350	5TL1TR001875-05			0	45,237
NRSA Training Core	93.350	5TL1TR001875-05			0	44,444
NRSA Training Core	93.350	5TL1TR001875-05			0	43,914
NRSA Training Core	93.350	5TL1TR001875-05			0	43,906
NRSA Training Core	93.350	5TL1TR001875-05			0	43,159
NRSA Training Core	93.350	5TL1TR001875-05			0	42,351
NRSA Training Core	93.350	5TL1TR001875-05			0	41,574
NRSA Training Core	93.350	5TL1TR001875-05			0	37,847
NRSA Training Core	93.350	5TL1TR001875-05			0	25,143
NRSA Training Core	93.350	5TL1TR001875-05			0	24,639
NRSA Training Core	93.350	5TL1TR001875-05			0	13,401
NRSA Training Core	93.350	5TL1TR001875-05			0	9,024

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						<u>Total Expenditures (Includes Subrecipients)</u>
NRSA Training Core	93.350	5TL1TR001875-05			0	6,836
NRSA Training Core	93.350	5TL1TR001875-05			0	6,836
NRSA Training Core	93.350	5TL1TR001875-05			0	6,836
NRSA Training Core	93.350	5TL1TR001875-05			0	6,700
NRSA Training Core	93.350	5TL1TR001875-05			0	6,700
NRSA Training Core	93.350	5TL1TR001875-05			0	6,103
NRSA Training Core	93.350	5TL1TR001875-05			0	4,558
NRSA Training Core	93.350	5TL1TR001875-05			0	4,558
NRSA Training Core	93.350	5TL1TR001875-05			0	4,467
NRSA Training Core	93.350	5TL1TR001875-05			0	4,358
NRSA Training Core	93.350	5TL1TR001875-05			0	261
NRSA Training Core	93.350	5TL1TR001875-05			0	-280
NRSA Training Core	93.350	5TL1TR001875-05			0	-720
NRSA Training Core	93.350	5TL1TR001875-05			0	-4,978
NRSA Training Core	93.350	5TL1TR001875-05			0	-5,376
NRSA Training Core	93.350	5TL1TR001875-05			0	-5,743

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					<u>\$0</u>	<u>\$1,066,921</u>
Institutional Career Development Core	93.350	5KL2TR001874-05			0	150,255
Institutional Career Development Core	93.350	5KL2TR001874-05			0	146,750
Institutional Career Development Core	93.350	5KL2TR001874-05			0	144,446
Institutional Career Development Core	93.350	5KL2TR001874-05			0	143,993
Institutional Career Development Core	93.350	5KL2TR001874-05			0	128,911
Institutional Career Development Core	93.350	5KL2TR001874-05			0	127,875
Institutional Career Development Core	93.350	5KL2TR001874-05			0	107,104
Institutional Career Development Core	93.350	5KL2TR001874-05			0	95,537
Institutional Career Development Core	93.350	5KL2TR001874-05			0	86,325
Institutional Career Development Core	93.350	5KL2TR001874-05			0	38,613
Institutional Career Development Core	93.350	5KL2TR001874-05			0	31,150
Institutional Career Development Core	93.350	5KL2TR001874-05			0	23,680
Institutional Career Development Core	93.350	5KL2TR001874-05			0	10,913
Institutional Career Development Core	93.350	5KL2TR001874-05			0	10,880
Institutional Career Development Core	93.350	5KL2TR001874-05			0	10,427

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Institutional Career Development Core	93.350	5KL2TR001874-05			0	10,410
Institutional Career Development Core	93.350	5KL2TR001874-05			0	10,385
Institutional Career Development Core	93.350	5KL2TR001874-05			0	10,384
Institutional Career Development Core	93.350	5KL2TR001874-05			0	7,419
Institutional Career Development Core	93.350	5KL2TR001874-05			0	1,138
Institutional Career Development Core	93.350	5KL2TR001874-05			0	196
Institutional Career Development Core	93.350	5KL2TR001874-05			0	54
Institutional Career Development Core	93.350	5KL2TR001874-05			0	13
Institutional Career Development Core	93.350	5KL2TR001874-05			0	-5,566
					\$0	\$1,291,292
Biomedical Data Translator Technical Feasibility Assessment and Architecture Design	93.350	1OT3TR002027-01			227,656	579,784
Biomedical Data Translator Technical Feasibility Assessment and Architecture Design	93.350	1OT3TR002027-01			42,204	42,204
Biomedical Data Translator Technical Feasibility Assessment and Architecture Design	93.350	1OT3TR002027-01			0	-6,683
Biomedical Data Translator Technical Feasibility Assessment and Architecture Design	93.350	1OT3TR002027-01			0	-21,639
Biomedical Data Translator Technical Feasibility Assessment and Architecture Design	93.350	1OT3TR002027-01			-42,204	-42,204
					\$227,656	\$551,462
Preclinical Evaluation of Vorinostat in Alopecia Areata	93.350	4UH3TR002090-03			0	534

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						R&D Cluster
<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Preclinical Evaluation of Vorinostat in Alopecia Areata	93.350	4UH3TR002090-03			0	1
					\$0	\$535
Bioprinting 3D skin for patient-specific drug discovery in inflammatory skin diseases.	93.350	5U18TR002305-02			0	520,086
					\$0	\$520,086
Preclinical Evaluation of Vorinostat in Alopecia Areata	93.350	4UH3TR002090-03			0	118,728
					\$0	\$118,728
Integrated Microphysiological System of Cerebral Organoid and Blood Vessel for Disease Modeling and Neuropsychiatric Drug screening	93.350	5UG3TR002151-02			49,422	208,405
Integrated Microphysiological System of Cerebral Organoid and Blood Vessel for Disease Modeling and Neuropsychiatric Drug screening	93.350	5UG3TR002151-02			37,984	175,245
Integrated Microphysiological System of Cerebral Organoid and Blood Vessel for Disease Modeling and Neuropsychiatric Drug screening	93.350	5UG3TR002151-02			0	108,820
Integrated Microphysiological System of Cerebral Organoid and Blood Vessel for Disease Modeling and Neuropsychiatric Drug screening	93.350	5UG3TR002151-02			0	101,107
					\$87,406	\$593,577
Translator Red Knowledge (TReK)	93.350	1OT2TR003434-01			15,120	97,396
Translator Red Knowledge (TReK)	93.350	1OT2TR003434-01			0	19,111
					\$15,120	\$116,507
Integrated Microphysiological System of Cerebral Organoid and Blood Vessel for Disease Modeling and Neuropsychiatric Drug screening	93.350	4UH3TR002151-03			0	65,684
Integrated Microphysiological System of Cerebral Organoid and Blood Vessel for Disease Modeling and Neuropsychiatric Drug screening	93.350	4UH3TR002151-03			0	55,897
Integrated Microphysiological System of Cerebral Organoid and Blood Vessel for Disease Modeling and Neuropsychiatric Drug screening	93.350	4UH3TR002151-03			0	51,187
					\$0	\$172,768
					\$335,446	\$14,274,503

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<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Research Infrastructure Programs						
Robust allograft tolerance in non-human primates	93.351	5R01OD017949-05			0	492,024
Robust allograft tolerance in non-human primates	93.351	5R01OD017949-05			124,478	380,865
					\$124,478	\$872,889
6 MeV/amu ion linac for deep-penetration microbeam and millimeter-beam charged-particle irradiations in small animals and biological tissues	93.351	1S10OD025190-01			0	300,860
					\$0	\$300,860
TCR and BCR deep sequencing to distinguish autoimmune recurrence from allograft rejection	93.351	5R21TR002279-02			22,985	158,346
TCR and BCR deep sequencing to distinguish autoimmune recurrence from allograft rejection	93.351	5R21TR002279-02			10,112	33,547
					\$33,097	\$191,893
475 MHz NMR Spectrometer	93.351	1S10OD023499-01			0	370,000
					\$0	\$370,000
Effects of ApoE-enhancing Compounds on Alzheimers Disease Phenotypes In Vivo	93.351	5R21TR002029-02			30,088	121,865
					\$30,088	\$121,865
Millipore Sigma ImageStream-X Mark II Imaging Cytometer	93.351	1S10OD026845-01			0	552,594
					\$0	\$552,594
Cryoprobe Upgrade of a 500 MHz NMR Spectrometer	93.351	1S10OD026749-01			0	21,010
					\$0	\$21,010
					\$187,663	\$2,431,111
21st Century Cures Act - Beau Biden Cancer Moonshot						
Engineering immunotherapeutic probiotics to mitigate irAE	93.353	1U01CA247573-01			0	117,762

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Engineering immunotherapeutic probiotics to mitigate irAE	93.353	1U01CA247573-01			0	52,683
					\$0	\$170,445
					\$0	\$170,445
Nursing Research						
Self-care decision-making: Feasibility or the BREATHE asthma intervention trial	93.361	5R21NR016507-02			20,553	22,604
					\$20,553	\$22,604
Precision in Symptom Self-Management (PriSSM) Center	93.361	5P30NR016587-04			0	159,257
Precision in Symptom Self-Management (PriSSM) Center	93.361	5P30NR016587-04			0	113,583
Precision in Symptom Self-Management (PriSSM) Center	93.361	5P30NR016587-04			0	101,882
Precision in Symptom Self-Management (PriSSM) Center	93.361	5P30NR016587-04			0	36,179
Precision in Symptom Self-Management (PriSSM) Center	93.361	5P30NR016587-04			0	14,453
Precision in Symptom Self-Management (PriSSM) Center	93.361	5P30NR016587-04			0	14,042
Precision in Symptom Self-Management (PriSSM) Center	93.361	5P30NR016587-04			0	9,030
Precision in Symptom Self-Management (PriSSM) Center	93.361	5P30NR016587-04			5,284	8,454
Precision in Symptom Self-Management (PriSSM) Center	93.361	5P30NR016587-04			0	8,394
Precision in Symptom Self-Management (PriSSM) Center	93.361	5P30NR016587-04			0	1,792
Precision in Symptom Self-Management (PriSSM) Center	93.361	5P30NR016587-04			0	1,280

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Precision in Symptom Self-Management (PriSSM) Center	93.361	5P30NR016587-04			0	134
					\$5,284	\$468,480
Reducing Health Disparities Through Informatics	93.361	5T32NR007969-19			0	410,775
					\$0	\$410,775
Video Information Provider for HIV-Associated Non-AIDS (VIP-HANA) Symptoms	93.361	5R01NR015737-04			21,803	397,564
Video Information Provider for HIV-Associated Non-AIDS (VIP-HANA) Symptoms	93.361	5R01NR015737-04			0	122,333
					\$21,803	\$519,897
Infection Prevention in Home Health Care (InHome)	93.361	5R01NR016865-04			124,265	663,568
Infection Prevention in Home Health Care (InHome)	93.361	5R01NR016865-04			106,423	255,581
					\$230,688	\$919,149
Advancing Chronic Condition Symptom Cluster Science Through Use of Electronic Health Records and Data Science Techniques	93.361	5K99NR017651-02			0	64,142
					\$0	\$64,142
Hydroxyurea Adherence for Personal Best in Sickle Cell Treatment	93.361	5R01NR017206-04			289,850	553,138
Hydroxyurea Adherence for Personal Best in Sickle Cell Treatment	93.361	5R01NR017206-04			0	250,907
					\$289,850	\$804,045
Study of Infection Management and Palliative Care at End-of-Life (SIMP-EL)	93.361	5R01NR013687-07			307,538	673,741
Study of Infection Management and Palliative Care at End-of-Life (SIMP-EL)	93.361	5R01NR013687-07			121,187	197,522
					\$428,725	\$871,263
Communicating narrative Concerns entered by RNs (CONCERN)	93.361	7R01NR016941-02			379,980	800,973
					\$379,980	\$800,973

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Comparative and Cost-Effectiveness Research Training for Nurse Scientists	93.361	5T32NR014205-08			0	286,266
					\$0	\$286,266
Information visualizations to facilitate clinician-patient communication in HIV care (Info Viz: HIV)	93.361	1K99NR017829-01A1			0	91,044
					\$0	\$91,044
Center for Improving Palliative Care for Vulnerable Adults with MCC (CIPC)	93.361	5P20NR018072-03			0	92,656
Center for Improving Palliative Care for Vulnerable Adults with MCC (CIPC)	93.361	5P20NR018072-03			0	67,857
Center for Improving Palliative Care for Vulnerable Adults with MCC (CIPC)	93.361	5P20NR018072-03			23,353	67,757
Center for Improving Palliative Care for Vulnerable Adults with MCC (CIPC)	93.361	5P20NR018072-03			23,739	56,248
Center for Improving Palliative Care for Vulnerable Adults with MCC (CIPC)	93.361	5P20NR018072-03			0	38,405
Center for Improving Palliative Care for Vulnerable Adults with MCC (CIPC)	93.361	5P20NR018072-03			0	7,976
Center for Improving Palliative Care for Vulnerable Adults with MCC (CIPC)	93.361	5P20NR018072-03			0	3,115
Center for Improving Palliative Care for Vulnerable Adults with MCC (CIPC)	93.361	5P20NR018072-03			0	2,167
Center for Improving Palliative Care for Vulnerable Adults with MCC (CIPC)	93.361	5P20NR018072-03			0	1,667
Center for Improving Palliative Care for Vulnerable Adults with MCC (CIPC)	93.361	5P20NR018072-03			0	1,366
Center for Improving Palliative Care for Vulnerable Adults with MCC (CIPC)	93.361	5P20NR018072-03			668	1,082
Center for Improving Palliative Care for Vulnerable Adults with MCC (CIPC)	93.361	5P20NR018072-03			0	97
					\$47,760	\$340,393

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					Subrecipients	Total Expenditures (Includes Subrecipients)
Mentoring and Research in Self-Management for Health Promotion and Disease Prevention	93.361	5K24NR018621-02			0	78,987
					\$0	\$78,987
Developmental Assets in Adolescents with Chronic Illness and Co-morbid Depression	93.361	1F31NR018779-01			0	45,016
					\$0	\$45,016
Improving Patient prioritization during hospital-homecare transition: A mixed study of a clinical decision support tool	93.361	5R01NR018831-02			46,285	181,368
					\$46,285	\$181,368
Effect of an integrated nutrition-math curriculum to improve food-purchasing behavior of children	93.361	5R01NR017571-03			65,166	524,880
					\$65,166	\$524,880
A Digital Intervention to Improve the Sexual and Reproductive Health of Male Adolescent Emergency Department Patients.	93.361	1R21NR019181-01			0	10,455
					\$0	\$10,455
					\$1,536,094	\$6,439,737

Cancer Cause and Prevention Research

Increasing breast cancer chemoprevention in the primary care setting	93.393	5R01CA177995-05			85,796	85,796
Increasing breast cancer chemoprevention in the primary care setting	93.393	5R01CA177995-05			0	40,529
Increasing breast cancer chemoprevention in the primary care setting	93.393	5R01CA177995-05			0	14,791
Increasing breast cancer chemoprevention in the primary care setting	93.393	5R01CA177995-05			0	-2,714
					\$85,796	\$138,402
Fusobacterium nucleatum-mediated stimulation of colorectal cancer: mechanistic studies	93.393	5R01CA192111-05			0	175,097
					\$0	\$175,097
CONSTRUCTION AND ANALYSIS OF RETROVIRUS MUTANTS	93.393	5R01CA030488-38			0	24,113

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$24,113
DNA-PKCS Phosphorylation in DNA Repair and Chromosomal Translocations	93.393	5R01CA184187-05			0	213,796
					\$0	\$213,796
DNA Double-Strand Break Repair, Chromosomes Translocations and Cancer	93.393	5P01CA174653-05			0	83,413
DNA Double-Strand Break Repair, Chromosomes Translocations and Cancer	93.393	5P01CA174653-05			0	66,870
DNA Double-Strand Break Repair, Chromosomes Translocations and Cancer	93.393	5P01CA174653-05			0	32,510
DNA Double-Strand Break Repair, Chromosomes Translocations and Cancer	93.393	5P01CA174653-05			0	25,394
DNA Double-Strand Break Repair, Chromosomes Translocations and Cancer	93.393	5P01CA174653-05			0	18,784
DNA Double-Strand Break Repair, Chromosomes Translocations and Cancer	93.393	5P01CA174653-05			0	3,983
DNA Double-Strand Break Repair, Chromosomes Translocations and Cancer	93.393	5P01CA174653-05			0	693
DNA Double-Strand Break Repair, Chromosomes Translocations and Cancer	93.393	5P01CA174653-05			0	-35,385
					\$0	\$196,262
The mechanisms driving brain oncogenesis by FGFR-TACC gene fusions	93.393	5R01CA178546-05			0	916
					\$0	\$916
Integrating Mammograms in Analyses of Genes and Environment in Sisters (IMAGES)	93.393	5U01CA203993-04			0	298,831
Integrating Mammograms in Analyses of Genes and Environment in Sisters (IMAGES)	93.393	5U01CA203993-04			0	152,775
					\$0	\$451,606
The role of butyrate-producing bacteria in CIMP colorectal cancer tumorigenesis	93.393	5R01CA205028-04			2,510	346,736
					\$2,510	\$346,736

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
HMGB1 as Link Between Hepatocellular Injury and HCC	93.393	5R01CA200597-05			0	334,443
					\$0	\$334,443
A Prospective, Randomized Study to Compare Effects of Ulipristal Acetate with a Combined Oral Contraceptive on Breast Epithelial Cell Proliferation	93.393	5R01CA200795-04			20,292	273,984
					\$20,292	\$273,984
DNA Repair and Genomic Instability in Cancer Development and Therapy	93.393	5R35CA197606-06			0	774,310
DNA Repair and Genomic Instability in Cancer Development and Therapy	93.393	5R35CA197606-06			0	59,796
DNA Repair and Genomic Instability in Cancer Development and Therapy	93.393	5R35CA197606-06			0	-2,144
					\$0	\$831,962
From pathogenesis to new therapeutic targets in Diffuse Large B cell Lymphoma	93.393	5R35CA210105-05			0	883,053
From pathogenesis to new therapeutic targets in Diffuse Large B cell Lymphoma	93.393	5R35CA210105-05			0	34,905
					\$0	\$917,958
The role of ATM in suppression of lymphomas	93.393	5R01CA158073-09			0	331,901
					\$0	\$331,901
The structural function of ATR in development, oncogenesis and cancer therapy	93.393	5R01CA215067-04			0	402,467
					\$0	\$402,467
Methylation and mutations in RB1 and variants of synthetic folic acid metabolism	93.393	5R01CA192662-04			4,253	176,512
					\$4,253	\$176,512
Replication fork remodeling and genomic stability	93.393	5R01CA197774-05			0	455,642
					\$0	\$455,642
Genomics and Mechanisms of Esophageal Carcinogenesis	93.393	5R01CA208711-04			0	87,123

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$87,123
The Role of Stem Cells and the Microenvironment in Gastrointestinal Cancers	93.393	5R35CA210088-04			0	715,493
The Role of Stem Cells and the Microenvironment in Gastrointestinal Cancers	93.393	5R35CA210088-04			30,221	239,126
					\$30,221	\$954,619
Controlling Esophageal Cancer: A Collaborative Modeling Approach	93.393	5U01CA199336-05			468,671	965,705
Controlling Esophageal Cancer: A Collaborative Modeling Approach	93.393	5U01CA199336-05			123,173	228,730
					\$591,844	\$1,194,435
Improving Esophageal Adenocarcinoma Prevention, Screening and Treatment	93.393	7R01CA140574-10			16,497	21,217
					\$16,497	\$21,217
The epigenetic mechanisms of high-grade pedia	93.393	5R01CA204297-04			35,386	363,018
The epigenetic mechanisms of high-grade pedia	93.393	5R01CA204297-04			0	90,543
The epigenetic mechanisms of high-grade pedia	93.393	5R01CA204297-04			0	70,559
					\$35,386	\$524,120
Molecular pathways and targeted therapies in human leukemia	93.393	5R35CA210065-04			0	859,810
Molecular pathways and targeted therapies in human leukemia	93.393	5R35CA210065-04			0	10,239
					\$0	\$870,049
The catalytic and non-catalytic functions of PARP1 in cancer biology	93.393	5R01CA226852-03			0	390,775
					\$0	\$390,775
Role of KMT2D gene inactivation in B cell non-Hodgkin Lymphoma	93.393	5R01CA172492-08			0	371,842
					\$0	\$371,842

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Systematic Identification and Pharmacological Targeting of Tumor Dependencies for Precision Cancer Medicine	93.393	5U01CA217858-04			96,998	661,591
Systematic Identification and Pharmacological Targeting of Tumor Dependencies for Precision Cancer Medicine	93.393	5U01CA217858-04			0	89,805
Systematic Identification and Pharmacological Targeting of Tumor Dependencies for Precision Cancer Medicine	93.393	5U01CA217858-04			0	82,289
Systematic Identification and Pharmacological Targeting of Tumor Dependencies for Precision Cancer Medicine	93.393	5U01CA217858-04			0	70,402
Systematic Identification and Pharmacological Targeting of Tumor Dependencies for Precision Cancer Medicine	93.393	5U01CA217858-04			0	22,218
Systematic Identification and Pharmacological Targeting of Tumor Dependencies for Precision Cancer Medicine	93.393	5U01CA217858-04			0	19,602
Systematic Identification and Pharmacological Targeting of Tumor Dependencies for Precision Cancer Medicine	93.393	5U01CA217858-04			0	15,083
Systematic Identification and Pharmacological Targeting of Tumor Dependencies for Precision Cancer Medicine	93.393	5U01CA217858-04			0	-9,639
					\$96,998	\$951,351
NSD1 Inactivation in Head and Neck Cancer	93.393	5R00CA212257-05			0	274,841
					\$0	\$274,841
Helicase regulation during homologous recombination	93.393	5R01CA236606-02			0	357,374
					\$0	\$357,374
DNA double-strand break repair, chromosome translocations and cancer	93.393	2P01CA174653-06			0	70,869
DNA double-strand break repair, chromosome translocations and cancer	93.393	2P01CA174653-06			0	38,934
DNA double-strand break repair, chromosome translocations and cancer	93.393	2P01CA174653-06			0	34,600
DNA double-strand break repair, chromosome translocations and cancer	93.393	2P01CA174653-06			0	31,637

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DNA double-strand break repair, chromosome translocations and cancer	93.393	2P01CA174653-06			0	19,242
DNA double-strand break repair, chromosome translocations and cancer	93.393	2P01CA174653-06			0	8,511
					\$0	\$203,793
Defining the contributions of BRCA1, BRCA2, and RAD52 to genome stability	93.393	1R01CA221858-01A1			0	17,896
					\$0	\$17,896
Breast Cancer Family Registry Cohort	93.393	5U01CA164920-08			1,100,856	1,613,182
Breast Cancer Family Registry Cohort	93.393	5U01CA164920-08			247,091	249,170
Breast Cancer Family Registry Cohort	93.393	5U01CA164920-08			0	74,538
					\$1,347,947	\$1,936,890
Restoring genome stability and tumor suppression in BRCA1 deficient cells	93.393	5R01CA227450-02			0	329,301
Restoring genome stability and tumor suppression in BRCA1 deficient cells	93.393	5R01CA227450-02			0	293,896
					\$0	\$623,197
Modeling bladder cancer pathogenesis and tumor evolution	93.393	5P01CA221757-03			0	345,913
Modeling bladder cancer pathogenesis and tumor evolution	93.393	5P01CA221757-03			0	292,459
Modeling bladder cancer pathogenesis and tumor evolution	93.393	5P01CA221757-03			183,570	183,570
Modeling bladder cancer pathogenesis and tumor evolution	93.393	5P01CA221757-03			162,265	175,061
Modeling bladder cancer pathogenesis and tumor evolution	93.393	5P01CA221757-03			0	104,649
Modeling bladder cancer pathogenesis and tumor evolution	93.393	5P01CA221757-03			0	89,851

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Modeling bladder cancer pathogenesis and tumor evolution	93.393	5P01CA221757-03			0	82,495
Modeling bladder cancer pathogenesis and tumor evolution	93.393	5P01CA221757-03			0	74,980
Modeling bladder cancer pathogenesis and tumor evolution	93.393	5P01CA221757-03			0	58,478
Modeling bladder cancer pathogenesis and tumor evolution	93.393	5P01CA221757-03			0	50,571
Modeling bladder cancer pathogenesis and tumor evolution	93.393	5P01CA221757-03			789	42,534
Modeling bladder cancer pathogenesis and tumor evolution	93.393	5P01CA221757-03			0	23,715
					\$346,624	\$1,524,276
CAPRI: Columbia Cancer Training Program for Resident-Investigators	93.393	5R38CA231577-03			0	468,944
					\$0	\$468,944
Multicenter trial of decision support for breast cancer chemoprevention	93.393	5R01CA226060-02			0	313,273
Multicenter trial of decision support for breast cancer chemoprevention	93.393	5R01CA226060-02			18,934	231,436
Multicenter trial of decision support for breast cancer chemoprevention	93.393	5R01CA226060-02			0	46,572
					\$18,934	\$591,281
The role of the microbiome in HPV-associated cervical cancer in women with HIV	93.393	1R01CA245894-01A1			0	6,656
					\$0	\$6,656
					\$2,597,302	\$16,642,476

Cancer Detection and Diagnosis Research

Cook For Your Life: Maintaining Dietary Change among Breast Cancer Survivors	93.394	5R01CA186080-05			253,737	385,393
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						<u>Total Expenditures (Includes Subrecipients)</u>
Cook For Your Life: Maintaining Dietary Change among Breast Cancer Survivors	93.394	5R01CA186080-05			0	70,605
Cook For Your Life: Maintaining Dietary Change among Breast Cancer Survivors	93.394	5R01CA186080-05			0	38,213
Cook For Your Life: Maintaining Dietary Change among Breast Cancer Survivors	93.394	5R01CA186080-05			0	26,841
					\$253,737	\$521,052
Early Detection of Ovarian Cancer Through Epigenetic Factors in the WHI	93.394	5R01CA204119-05			18,449	514,316
					\$18,449	\$514,316
Identifying leptomeningeal metastasis from breast cancer utilizing a novel immunocytochemical microfluidic device	93.394	5R03CA208547-02			0	-2,449
					\$0	-\$2,449
Large-Scale Integration of Single Cell RNA-Seq and High-Content Imaging for Analyzing Drug Response in Cancer	93.394	5R33CA202827-03			0	750
					\$0	\$750
Validating Rapid Microfluidic Isolation of Personalized Aptamers for Monitoring Minimal Residual Disease in Multiple Myeloma	93.394	5R33CA196470-03			0	214,244
Validating Rapid Microfluidic Isolation of Personalized Aptamers for Monitoring Minimal Residual Disease in Multiple Myeloma	93.394	5R33CA196470-03			0	113,681
					\$0	\$327,925
The Oral Microbiome for the Detection of Barretts Esophagus	93.394	5R01CA238433-02			3,182	316,275
					\$3,182	\$316,275
An Integrated Theranostic System for Breast Cancer	93.394	5R01CA228275-03			0	381,831
					\$0	\$381,831
A prognostic mRNA immune signature for resected stage II-III melanoma	93.394	5UH2CA218149-02			17,851	158,964
A prognostic mRNA immune signature for resected stage II-III melanoma	93.394	5UH2CA218149-02			0	2,128
					\$17,851	\$161,092

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$293,219	\$2,220,792
Cancer Treatment Research						
Columbia University Minority/Underserved Site NCI Community Oncology Research Program	93.395	5UG1CA189960-05			10,000	173,821
Columbia University Minority/Underserved Site NCI Community Oncology Research Program	93.395	5UG1CA189960-05			0	24,307
Columbia University Minority/Underserved Site NCI Community Oncology Research Program	93.395	5UG1CA189960-05			0	18,574
Columbia University Minority/Underserved Site NCI Community Oncology Research Program	93.395	5UG1CA189960-05			0	-329
					\$10,000	\$216,373
Analysis of drug response in organoids and mouse models	93.395	5R01CA196662-03			0	-258
Analysis of drug response in organoids and mouse models	93.395	5R01CA196662-03			0	-1,461
					\$0	-\$1,719
HAUSP inhibitors in p53-wild type and p53-mutant tumors	93.395	5R01CA193890-05			0	232,390
					\$0	\$232,390
Preclinical analyses of advanced prostate cancer in genetically-engineered mice	93.395	5R01CA173481-08			0	367,179
					\$0	\$367,179
CHRONIC CONVECTION ENHANCED DELIVERY (CED) OF TOPOTECAN FOR GLIOBLASTOMA	93.395	5R01CA161404-06			0	537,549
					\$0	\$537,549
Therapeutic potential of enhanced mitochondrial biogenesis for paclitaxel-induced peripheral neuropathy	93.395	5R21CA226672-02			0	127,225
					\$0	\$127,225
Programmable Probiotics for Cancer	93.395	5R00CA197649-04			0	81,300
					\$0	\$81,300

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Elucidating genetics of response to immune checkpoint blockade in lung cancer	93.395	5R01CA205426-04			200,000	649,282
Elucidating genetics of response to immune checkpoint blockade in lung cancer	93.395	5R01CA205426-04			0	56,609
Elucidating genetics of response to immune checkpoint blockade in lung cancer	93.395	5R01CA205426-04			0	20,163
					\$200,000	\$726,054
Optimizing the Treatment of Pancreatic Adenocarcinoma	93.395	5R01CA212086-04			132,614	316,459
Optimizing the Treatment of Pancreatic Adenocarcinoma	93.395	5R01CA212086-04			0	68,921
					\$132,614	\$385,380
Molecular characterization and targeting of NT5C2 mutations in acute lymphoblastic leukemia	93.395	5R01CA216981-04			0	271,160
Molecular characterization and targeting of NT5C2 mutations in acute lymphoblastic leukemia	93.395	5R01CA216981-04			0	98,491
					\$0	\$369,651
Therapeutically Exploiting a Newly Isolated Neural-Like Stem Cell Against GBM	93.395	5R01CA179072-06			0	291,864
					\$0	\$291,864
Non-melanoma skin cancer: A model for impact of aging on an environmental disease	93.395	5UH3CA213384-05			0	114,183
Non-melanoma skin cancer: A model for impact of aging on an environmental disease	93.395	5UH3CA213384-05			0	86,275
					\$0	\$200,458
Flexible Tools for Pre-Clinical Studies to Answer Key Questions Underlying Heavy Ion Radiotherapy	93.395	5U01CA236554-02			0	386,916
Flexible Tools for Pre-Clinical Studies to Answer Key Questions Underlying Heavy Ion Radiotherapy	93.395	5U01CA236554-02			0	139,255
Flexible Tools for Pre-Clinical Studies to Answer Key Questions Underlying Heavy Ion Radiotherapy	93.395	5U01CA236554-02			0	70,275

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Flexible Tools for Pre-Clinical Studies to Answer Key Questions Underlying Heavy Ion Radiotherapy	93.395	5U01CA236554-02			0	45,345
					\$0	\$641,791
Development of first-in-class histone acetyltransferase (HAT) activators for precision targeting of epigenetic derangements in lymphoma	93.395	5R01CA222931-03			0	466,252
Development of first-in-class histone acetyltransferase (HAT) activators for precision targeting of epigenetic derangements in lymphoma	93.395	5R01CA222931-03			0	96,710
					\$0	\$562,962
Cryotherapy and Compression Therapy to Prevent Chemotherapy Induced Peripheral Neuropathy in Breast Cancer Patients	93.395	1R03CA238982-01A1			0	51,932
					\$0	\$51,932
Probiotics for Prevention of Acute Graft-vs-Host Disease in Children with Cancer	93.395	5R01CA201788-05			0	310,351
					\$0	\$310,351
Modulation of the tumor microenvironment with probiotic therapies	93.395	1R01CA249160-01			0	31,579
Modulation of the tumor microenvironment with probiotic therapies	93.395	1R01CA249160-01			0	10,541
					\$0	\$42,120
(PQ8) Predictive biomarkers for the onset of immune-related adverse events associated with PD-1 blockade	93.395	5R21CA231277-02			0	63,470
					\$0	\$63,470
					\$342,614	\$5,206,330
Cancer Biology Research						
Hepatic Stellate Cells and Liver Cancer	93.396	5R01CA190844-05			0	231,322
					\$0	\$231,322
An innate system for detection of aberrant tissue growth	93.396	5R01CA192838-05			0	352,477
					\$0	\$352,477

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Analysis of epithelial heterogeneity in prostate development and cancer	93.396	5R01CA238005-02			0	477,819
					\$0	\$477,819
Molecular mechanisms of prostate cancer metastasis	93.396	5R01CA183929-05			0	198,138
					\$0	\$198,138
Regulation of P53 acetylation and deacetylation in tumorigenesis	93.396	5R01CA085533-15			0	159,216
					\$0	\$159,216
Defining the functions and translational potential of ferroptosis	93.396	5R35CA209896-05			0	764,643
Defining the functions and translational potential of ferroptosis	93.396	5R35CA209896-05			0	2,038
					\$0	\$766,681
Roles and Regulations of wild-type and mutant forms of p53	93.396	5P01CA087497-19			502,056	574,176
Roles and Regulations of wild-type and mutant forms of p53	93.396	5P01CA087497-19			219,244	247,055
Roles and Regulations of wild-type and mutant forms of p53	93.396	5P01CA087497-19			0	199,668
Roles and Regulations of wild-type and mutant forms of p53	93.396	5P01CA087497-19			0	195,326
Roles and Regulations of wild-type and mutant forms of p53	93.396	5P01CA087497-19			0	80,387
Roles and Regulations of wild-type and mutant forms of p53	93.396	5P01CA087497-19			0	39,967
					\$721,300	\$1,336,579
Investigating the cell of origin of bladder cancer	93.396	5R01CA193442-05			0	248,659
Investigating the cell of origin of bladder cancer	93.396	5R01CA193442-05			0	94,654
					\$0	\$343,313

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						<u>Total Expenditures (Includes Subrecipients)</u>
The Role of wild-type Kras in the context of tumor progression and metastasis	93.396	5R01CA178445-05			0	355,072
The Role of wild-type Kras in the context of tumor progression and metastasis	93.396	5R01CA178445-05			0	11,491
					\$0	\$366,563
The role of the LZTR1 ubiquitin ligase in stem cells and cancer	93.396	5R01CA190891-05			0	258,384
					\$0	\$258,384
The role of RHOA G17V Mutation on Peripheral T-cell Lymphomas	93.396	5R01CA197945-05			0	365,258
					\$0	\$365,258
Regulation of SLC7A11 by p53 in cancer metabolism	93.396	5R01CA190477-05			0	460,204
					\$0	\$460,204
Structure and function of Transient Receptor Potential channels	93.396	5R01CA206573-04			0	394,682
					\$0	\$394,682
Mechanisms of targeting oncoprotein SET in tumor suppression	93.396	5R01CA216884-04			0	475,132
					\$0	\$475,132
The Development And Progression Of IPMN To PDA In The Context Of Inactivated Activin Signaling	93.396	5R01CA217207-04			0	697,584
					\$0	\$697,584
Elucidating the dependencies of tumor initiating and drug-resistant niches in human malignancies by genome-wide molecular profiling of single cells	93.396	5R35CA197745-06			0	813,900
Elucidating the dependencies of tumor initiating and drug-resistant niches in human malignancies by genome-wide molecular profiling of single cells	93.396	5R35CA197745-06			0	35,257
Elucidating the dependencies of tumor initiating and drug-resistant niches in human malignancies by genome-wide molecular profiling of single cells	93.396	5R35CA197745-06			0	26,220
Elucidating the dependencies of tumor initiating and drug-resistant niches in human malignancies by genome-wide molecular profiling of single cells	93.396	5R35CA197745-06			0	8,953
					\$0	\$884,330

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						<u>Total Expenditures (Includes Subrecipients)</u>
Analysis of cancer cell metabolism in diverse environmental conditions	93.396	5R01CA201276-05			192,710	454,099
					\$192,710	\$454,099
Understanding the role of B-Ras proteins in tumorigenesis	93.396	5R01CA206556-04			0	108,677
Understanding the role of B-Ras proteins in tumorigenesis	93.396	5R01CA206556-04			0	50,139
					\$0	\$158,816
Targeting cysteine import to induce ferroptotic cell death in pancreatic cancer	93.396	5R01CA215607-04			59,409	682,582
					\$59,409	\$682,582
Role of Cancer-Associated Fibroblasts in Cholangiocarcinoma	93.396	5R01CA228483-03			197,816	502,118
					\$197,816	\$502,118
Improving specificity of HPV Screen-and-Treat in South Africa	93.396	5UH3CA189908-05			361,128	473,134
					\$361,128	\$473,134
p53 acetylation in ferroptosis and tumor suppression	93.396	5R01CA224272-03			0	375,833
					\$0	\$375,833
Integrating Radiomics into S0819 and Lung-MAP, Biomarker Driven Clinical Trials for Lung Cancer	93.396	5U01CA225431-03			67,041	523,922
Integrating Radiomics into S0819 and Lung-MAP, Biomarker Driven Clinical Trials for Lung Cancer	93.396	5U01CA225431-03			30,530	38,368
Integrating Radiomics into S0819 and Lung-MAP, Biomarker Driven Clinical Trials for Lung Cancer	93.396	5U01CA225431-03			0	13,675
					\$97,571	\$575,965
Multiscale proteomics studies of DNA repair and genomic stability	93.396	5R50CA233182-03			0	160,436
					\$0	\$160,436
Mechanisms of Esophageal Carcinogenesis	93.396	5P01CA098101-18			0	456,041

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Mechanisms of Esophageal Carcinogenesis	93.396	5P01CA098101-18			247,431	293,931	
Mechanisms of Esophageal Carcinogenesis	93.396	5P01CA098101-18			0	195,639	
Mechanisms of Esophageal Carcinogenesis	93.396	5P01CA098101-18			53,513	156,703	
Mechanisms of Esophageal Carcinogenesis	93.396	5P01CA098101-18			0	98,300	
					\$300,944	\$1,200,614	
Single-cell characterization of tumor and microenvironment co-evolution in Peripheral T-cell Lymphomas	93.396	1U01CA243073-01			0	300,266	
Single-cell characterization of tumor and microenvironment co-evolution in Peripheral T-cell Lymphomas	93.396	1U01CA243073-01			0	195,198	
					\$0	\$495,464	
Regulation of p53 acetylation and deacetylation in tumorigenesis.	93.396	2R01CA085533-16			0	160,504	
					\$0	\$160,504	
Mechanisms of Silencing of Retroviral DNAs in Embryonic Cell Lines	93.396	2R01CA030488-39A1			0	152,021	
					\$0	\$152,021	
NRF2-dependent redox signaling in pancreatic cancer	93.396	1R01CA240654-01A1			0	32,822	
					\$0	\$32,822	
Functions and Activities of p53 and Mdm2 in Normal and Cancer Cells	93.396	5R35CA220526-03			0	672,769	
Functions and Activities of p53 and Mdm2 in Normal and Cancer Cells	93.396	5R35CA220526-03			0	66,374	
					\$0	\$739,143	
Mechanisms of ID2 regulation in glioma	93.396	5R01CA239721-02			0	310,418	
					\$0	\$310,418	

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Modulating dietary zinc to prevent cachexia and improve survival in cancer	93.396	5R01CA231239-02			0	302,507
					\$0	\$302,507
The Huwe1 ubiquitin ligase regulates mitosis, genomic stability and oncogenesis	93.396	5R01CA239698-02			0	390,355
					\$0	\$390,355
Mitochondrial and nuclear functions of NKX3.1 in regulating oxidative stress in prostate cancer	93.396	5R01CA233176-02			0	332,014
					\$0	\$332,014
					\$1,930,878	\$15,266,527

Cancer Centers Support Grants

Topology of Cancer Evolution and Heterogeneity	93.397	5U54CA193313-05			0	262,147
Topology of Cancer Evolution and Heterogeneity	93.397	5U54CA193313-05			0	248,469
Topology of Cancer Evolution and Heterogeneity	93.397	5U54CA193313-05			0	186,786
Topology of Cancer Evolution and Heterogeneity	93.397	5U54CA193313-05			0	186,509
Topology of Cancer Evolution and Heterogeneity	93.397	5U54CA193313-05			0	167,317
Topology of Cancer Evolution and Heterogeneity	93.397	5U54CA193313-05			60,018	135,597
Topology of Cancer Evolution and Heterogeneity	93.397	5U54CA193313-05			0	130,466
Topology of Cancer Evolution and Heterogeneity	93.397	5U54CA193313-05			35,429	122,775
Topology of Cancer Evolution and Heterogeneity	93.397	5U54CA193313-05			0	87,509
Topology of Cancer Evolution and Heterogeneity	93.397	5U54CA193313-05			0	77,521

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Topology of Cancer Evolution and Heterogeneity	93.397	5U54CA193313-05			47,736	47,736
Topology of Cancer Evolution and Heterogeneity	93.397	5U54CA193313-05			0	25,641
Topology of Cancer Evolution and Heterogeneity	93.397	5U54CA193313-05			0	19,297
Topology of Cancer Evolution and Heterogeneity	93.397	5U54CA193313-05			0	12,853
Topology of Cancer Evolution and Heterogeneity	93.397	5U54CA193313-05			0	1,600
Topology of Cancer Evolution and Heterogeneity	93.397	5U54CA193313-05			0	-10,960
					\$143,183	\$1,701,263
Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	354,534
Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	341,369
Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	337,436
Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	334,844
Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	328,569
Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	293,781
Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	291,097
Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	235,682
Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	210,232

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Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	194,558
Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	176,085
Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	162,409
Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	160,205
Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	157,820
Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	144,790
Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	144,018
Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	142,727
Cancer Center Support Grant	93.397	3P30CA013696-44SA			57,774	118,935
Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	118,154
Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	112,390
Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	107,620
Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	95,999
Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	94,444
Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	81,460
Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	75,524

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Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	73,826
Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	72,688
Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	70,866
Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	70,303
Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	60,650
Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	52,355
Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	52,053
Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	13,318
Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	11,536
Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	10,913
Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	960
Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	666
Cancer Center Support Grant	93.397	3P30CA013696-44SA			0	-1,661
					\$57,774	\$5,303,155
Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			0	219,238
Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			0	166,090

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Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			0	156,840
Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			0	134,646
Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			0	130,273
Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			0	127,408
Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			0	121,549
Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			0	98,309
Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			0	89,006
Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			0	85,628
Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			83,787	83,787
Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			0	80,201
Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			0	63,303
Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			0	61,153
Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			0	59,207
Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			0	48,244
Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			0	46,658
Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			0	44,164

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Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			0	41,039
Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			0	39,871
Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			0	31,630
Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			0	30,094
Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			0	24,955
Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			0	19,434
Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			0	18,062
Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			0	15,820
Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			0	15,684
Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			0	15,387
Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			0	14,943
Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			0	13,497
Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			0	13,292
Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			0	7,209
Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			3,896	3,896
Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			0	3,287

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Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			0	2,101
Centers for Cancer Systems Therapeutics (CaST)	93.397	5U54CA209997-05			0	-2,867
					\$87,683	\$2,123,038
The role of the micro environment in Barrett s Esophagus	93.397	5U54CA163004-09			161,360	237,486
The role of the micro environment in Barrett s Esophagus	93.397	5U54CA163004-09			48,463	215,275
The role of the micro environment in Barrett s Esophagus	93.397	5U54CA163004-09			17,569	148,439
The role of the micro environment in Barrett s Esophagus	93.397	5U54CA163004-09			0	148,305
The role of the micro environment in Barrett s Esophagus	93.397	5U54CA163004-09			0	121,246
The role of the micro environment in Barrett s Esophagus	93.397	5U54CA163004-09			69,210	106,316
The role of the micro environment in Barrett s Esophagus	93.397	5U54CA163004-09			11,754	88,327
The role of the micro environment in Barrett s Esophagus	93.397	5U54CA163004-09			0	59,550
The role of the micro environment in Barrett s Esophagus	93.397	5U54CA163004-09			0	54,725
The role of the micro environment in Barrett s Esophagus	93.397	5U54CA163004-09			0	15,664
The role of the micro environment in Barrett s Esophagus	93.397	5U54CA163004-09			8,528	8,528
The role of the micro environment in Barrett s Esophagus	93.397	5U54CA163004-09			8,135	8,135
					\$325,019	\$1,211,996
					\$613,659	\$10,339,452

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Cancer Research Manpower						
Childhood Infection and Pubertal Timing	93.398	5K01CA186943-05			0	120,760
					\$0	\$120,760
Training Program in Cancer-related Population Sciences	93.398	5T32CA094061-19			0	174,719
Training Program in Cancer-related Population Sciences	93.398	5T32CA094061-19			0	36,791
					\$0	\$211,510
Molecular Oncology Training Program	93.398	5T32CA203703-05			0	340,567
Molecular Oncology Training Program	93.398	5T32CA203703-05			0	-55,949
					\$0	\$284,618
A Novel Protein Complex Controls Homologous Recombination Repair in Breast Cancer	93.398	5K22CA178317-03			0	4,020
					\$0	\$4,020
Mechanical regulation of breast cancer cell nuclei by the LINC complex	93.398	5F32CA221320-03			0	58,292
Mechanical regulation of breast cancer cell nuclei by the LINC complex	93.398	5F32CA221320-03			0	8,734
					\$0	\$67,026
Role of Nuclear Actin Polymerization in Double-Strand Break Mobility and Repair	93.398	5F30CA217049-03			0	21,906
Role of Nuclear Actin Polymerization in Double-Strand Break Mobility and Repair	93.398	5F30CA217049-03			0	21,040
					\$0	\$42,946
The role of a novel fusion oncogene FYN-TRAF3IP2 in peripheral T-cell lymphoma	93.398	5F30CA225052-03			0	24,205
The role of a novel fusion oncogene FYN-TRAF3IP2 in peripheral T-cell lymphoma	93.398	5F30CA225052-03			0	17,306

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$41,511
Super-Competition as a Mechanism for Preneoplastic Field Growth	93.398	5F31CA228451-03			0	45,016
					\$0	\$45,016
Characterizing LIN-12/Notch Regulation and Activity	93.398	5F31CA236516-02			0	42,881
					\$0	\$42,881
Functional Approaches to Understanding Cancer Aneuploidy: Interrogating the Effects of Chromosome 3p Deletion	93.398	1K22CA237733-01			0	111,186
					\$0	\$111,186
The Role of Androgens on Breast Cancer Susceptibility Across the Lifecourse	93.398	5K07CA218166-03			0	160,584
					\$0	\$160,584
Engineering of bacterial probiotics for the detection and treatment of hepatocellular carcinoma	93.398	5F32CA225145-02			0	27,975
Engineering of bacterial probiotics for the detection and treatment of hepatocellular carcinoma	93.398	5F32CA225145-02			0	13,689
Engineering of bacterial probiotics for the detection and treatment of hepatocellular carcinoma	93.398	5F32CA225145-02			0	4,193
					\$0	\$45,857
Impact of the Therapeutic Alliance on Reduction of Disparities in Latino End-of-Life Cancer Care	93.398	1K08CA245193-01			0	27,443
					\$0	\$27,443
Dissecting mechanisms of immunotherapy resistance in melanoma patients	93.398	5K08CA222663-05			0	92,533
					\$0	\$92,533
Integrative framework for identifying dysregulated mechanisms in the tumor-immune microenvironment	93.398	4R00CA230195-03			0	28,048
					\$0	\$28,048
Bacterial Delivery of CXCR7 Nanobodies to Alleviate Immune Suppression in Pancreatic Cancer	93.398	1F31CA250443-01			0	10,550
					\$0	\$10,550

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$1,336,489
Cancer Control						
Columbia University Minority/Underserved Site NCI Community Oncology Research Program	93.399	5UG1CA189960-07			0	539,224
Columbia University Minority/Underserved Site NCI Community Oncology Research Program	93.399	5UG1CA189960-07			0	221,453
					<u>\$0</u>	<u>\$760,677</u>
					\$0	\$760,677
Preventing Heart Attacks and Strokes in High Need Areas						
GENETIC, IMMUNOLOGIC AND MECHANISTIC BASIS OF HUMAN NK CELL DEFICIENCY	93.816	5R01AI120989-06			0	846,900
Directing Function at the Natural Killer Cell Secretary Immunological Synapse	93.816	5R01AI067946-14			0	253,861
					<u>\$0</u>	<u>\$846,900</u>
					<u>\$0</u>	<u>\$253,861</u>
					\$0	\$1,100,761
Cardiovascular Diseases Research						
Patient health information preference and statin therapy	93.837	5K23HL121144-05			0	136,134
PTSD, Medication Adherence, and Prognosis after Acute Coronary Syndromes	93.837	5R01HL123368-04			0	58,540
Midcareer Investigator Award in Patient-Oriented Research in Human Hypertension	93.837	5K24HL125704-05			0	82,199
BEST-DP: Biostatistics & Epidemiology Summer Training Diversity Program (BEGG/BOWMAN/MARCH)	93.837	5R25HL096260-10			0	-321
					<u>\$0</u>	<u>\$82,199</u>
					\$0	\$-321

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						<u>Total Expenditures (Includes Subrecipients)</u>
Modeling Marfan Syndrome with iSMC-based Tissue-engineered Blood Vessel	93.837	5R21HL140275-02			0	39,101
					\$0	\$39,101
Arrhythmia mapping using electromechanical wave imaging	93.837	5R01HL140646-03			0	411,671
					\$0	\$411,671
Psychological stress, and circadian patterns of sodium excretion and blood pressure	93.837	5R01HL137818-03			0	356,066
Psychological stress, and circadian patterns of sodium excretion and blood pressure	93.837	5R01HL137818-03			0	76,366
					\$0	\$432,432
Identifying Novel Behavioral Targets for Improving Sleep: A Self-Regulation Model	93.837	5K23HL125748-05			0	179,238
					\$0	\$179,238
Insulin action, reverse cholesterol transport, and HDL function	93.837	5R01HL125649-05			0	69,039
					\$0	\$69,039
The role of impaired endothelium-dependent vasoactivity in neurodegeneration	93.837	5F30HL128023-04			0	4,364
					\$0	\$4,364
Gentrification, food environment, and risk for obesity: A mixed methods approach	93.837	5F31HL131441-04			0	13,179
					\$0	\$13,179
Blood Pressure Measurement and Hypertension in Pregnancy	93.837	5K23HL136853-03			0	104,182
Blood Pressure Measurement and Hypertension in Pregnancy	93.837	5K23HL136853-03			0	61,868
					\$0	\$166,050
Regulation of lipoprotein metabolism by adipose-specific Tribbles-	93.837	5R01HL141745-03			0	440,067
					\$0	\$440,067

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						R&D Cluster
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An Information technology approach to implementing depression treatment in cardiac patients: iHeart Trial	93.837	5R01HL141609-03			17,035	401,413
An Information technology approach to implementing depression treatment in cardiac patients: iHeart Trial	93.837	5R01HL141609-03			0	161,370
An Information technology approach to implementing depression treatment in cardiac patients: iHeart Trial	93.837	5R01HL141609-03			0	27,604
					\$17,035	\$590,387
Role of Vascular Ion Channels in Heart Failure and Cardiovascular Diseases	93.837	5K08HL122526-05			0	157,650
					\$0	\$157,650
Translational Research of Negative Emotions and Acute Endothelial Dysfunction	93.837	5R01HL116470-05			0	31,040
					\$0	\$31,040
The Trinucleotide Repeat Containing 6a-Mediated miRNA Activities in the Ciliogenesis of Airway Epithelium	93.837	5R01HL131422-04			0	206,666
					\$0	\$206,666
Novel Therapy for Diabetic PAD Monitored With Dual Isotope Multimodality Imaging	93.837	5R01HL130056-04			0	257,170
					\$0	\$257,170
Elucidating the mechanisms of vascular dysfunction in heart failure	93.837	5R01HL126735-04			0	262,837
					\$0	\$262,837
Lung Barrier Protection by Tylated Proteins	93.837	5R01HL036024-32			0	446,539
					\$0	\$446,539
Testing biopsychosocial mechanisms of the posthospital syndrome model of early rehospitalization in acute coronary syndrome patients	93.837	5R01HL128497-04			0	446,909
Testing biopsychosocial mechanisms of the posthospital syndrome model of early rehospitalization in acute coronary syndrome patients	93.837	5R01HL128497-04			0	96,209
					\$0	\$543,118
Enhancing Inflammation Resolution in Atherosclerosis via Targeted Nanoparticle-Mediated Delivery of Biologics	93.837	5R01HL127464-04			192,628	198,629

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$192,628	\$198,629
HDL-mediated cholesterol efflux and plaque inflammation in MESA	93.837	5R01HL127637-04			350,617	594,814
HDL-mediated cholesterol efflux and plaque inflammation in MESA	93.837	5R01HL127637-04			0	150,587
HDL-mediated cholesterol efflux and plaque inflammation in MESA	93.837	5R01HL127637-04			25,704	25,704
HDL-mediated cholesterol efflux and plaque inflammation in MESA	93.837	5R01HL127637-04			0	-1,444
					\$376,321	\$769,661
Potential future benefits of cardiovascular risk factor control in today s young adults	93.837	5R01HL107475-06			98,446	149,203
					\$98,446	\$149,203
Columbia University Training Program in Lung Science	93.837	5T32HL105323-10			0	311,171
Columbia University Training Program in Lung Science	93.837	5T32HL105323-10			0	-311
					\$0	\$310,860
Mentored Patient Oriented Research in Cardiometabolic Disease	93.837	5K24HL107643-10			0	85,824
					\$0	\$85,824
Depression Screening RCT in ACS patients: Quality of Life and Cost Outcomes	93.837	5R01HL114924-05			265	211,104
					\$265	\$211,104
Immune privilege of the hematopoietic stem cell niche	93.837	5R01HL129506-05			0	134,424
					\$0	\$134,424
Chronic obstructive pulmonary disease in non-smokers	93.837	5R01HL130506-05			381,975	541,425
Chronic obstructive pulmonary disease in non-smokers	93.837	5R01HL130506-05			0	18,639
					\$381,975	\$560,064

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Retail Outlet Health Kiosk Hypertension Trial	93.837	5R34HL137659-02			0	159,431
Retail Outlet Health Kiosk Hypertension Trial	93.837	5R34HL137659-02			0	64,667
					\$0	\$224,098
Impact of PTSD on cardiovascular risk in survivors of stroke and transient ischemic attack	93.837	5R01HL132347-04			50,740	748,471
Impact of PTSD on cardiovascular risk in survivors of stroke and transient ischemic attack	93.837	5R01HL132347-04			0	-1,525
					\$50,740	\$746,946
Impact of Social-Interpersonal Factors in the ER on PTSD/Cardiac Outcomes	93.837	5R01HL117832-05			0	12,294
					\$0	\$12,294
Mechanisms of second heart field development regulated by Nkx genes	93.837	5R01HL131438-04			0	291,968
					\$0	\$291,968
Mechanisms Of Long QT Syndrome 1 In Heart	93.837	5R01HL122421-04			0	561,592
					\$0	\$561,592
Mechanisms linking LNK genetic variation to atherothrombosis	93.837	5R01HL137663-04			0	496,955
					\$0	\$496,955
Human LincRNAs in Macrophage Biology and Related Cardiometabolic Diseases	93.837	5R01HL132561-04			0	359,070
					\$0	\$359,070
The STK25 Signaling Pathway in Human Cardiac Cells	93.837	5K08HL140201-03			0	188,993
					\$0	\$188,993
Patient Level Prediction of Clinical Outcomes and Cost-Effectiveness inSPRINT (Optimize-SPRINT)	93.837	5R01HL139837-03			294,698	412,678
Patient Level Prediction of Clinical Outcomes and Cost-Effectiveness inSPRINT (Optimize-SPRINT)	93.837	5R01HL139837-03			122,840	247,364

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$417,538	\$660,042
Molecular mechanisms of arrhythmia caused by high-fat diet	93.837	5R01HL136758-03			0	424,670
					\$0	\$424,670
Comparing the value of intensive systolic blood pressure treatment implementation strategies	93.837	5K01HL140170-03			0	127,722
					\$0	\$127,722
Exploring the molecular physiology of atrial fibrillation	93.837	5R01HL140934-03			55,343	441,058
Exploring the molecular physiology of atrial fibrillation	93.837	5R01HL140934-03			0	291,671
					\$55,343	\$732,729
Postdoctoral Training in Arteriosclerosis Research	93.837	5T32HL007343-42			0	672,646
Postdoctoral Training in Arteriosclerosis Research	93.837	5T32HL007343-42			0	40,677
					\$0	\$713,323
Short Term Training Grant	93.837	5T35HL007616-40			0	129,276
Short Term Training Grant	93.837	5T35HL007616-40			0	59,512
					\$0	\$188,788
Postdoctoral Training in Cardiovascular Disease	93.837	5T32HL007854-25			0	383,508
Postdoctoral Training in Cardiovascular Disease	93.837	5T32HL007854-25			0	330,444
Postdoctoral Training in Cardiovascular Disease	93.837	5T32HL007854-25			0	24,458
Postdoctoral Training in Cardiovascular Disease	93.837	5T32HL007854-25			0	14,256
Postdoctoral Training in Cardiovascular Disease	93.837	5T32HL007854-25			0	346

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$753,012
Red blood cells from iron-deficient donors: recovery and storage quality	93.837	5R01HL133049-04			51,029	742,490
					\$51,029	\$742,490
Characterization of Cardiac Behavior as a Function of Topology	93.837	5F30HL131383-03			0	-946
					\$0	-\$946
In vivo imaging of destructive processes in COPD	93.837	5R01HL131960-03			0	115,844
In vivo imaging of destructive processes in COPD	93.837	5R01HL131960-03			0	99,113
					\$0	\$214,957
Test of a new theory to explain excess risk in cardiac PTSD	93.837	5R01HL128310-04			61,623	201,161
Test of a new theory to explain excess risk in cardiac PTSD	93.837	5R01HL128310-04			0	-1,444
					\$61,623	\$199,717
Molecular mechanisms underlying cardiac sodium channelopathy	93.837	5R01HL138486-04			0	508,280
					\$0	\$508,280
Optical Tomographic Imaging of Peripheral Arterial Disease	93.837	5R01HL115336-05			0	62,106
					\$0	\$62,106
Carotid plaque assessment using Pulse Wave Imaging	93.837	5R01HL135734-04			0	605,718
					\$0	\$605,718
Model Based Approach to improving Hypertension Control in Populations	93.837	5R01HL130500-04			188,571	384,073
					\$188,571	\$384,073
Modeling, pathogenesis and treatment of idiopathic pulmonary fibrosis	93.837	5U01HL134760-05			0	759,550

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						<u>Total Expenditures (Includes Subrecipients)</u>
Modeling, pathogenesis and treatment of idiopathic pulmonary fibrosis	93.837	5U01HL134760-05			0	374,401
Modeling, pathogenesis and treatment of idiopathic pulmonary fibrosis	93.837	5U01HL134760-05			0	45,552
Modeling, pathogenesis and treatment of idiopathic pulmonary fibrosis	93.837	5U01HL134760-05			0	2,828
Modeling, pathogenesis and treatment of idiopathic pulmonary fibrosis	93.837	5U01HL134760-05			0	2,687
Modeling, pathogenesis and treatment of idiopathic pulmonary fibrosis	93.837	5U01HL134760-05			0	580
					\$0	\$1,185,598
Impact of Prolonged Sedentary Behavior on Cardiac Outcomes and Mortality in Acute Coronary Syndrome Patients	93.837	5R01HL134985-04			0	577,587
Impact of Prolonged Sedentary Behavior on Cardiac Outcomes and Mortality in Acute Coronary Syndrome Patients	93.837	5R01HL134985-04			0	32,400
					\$0	\$609,987
Phenotyping Genetic Disorders of Hepatic Lipid and Lipoprotein Metabolism in Cells, Mice, and Men	93.837	5R35HL135833-04			0	486,550
Phenotyping Genetic Disorders of Hepatic Lipid and Lipoprotein Metabolism in Cells, Mice, and Men	93.837	5R35HL135833-04			0	435,647
					\$0	\$922,197
Novel Cardioprotective sGC/cGMP Microdomains: Therapeutic Targets in Medically Treated HF	93.837	5R01HL138528-04			5,178	543,141
					\$5,178	\$543,141
Macrophage-specific function of GWAS CAD-associated LIPA alleles in atherosclerosis	93.837	5R00HL130574-05			0	238,373
					\$0	\$238,373
Mechanisms of Atherogenesis in Insulin Resistance	93.837	5P01HL087123-13			0	552,331
Mechanisms of Atherogenesis in Insulin Resistance	93.837	5P01HL087123-13			0	543,995

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Mechanisms of Atherogenesis in Insulin Resistance	93.837	5P01HL087123-13			0	378,068
Mechanisms of Atherogenesis in Insulin Resistance	93.837	5P01HL087123-13			0	323,474
Mechanisms of Atherogenesis in Insulin Resistance	93.837	5P01HL087123-13			0	203,817
Mechanisms of Atherogenesis in Insulin Resistance	93.837	5P01HL087123-13			0	164,293
Mechanisms of Atherogenesis in Insulin Resistance	93.837	5P01HL087123-13			0	37,929
Mechanisms of Atherogenesis in Insulin Resistance	93.837	5P01HL087123-13			0	7,639
Mechanisms of Atherogenesis in Insulin Resistance	93.837	5P01HL087123-13			0	618
Mechanisms of Atherogenesis in Insulin Resistance	93.837	5P01HL087123-13			0	-3,365
					\$0	\$2,208,799
Elucidation of Tissue-Specific Transcriptomic Profiles in Cardio-metabolic Disease	93.837	5R01HL113147-08			128,123	746,207
					\$128,123	\$746,207
The Association of Damaging Genetic Variation With Ventricular Function in Hypoplastic Left Heart Syndrome	93.837	5K23HL143136-03			0	138,456
					\$0	\$138,456
Unraveling the Complexity of Lipoprotein(a) Metabolism: Human Kinetic Studie	93.837	5R01HL139759-03			0	365,663
					\$0	\$365,663
Testing a rapid outpatient management strategy on PTSD, cardiovascular and rehospitalization risk in TIA and minor stroke survivors evaluated in the Emergency Department	93.837	5R01HL141811-03			0	390,466
Testing a rapid outpatient management strategy on PTSD, cardiovascular and rehospitalization risk in TIA and minor stroke survivors evaluated in the Emergency Department	93.837	5R01HL141811-03			0	251,640
Testing a rapid outpatient management strategy on PTSD, cardiovascular and rehospitalization risk in TIA and minor stroke survivors evaluated in the Emergency Department	93.837	5R01HL141811-03			0	19,085

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$661,191
TTC39B in Metabolism	93.837	5R01HL119830-06			0	401,201
					\$0	\$401,201
A Mechanistic and Translational Research Program Linking Impaired Resolution, Defective Efferocytosis, and Clonal Hematopoiesis to the Formation of Clinically Dangerous Atherosclerotic Plaques	93.837	5R35HL145228-02			8,253	666,942
A Mechanistic and Translational Research Program Linking Impaired Resolution, Defective Efferocytosis, and Clonal Hematopoiesis to the Formation of Clinically Dangerous Atherosclerotic Plaques	93.837	5R35HL145228-02			0	295,599
					\$8,253	\$962,541
Signaling Pathways and Regulators of Calcium Channels in Heart	93.837	5F31HL142178-02			0	36,273
Signaling Pathways and Regulators of Calcium Channels in Heart	93.837	5F31HL142178-02			0	7,471
					\$0	\$43,744
Processing of Apoptotic Cell-Derived Cargo by Macrophages Continues Efferocytosis and Drives Atherosclerosis Regression	93.837	5K99HL145131-02			0	170,421
					\$0	\$170,421
Familial hypercholesterolemia screening in children: population impact of phenotype, genotype, and cascade approaches	93.837	5R01HL141823-02			352,796	609,645
					\$352,796	\$609,645
ABCA1/G1 and LXRs in Atherogenesis	93.837	2R01HL107653-09			0	509,436
					\$0	\$509,436
Defining the Role of Inc-TECRL in Maladaptive Cardiac Remodeling	93.837	5K08HL146964-02			0	141,936
					\$0	\$141,936
Elucidating the molecular mechanisms of cognitive decline in atrial fibrillation	93.837	5R03HL146881-02			0	39,255
					\$0	\$39,255
SCAN-MP (Screening for Cardiac Amyloidosis with Nuclear imaging in Minority Populations)	93.837	5R01HL139671-02			674,406	1,115,946
					\$674,406	\$1,115,946

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
JAK2V617F, clonal hematopoiesis and atherosclerosis	93.837	5R01HL148071-02			0	459,689
					\$0	\$459,689
Identification and functional analysis of novel infantile cardiomyopathogenes	93.837	5K23HL138231-04			0	142,816
					\$0	\$142,816
The Congenital Heart Technical Skill Study: Improving Outcomes for Infants and Children with Congenital Heart Disease	93.837	5K23HL133454-03			42,906	201,541
					\$42,906	\$201,541
Identifying Early Intervention Targets for Reducing Cardiovascular Risk in Posttraumatic Stress	93.837	1R01HL139614-01A1			84,127	84,785
					\$84,127	\$84,785
NOVEL MECHANISMS OF ALVEOLAR INFLAMMATION	93.837	5R01HL057556-22			0	701,206
					\$0	\$701,206
Ubiquitin Regulation of K Channels in Health and Disease	93.837	5R01HL142111-03			0	367,163
					\$0	\$367,163
A novel molecular determinant of the cardiac beta1-adrenergic receptor response	93.837	5R01HL138468-03			117,826	535,144
					\$117,826	\$535,144
L-type channel trafficking and modulation in heart	93.837	5R01HL121253-07			0	333,956
					\$0	\$333,956
L-type channel trafficking and modulation in heart	93.837	5R01HL121253-07			0	283,689
					\$0	\$283,689
Genetic analysis of structural birth defects by integration of multiple diseases with epigenomic data and cancer mutations	93.837	5R03HL138352-02			0	14,326
					\$0	\$14,326
Transcriptional Regulation of Macrophage Function by LXR in Atherosclerosis	93.837	5F30HL137327-02			0	50,016
					\$0	\$50,016

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						<u>Total Expenditures (Includes Subrecipients)</u>
Role of RAGE in Bicuspid Aortic Valve Syndrome	93.837	5R01HL122805-05			95,491	433,430
					\$95,491	\$433,430
Data-driven subtyping to find patients with drug interactions leading to stroke	93.837	5F30HL140946-03			0	50,016
					\$0	\$50,016
Sculpting the ubiquitin status of KCNQ1 in cardiac health and disease	93.837	5F30HL140878-03			0	50,016
					\$0	\$50,016
Characterizing the Mechanisms of Cardiac Recovery Following Treatment with Exosomes Secreted by iPS Derived Cardiomyocytes	93.837	5F30HL145921-02			0	28,425
Characterizing the Mechanisms of Cardiac Recovery Following Treatment with Exosomes Secreted by iPS Derived Cardiomyocytes	93.837	5F30HL145921-02			0	22,940
					\$0	\$51,365
Integrate gene expression data to characterize the contribution of rare genetic risk factors to structural birth defects	93.837	5R03HL147197-02			0	152,711
					\$0	\$152,711
Training in Cardiovascular Translational Research	93.837	5T32HL120826-08			0	324,744
Training in Cardiovascular Translational Research	93.837	5T32HL120826-08			0	213,591
					\$0	\$538,335
Ryanodine Receptor Defects in Cardiomyopathy Caused by Lamin A/C Gene Mutations	93.837	5R01HL142903-02			0	185,057
Ryanodine Receptor Defects in Cardiomyopathy Caused by Lamin A/C Gene Mutations	93.837	5R01HL142903-02			0	29,628
					\$0	\$214,685
Investigating the Effects of Adipocyte-Specific Knockout of Tribbles1 on Plasma Adiponectin Levels and Lipoprotein Metabolism	93.837	1F30HL146076-01A1			0	50,016
					\$0	\$50,016
Novel nutraceuticals relax airway smooth muscle and decrease inflammation in allergic lung disease	93.837	1R01HL144852-01A1			0	98,436

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$98,436
BEST-DP: Biostatistics & Epidemiology Summer Training Diversity Program	93.837	5R25HL096260-12			0	18,425
					\$0	\$18,425
Injectable microtissues to promote rapid host re-perfusion of ischemic tissues	93.837	5R01HL141935-03			0	422,666
					0	22,752
					\$0	\$445,418
Engineering Vascularized Cardiac Muscle	93.837	5R01HL076485-13			216,000	688,674
					\$216,000	\$688,674
High resolution imaging of the myocardium	93.837	4DP2HL127776-02			0	470,989
					\$0	\$470,989
Sigma-1 receptor activation on cardiac calcium channelopathy	93.837	5F31HL142239-02			0	40,880
					\$0	\$40,880
Harmful effects of transfusion-induced iron overload	93.837	5R21HL145319-02			0	206,049
					\$0	\$206,049
Examining associations of sexual identity, life experiences, and cardiovascular disease risk in sisters	93.837	1K01HL146965-01			0	159,092
					\$0	\$159,092
Investigating fear of recurrence as a modifiable mechanism of behavior change to improve medication adherence in acute coronary syndrome patients	93.837	5R21HL145970-02			0	231,365
					\$0	\$231,365
Impact of circadian misalignment on energy balance regulation	93.837	5R01HL142648-03			40,503	483,323
					31,787	82,228

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						R&D Cluster
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Impact of circadian misalignment on energy balance regulation	93.837	5R01HL142648-03			0	160
					\$72,290	\$565,711
Lung epithelial cell specification in human pluripotent stem cells	93.837	5R01HL142727-02			0	466,805
					\$0	\$466,805
Structure-function analysis for elucidating pathogenicity of cardiac ryanodine receptor genetic variants	93.837	5R01HL145473-02			0	477,658
					\$0	\$477,658
Capacity Building: Leveraging Medicaid Data to Assess and Improve Longitudinal Outcomes and Costs for New York s Most Vulnerable Congenital Heart Patients	93.837	1R01HL150044-01			0	6,185
					\$0	\$6,185
Phosphorylation-dependent regulation of calcium channels by macromolecular complexes	93.837	5R01HL146149-02			216,950	567,003
					\$216,950	\$567,003
Circadian Pattern of Rest-Activity Rhythms and Blood Pressure and the Underlying Epigenetic Mechanism	93.837	5K99HL148511-02			0	104,697
					\$0	\$104,697
The Identification of Modifiable Emergency Department and Sleep Factors Contributing to Psychological and Cardiovascular Risk in Clinicians	93.837	1R01HL146911-01A1			0	59,013
					\$0	\$59,013
The Identification of Modifiable Emergency Department and Sleep Factors Contributing to Psychological and Cardiovascular Risk in Clinicians	93.837	1R01HL146911-01A1			0	52,545
					\$0	\$111,558
Computational and functional strategies to decipher lncRNAs in human atherosclerosis	93.837	1R01HL150359-01			0	51,843
					\$0	\$51,843
Understanding the role of mitochondrial dysfunction in cardiac arrhythmias using a novel 3D panoramic optical mapping system	93.837	1R01HL152236-01			0	41,288
					\$0	\$41,288
Cardiovascular consequences of increased inflammasome activation in Jak2vf-mediated clonal hematopoiesis	93.837	1F32HL151051-01			0	17,198
					\$0	\$17,198

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Automated clinic blood pressure assessment and detection of white coat and masked hypertension study in African Americans	93.837	1R01HL146636-01A1			0	16,410
					\$0	\$16,410
Identifying Novel Diagnostics and Mechanisms for Cardiac Allograft Vasculopathy	93.837	1K23HL148528-01A1			0	32,470
					\$0	\$32,470
Discovering Wdfy3 as a novel regulator of macrophage efferocytosis by genome-wide CRISPR screen	93.837	1R01HL151611-01			0	76,421
					\$0	\$76,421
					\$3,905,860	\$37,368,683

Lung Diseases Research

Pulmonary Microvascular Blood Flow and Cor Pulmonale Parvus in Emphysema/COPD	93.838	5R01HL093081-08			-705	70,810
					-\$705	\$70,810
Novel Quantitative Emphysema Subtypes in MESA and SPIROMICS	93.838	5R01HL121270-04			0	-5,010
Novel Quantitative Emphysema Subtypes in MESA and SPIROMICS	93.838	5R01HL121270-04			0	-14,854
					\$0	-\$19,864
Mitochondrial dynamics in acute lung injury	93.838	5R01HL122730-04			0	57,432
					\$0	\$57,432
Lung resident niches for memory CD4 T cells	93.838	5R01HL116136-04			0	1,800
					\$0	\$1,800
Targeting airway smooth muscle chloride fluxes for bronchorelaxation	93.838	5R01HL122340-04			0	328,395
					\$0	\$328,395
Smoke induced alterations in ion channel function	93.838	5K08HL126071-05			0	120,712
					\$0	\$120,712

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
PVDOMICS Defining the Future Fingerprints of Pulmonary Vascular Disease	93.838	5U01HL125218-05			26,890	97,479
					\$26,890	\$97,479
Pulmonary microvascular perfusion in the Multi-Ethnic Study of Atherosclerosis	93.838	5R01HL077612-12			140,392	280,294
Pulmonary microvascular perfusion in the Multi-Ethnic Study of Atherosclerosis	93.838	5R01HL077612-12			0	5,491
					\$140,392	\$285,785
Antagonism of the Calcium -Activated Chloride Channel TMEM16A Beneficial Therapeutic Effects on Airway Epithelium and Smooth Muscle	93.838	5K08HL132203-04			0	114,700
					\$0	\$114,700
Obstructive sleep apnea and subclinical lung injury in health and disease	93.838	5R01HL137234-03			62,970	349,145
					\$62,970	\$349,145
Role of High Density Lipoproteins in Interstitial Lung Disease	93.838	5K23HL140199-03			0	112,112
					\$0	\$112,112
Innate Immune Clearance of Host-Adapted Pulmonary Pathogens	93.838	5R35HL135800-04			0	376,477
Innate Immune Clearance of Host-Adapted Pulmonary Pathogens	93.838	5R35HL135800-04			0	303,886
Innate Immune Clearance of Host-Adapted Pulmonary Pathogens	93.838	5R35HL135800-04			0	57,867
Innate Immune Clearance of Host-Adapted Pulmonary Pathogens	93.838	5R35HL135800-04			0	42,348
					\$0	\$780,578
Pulmonary Complications in a Birth Cohort after a Randomized Trial of Antenatal Corticosteroids: the ALPS Follow-Up Study - Clinical Coordinating Center (ALPS-FS: CCC)	93.838	5R01HL098554-08			0	163,129
					\$0	\$163,129
Translating an Evidence-based Urban Asthma Program for Rural Adolescents: Testing Effectiveness & Cost-effectiveness and Understanding Factors Associated with Implementation	93.838	5R01HL136753-03			354,141	634,435
					\$354,141	\$634,435

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						<u>Total Expenditures (Includes Subrecipients)</u>
Hypercoagulability and Chronic Lung Disease in Older Adults	93.838	5K23HL130627-05			0	156,198
					\$0	\$156,198
Mentored Patient Oriented Research in Pulmonary Fibrosis and Lung Transplantation	93.838	5K24HL131937-03			0	25,523
					\$0	\$25,523
Mechanisms Controlling Expansion and Lineage Specification of Airway Progenitors in Development and Disease	93.838	5R35HL135834-04			0	328,598
Mechanisms Controlling Expansion and Lineage Specification of Airway Progenitors in Development and Disease	93.838	5R35HL135834-04			0	291,413
					\$0	\$620,011
Mechanism of Respiratory SystemEsophageal Separation	93.838	5R01HL132996-04			0	291,563
Mechanism of Respiratory SystemEsophageal Separation	93.838	5R01HL132996-04			0	149,187
					\$0	\$440,750
Subclinical Interstitial Lung Disease in MESA and FAR-ILD	93.838	5R01HL103676-08			96,726	489,216
Subclinical Interstitial Lung Disease in MESA and FAR-ILD	93.838	5R01HL103676-08			0	88,602
Subclinical Interstitial Lung Disease in MESA and FAR-ILD	93.838	5R01HL103676-08			0	39,094
Subclinical Interstitial Lung Disease in MESA and FAR-ILD	93.838	5R01HL103676-08			0	28,116
					\$96,726	\$645,028
Training Program in Population Science of Respiratory Diseases	93.838	5T32HL144442-02			0	59,663
					\$0	\$59,663
Measuring lung stress to identify occult ventilation-induced lung injury in ARDS	93.838	5R21HL145506-02			0	69,812
					\$0	\$69,812

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						R&D Cluster
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Pulmonary Fibrosis and Telomerase Dysfunction	93.838	7R01HL093096-10			0	355,390
					\$0	\$355,390
Novel Quantitative Emphysema Subtypes in MESA and SPIROMICS	93.838	5R01HL121270-06			124,460	279,547
Novel Quantitative Emphysema Subtypes in MESA and SPIROMICS	93.838	5R01HL121270-06			0	184,993
					\$124,460	\$464,540
Host-pathogen interactions that promote carbapenem-resistant Klebsiella pneumoniae pulmonary infection	93.838	5K08HL138289-04			0	157,134
					\$0	\$157,134
Physical Activity and Dose of Air Pollution in Pediatric Urban Asthma: Impact of Minute Ventilation	93.838	5K01HL140216-03			0	141,616
					\$0	\$141,616
GABAA Receptor-Mediated Modulation of Lung Inflammation	93.838	5K08HL140102-03			0	136,920
					\$0	\$136,920
Integration of omics data to improve interpretation of genetic risk variants in lung disease	93.838	5R01HL142028-02			111,203	251,959
					\$111,203	\$251,959
Gelsolin modulation of airway hyperresponsiveness and inflammation	93.838	5K08HL143052-03			0	137,395
					\$0	\$137,395
Immunobiology and alveolar physiology of the aging lung	93.838	5U01HL145547-02			0	160,494
Immunobiology and alveolar physiology of the aging lung	93.838	5U01HL145547-02			0	151,603
Immunobiology and alveolar physiology of the aging lung	93.838	5U01HL145547-02			0	107,036
Immunobiology and alveolar physiology of the aging lung	93.838	5U01HL145547-02			0	105,484

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Immunobiology and alveolar physiology of the aging lung	93.838	5U01HL145547-02			0	102,682
Immunobiology and alveolar physiology of the aging lung	93.838	5U01HL145547-02			0	23,784
Immunobiology and alveolar physiology of the aging lung	93.838	5U01HL145547-02			0	8,110
					\$0	\$659,193
Lung leukocytes promote alveolar epithelial regeneration after severe injury	93.838	1R01HL148718-01A1			0	22,840
					\$0	\$22,840
Breath stacking dyssynchrony in acute respiratory distress syndrome	93.838	5K23HL133489-05			0	162,162
					\$0	\$162,162
Regulatory Mechanisms of Cell Competition in Lung Regeneration	93.838	5R01HL148223-02			0	340,744
					\$0	\$340,744
Bioengineering a chimeric human lung	93.838	5R01HL120046-07			0	398,216
Bioengineering a chimeric human lung	93.838	5R01HL120046-07			0	168,759
					\$0	\$566,975
Roles and therapeutic potential of CD150high niche-associated regulatory T cells in bone marrow injury and engraftment	93.838	5R01HL145154-02			0	270,581
					\$0	\$270,581
Combined Cardiopulmonary Failure in COPD: SPIROMICS H	93.838	5R01HL093081-10			432,516	726,797
					\$432,516	\$726,797
					\$1,348,593	\$9,507,879

Blood Diseases and Resources Research

Genetic characterization of osteoblast-induced leukemias	93.839	5R01HL130937-04			0	434,806
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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$434,806
Local and systemic regulation of hematopoietic stem cells by thrombopoietin	93.839	5F30HL137323-04			0	53,656
					\$0	\$53,656
Regulation of hematopoietic stem cells and leukemia stem cells by thrombopoietin	93.839	5R01HL132074-03			0	508,797
					\$0	\$508,797
Emergency Myelopoiesis Pathways in the Control of Blood Production	93.839	5R35HL135763-04			0	624,119
					\$0	\$624,119
Emergency Myelopoiesis Pathways in the Control of Blood Production	93.839	5R35HL135763-04			0	215,036
					\$0	\$215,036
					\$0	\$839,155
Neurocognitive effects of iron deficiency in blood donors.	93.839	1R01HL139489-01			57,214	665,013
					\$57,214	\$665,013
Mitochondrial regulation of hematopoietic stem cells	93.839	5R01HL135039-04			0	295,065
					\$0	\$295,065
					\$0	\$295,065
Mechanistic Studies and Translational Applications of Stress Signaling in Anemia	93.839	7R01HL130142-04			18,328	253,301
					\$18,328	\$253,301
N6-methyladenosine RNA modification regulates hematopoietic stem cell function	93.839	5F30HL142196-03			0	50,016
					\$0	\$50,016
Regulation of RBC Alloimmunization by Naturally Occurring and Adaptive Antibodies	93.839	5R01HL135248-04			0	414,183
					\$0	\$414,183
					\$0	\$414,183
The Impact of Oxidative Stress on Erythrocyte Biology	93.839	1R01HL148151-01			360,162	653,528
					\$360,162	\$653,528
Autophagy Engagement and Hematopoietic Stem Cell Maintenance During Aging	93.839	1F31HL151140-01			0	26,498

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$26,498
Immune Response to RBC Antigens	93.839	5R01HL133325-04			0	445,640
					\$0	\$445,640
Effector T-cell trafficking in graft-versus-host disease	93.839	5R01HL143424-02			13,013	303,634
					\$13,013	\$303,634
					\$448,717	\$4,943,292
Arthritis, Musculoskeletal and Skin Diseases Research						
Functional Genomics of Alopecia Areata	93.846	5R01AR065963-04			0	163,500
Functional Genomics of Alopecia Areata	93.846	5R01AR065963-04			0	6,497
					\$0	\$169,997
Meniscus Regeneration by Endogenous Stem/Progenitor Cells	93.846	5R01AR065023-05			188,829	613,360
					\$188,829	\$613,360
Pathogenesis of Emery-Dreifuss Muscular Dystrophy	93.846	5R01AR048997-15			0	301,310
					\$0	\$301,310
Nuclear Movement LINC Complex and Emery-Dreifuss Muscular Dystrophy	93.846	5R01AR068636-05			36,670	247,409
Nuclear Movement LINC Complex and Emery-Dreifuss Muscular Dystrophy	93.846	5R01AR068636-05			0	121,497
					\$36,670	\$368,906
Osteochondroreticular (OCR) cells as sources of cartilage repair in Osteoarthritis	93.846	5R01AR069852-04			0	62,079
					\$0	\$62,079
Mechanisms of mechanosensory transduction in Merkel cells	93.846	5R01AR051219-14			248,177	429,833

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Mechanisms of mechanosensory transduction in Merkel cells	93.846	5R01AR051219-14			0	39,101
					\$248,177	\$468,934
Molecular and Therapeutic Mechanisms of a new model of Congenital Muscular Dystrophy	93.846	5F31AR070013-04			0	50,016
					\$0	\$50,016
Columbia University Skin Disease Resource-Based Center (epiCURE)	93.846	5P30AR069632-05			0	234,065
Columbia University Skin Disease Resource-Based Center (epiCURE)	93.846	5P30AR069632-05			0	144,372
Columbia University Skin Disease Resource-Based Center (epiCURE)	93.846	5P30AR069632-05			0	139,841
Columbia University Skin Disease Resource-Based Center (epiCURE)	93.846	5P30AR069632-05			0	80,874
Columbia University Skin Disease Resource-Based Center (epiCURE)	93.846	5P30AR069632-05			0	27,004
Columbia University Skin Disease Resource-Based Center (epiCURE)	93.846	5P30AR069632-05			0	22,406
Columbia University Skin Disease Resource-Based Center (epiCURE)	93.846	5P30AR069632-05			0	14,541
Columbia University Skin Disease Resource-Based Center (epiCURE)	93.846	5P30AR069632-05			0	9,401
Columbia University Skin Disease Resource-Based Center (epiCURE)	93.846	5P30AR069632-05			0	6,550
Columbia University Skin Disease Resource-Based Center (epiCURE)	93.846	5P30AR069632-05			0	4,827
Columbia University Skin Disease Resource-Based Center (epiCURE)	93.846	5P30AR069632-05			0	-203
					\$0	\$683,678
Alopecia Areata Center for Research Translation (AACORT)	93.846	5P50AR070588-05			0	395,322

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Alopecia Areata Center for Research Translation (AACORT)	93.846	5P50AR070588-05			0	348,137
Alopecia Areata Center for Research Translation (AACORT)	93.846	5P50AR070588-05			0	131,884
Alopecia Areata Center for Research Translation (AACORT)	93.846	5P50AR070588-05			0	100,242
Alopecia Areata Center for Research Translation (AACORT)	93.846	5P50AR070588-05			0	81,049
Alopecia Areata Center for Research Translation (AACORT)	93.846	5P50AR070588-05			0	80,636
Alopecia Areata Center for Research Translation (AACORT)	93.846	5P50AR070588-05			0	59,641
Alopecia Areata Center for Research Translation (AACORT)	93.846	5P50AR070588-05			0	58,392
Alopecia Areata Center for Research Translation (AACORT)	93.846	5P50AR070588-05			0	57,291
Alopecia Areata Center for Research Translation (AACORT)	93.846	5P50AR070588-05			0	54,542
Alopecia Areata Center for Research Translation (AACORT)	93.846	5P50AR070588-05			0	49,661
Alopecia Areata Center for Research Translation (AACORT)	93.846	5P50AR070588-05			0	41,295
					\$0	\$1,458,092
Activation of Human Skin T Cells by Mammalian and Microbial Lipids Presented by CD1a	93.846	5K01AR068475-05			0	94,424
					\$0	\$94,424
Tendon Enthesis Development and Regeneration	93.846	5R01AR055580-10			209,972	451,213
Tendon Enthesis Development and Regeneration	93.846	5R01AR055580-10			0	2,437
					\$209,972	\$453,650

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Rotator Cuff Degeneration and Repair	93.846	5R01AR057836-07			130,096	415,172	
					\$130,096	\$415,172	
Seamless Healing of Avascular Meniscus Tears by Stem Cell Recruitment	93.846	5R01AR071316-04			94,970	323,915	
					\$94,970	\$323,915	
Mechanobiology of Inflammation in the Intervertebral Disc	93.846	5R01AR069668-03			29,780	395,569	
Mechanobiology of Inflammation in the Intervertebral Disc	93.846	5R01AR069668-03			0	68,836	
					\$29,780	\$464,405	
Incorporation of Dexamethasone Delivery within Engineered Cartilage	93.846	5R01AR068133-04			236,837	462,396	
Incorporation of Dexamethasone Delivery within Engineered Cartilage	93.846	5R01AR068133-04			0	155,169	
Incorporation of Dexamethasone Delivery within Engineered Cartilage	93.846	5R01AR068133-04			0	78,094	
					\$236,837	\$695,659	
Osteocyte Calcium and Contractile Dynamics in Facilitating the Expression of RANKL, OPG, and Sclerostin under Mechanical Loading	93.846	5R01AR069148-04			0	341,944	
					\$0	\$341,944	
Primary Cilia as Mechanotransducer in Bone	93.846	5R01AR062177-09			0	253,786	
Primary Cilia as Mechanotransducer in Bone	93.846	5R01AR062177-09			0	84,130	
					\$0	\$337,916	
Adipose Inflammation in Rheumatoid Arthritis	93.846	5R01AR068425-04			60,120	333,931	
					\$60,120	\$333,931	
Inflammation and Cardiovascular Disease in Rheumatoid Arthritis	93.846	5R01AR050026-14			151,161	432,119	

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

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						R&D Cluster
<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Inflammation and Cardiovascular Disease in Rheumatoid Arthritis	93.846	5R01AR050026-14			0	92,694
Inflammation and Cardiovascular Disease in Rheumatoid Arthritis	93.846	5R01AR050026-14			0	76,282
					\$151,161	\$601,095
Screening Chest CT to Detect Interstitial Lung Disease in Systemic Sclerosis	93.846	5K23AR075112-02			7,743	152,582
					\$7,743	\$152,582
Skeletal Microstructure-Racial Differences and Genetic Contributors	93.846	5R01AR071986-03			0	530,860
					\$0	\$530,860
Structure and mechanism of pemphigus autoantibodies	93.846	5R01AR073846-03			0	516,322
					\$0	\$516,322
Functional Studies of the IL-7/IL-7R Pathway in Alopecia Areata	93.846	5K01AR070291-04			0	127,918
					\$0	\$127,918
Synthetic Developmental Tissue Engineering of Human Hair Follicles	93.846	5K01AR072131-04			0	123,803
					\$0	\$123,803
Immunophenotyping of Lichen Planopilaris.	93.846	5R21AR073013-02			0	182,967
					\$0	\$182,967
Muscle regulation of bone function	93.846	5R01AR073180-02			0	399,818
					\$0	\$399,818
Role of secreted phospholipase A2 in the activation of human CD1-restricted T cells	93.846	1R01AR074037-01A1			0	191,270
					\$0	\$191,270
Integrated Cartilage Repair	93.846	5R01AR073529-03			0	410,028
					\$0	\$410,028

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						R&D Cluster
<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Laser Treatment Modality for Strengthening Osteoarthritic Cartilage	93.846	5R01AR073289-02			0	124,149
Laser Treatment Modality for Strengthening Osteoarthritic Cartilage	93.846	5R01AR073289-02			0	108,963
					\$0	\$233,112
Enhanced Tendon Healing Through Growth Factor and Cell Therapies	93.846	5R01AR062947-08			316,894	482,828
					\$316,894	\$482,828
Inflammation in Rotator Cuff Tear and Repair	93.846	5K08AR072092-04			0	138,555
					\$0	\$138,555
Adhesive materials for tendon-to-bone repair	93.846	5R21AR076008-02			0	66,991
					\$0	\$66,991
Molecular basis of the inhibitory effects of ATRA on osteoblast-induced MDS/AML	93.846	2R56AR054447-11A1			0	229,450
					\$0	\$229,450
Genetic Dissection of OXPHOS Assembly in Skeletal Muscles	93.846	1R21AR077312-01			0	94,483
					\$0	\$94,483
Cell Cycle-Mediated Optimization of Cartilage Tissue Development	93.846	1R21AR075245-01A1			0	3,994
					\$0	\$3,994
Identification of biologically relevant subtypes of hidradenitis suppurativa	93.846	1K01AR075111-01A1			0	8,307
					\$0	\$8,307
					\$1,711,249	\$12,131,771
Diabetes, Digestive, and Kidney Diseases Extramural Research						
Primary Hyperparathyroidism	93.847	5R01DK032333-33			0	252,700
					\$0	\$252,700

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Multidisciplinary Training in Translational Gastrointestinal and Liver Research	93.847	5T32DK083256-10			0	-12
					\$0	\$-12
Differentiating Radio-sensitivities Among Intestinal Stem Cell Pools	93.847	5U01DK103155-05			163,313	164,184
Differentiating Radio-sensitivities Among Intestinal Stem Cell Pools	93.847	5U01DK103155-05			1,806	1,806
					\$165,119	\$165,990
Elucidating IgA nephropathy through Genetic Studies of IgA1 Glycosylation	93.847	5R01DK082753-09			173,442	173,442
Elucidating IgA nephropathy through Genetic Studies of IgA1 Glycosylation	93.847	5R01DK082753-09			0	-1,719
					\$173,442	\$171,723
Long term change of GLP-1 insulintropic effect after GBP surgery	93.847	5R01DK098056-04			0	31,488
					\$0	\$31,488
Genetics of Congenital Obstructive Uropathy	93.847	5R01DK103184-05			0	280,894
					\$0	\$280,894
Postprandial Vitamin A	93.847	5R01DK068437-14			0	222,975
					\$0	\$222,975
Lifestyle Interventions in Overweight and Obese Pregnant Women	93.847	5U01DK094463-06			0	165,471
Lifestyle Interventions in Overweight and Obese Pregnant Women	93.847	5U01DK094463-06			0	-14,847
					\$0	\$150,624
Branching Morphogenesis of Urinary Epithelia: from Genes to Cellular Behaviors	93.847	5R01DK083289-10			0	259,325
					\$0	\$259,325
Analysis of beta cell dedifferentiation using scRNA-seq of human T2D	93.847	5F32DK117574-02			0	8,704

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Analysis of beta cell dedifferentiation using scRNA-seq of human T2D	93.847	5F32DK117574-02			0	2,999
					\$0	\$11,703
Genetic and Molecular Etiology of Developmental Kidney and Urinary Tract Abnormalities in the DiGeorge, or 22q11.2, Syndrome.	93.847	5F32DK121454-02			0	47,405
Genetic and Molecular Etiology of Developmental Kidney and Urinary Tract Abnormalities in the DiGeorge, or 22q11.2, Syndrome.	93.847	5F32DK121454-02			0	10,436
					\$0	\$57,841
The Genetic Origins and Complications of Urinary Tract Abnormalities	93.847	5U54DK104309-05			0	54,684
The Genetic Origins and Complications of Urinary Tract Abnormalities	93.847	5U54DK104309-05			0	50,170
The Genetic Origins and Complications of Urinary Tract Abnormalities	93.847	5U54DK104309-05			35,483	35,483
The Genetic Origins and Complications of Urinary Tract Abnormalities	93.847	5U54DK104309-05			0	30,490
The Genetic Origins and Complications of Urinary Tract Abnormalities	93.847	5U54DK104309-05			0	26,158
The Genetic Origins and Complications of Urinary Tract Abnormalities	93.847	5U54DK104309-05			0	25,158
The Genetic Origins and Complications of Urinary Tract Abnormalities	93.847	5U54DK104309-05			0	23,870
The Genetic Origins and Complications of Urinary Tract Abnormalities	93.847	5U54DK104309-05			0	18,955
The Genetic Origins and Complications of Urinary Tract Abnormalities	93.847	5U54DK104309-05			0	-4,017
					\$35,483	\$260,951
HORMONES: BIOCHEMISTRY AND MOLECULAR BIOLOGY	93.847	5T32DK007328-40			0	376,093
HORMONES: BIOCHEMISTRY AND MOLECULAR BIOLOGY	93.847	5T32DK007328-40			0	143
					\$0	\$376,236

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						<u>Total Expenditures (Includes Subrecipients)</u>
Graduate Training in Nutrition	93.847	5T32DK007647-30			0	284,238
Graduate Training in Nutrition	93.847	5T32DK007647-30			0	2,379
					\$0	\$286,617
The Rewarding Value of Sugar in the Absence of Sweet Taste	93.847	5F30DK108564-05			0	49,526
					\$0	\$49,526
Clinical Research on Nonalcoholic Fatty Liver Disease	93.847	5U01DK061734-17			244,668	245,004
Clinical Research on Nonalcoholic Fatty Liver Disease	93.847	5U01DK061734-17			0	-150
					\$244,668	\$244,854
Enteric Neuronal Development as a Determinant of Intestinal Inflammation	93.847	5K08DK093786-05			0	-886
					\$0	\$-886
Imaging beta cell function for metabolic surgery	93.847	5R01DK104740-05			0	394,060
					\$0	\$394,060
Immune response to iPSC-derived beta cells in Type 1 diabetes	93.847	5R01DK103585-04			0	-8,146
Immune response to iPSC-derived beta cells in Type 1 diabetes	93.847	5R01DK103585-04			0	-14,083
					\$0	\$-22,229
Genetics of IgA nephropathy by integrative network-based association studies	93.847	5R01DK105124-05			94,628	151,554
					\$94,628	\$151,554
Function and regulation of progastrin receptors on intestinal progenitors	93.847	5R37DK052778-21			0	363,323
					\$0	\$363,323
Notch, Type 2 Diabetes and NAFLD	93.847	5R01DK103818-05			0	258,163

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$258,163
Training Program in Endocrinology and Metabolism	93.847	5T32DK007271-40			0	266,761
Training Program in Endocrinology and Metabolism	93.847	5T32DK007271-40			0	13,404
					\$0	\$280,165
Mouse Models of Insulin Resistance	93.847	5R37DK058282-20			0	457,571
					\$0	\$457,571
Bacterial Translocation and the Intestinal Microbiome in Recurrent Disease Following Liver Transplantation	93.847	5K23DK101827-04			0	75,761
					\$0	\$75,761
Mechanisms Underlying Predictors of Success from Obesity Surgery	93.847	5R01DK108643-05			138,559	175,284
					\$138,559	\$175,284
Metabolomic Biomarkers Predictors of Long-term Success Following Bariatric surgery	93.847	5R01DK108580-04			100,072	145,705
					\$100,072	\$145,705
Role of Forkhead Proteins in Insulin Action	93.847	5R01DK057539-19			0	23,328
					\$0	\$23,328
Genetics of Human Renal Hypodysplasia	93.847	5R01DK080099-09			74,531	311,136
					\$74,531	\$311,136
Significance of Intrarenal T cells in SLE Nephritis	93.847	5R01DK106436-04			0	331,400
					\$0	\$331,400
13/22 Diabetes Prevention Program Outcomes Study (DPPOS) Phase 3 - Research Project	93.847	5U01DK048404-27			0	309,079
13/22 Diabetes Prevention Program Outcomes Study (DPPOS) Phase 3 - Research Project	93.847	5U01DK048404-27			0	156,505
					\$0	\$465,584

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Vitamin A Homeostasis: Retinyl Ester Stores	93.847	5R01DK101251-03			180,778	196,291
					\$180,778	\$196,291
Circadian clock regulation of branching morphogenesis during kidney development	93.847	5R01DK106548-05			0	268,710
					\$0	\$268,710
Advancing Clinical Research in Primary Glomerular Diseases	93.847	5UM1DK100876-06			0	-1
					\$0	\$-1
New York Obesity Research Center	93.847	5P30DK026687-39			0	283,477
New York Obesity Research Center	93.847	5P30DK026687-39			25,064	227,503
New York Obesity Research Center	93.847	5P30DK026687-39			123,009	216,863
New York Obesity Research Center	93.847	5P30DK026687-39			0	163,379
New York Obesity Research Center	93.847	5P30DK026687-39			0	100,061
New York Obesity Research Center	93.847	5P30DK026687-39			0	98,746
New York Obesity Research Center	93.847	5P30DK026687-39			0	80,755
New York Obesity Research Center	93.847	5P30DK026687-39			0	80,000
New York Obesity Research Center	93.847	5P30DK026687-39			0	69,772
New York Obesity Research Center	93.847	5P30DK026687-39			0	46,808
New York Obesity Research Center	93.847	5P30DK026687-39			0	40,061

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New York Obesity Research Center	93.847	5P30DK026687-39			0	36,504
New York Obesity Research Center	93.847	5P30DK026687-39			0	23,871
New York Obesity Research Center	93.847	5P30DK026687-39			0	1,647
					\$148,073	\$1,469,447
09/16 Action for Health in Diabetes Extension Study Research Project	93.847	5U01DK057178-22			0	189,088
09/16 Action for Health in Diabetes Extension Study Research Project	93.847	5U01DK057178-22			0	139,343
					\$0	\$328,431
Aptamer-Based Arrays for Detection of Pathogenic IgA1 O-Glycoforms in IgA Nephropathy	93.847	5R21DK109690-02			0	1
Aptamer-Based Arrays for Detection of Pathogenic IgA1 O-Glycoforms in IgA Nephropathy	93.847	5R21DK109690-02			0	-1
					\$0	\$0
Precision Medicine Research in Nephrology	93.847	5T32DK108741-05			0	126,291
					\$0	\$126,291
IGFBP-Mediated Local and Systemic Effects of Mitochondrial Dysfunction in Skeletal Muscles	93.847	5R21DK112074-03			0	106,256
					\$0	\$106,256
Paneth cells and acute kidney injury	93.847	5R01DK109544-04			0	442,701
					\$0	\$442,701
Mechanisms of Beta Cell Failure	93.847	5R01DK064819-18			0	474,417
					\$0	\$474,417
CSF Neuropeptide, Hormonal and Metabolomic Analysis in Human Energy	93.847	5R01DK093920-08			0	520,911
					\$0	\$520,911

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Obesity Research Center Training Grant	93.847	5T32DK007559-30			0	130,475
Obesity Research Center Training Grant	93.847	5T32DK007559-30			0	52,719
					\$0	\$183,194
Increasing Minority Population Awareness through Community Teaching for Improved Organ Donation (IMPACT for Improved Organ Donation)	93.847	5R01DK114893-04			0	272,879
					\$0	\$272,879
THE FUNCTION AND REGULATION OF HISTIDINE DECARBOXYLASE IN GUT INFLAMMATION	93.847	5R01DK048077-24			0	365,887
					\$0	\$365,887
Enteroendocrine Cell Subsets with Reserve Stem Cell Function	93.847	5R03DK114656-02			0	4,841
					\$0	\$4,841
2/2 APOL1 Long-Term Kidney Transplantation Outcomes Network- Clinical Center	93.847	5U01DK116066-04			28,623	223,336
2/2 APOL1 Long-Term Kidney Transplantation Outcomes Network- Clinical Center	93.847	5U01DK116066-04			0	18,983
2/2 APOL1 Long-Term Kidney Transplantation Outcomes Network- Clinical Center	93.847	5U01DK116066-04			4,401	7,041
2/2 APOL1 Long-Term Kidney Transplantation Outcomes Network- Clinical Center	93.847	5U01DK116066-04			6,548	6,548
2/2 APOL1 Long-Term Kidney Transplantation Outcomes Network- Clinical Center	93.847	5U01DK116066-04			0	-33,242
					\$39,572	\$222,666
Barrett s esophagus and progenitor cells at the squamous-columnar junction	93.847	5R01DK113144-04			0	351,676
					\$0	\$351,676
Genomics of mammalian posterior urethral valves	93.847	5R01DK115574-04			18,000	607,165
					\$18,000	\$607,165

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
TAZ and YAP in Non-Alcoholic Steatohepatitis and its Complications	93.847	5R01DK116620-03			0	403,576
TAZ and YAP in Non-Alcoholic Steatohepatitis and its Complications	93.847	5R01DK116620-03			0	370,889
TAZ and YAP in Non-Alcoholic Steatohepatitis and its Complications	93.847	5R01DK116620-03			0	26,462
					\$0	\$800,927
Training Grant in Pediatric Endocrinology, Diabetes and Metabolism	93.847	5T32DK065522-15			0	235,789
Training Grant in Pediatric Endocrinology, Diabetes and Metabolism	93.847	5T32DK065522-15			0	9,677
Training Grant in Pediatric Endocrinology, Diabetes and Metabolism	93.847	5T32DK065522-15			0	-1
					\$0	\$245,465
Amitosis of Polyploid Cells to Functional Intestinal Stem Cells	93.847	5R01DK107702-04			0	429,006
					\$0	\$429,006
Functional imaging and eating behavior among FTO genotypes in pre-obese children	93.847	5R01DK097399-05			2,625	61,109
					\$2,625	\$61,109
Characterizing the Dedifferentiating Beta Cell in Diabetes	93.847	5F30DK112518-03			0	-946
					\$0	-\$946
GENERATING AN ATLAS OF THE DEVELOPING HUMAN URINARY OUTFLOW TRACT.	93.847	5U01DK110803-05			24,900	364,629
GENERATING AN ATLAS OF THE DEVELOPING HUMAN URINARY OUTFLOW TRACT.	93.847	5U01DK110803-05			0	63,393
GENERATING AN ATLAS OF THE DEVELOPING HUMAN URINARY OUTFLOW TRACT.	93.847	5U01DK110803-05			0	-6,637
					\$24,900	\$421,385
Role of Autophagy in Maladaptive Renal Repair Following Acute Kidney Injury	93.847	5R01DK107653-03			0	86,072

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$86,072
The molecular genetic analysis of human obesity	93.847	5R01DK052431-25			0	713,595
The molecular genetic analysis of human obesity	93.847	5R01DK052431-25			0	23,316
					\$0	\$736,911
VZV in the enteric nervous system: pathogenesis and consequences	93.847	5R01DK093094-08			13,047	306,747
					\$13,047	\$306,747
Genetics of early childhood obesity and its clinical implications	93.847	5K23DK110539-05			0	182,816
					\$0	\$182,816
Regulation of glucose uptake in osteoblasts by Runx2	93.847	5R01DK104727-05			0	335,277
					\$0	\$335,277
Notch function in postnatal intestinal and mesenteric lymphatics	93.847	5R01DK107633-04			87,752	463,798
					\$87,752	\$463,798
PPARgamma Deacetylation in the Restoration of Metabolic Homeostasis	93.847	5R01DK112943-03			0	349,405
					\$0	\$349,405
Role of Dach1 in Obesity-Induced Hepatic Insulin Resistance	93.847	5R01DK106045-05			0	448,063
					\$0	\$448,063
A New Therapeutic Option for the Treatment of Prolactinomas	93.847	5R21DK112093-03			0	76,812
					\$0	\$76,812
Loss of Gastrointestinal Colonization Resistance and Antibiotic-Resistant infections in the ICU	93.847	5K23DK111847-04			0	207,449
					\$0	\$207,449
ADIPOSE TISSUE MACROPHAGE PHENOTYPE AND FUNCTION	93.847	5R01DK066525-17			0	404,835

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$404,835
The Intraepithelial T cell Response in Celiac Disease	93.847	5K08DK100739-06			0	170,092
					\$0	\$170,092
New approaches to the evaluation and treatment of acromegaly	93.847	5R01DK110771-04			0	458,830
					\$0	\$458,830
Training Medical Students in NIDDK Research	93.847	5T35DK093430-09			0	25,490
					\$0	\$25,490
Hepatoprotective Mechanisms of TTC39B Deficiency	93.847	5K01DK114380-03			0	138,472
					\$0	\$138,472
MerTK in NASH-related liver fibrosis	93.847	5K99DK115778-02			0	89,122
					\$0	\$89,122
Basal Progenitor Cells and Eosinophilic Esophagus	93.847	5R01DK100342-08			0	445,894
					\$0	\$445,894
Multidisciplinary Training in Translational Gastrointestinal and Liver Research	93.847	5T32DK083256-12			0	287,103
					\$0	\$287,103
Multidisciplinary Training in Translational Gastrointestinal and Liver Research	93.847	5T32DK083256-12			0	1,047
					\$0	\$1,047
Cytotoxic T cells in Ulcerative Colitis	93.847	5R03DK121026-02			0	125,230
					\$0	\$125,230
Overfeeding and body weight regulation	93.847	5F31DK122711-02			0	45,016
					\$0	\$45,016
Nuclear Envelope, Lipoprotein Metabolism, and Hepatic Steatosis	93.847	5R01DK118480-02			0	191,392

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Nuclear Envelope, Lipoprotein Metabolism, and Hepatic Steatosis	93.847	5R01DK118480-02			0	87,645
					\$0	\$279,037
Signaling Mechanisms Promoting Barrett's Metaplasia	93.847	5R01DK120650-02			0	515,609
					\$0	\$515,609
RBP2 Biology and Pathobiology	93.847	5R01DK122071-02			120,895	358,103
					\$120,895	\$358,103
Improving Diagnosis and Prevention of Pediatric Nonalcoholic Fatty Liver Disease	93.847	5K23DK115682-03			0	154,500
					\$0	\$154,500
Genomics of glomerular disease	93.847	5RC2DK116690-03			185,321	1,433,124
					\$185,321	\$1,433,124
Epigenetic Regulation by FoxO1 in Pancreatic Beta Cells	93.847	5K01DK114372-03			0	168,342
					\$0	\$168,342
Prebiotic GOS and lactoferrin for beneficial gut microbiota with iron supplements	93.847	5R01DK115449-03			290,088	493,602
					\$290,088	\$493,602
Columbia Diabetes Research Center	93.847	5P30DK063608-18			0	387,461
Columbia Diabetes Research Center	93.847	5P30DK063608-18			0	179,899
Columbia Diabetes Research Center	93.847	5P30DK063608-18			0	171,320
Columbia Diabetes Research Center	93.847	5P30DK063608-18			0	171,236
Columbia Diabetes Research Center	93.847	5P30DK063608-18			0	104,103

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Columbia Diabetes Research Center	93.847	5P30DK063608-18			0	101,169
Columbia Diabetes Research Center	93.847	5P30DK063608-18			0	78,150
Columbia Diabetes Research Center	93.847	5P30DK063608-18			0	76,739
Columbia Diabetes Research Center	93.847	5P30DK063608-18			0	69,041
Columbia Diabetes Research Center	93.847	5P30DK063608-18			0	68,044
Columbia Diabetes Research Center	93.847	5P30DK063608-18			0	59,514
Columbia Diabetes Research Center	93.847	5P30DK063608-18			0	49,342
Columbia Diabetes Research Center	93.847	5P30DK063608-18			0	48,332
Columbia Diabetes Research Center	93.847	5P30DK063608-18			0	33,255
Columbia Diabetes Research Center	93.847	5P30DK063608-18			0	20,697
Columbia Diabetes Research Center	93.847	5P30DK063608-18			0	14,150
Columbia Diabetes Research Center	93.847	5P30DK063608-18			0	5,434
Columbia Diabetes Research Center	93.847	5P30DK063608-18			0	2,164
Columbia Diabetes Research Center	93.847	5P30DK063608-18			0	45
					\$0	\$1,640,095
Generation of New Mouse Models of Low Nephron Numbers to Understand Pathogenesis of AKI and CKD in Humans Born Preterm	93.847	5R01DK118140-02			0	387,695
					\$0	\$387,695

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Novel genetic engineering tools for functional studies of the gut microbiome	93.847	5F30DK111145-04			0	50,016
Novel genetic engineering tools for functional studies of the gut microbiome	93.847	5F30DK111145-04			0	23,875
					\$0	\$73,891
Metabolic and Endocrine Effects of Bariatric Surgery	93.847	5R01DK072011-14			0	494,144
Metabolic and Endocrine Effects of Bariatric Surgery	93.847	5R01DK072011-14			0	53,042
					\$0	\$547,186
Engineering Nanobodies To Study Beta Subunit-Specific Voltage-Gated Calcium Channel Complexes in Pancreatic Beta Cells	93.847	5F31DK118866-03			0	45,016
					\$0	\$45,016
Retinoic acid signaling controls urothelial development and regeneration.	93.847	5R01DK095044-08			0	635,060
					\$0	\$635,060
Peptidylarginine deiminase-4 and acute kidney injury	93.847	5R01DK115694-04			0	322,057
					\$0	\$322,057
Ecological dynamics and metabolic interactions in gut microbiome across space and time	93.847	5R01DK118044-03			0	419,692
Ecological dynamics and metabolic interactions in gut microbiome across space and time	93.847	5R01DK118044-03			0	301,241
					\$0	\$720,933
Trafficking-Dependent Signaling of Pain by Protease-Activated Receptors	93.847	5R01DK118971-02			163,942	247,731
					\$163,942	\$247,731
Purinergic signaling in granuloma forming Th2 immunity	93.847	5R01DK113790-05			16,648	321,201
					\$16,648	\$321,201
Calcium and the physiology of diabetes	93.847	5R01DK118240-02			0	343,673

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$343,673
Networks for functional regulation of pancreatic acinar-ductal metaplasia and epithelial plasticity	93.847	5R01DK060694-19			0	374,706
					\$0	\$374,706
The LIN28b-Let7-IMP1 axis in colonic epithelial biology	93.847	5R01DK056645-20			7,328	249,311
					\$7,328	\$249,311
AUTOPHAGY AND ESOPHAGEAL TISSUE REMODELING IN EOE	93.847	7R01DK114436-03			0	541,107
					\$0	\$541,107
Synergistic Effects of Medium-chain and Omega-3 Triglycerides on Cellular Omega-3 Fatty AcidEnrich	93.847	1R01DK119389-01A1			0	67,361
					\$0	\$67,361
Molecular Mechanisms of Toxin-InducedBiliary Atresia	93.847	5K08DK107910-04			0	81,462
					\$0	\$81,462
Diabetes disparities in Latino sub populations: linking biology to social epidemiology	93.847	5K01DK107791-05			0	108,407
					\$0	\$108,407
Bile acids and insulin sensitivity	93.847	5R01DK115825-03			0	685,935
					\$0	\$792,792
Bile acids and insulin sensitivity	93.847	5R01DK115825-03			0	106,857
					\$0	\$382,334
Mechanisms of Mucosal Th17 Cell Induction By Segmented Filamentous Bacteria	93.847	5R01DK098378-08			0	382,334
					\$0	\$382,334
Dynamically Tailoring Interventions for Problem-Solving in Diabetes Self-Management Using Self-Monitoring Data - a Randomized Controlled Trial	93.847	1R01DK113189-01A1			317,978	798,956
					\$317,978	\$798,956
Trace mineral levels, metabolomics, and diabetes risk	93.847	7R01DK116603-02			13,752	170,381

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$13,752	\$170,381
Tissue Resident Immune Cells in Human Pancreas.	93.847	5K08DK122130-02			0	140,451
					\$0	\$140,451
The impact of glomerular disorders on bone quality and strength	93.847	5R01DK119266-03			374,162	664,709
					\$374,162	\$664,709
Novel genomic and transcriptomic tools to study human congenital anomalies of the kidney and urinary tract	93.847	5P20DK116191-02			0	193,857
Novel genomic and transcriptomic tools to study human congenital anomalies of the kidney and urinary tract	93.847	5P20DK116191-02			0	73,391
Novel genomic and transcriptomic tools to study human congenital anomalies of the kidney and urinary tract	93.847	5P20DK116191-02			0	549
					\$0	\$267,797
Jagged-Notch signaling in NASH/fibrosis	93.847	5R01DK119767-02			0	314,171
					\$0	\$314,171
Rare variant analysis of glomerulonephritis	93.847	5K01DK119549-02			0	107,523
					\$0	\$107,523
The Columbia PCC for CureGN: the Cure Glomerulonephropathy network	93.847	5U01DK100876-08			122,040	896,150
The Columbia PCC for CureGN: the Cure Glomerulonephropathy network	93.847	5U01DK100876-08			0	72,619
					\$122,040	\$968,769
TOX4 integrates hormone signaling on hepatic glucose and lipid metabolism	93.847	5K01DK123199-02			0	84,440
					\$0	\$84,440
Investigation of Genomic Disorders in Chronic Kidney Disease	93.847	5R21DK119802-02			0	182,339
					\$0	\$182,339

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Gut cell plasticity during diabetes treatment	93.847	5K01DK121873-02			0	111,837
					\$0	\$111,837
Skeletal Fragility in Type 1 Diabetes: Glycemic Control and Bone Strength	93.847	1R01DK122564-01			0	86,631
					\$0	\$86,631
Investigating the Genetic, Cellular, and Metabolic Events Important for Urothelial Homeostasis and Response to Urinary Tract Infection	93.847	5U54DK104309-07			0	343,674
Investigating the Genetic, Cellular, and Metabolic Events Important for Urothelial Homeostasis and Response to Urinary Tract Infection	93.847	5U54DK104309-07			25,826	262,874
Investigating the Genetic, Cellular, and Metabolic Events Important for Urothelial Homeostasis and Response to Urinary Tract Infection	93.847	5U54DK104309-07			0	253,636
Investigating the Genetic, Cellular, and Metabolic Events Important for Urothelial Homeostasis and Response to Urinary Tract Infection	93.847	5U54DK104309-07			70,363	164,426
Investigating the Genetic, Cellular, and Metabolic Events Important for Urothelial Homeostasis and Response to Urinary Tract Infection	93.847	5U54DK104309-07			0	145,039
Investigating the Genetic, Cellular, and Metabolic Events Important for Urothelial Homeostasis and Response to Urinary Tract Infection	93.847	5U54DK104309-07			0	64,256
Investigating the Genetic, Cellular, and Metabolic Events Important for Urothelial Homeostasis and Response to Urinary Tract Infection	93.847	5U54DK104309-07			0	43,235
Investigating the Genetic, Cellular, and Metabolic Events Important for Urothelial Homeostasis and Response to Urinary Tract Infection	93.847	5U54DK104309-07			0	19,162
					\$96,189	\$1,296,302
Tracing the Origins of Sleeve Gastrectomy Glycemic Effects	93.847	7K08DK101830-05			0	224,050
					\$0	\$224,050
Clinical Research on Nonalcoholic Fatty Liver Disease	93.847	2U01DK061734-18			717,340	925,976
					\$717,340	\$925,976
A model system to study mechanosensing in podocytes	93.847	5F31DK124135-02			0	40,996
					\$0	\$40,996

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						<u>Total Expenditures (Includes Subrecipients)</u>
Modeling autoimmune pathogenesis and beta cell destruction by T1D immune systems	93.847	5U01DK123559-02			140,152	510,597
Modeling autoimmune pathogenesis and beta cell destruction by T1D immune systems	93.847	5U01DK123559-02			0	39,624
					\$140,152	\$550,221
DAMPs and Their Receptors Link Hepatocyte Death to HSC Activation and Liver Fibrosis	93.847	5R01DK124104-02			0	545,449
					\$0	\$545,449
Understanding stem cell heterogeneity and niche function in intestinal regeneration after irradiation	93.847	5U01DK103155-07			23,491	288,981
					\$23,491	\$288,981
Kidney Precision Medicine Program (KPMP): Columbia AKI Recruitment Site	93.847	5UH3DK114926-04			0	384,661
					\$0	\$384,661
Identification of unique nitric oxide-expressing hematopoietic stem cells and their special vascular niche	93.847	1R01DK121889-01A1			0	37,586
					\$0	\$37,586
Developmental programming of brown adipose tissue sympathetic tone	93.847	1R56DK125094-01			0	26,805
					\$0	\$26,805
Hepatic Rap1 in glucose homeostasis	93.847	1R01DK124457-01			0	41,012
					\$0	\$41,012
Structure and mechanism of the protein-capture receptors of the kidney proximal tubule	93.847	1R01DK124667-01			0	18,576
					\$0	\$18,576
					\$4,130,575	\$39,079,497
Extramural Research Programs in the Neurosciences and Neurological Disorders						
Assessment and characterization of naming in older adults with epilepsy	93.853	5R01NS083976-05			0	43,901
					\$0	\$43,901

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Prevalence and predictors of asymptomatic atrial fibrillation in the community	93.853	5R01NS083784-05			0	182,766
					\$0	\$182,766
Advanced Graduate Training Program in Theoretical Neuroscience	93.853	5T32NS064929-10			0	-4,183
Advanced Graduate Training Program in Theoretical Neuroscience	93.853	5T32NS064929-10			0	-13,135
					\$0	-\$17,318
RNA regulatory networks in motor neuron development and function	93.853	5R01NS089676-05			0	240,357
RNA regulatory networks in motor neuron development and function	93.853	5R01NS089676-05			0	16,976
					\$0	\$257,333
Functional data analytics for kinematic assessments of motor control	93.853	5R01NS097423-05			97,473	240,083
					\$97,473	\$240,083
In-vivo optical imaging of neurovascular coupling and cerebral metabolism	93.853	5R01NS063226-10			0	136,573
					\$0	\$136,573
Omega 3 Fatty Acids Acute Neuroprotection via Mitochondria	93.853	5R01NS088197-05			0	185,585
Omega 3 Fatty Acids Acute Neuroprotection via Mitochondria	93.853	5R01NS088197-05			0	32,179
					\$0	\$217,764
Pharmacologic Treatment of Human Mitochondrial DNA (mtDNA) Disease	93.853	5F30NS093798-04			0	468
					\$0	\$468
Sexually dimorphic regulation of neuronal identity in C.elegans	93.853	4R37NS039996-19			0	-4,672
					\$0	-\$4,672
The Role of Clustered Protocadherins in Neurite Self-avoidance	93.853	5R01NS088476-04			0	2,375

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$2,375
Identification of Susceptibility Genes for Essential Tremor	93.853	5R01NS073872-07			490,704	807,084
					\$490,704	\$807,084
Development and function of an adult locomotion circuit in Drosophila	93.853	5R01NS070644-10			0	243,501
Development and function of an adult locomotion circuit in Drosophila	93.853	5R01NS070644-10			0	85,079
					\$0	\$328,580
NAMDC: Overall Research Plan	93.853	5U54NS078059-08			49,650	150,285
NAMDC: Overall Research Plan	93.853	5U54NS078059-08			0	108,174
NAMDC: Overall Research Plan	93.853	5U54NS078059-08			63,238	65,810
NAMDC: Overall Research Plan	93.853	5U54NS078059-08			53,864	62,863
NAMDC: Overall Research Plan	93.853	5U54NS078059-08			59,796	61,428
NAMDC: Overall Research Plan	93.853	5U54NS078059-08			0	27,630
NAMDC: Overall Research Plan	93.853	5U54NS078059-08			0	-3,255
NAMDC: Overall Research Plan	93.853	5U54NS078059-08			0	-14,465
NAMDC: Overall Research Plan	93.853	5U54NS078059-08			0	-52,808
					\$226,548	\$405,662
Examination of the earliest symptoms and biomarkers of FTL D MAPT carriers	93.853	4R01NS076837-05			1,907	36,679
					\$1,907	\$36,679

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Cellular and molecular mechanisms underlying the function of SRGAP2 during synaptic development	93.853	5R01NS067557-11			0	401,339
Cellular and molecular mechanisms underlying the function of SRGAP2 during synaptic development	93.853	5R01NS067557-11			0	14,976
					\$0	\$416,315
The behavioral functions of upper and lower cortical layers	93.853	5R01NS094659-05			0	212,862
					\$0	\$212,862
Neuroepidemiology Training Program	93.853	5T32NS007153-35			0	6,390
					\$0	\$6,390
Discovery of Novel Molecular Abnormalities Underlying Non-Lesional Focal Epilepsy	93.853	5R01NS089552-04			9,728	27,717
					\$9,728	\$27,717
The regulations of beta-amyloid sensitivity and Alzheimer s related impairments by PP2A	93.853	5R01NS092045-05			100,816	242,642
					\$100,816	\$242,642
Mechanisms of measles virus CNS adaptation	93.853	5R01NS091263-05			74,271	197,979
					\$74,271	\$197,979
Statistical methods for early disease prediction and treatment strategy estimation using biomarker signatures	93.853	5R01NS073671-08			110,441	244,695
					\$110,441	\$244,695
Advanced Graduate Training Program in Neurobiology and Behavior	93.853	5T32NS064928-10			0	191,421
					\$0	\$191,421
Evaluating CA2 Neurons as Novel Targets in Epilepsy	93.853	5R21NS093991-02			-286	-286
					-\$286	-\$286
An internal sensory circuit for neuropeptide control of body homeostasis	93.853	5R21NS105507-02			0	199,808
					\$0	\$199,808

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Autophagy and Neurodegeneration	93.853	5R01NS063973-10			152,310	263,132
					\$152,310	\$263,132
Neurology Research Education and Mentorship Program	93.853	5R25NS070697-10			0	277,358
					\$0	\$277,358
The role of ApoE in injury-induced neurogenesis	93.853	5R01NS095803-04			0	262,097
					\$0	\$262,097
Summer Program for Under Represented Students (SPURS)	93.853	5R25NS076445-09			0	73,685
					\$0	\$73,685
Generation of caspase-9 cell specific inducible knockout mice for the study of mechanisms of cerebral edema	93.853	5R03NS099920-02			0	18,322
					\$0	\$18,322
The Role of p38 MAPK Activation in Spinal Muscular Atrophy	93.853	5R21NS098363-02			0	114,432
					\$0	\$114,432
Mechanisms of spatial memory during navigation in virtual reality	93.853	5R00NS093071-05			0	67,792
					\$0	\$67,792
The Spinal Muscular Atrophy NMJ phenotype: mechanisms and molecular mediators	93.853	1R21NS099921-01A1			0	162,353
					\$0	\$162,353
RNA-mediated mechanisms of motor system dysfunction in spinal muscular atrophy	93.853	5R01NS102451-03			0	376,873
RNA-mediated mechanisms of motor system dysfunction in spinal muscular atrophy	93.853	5R01NS102451-03			0	16,999
					\$0	\$393,872
SMN post-translational modification in Spinal Muscular Atrophy	93.853	5R21NS101575-02			0	86,231
					\$0	\$86,231

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Statewide dissemination of a school-based public stroke education intervention	93.853	5R01NS067443-10			161,497	517,683	
Statewide dissemination of a school-based public stroke education intervention	93.853	5R01NS067443-10			0	179,238	
Statewide dissemination of a school-based public stroke education intervention	93.853	5R01NS067443-10			98,032	98,032	
Statewide dissemination of a school-based public stroke education intervention	93.853	5R01NS067443-10			11,284	11,284	
					\$270,813	\$806,237	
The Role of Dendrites in Thalamocortical Circuitry	93.853	5R01NS069679-10			0	302,275	
					\$0	\$302,275	
Neurotrophins, spontaneous release, and synaptic growth cascades	93.853	5R01NS083690-05			0	7,257	
					\$0	\$7,257	
Mechanisms for Internal Models in a Cerebellum-like Circuit	93.853	5R01NS075023-09			0	497,150	
					\$0	\$497,150	
MicroRNA modulation of tau expression and phosphorylation in tauopathy	93.853	5R01NS095922-05			0	441,041	
					\$0	\$441,041	
Excitatory spinal micro-circuit mechanisms involved in locomotor activity	93.853	5F30NS098551-04			0	45,016	
					\$0	\$45,016	
Dual Inhibition of Mitochondrial Matrix Chaperones and Anti-Apoptotic Bcl-2 Family Members for Glioblastoma Therapy.	93.853	5R01NS095848-05			0	179,955	
					\$0	\$179,955	
SMN dysfunction in FUS-dependent ALS	93.853	5R21NS099977-02			0	11,103	
					\$0	\$11,103	
Mitochondrial Dysfunction and White Matter Injury	93.853	5R01NS099109-05			0	338,675	

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$338,675
ATrial Cardiopathy and Antithrombotic Drugs In prevention After cryptogenic stroke (ARCADIA)	93.853	5U01NS095869-02			2,004,029	2,543,184
					\$2,004,029	\$2,543,184
Carotid Revascularization and Medical Management for Asymptomatic Carotid Stenosis Trial - Hemodynamics (CREST-H)	93.853	5R01NS097876-04			468,939	523,273
Carotid Revascularization and Medical Management for Asymptomatic Carotid Stenosis Trial - Hemodynamics (CREST-H)	93.853	5R01NS097876-04			21,650	21,650
Carotid Revascularization and Medical Management for Asymptomatic Carotid Stenosis Trial - Hemodynamics (CREST-H)	93.853	5R01NS097876-04			0	7,419
					\$490,589	\$552,342
FUS Gain-of-Function Mechanisms in Animal and Cellular Models of ALS	93.853	2R56NS073776-06A1			0	42,156
					\$0	\$42,156
Health Disparities in Sepsis as a Risk Factor for Stroke	93.853	5R03NS101417-02			0	46,900
					\$0	\$46,900
Influence of genotype on microglia phenotype and function in PD	93.853	5R01NS089674-04			1,133	88,137
					\$1,133	\$88,137
The role of CA2 in epilepsy and social comorbidity	93.853	5R01NS106983-03			247,904	545,649
					\$247,904	\$545,649
RNA Binding Proteins in Complex Neurological Disease	93.853	5R01NS091118-05			0	283,454
					\$0	\$283,454
Identification and molecular characterization of somatic mutations in MCD	93.853	5R01NS094596-04			230,631	386,193
					\$230,631	\$386,193
Single cell analysis of the infiltrative margins of glioblastoma and post-treatment recurrence	93.853	5R01NS103473-04			0	188,538

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						<u>Total Expenditures (Includes Subrecipients)</u>
Single cell analysis of the infiltrative margins of glioblastoma and post-treatment recurrence	93.853	5R01NS103473-04			0	94,525
Single cell analysis of the infiltrative margins of glioblastoma and post-treatment recurrence	93.853	5R01NS103473-04			0	17,772
					\$0	\$300,835
Mechanisms of Central Synaptic Dysfunction in SMA	93.853	5R01NS078375-09			0	449,561
					\$0	\$449,561
MICROENVIRONMENT IN ENTERIC NEURON DEVELOPMENT	93.853	5R01NS015547-37			0	638,044
					\$0	\$638,044
Neuron death in Parkinson s disease: The role of Trib3	93.853	5R01NS072050-08			0	277,924
					\$0	\$277,924
SCAPE microscopy for high-speed in-vivo volumetric microscopy in behaving organisms	93.853	5U01NS094296-03			0	-2,112
SCAPE microscopy for high-speed in-vivo volumetric microscopy in behaving organisms	93.853	5U01NS094296-03			0	-6,180
					\$0	\$-8,292
Generation of mice to selectively mark a subset of spinal interneurons	93.853	5R03NS103148-02			0	41,103
					\$0	\$41,103
mRNA Translation Dysregulation in Neurodevelopmental and Neurodegenerative Diseases (Stephanie Herrlinger)	93.853	5K00MH121382-04			0	71,815
					\$0	\$71,815
Dissecting the role of thalamostriatal circuits in flexible versus automatized motor skill execution	93.853	5F31NS111853-02			0	45,016
					\$0	\$45,016
Role of ER-mitochondria contacts in dendritic Ca2+ homeostasis, synaptic integration and circuit function	93.853	5R01NS107483-02			0	765,706
Role of ER-mitochondria contacts in dendritic Ca2+ homeostasis, synaptic integration and circuit function	93.853	5R01NS107483-02			0	5,644

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$771,350
Computational and circuit mechanisms of decision making	93.853	5R01NS113113-02			0	428,907
					\$0	\$428,907
Dissecting the action learning process with dopaminergic reinforcement	93.853	5K99NS112575-02			0	72,356
					\$0	\$72,356
The role of CA2 circuits in temporal lobe epilepsy	93.853	5F31NS113466-02			0	45,016
					\$0	\$45,016
Post-transcriptional regulation of Snap25 by Pumilio proteins in synaptogenesis	93.853	5F31NS113574-02			0	45,016
					\$0	\$45,016
Dynamic Neural Mechanisms of Audiovisual Speech Perception	93.853	5U01NS098976-03			143,347	273,327
					\$143,347	\$273,327
Targeting Lewy Body Specific Pathology Using Biomarkers	93.853	5U01NS100600-05			96,526	316,253
Targeting Lewy Body Specific Pathology Using Biomarkers	93.853	5U01NS100600-05			0	293,288
					\$96,526	\$609,541
CRCNS: Refining computational models of motor sequence learning and execution	93.853	5R01NS105349-04			177,487	346,297
					\$177,487	\$346,297
Cellular and molecular mechanisms of neuronal remodeling in healthy tissue	93.853	5F31NS103439-03			0	45,016
					\$0	\$45,016
Do seizures stimulate glioma progression?	93.853	5R03NS103125-02			0	10,450
Do seizures stimulate glioma progression?	93.853	5R03NS103125-02			0	-4,119
					\$0	\$6,331

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Effects of learning on multi-sensory integration in primary sensory cortical areas	93.853	5F31NS105490-02			0	2,027
					\$0	\$2,027
Making the Invisible Visible: Advanced MRI in Non Lesional Focal Epilepsy	93.853	5R21NS101303-02			81,049	142,749
					\$81,049	\$142,749
Computational and circuit mechanisms underlying motor control	93.853	5U19NS104649-04			0	615,974
Computational and circuit mechanisms underlying motor control	93.853	5U19NS104649-04			0	558,068
Computational and circuit mechanisms underlying motor control	93.853	5U19NS104649-04			0	548,593
Computational and circuit mechanisms underlying motor control	93.853	5U19NS104649-04			0	410,268
Computational and circuit mechanisms underlying motor control	93.853	5U19NS104649-04			36,387	387,048
Computational and circuit mechanisms underlying motor control	93.853	5U19NS104649-04			0	367,832
Computational and circuit mechanisms underlying motor control	93.853	5U19NS104649-04			0	325,908
Computational and circuit mechanisms underlying motor control	93.853	5U19NS104649-04			0	82,677
Computational and circuit mechanisms underlying motor control	93.853	5U19NS104649-04			0	82,562
Computational and circuit mechanisms underlying motor control	93.853	5U19NS104649-04			3,134	71,920
Computational and circuit mechanisms underlying motor control	93.853	5U19NS104649-04			0	61,246
Computational and circuit mechanisms underlying motor control	93.853	5U19NS104649-04			0	58,122
Computational and circuit mechanisms underlying motor control	93.853	5U19NS104649-04			0	36,559

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Computational and circuit mechanisms underlying motor control	93.853	5U19NS104649-04			0	22,500
Computational and circuit mechanisms underlying motor control	93.853	5U19NS104649-04			0	15,751
Computational and circuit mechanisms underlying motor control	93.853	5U19NS104649-04			0	12,416
Computational and circuit mechanisms underlying motor control	93.853	5U19NS104649-04			0	8,184
Computational and circuit mechanisms underlying motor control	93.853	5U19NS104649-04			0	-6,490
					\$39,521	\$3,659,138
Mechanisms Linking Hearing Loss and Alzheimer s Disease and Related Dementias	93.853	5K23AG057832-03			0	168,914
					\$0	\$168,914
Selective autophagy in Parkinson s disease	93.853	5R01NS101663-03			18,484	691,823
					\$18,484	\$691,823
Clinical Impact of Early Pathogen Identification in Acute Neurological Infections	93.853	5K23NS105935-03			0	187,047
					\$0	\$187,047
Dissecting the role of dorsomedial striatal circuits in action selectionduring spatial exploration	93.853	5K99NS107721-02			0	98,034
					\$0	\$98,034
Development of therapeutic fusion inhibitor peptides for Measlesencephalitis	93.853	5R01NS105699-02			0	157,750
Development of therapeutic fusion inhibitor peptides for Measlesencephalitis	93.853	5R01NS105699-02			0	37,521
					\$0	\$195,271
Understanding V1 circuit dynamics and computations	93.853	5U19NS107613-03			302,917	516,620
Understanding V1 circuit dynamics and computations	93.853	5U19NS107613-03			0	510,372

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Understanding V1 circuit dynamics and computations	93.853	5U19NS107613-03			0	418,736
Understanding V1 circuit dynamics and computations	93.853	5U19NS107613-03			398,432	398,432
Understanding V1 circuit dynamics and computations	93.853	5U19NS107613-03			367,562	367,562
Understanding V1 circuit dynamics and computations	93.853	5U19NS107613-03			337,976	337,976
Understanding V1 circuit dynamics and computations	93.853	5U19NS107613-03			296,225	296,225
Understanding V1 circuit dynamics and computations	93.853	5U19NS107613-03			169,312	169,312
Understanding V1 circuit dynamics and computations	93.853	5U19NS107613-03			0	102,777
Understanding V1 circuit dynamics and computations	93.853	5U19NS107613-03			92,280	92,280
Understanding V1 circuit dynamics and computations	93.853	5U19NS107613-03			48,041	48,041
Understanding V1 circuit dynamics and computations	93.853	5U19NS107613-03			19,241	19,241
Understanding V1 circuit dynamics and computations	93.853	5U19NS107613-03			11,530	11,530
Understanding V1 circuit dynamics and computations	93.853	5U19NS107613-03			8,743	8,743
Understanding V1 circuit dynamics and computations	93.853	5U19NS107613-03			5,255	5,255
					\$2,057,514	\$3,303,102
Dendritic patterning by interacting extrinsic cues	93.853	5R01NS061908-13			0	327,969
					\$0	\$327,969
Optimal force production via flexible neural control of motor units	93.853	5F31NS110201-02			0	45,016

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$45,016
Characterizing Direct Cortical Influences on Hippocampal CA1 Population Dynamics in Behaving Mice	93.853	5F31NS110316-03			0	45,016
					\$0	\$45,016
The role of the human-specific gene SRGAP2C in regulating neuronal circuit function and behavior	93.853	5K99NS109323-02			0	80,559
					\$0	\$80,559
Patient-Based Structural Biology of Tauopathies and TDP-43 Proteinopathies using Cryo-ElectronMicroscopy and Mass Spectrometry	93.853	5U01NS110438-03			150,374	734,574
Patient-Based Structural Biology of Tauopathies and TDP-43 Proteinopathies using Cryo-ElectronMicroscopy and Mass Spectrometry	93.853	5U01NS110438-03			580,881	694,995
					\$731,255	\$1,429,569
Transforming Growth Factor Beta Signaling in a mouse model of Amyotrophic Lateral Sclerosis	93.853	5F31NS108632-02			0	45,016
					\$0	\$45,016
Do Unique Homeobox Gene Codes Define all Neuron Classes of the C. Elegans Nervous System	93.853	5F31NS105398-03			0	43,780
Do Unique Homeobox Gene Codes Define all Neuron Classes of the C. Elegans Nervous System	93.853	5F31NS105398-03			0	2,033
					\$0	\$45,813
Mitochondrial complex-I as a target for metab	93.853	5R01NS100850-04			5,144	295,191
					\$5,144	\$295,191
Clinical Research Sites for the Network of Excellence in Neuroscience Clinical Trials (NeuroNEXT sites) (U24)	93.853	5U24NS107168-03			16,398	326,285
Clinical Research Sites for the Network of Excellence in Neuroscience Clinical Trials (NeuroNEXT sites) (U24)	93.853	5U24NS107168-03			28,894	34,515
					\$45,292	\$360,800
Psychosocial Impact of Genetics in Epilepsy	93.853	5R01NS104076-03			21,194	611,142
					\$21,194	\$611,142

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Retromer dysfunction in amyotrophic lateral sclerosis	93.853	5F31NS101966-03			0	20,245
					\$0	\$20,245
Endosomal Platforms for Neuropeptide Receptor Signaling	93.853	5R01NS102722-03			0	125,268
					\$0	\$125,268
Peripheral mechanisms of neurotransmission in mammalian touch receptors	93.853	5F31NS105449-02			0	19,406
					\$0	\$19,406
Structure and Function of AMPA subtype ionotropic glutamate receptors	93.853	5R01NS083660-08			166,262	429,291
					\$166,262	\$429,291
Single-particle cryo-EM characterization of AMPA receptor functional states	93.853	5R01NS107253-03			0	343,708
					\$0	\$343,708
Targeting cortical microglia to treat neuropathic pain	93.853	5R21NS106469-03			0	172,319
					\$0	\$172,319
Deciphering the role of Pumilio1 in two new neurological diseases	93.853	5R01NS109858-02			0	457,435
					\$0	\$457,435
High-throughput disease modeling to uncover shared and unique characteristics among neurodegenerative diseases	93.853	5F31NS111851-02			0	45,016
					\$0	\$45,016
Modeling gene-specific therapy of intractable childhood epileptic encephalopathy	93.853	5F31NS111808-02			0	45,016
					\$0	\$45,016
A nervous system-wide analysis of C. elegans homeobox gene function	93.853	5R21NS106843-02			0	148,569
					\$0	\$148,569
CRCNS: Modeling the Nanophysiology of Dendritic Spines	93.853	5R01NS110422-03			0	266,327

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$266,327
The Neuropeptidergic Connectome of Caenorhabditis Elegans	93.853	5R01NS110391-03			115,189	272,575
					\$115,189	\$272,575
Development of ferroptosis inhibitors for Huntington Disease	93.853	1R61NS109407-01A1			0	197,732
					\$0	\$197,732
Sexually dimorphic regulation of neuronal identity in C.elegans	93.853	5R37NS039996-20			0	359,342
					\$0	\$359,342
Transcriptional Control of Neuronal Plasticity by daf-16/FoxO	93.853	1R21NS115442-01			0	20,249
					\$0	\$20,249
A molecular map of the electrical connectome of C. elegans	93.853	5R21NS106909-02			0	171,729
					\$0	\$171,729
SCAPE microscopy for high-speed 3D imaging of cellular function in behaving animals: Continued innovation, optimization, and dissemination	93.853	1UF1NS108213-01			152,110	816,120
					\$152,110	\$816,120
Targeting Mutant IDH1 for a Novel Synthetic Lethal Interaction in Malignant Gliomas	93.853	5R01NS102366-02			0	505,737
					\$0	\$505,737
Genetic Determinants of Epilepsy in Murine Systems	93.853	5R37NS031348-28			0	752,979
Genetic Determinants of Epilepsy in Murine Systems	93.853	5R37NS031348-28			0	10,854
					\$0	\$763,833
Mechanisms of Axon Pathology in ALS	93.853	5R01NS107442-03			191,527	631,179
Mechanisms of Axon Pathology in ALS	93.853	5R01NS107442-03			0	162,819
					\$191,527	\$793,998

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Chemical Biology of Tau Missorting in Alzheimers Disease	93.853	5R21NS109887-02			0	19,957
					\$0	\$19,957
Distal enhancers controlling motor neuron gene expression program	93.853	5R01NS109217-02			125,162	540,595
					\$125,162	\$540,595
Spinal muscular atrophy: Mechanisms & treatment strategies.	93.853	5R01NS104218-02			0	430,736
					\$0	\$430,736
: Focused ultrasound and synucleinopathy	93.853	1R21NS111176-01			0	222,050
					\$0	\$222,050
Motor cortex electrical stimulation to augment spontaneous recovery after chronicsubcortical stroke	93.853	7R01NS092875-05			0	325,225
					\$0	\$325,225
Application of single cell sequencing to study astrocyte-mediated neuronal degeneration in a stem cell model of frontotemporal dementia	93.853	5R03NS112785-02			0	62,635
					\$0	\$62,635
Uncovering the roles of ubiquitination and the ESCRT pathway in degradative sorting of SV proteins.	93.853	5R01NS080967-07			0	346,022
					\$0	\$346,022
Multiplex modeling of ALS with barcoded human pluripotent stem cell lines	93.853	1R21NS109661-01A1			0	148,802
					\$0	\$148,802
Development of a GBA p.E326K associated Parkinsons disease and Dementia with Lewy body mouse model	93.853	5R03NS113038-02			0	26,529
					\$0	\$26,529
Essential role of Stasimon in motor circuit development and disease	93.853	1R01NS114218-01			0	318,057
					\$0	\$318,057
Mechanisms and therapeutic targeting of motor neuron death in SMA	93.853	1R01NS116400-01			0	103,538

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$103,538
Role of the Kinesin KIF1A in Neurological Disease	93.853	1R01NS114636-01			0	66,481
Role of the Kinesin KIF1A in Neurological Disease	93.853	1R01NS114636-01			0	42,150
					\$0	\$108,631
Transcriptional control of motor neuron maturation	93.853	1R01NS116141-01			0	3,438
Defining immune cell heterogeneity in human ALS and mouse model of the	93.853	1R01NS117583-01			0	44,182
					\$0	\$44,182
Stroke Trials Network of Columbia and Cornell	93.853	5U24NS107237-03			0	210,027
Stroke Trials Network of Columbia and Cornell	93.853	5U24NS107237-03			84,975	121,507
					\$84,975	\$331,534
Cerebellar Circuitry in the Pathophysiology of Tremor	93.853	5R01NS104423-03			0	478,359
					\$0	\$478,359
Autoimmune features of neurodegenerative disorders	93.853	5R01NS095435-03			455,021	772,872
Autoimmune features of neurodegenerative disorders	93.853	5R01NS095435-03			0	50,849
Autoimmune features of neurodegenerative disorders	93.853	5R01NS095435-03			461	747
					\$455,482	\$824,468
Cellular and Molecular basis for cognitive impairment associated with Glucocerebrosidase (GBA1) mutation	93.853	5R01NS104390-03			0	162,649
Cellular and Molecular basis for cognitive impairment associated with Glucocerebrosidase (GBA1) mutation	93.853	5R01NS104390-03			0	39,462
					\$0	\$202,111

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Cortical localization in epilepsy	93.853	5R01NS035140-18			25,876	430,939
					\$25,876	\$430,939
Dynamics of long range network interactions in focal epilepsy	93.853	5R01NS084142-08			427,212	1,010,668
					\$427,212	\$1,010,668
Molecular correlates of proprioceptor subtype identity	93.853	5R01NS106715-02			0	343,691
					\$0	\$343,691
Modality specific naming assessment across the age spa	93.853	5R03NS111180-02			0	68,232
					\$0	\$68,232
Modulating selective autophagy to modify Huntington s disease	93.853	5R01NS077111-06			0	345,435
					\$0	\$345,435
Promoting Research in PLS: Current Knowledge and Future Challenges	93.853	1R13NS111790-01			0	1,701
					\$0	\$1,701
Neurovascular Unit Dysfunction in Women with Severe Preeclampsia	93.853	5K23NS107645-02			0	188,616
					\$0	\$188,616
BAsIC - Brain-computer-interface practical Application in the Intensive Care unit: a pilot study	93.853	5R03NS112760-02			0	68,394
					\$0	\$68,394
RECONFIG - REcovery of CONsciousness Following Intracerebral hemorrhaGe	93.853	5R01NS106014-02			0	313,817
					\$0	\$313,817
Dietary Contribution in Cerebellar Ataxia	93.853	5R03NS114871-02			0	58,170
					\$0	\$58,170
The North American Mitochondrial Disease Consortium (NAMDC)	93.853	2U54NS078059-09			0	249,272

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<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	R&D Cluster	
					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
The North American Mitochondrial Disease Consortium (NAMDC)	93.853	2U54NS078059-09			11,300	236,936
The North American Mitochondrial Disease Consortium (NAMDC)	93.853	2U54NS078059-09			34,928	50,428
The North American Mitochondrial Disease Consortium (NAMDC)	93.853	2U54NS078059-09			0	2,301
					\$46,228	\$538,937
A transcription factor complex specifically induced in neurodegeneration	93.853	5R01NS109607-03			0	536,980
					\$0	\$536,980
The role of SUMOylation in Tau-mediated pathology	93.853	5R01NS110024-02			158,253	485,326
					\$158,253	\$485,326
Exploring the contribution of viral PP2A inhibition to tau pathology in Alzheimer s disease.	93.853	1R21NS113063-01			50,795	176,671
					\$50,795	\$176,671
Mechanisms of FUS Toxicity in Animal and Cellular Models of ALS/FTD	93.853	5R01NS106236-02			0	621,859
					\$0	\$621,859
Neuroepidemiology Training Program	93.853	5T32NS007153-37			0	217,610
					\$0	\$217,610
Advanced Graduate Training Program in Theoretical Neuroscience	93.853	5T32NS064929-12			0	185,333
					\$0	\$185,333
n-3 Diglyceride Emulsions: Characterization of a Novel Neuroprotectant	93.853	1R21NS109717-01A1			0	145,813
					\$0	\$145,813
Tuning of CaV channel dynamics by stac proteins	93.853	1R01NS110672-01A1			0	162,318
					\$0	\$162,318

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Understanding how activity drives diverse spine structural interactions	93.853	1R01NS112485-01A1			0	61,537
					\$0	\$61,537
The role of FMN loss by mitochondrial Complex I in neonatal hypoxic-ischemic brain injury	93.853	1R01NS112381-01A1			0	23,577
					\$0	\$23,577
SCH: INT: An Adaptive Robotic Hand Orthosis with Multimodal Sensing and Continuous Learning	93.853	5R01NS115652-02			0	133,614
SCH: INT: An Adaptive Robotic Hand Orthosis with Multimodal Sensing and Continuous Learning	93.853	5R01NS115652-02			0	125,616
					\$0	\$259,230
Slit-Robo signaling links synapse specificity with functional circuit wiring	93.853	1R21NS109753-01A1			0	216,415
					\$0	\$216,415
Structural studies of HCN channels in health and disease	93.853	5R01NS109366-02			0	197,843
Structural studies of HCN channels in health and disease	93.853	5R01NS109366-02			0	93,478
Structural studies of HCN channels in health and disease	93.853	5R01NS109366-02			0	83,808
Structural studies of HCN channels in health and disease	93.853	5R01NS109366-02			0	29,266
					\$0	\$404,395
The cerebro-cerebellar-basal-gangliar network for visuomotor learning	93.853	5R01NS113078-02			138,250	921,182
					\$138,250	\$921,182
Reinforcement learning and action sequencing in subcortical and cortical circuits	93.853	1K99NS114194-01			0	65,199
					\$0	\$65,199
Characterizing the structure of motor cortex activity across multiple behaviors for improved brainmachine interfaces	93.853	1K99NS115919-01			0	30,287
					\$0	\$30,287

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Exploring new roles of Robo2 in synaptic development, plasticity and hippocampal circuit function	93.853	1K99NS115984-01			0	26,523
					\$0	\$26,523
Multiscale imaging of marmoset cortex during visual object recognition and learning	93.853	1R34NS116739-01			0	86,225
					\$0	\$86,225
Development and function of an adult locomotion circuit in Drosophila	93.853	2R01NS070644-11			0	21,184
					\$0	\$21,184
Brain Research Apprenticeships in New York at Columbia (BRAINYAC)	93.853	1R25NS115551-01			0	17,884
					\$0	\$17,884
Neural Mechanisms for memory-guided visual behavior in humans	93.853	8K00EY031607-03			0	33,460
					\$0	\$33,460
Optical Methods for Imaging and Manipulating Dendritic Spines in Vivo	93.853	1R34NS116740-01			0	13,165
					\$0	\$13,165
					\$10,063,145	\$47,997,735

Allergy and Infectious Diseases Research

Columbia Partnership for Prevention and Control of HIV/AIDS Clinical Trials Unit (Columbia Partnership CTU)	93.855	5UM1AI069470-14			327,296	748,763
Columbia Partnership for Prevention and Control of HIV/AIDS Clinical Trials Unit (Columbia Partnership CTU)	93.855	5UM1AI069470-14			89,547	551,821
Columbia Partnership for Prevention and Control of HIV/AIDS Clinical Trials Unit (Columbia Partnership CTU)	93.855	5UM1AI069470-14			0	520,227
Columbia Partnership for Prevention and Control of HIV/AIDS Clinical Trials Unit (Columbia Partnership CTU)	93.855	5UM1AI069470-14			0	501,829
Columbia Partnership for Prevention and Control of HIV/AIDS Clinical Trials Unit (Columbia Partnership CTU)	93.855	5UM1AI069470-14			58,163	483,834

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Columbia Partnership for Prevention and Control of HIV/AIDS Clinical Trials Unit (Columbia Partnership CTU)	93.855	5UM1AI069470-14			96,054	414,543
Columbia Partnership for Prevention and Control of HIV/AIDS Clinical Trials Unit (Columbia Partnership CTU)	93.855	5UM1AI069470-14			0	404,469
Columbia Partnership for Prevention and Control of HIV/AIDS Clinical Trials Unit (Columbia Partnership CTU)	93.855	5UM1AI069470-14			0	381,256
Columbia Partnership for Prevention and Control of HIV/AIDS Clinical Trials Unit (Columbia Partnership CTU)	93.855	5UM1AI069470-14			297,503	322,919
Columbia Partnership for Prevention and Control of HIV/AIDS Clinical Trials Unit (Columbia Partnership CTU)	93.855	5UM1AI069470-14			190,880	304,332
Columbia Partnership for Prevention and Control of HIV/AIDS Clinical Trials Unit (Columbia Partnership CTU)	93.855	5UM1AI069470-14			0	277,412
Columbia Partnership for Prevention and Control of HIV/AIDS Clinical Trials Unit (Columbia Partnership CTU)	93.855	5UM1AI069470-14			33,588	229,750
Columbia Partnership for Prevention and Control of HIV/AIDS Clinical Trials Unit (Columbia Partnership CTU)	93.855	5UM1AI069470-14			128,548	226,062
Columbia Partnership for Prevention and Control of HIV/AIDS Clinical Trials Unit (Columbia Partnership CTU)	93.855	5UM1AI069470-14			95,552	220,304
Columbia Partnership for Prevention and Control of HIV/AIDS Clinical Trials Unit (Columbia Partnership CTU)	93.855	5UM1AI069470-14			0	159,805
Columbia Partnership for Prevention and Control of HIV/AIDS Clinical Trials Unit (Columbia Partnership CTU)	93.855	5UM1AI069470-14			43,623	157,897
Columbia Partnership for Prevention and Control of HIV/AIDS Clinical Trials Unit (Columbia Partnership CTU)	93.855	5UM1AI069470-14			0	140,800
Columbia Partnership for Prevention and Control of HIV/AIDS Clinical Trials Unit (Columbia Partnership CTU)	93.855	5UM1AI069470-14			0	137,070
Columbia Partnership for Prevention and Control of HIV/AIDS Clinical Trials Unit (Columbia Partnership CTU)	93.855	5UM1AI069470-14			0	131,395
Columbia Partnership for Prevention and Control of HIV/AIDS Clinical Trials Unit (Columbia Partnership CTU)	93.855	5UM1AI069470-14			0	123,163
					\$1,360,754	\$6,437,651

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Columbia University Graduate Training Program in Microbiology and Immunology	93.855	5T32AI106711-05			0	29,414
					\$0	\$29,414
Carbapenem-resistant bacterial colonization and infection in liver transplant	93.855	5R01AI116939-05			24,217	167,901
					\$24,217	\$167,901
Defining P. Falciparum resistance to artemisinin-based combination therapies	93.855	5R01AI109023-05			0	161,549
					\$0	\$161,549
Asymmetric Lymphocyte Division in the Immune Response	93.855	5R01AI076458-10			0	285,418
					\$0	\$285,418
Center for Research in Diagnostics and Discovery - Administrative Core	93.855	5U19AI109761-05			0	441,544
Center for Research in Diagnostics and Discovery - Administrative Core	93.855	5U19AI109761-05			0	344,615
Center for Research in Diagnostics and Discovery - Administrative Core	93.855	5U19AI109761-05			278,812	278,812
Center for Research in Diagnostics and Discovery - Administrative Core	93.855	5U19AI109761-05			0	164,264
Center for Research in Diagnostics and Discovery - Administrative Core	93.855	5U19AI109761-05			0	83,732
Center for Research in Diagnostics and Discovery - Administrative Core	93.855	5U19AI109761-05			0	75,327
Center for Research in Diagnostics and Discovery - Administrative Core	93.855	5U19AI109761-05			0	20,462
					\$278,812	\$1,408,756
Preventing Childhood Tuberculosis in Lesotho (PREVENT Study)	93.855	5K01AI104351-05			0	23,941
					\$0	\$23,941
Global HIV Implementation Science Research Training Grant	93.855	5T32AI114398-05			0	29,813

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$29,813
Advanced Rigidity-based Material for Enhanced Immunotherapy	93.855	5R01AI110593-04			0	137,295
					\$0	\$137,295
Diversifying and Regenerating T Cell Function	93.855	5R01AI113365-05			0	150,379
					\$0	\$150,379
A Household Yeast Biosensor for cholera	93.855	5R01AI110794-05			82,297	478,305
					\$82,297	\$478,305
Comprehensive genetic analysis of antibiotic persistence	93.855	5R01AI077562-10			0	288,416
					\$0	\$288,416
Training in Pediatric Infectious Diseases	93.855	5T32AI007531-20			0	31,608
Training in Pediatric Infectious Diseases	93.855	5T32AI007531-20			0	7
					\$0	\$31,615
Self-assembling nanoparticles for intranasal delivery of influenza fusion inhibitors	93.855	5R01AI119762-04			311,784	514,944
					\$311,784	\$514,944
Engineering protease-resistant alpha-beta peptides	93.855	5R01AI114736-05			311,462	464,461
					\$311,462	\$464,461
Development of novel endosome-targeted Ebola virus entry inhibitors as antiviral agents	93.855	5R01AI121349-05			151,242	372,817
					\$151,242	\$372,817
Contribution of B cells to human cardiac allograft vasculopathy	93.855	5R01AI116814-05			0	367,140
					\$0	\$367,140
Promoting Engagement in the Drug Resistant TB/HIV Care Continuation in South Africa	93.855	5R01AI124413-05			375,327	542,760

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$375,327	\$542,760
Sample Sparring Chambers for Imaging of T cell Response and Function	93.855	5U24AI118669-04			0	164,813
Sample Sparring Chambers for Imaging of T cell Response and Function	93.855	5U24AI118669-04			0	72
					\$0	\$164,885
Flu SAFE: Flu SMS Alerts to Freeze Exposure	93.855	5R01AI127812-04			0	766,361
					\$0	\$766,361
Regulatory T cells to promote mixed chimerism for tolerance to islets and kidneys from deceased and living donors	93.855	5U19AI131474-04			0	699,538
Regulatory T cells to promote mixed chimerism for tolerance to islets and kidneys from deceased and living donors	93.855	5U19AI131474-04			24,766	589,212
Regulatory T cells to promote mixed chimerism for tolerance to islets and kidneys from deceased and living donors	93.855	5U19AI131474-04			221,644	272,147
Regulatory T cells to promote mixed chimerism for tolerance to islets and kidneys from deceased and living donors	93.855	5U19AI131474-04			0	169,723
Regulatory T cells to promote mixed chimerism for tolerance to islets and kidneys from deceased and living donors	93.855	5U19AI131474-04			0	71,885
Regulatory T cells to promote mixed chimerism for tolerance to islets and kidneys from deceased and living donors	93.855	5U19AI131474-04			64,903	68,135
Regulatory T cells to promote mixed chimerism for tolerance to islets and kidneys from deceased and living donors	93.855	5U19AI131474-04			6,156	66,791
Regulatory T cells to promote mixed chimerism for tolerance to islets and kidneys from deceased and living donors	93.855	5U19AI131474-04			0	65,806
Regulatory T cells to promote mixed chimerism for tolerance to islets and kidneys from deceased and living donors	93.855	5U19AI131474-04			0	44,867
Regulatory T cells to promote mixed chimerism for tolerance to islets and kidneys from deceased and living donors	93.855	5U19AI131474-04			0	43,537
Regulatory T cells to promote mixed chimerism for tolerance to islets and kidneys from deceased and living donors	93.855	5U19AI131474-04			0	7,803

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Regulatory T cells to promote mixed chimerism for tolerance to islets and kidneys from deceased and living donors	93.855	5U19AI131474-04			0	5,120
					\$317,469	\$2,104,564
Development and significance of the plasma cell niche in the human infant thymus	93.855	5U01AI131339-04			23,321	438,229
Development and significance of the plasma cell niche in the human infant thymus	93.855	5U01AI131339-04			11,930	72,919
Development and significance of the plasma cell niche in the human infant thymus	93.855	5U01AI131339-04			0	1,943
					\$35,251	\$513,091
Center for High-Throughput Minimally-Invasive Radiation Biodosimetry	93.855	5U19AI067773-15			1,330,205	1,661,737
Center for High-Throughput Minimally-Invasive Radiation Biodosimetry	93.855	5U19AI067773-15			1,005,000	1,038,890
Center for High-Throughput Minimally-Invasive Radiation Biodosimetry	93.855	5U19AI067773-15			0	550,723
Center for High-Throughput Minimally-Invasive Radiation Biodosimetry	93.855	5U19AI067773-15			0	510,228
Center for High-Throughput Minimally-Invasive Radiation Biodosimetry	93.855	5U19AI067773-15			466,192	466,192
Center for High-Throughput Minimally-Invasive Radiation Biodosimetry	93.855	5U19AI067773-15			0	246,975
Center for High-Throughput Minimally-Invasive Radiation Biodosimetry	93.855	5U19AI067773-15			0	213,869
Center for High-Throughput Minimally-Invasive Radiation Biodosimetry	93.855	5U19AI067773-15			206,441	206,441
Center for High-Throughput Minimally-Invasive Radiation Biodosimetry	93.855	5U19AI067773-15			0	170,015
Center for High-Throughput Minimally-Invasive Radiation Biodosimetry	93.855	5U19AI067773-15			0	159,922
Center for High-Throughput Minimally-Invasive Radiation Biodosimetry	93.855	5U19AI067773-15			150,776	150,776

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						<u>Total Expenditures (Includes Subrecipients)</u>
Center for High-Throughput Minimally-Invasive Radiation Biodosimetry	93.855	5U19AI067773-15			0	112,333
Center for High-Throughput Minimally-Invasive Radiation Biodosimetry	93.855	5U19AI067773-15			0	91,519
Center for High-Throughput Minimally-Invasive Radiation Biodosimetry	93.855	5U19AI067773-15			0	88,093
Center for High-Throughput Minimally-Invasive Radiation Biodosimetry	93.855	5U19AI067773-15			0	80,888
Center for High-Throughput Minimally-Invasive Radiation Biodosimetry	93.855	5U19AI067773-15			0	77,171
Center for High-Throughput Minimally-Invasive Radiation Biodosimetry	93.855	5U19AI067773-15			0	60,964
Center for High-Throughput Minimally-Invasive Radiation Biodosimetry	93.855	5U19AI067773-15			0	43,465
Center for High-Throughput Minimally-Invasive Radiation Biodosimetry	93.855	5U19AI067773-15			34,417	34,417
Center for High-Throughput Minimally-Invasive Radiation Biodosimetry	93.855	5U19AI067773-15			0	31,948
Center for High-Throughput Minimally-Invasive Radiation Biodosimetry	93.855	5U19AI067773-15			0	25,965
Center for High-Throughput Minimally-Invasive Radiation Biodosimetry	93.855	5U19AI067773-15			0	24,932
Center for High-Throughput Minimally-Invasive Radiation Biodosimetry	93.855	5U19AI067773-15			0	23,475
Center for High-Throughput Minimally-Invasive Radiation Biodosimetry	93.855	5U19AI067773-15			0	22,711
Center for High-Throughput Minimally-Invasive Radiation Biodosimetry	93.855	5U19AI067773-15			0	19,506
Center for High-Throughput Minimally-Invasive Radiation Biodosimetry	93.855	5U19AI067773-15			0	14,691
Center for High-Throughput Minimally-Invasive Radiation Biodosimetry	93.855	5U19AI067773-15			0	13,477

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Center for High-Throughput Minimally-Invasive Radiation Biodosimetry	93.855	5U19AI067773-15			0	9,956
Center for High-Throughput Minimally-Invasive Radiation Biodosimetry	93.855	5U19AI067773-15			4,761	4,761
Center for High-Throughput Minimally-Invasive Radiation Biodosimetry	93.855	5U19AI067773-15			0	3,961
					\$3,197,792	\$6,160,001
A Tolerance Approach to Xenotransplantation	93.855	5P01AI045897-20			17,174	1,291,412
A Tolerance Approach to Xenotransplantation	93.855	5P01AI045897-20			0	378,585
A Tolerance Approach to Xenotransplantation	93.855	5P01AI045897-20			25,623	337,771
A Tolerance Approach to Xenotransplantation	93.855	5P01AI045897-20			0	312,171
A Tolerance Approach to Xenotransplantation	93.855	5P01AI045897-20			0	263,362
A Tolerance Approach to Xenotransplantation	93.855	5P01AI045897-20			0	86,343
A Tolerance Approach to Xenotransplantation	93.855	5P01AI045897-20			0	72,180
A Tolerance Approach to Xenotransplantation	93.855	5P01AI045897-20			0	49,380
A Tolerance Approach to Xenotransplantation	93.855	5P01AI045897-20			0	45,396
A Tolerance Approach to Xenotransplantation	93.855	5P01AI045897-20			0	34,187
A Tolerance Approach to Xenotransplantation	93.855	5P01AI045897-20			4,939	32,787
A Tolerance Approach to Xenotransplantation	93.855	5P01AI045897-20			3,738	23,210

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
A Tolerance Approach to Xenotransplantation	93.855	5P01AI045897-20			0	11,191
A Tolerance Approach to Xenotransplantation	93.855	5P01AI045897-20			0	8,537
A Tolerance Approach to Xenotransplantation	93.855	5P01AI045897-20			0	41
					\$51,474	\$2,946,553
Altered CD4+ T cell function in relation to the AHI1 MS locus	93.855	5R01AI130547-05			0	487,567
					\$0	\$487,567
Elucidating the molecular basis of piperazine resistance and the role of altered hemoglobin metabolism in Plasmodium falciparum	93.855	5R01AI124678-04			121,488	294,592
					\$121,488	\$294,592
New mechanism of commensal bacteria interaction with host immunity	93.855	5R21AI126305-02			0	61,605
					\$0	\$61,605
Role of ncRNA Surveillance Complex	93.855	5R01AI099195-09			0	567,517
Role of ncRNA Surveillance Complex	93.855	5R01AI099195-09			0	402,195
Role of ncRNA Surveillance Complex	93.855	5R01AI099195-09			0	8,992
					\$0	\$978,704
Micron-scale Spatial Metagenomic Mapping of Microbial Biogeography in the Gastrointestinal Tract	93.855	5R01AI132403-04			0	606,266
					\$0	\$606,266
Modeling the development, age structure and maintenance of T cell populations	93.855	5R01AI093870-11			179,017	435,293
					\$179,017	\$435,293
Long noncoding RNA expressing genomic element that control antibody diversification and chromosomal integrity in B cells	93.855	5R01AI134988-03			0	328,557
					\$0	\$328,557

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Defining the Role of PfCRT and PfMDR1 as Pleiotropic Mediators of Plasmodium falciparum Multidrug Resistance	93.855	5R37AI050234-18			0	491,306
					\$0	\$491,306
Controllable Rigidity Surface for T Cell Mechanobiology	93.855	5R21AI119953-02			0	137,657
					\$0	\$137,657
Innate B cell immunity and antibody-mediated rejection of human kidney allografts	93.855	5R01AI123342-05			20,405	484,397
					\$20,405	\$484,397
Human anti-viral immune responses in tissues and circulation	93.855	5U19AI128949-03			588,539	629,753
Human anti-viral immune responses in tissues and circulation	93.855	5U19AI128949-03			354,493	404,851
Human anti-viral immune responses in tissues and circulation	93.855	5U19AI128949-03			0	306,103
Human anti-viral immune responses in tissues and circulation	93.855	5U19AI128949-03			0	212,883
Human anti-viral immune responses in tissues and circulation	93.855	5U19AI128949-03			0	165,347
COVID-19 - Human anti-viral immune responses in tissues and circulation	93.855	COVID-19			0	154,162
Human anti-viral immune responses in tissues and circulation	93.855	5U19AI128949-03			0	152,401
Human anti-viral immune responses in tissues and circulation	93.855	5U19AI128949-03			0	122,149
Human anti-viral immune responses in tissues and circulation	93.855	5U19AI128949-03			0	114,145
Human anti-viral immune responses in tissues and circulation	93.855	5U19AI128949-03			0	95,614
Human anti-viral immune responses in tissues and circulation	93.855	5U19AI128949-03			0	47,222

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Human anti-viral immune responses in tissues and circulation	93.855	5U19AI128949-03			0	44,430
					\$943,032	\$2,449,060
Development of lung T cell responses in infant respiratory immunity	93.855	5U01AI100119-09			0	350,908
Development of lung T cell responses in infant respiratory immunity	93.855	5U01AI100119-09			0	19,519
					\$0	\$370,427
Columbia Integrated Training Program in Infectious Diseases Research	93.855	5T32AI100852-08			0	155,905
					\$0	\$155,905
In vivo development and reactivity of human autoreactive T cells	93.855	5R01AI142428-02			0	415,492
					\$0	\$415,492
Elucidating transmission of plasmids harboring blaKPC among carbapenemresistant Enterobacteriaceae using long-range sequencing	93.855	5K23AI137316-02			0	158,358
					\$0	\$158,358
Novel mechanisms regulating PD-1 signaling and function	93.855	5R01AI125640-06			0	436,309
					\$0	\$436,309
Thymic negative selection in human T1D immune systems	93.855	5R21AI146828-02			0	200,393
					\$0	\$200,393
A Rationally Targeted Approach to Preventing GBS Infection	93.855	5K08AI132555-02			19,408	60,894
					\$19,408	\$60,894
DEFINING THE ROLE OF CELL MIGRATION IN HUMAN NK CELL DIFFERENTIATION	93.855	5R01AI137073-03			0	489,067
DEFINING THE ROLE OF CELL MIGRATION IN HUMAN NK CELL DIFFERENTIATION	93.855	5R01AI137073-03			0	29,101
					\$0	\$518,168

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Structural basis of antibody affinity maturation by somatic hypermutation	93.855	5R21AI138024-02			0	243,683
					\$0	\$243,683
DETERMINING THE ROLE OF THE REPLICATIVE HELICASE IN HUMAN NK CELL DEVELOPMENT	93.855	5R01AI137275-03			11,316	476,701
					\$11,316	\$476,701
Development of Localized T Cell Immunity in Pediatric Respiratory Tract Infection	93.855	5K23AI141686-02			0	185,803
					\$0	\$185,803
Intestinal allograft tolerance in large animals	93.855	5R01AI138547-02			0	749,650
Intestinal allograft tolerance in large animals	93.855	5R01AI138547-02			0	778
					\$0	\$750,428
Understanding the importance of IκB-b as a selective co-activator of NF-κB signaling	93.855	5R01AI139217-02			0	424,729
					\$0	\$424,729
Tissue compartmentalization of human lymphocytes	93.855	5P01AI106697-08			854,181	972,470
Tissue compartmentalization of human lymphocytes	93.855	5P01AI106697-08			0	344,755
Tissue compartmentalization of human lymphocytes	93.855	5P01AI106697-08			0	280,535
Tissue compartmentalization of human lymphocytes	93.855	5P01AI106697-08			0	208,135
Tissue compartmentalization of human lymphocytes	93.855	5P01AI106697-08			0	202,783
Tissue compartmentalization of human lymphocytes	93.855	5P01AI106697-08			174,729	177,779
Tissue compartmentalization of human lymphocytes	93.855	5P01AI106697-08			0	158,254

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						<u>Total Expenditures (Includes Subrecipients)</u>
Tissue compartmentalization of human lymphocytes	93.855	5P01AI106697-08			0	137,048
Tissue compartmentalization of human lymphocytes	93.855	5P01AI106697-08			0	79,831
Tissue compartmentalization of human lymphocytes	93.855	5P01AI106697-08			0	13,911
Tissue compartmentalization of human lymphocytes	93.855	5P01AI106697-08			0	8,566
Tissue compartmentalization of human lymphocytes	93.855	5P01AI106697-08			0	7,597
Tissue compartmentalization of human lymphocytes	93.855	5P01AI106697-08			0	7,052
Tissue compartmentalization of human lymphocytes	93.855	5P01AI106697-08			0	6,955
Tissue compartmentalization of human lymphocytes	93.855	5P01AI106697-08			0	6,423
Tissue compartmentalization of human lymphocytes	93.855	5P01AI106697-08			0	5,446
Tissue compartmentalization of human lymphocytes	93.855	5P01AI106697-08			0	440
Tissue compartmentalization of human lymphocytes	93.855	5P01AI106697-08			0	-1,258
					\$1,028,910	\$2,616,722
Leveraging experimental and computational tools to define molecular functions of non-coding RNAs in innate immune responses to viral infection	93.855	5R21AI147201-02			0	162,154
					\$0	\$162,154
Novel analysis of association between microbiome and treatment infection in AML	93.855	5R01AI143886-02			30,481	246,063
					\$30,481	\$246,063
Role of Chromatin Associated Host Factors in Regulation of Retroviral Replication	93.855	1F32AI149989-01			0	25,057
					\$0	\$25,057

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Role of heme oxygenase 2 in trafficking and regulation of myristoylated proteins	93.855	1R21AI150813-01			0	41,570
					\$0	\$41,570
PRovide Options for Treatment of Exposed Children against Tuberculosis (PROTECT) Study	93.855	5R21AI138807-02			26,265	94,447
PRovide Options for Treatment of Exposed Children against Tuberculosis (PROTECT) Study	93.855	5R21AI138807-02			0	44,117
					\$26,265	\$138,564
Global HIV Implementation Science Research Training Grant Renewal	93.855	2T32AI114398-06			0	334,796
					\$0	\$334,796
Integration of Redox-Balancing Mechanisms in Pseudomonas Aeruginosa Biofilms	93.855	5R01AI103369-08			0	565,669
Integration of Redox-Balancing Mechanisms in Pseudomonas Aeruginosa Biofilms	93.855	5R01AI103369-08			0	68,591
					\$0	\$634,260
Center for Solutions for ME/CFS	93.855	5U54AI138370-04			402,281	1,782,313
Center for Solutions for ME/CFS	93.855	5U54AI138370-04			361,199	361,199
Center for Solutions for ME/CFS	93.855	5U54AI138370-04			0	246,791
Center for Solutions for ME/CFS	93.855	5U54AI138370-04			0	32,383
Center for Solutions for ME/CFS	93.855	5U54AI138370-04			-31,125	-31,125
Center for Solutions for ME/CFS	93.855	5U54AI138370-04			0	-139,091
Center for Solutions for ME/CFS	93.855	5U54AI138370-04			0	-559,650
					\$732,355	\$1,692,820

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Inferring Shifts in Susceptibility and Cross Protection to Influenza from (Sub)typed Incidence Data	93.855	5R03AI135926-03			0	64,281
					\$0	\$64,281
Disease Persistence and Population Dynamics: Modeling Measles under Mass Vaccination	93.855	5R01AI145883-02			0	213,738
					\$0	\$213,738
COVID-19 - Genetic and ecological determinants of coronavirus recombination	93.855	COVID-19			0	28,015
					\$0	\$28,015
Physiological responses to cell wall-active antibiotics in a Gram-positive bacterium	93.855	5R21AI135427-02			0	181,851
					\$0	\$181,851
Mechanism of Zika virus induced corticogenesis defects	93.855	5R21AI139775-02			0	165,462
					\$0	\$165,462
The generation, migration and function of inflammatory ILC2s	93.855	4R00AI123350-02			0	244,516
					\$0	\$244,516
Title: Recipient Epidemiology and Donor Evaluation Study IV - Pediatric (REDS-IV-P) Domestic Hub	93.855	75N92019D00037			394,851	638,660
					\$394,851	\$638,660
Non-redundant functions of type 3 innate lymphoid cells in mucosal immunity	93.855	1R01AI144808-01			0	363,682
					\$0	\$363,682
Discovery of immunomodulatory gut microbes with MAGIC	93.855	5R21AI146817-02			0	91,576
					\$0	\$91,576
Discovery of immunomodulatory gut microbes with MAGIC	93.855	5R21AI146817-02			0	39,408
					\$0	\$130,984
Role of astrocyte infection in viral neurovirulence	93.855	5R21AI137613-02			0	135,518
					\$0	\$135,518

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						<u>Total Expenditures (Includes Subrecipients)</u>
Development of FAST-DOSE assay system for the rapid assessment of acute radiation exposure, individual radiosensitivity and injury in victims for a large-scale radiological incident	93.855	1U01AI148309-01			0	20,988
					\$0	\$20,988
Role of T cell derived amphiregulin in recovery from influenza virus infection	93.855	1R21AI149657-01			0	61,666
					\$0	\$61,666
Identifying quantitative trait loci that regulate enterovirus D68 pathogenesis using the Collaborative Cross	93.855	1R21AI151996-01			0	44,610
					\$0	\$44,610
Forecasting International Transmission of Influenza: Development and Validation of a Global Model	93.855	1F31AI138410-01A1			0	26,577
					\$0	\$26,577
Phenotyping sepsis in Uganda using molecular pathogen diagnostics and latent class modeling	93.855	5F32AI147528-02			0	85,448
					\$0	\$85,448
Leveraging PfCRT Structure to Discern Function and Predict Emergence of DrugResistant Malaria	93.855	5R01AI147628-02			0	238,106
					\$0	\$238,106
Leveraging PfCRT Structure to Discern Function and Predict Emergence of DrugResistant Malaria	93.855	5R01AI147628-02			0	176,760
					\$0	\$176,760
Leveraging PfCRT Structure to Discern Function and Predict Emergence of DrugResistant Malaria	93.855	5R01AI147628-02			0	132,586
					\$0	\$132,586
Training in Pediatric Infectious Diseases	93.855	5T32AI007531-22			0	8,194
					\$0	\$8,194
Small molecules to block measles spreading in the central nervous system	93.855	1R56AI146980-01			0	74,670
					\$0	\$74,670
Bispecific and Trispecific Anti-Env Antibodies for Eliminating HIV Reservoir Cells	93.855	5R01AI129802-05			0	259,553
					\$0	\$259,553

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Bispecific Antibody Drug Conjugates for Selective Targeting and Activation of the HIV Latent Reservoir	93.855	5R01AI134328-05			0	149,524
					\$0	\$149,524
Diverse Functions of HIV-1 Capsid During Postentry Events	93.855	5R01AI100720-10			0	183,840
					\$0	\$183,840
Single-Cell analysis of HIV-1 Production and transmission	93.855	5R01AI145570-03			0	184,061
					\$0	\$184,061
Quantifying Effector Functions of Anti-HIV 1gG1 Antibodies in Vivo	93.855	5R01AI145645-03			36,969	220,268
					\$36,969	\$220,268
Novel HIV-1 Env trimer probes for efficient isolation of broadly neutralizing antibodies	93.855	6R01AI122953-05			0	134,486
					\$0	\$134,486
The Molecular Epidemiology of Staphylococcus aureus Bacteremias During the Opioid Epidemic: A New York Region Perspective	93.855	1R21AI152046-01			0	287
					\$0	\$287
Group 1 CD1-restricted human T cells induced by a whole sporozoite-based malaria vaccine	93.855	1R21AI151469-01			0	11,367
					\$0	\$11,367
Composite porcine islet-kidney xenotransplants to cure diabetes and renal failure	93.855	1U01AI152881-01			0	38,542
					\$0	\$38,542
Targeted next-generation sequencing to enhance detection and genomic characterization of Mycobacterium tuberculosis and high-impact bacterial pathogens among HIV-infected adults with sepsis in Uganda	93.855	1R21AI143417-01A1			0	17,114
					\$0	\$17,114
					\$10,042,378	\$45,827,684
Biomedical Research and Research Training						
Drug Effect Discovery Through Data Mining and Integrative Chemical Biology	93.859	5R01GM107145-05			0	8,111
					\$0	\$8,111

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						<u>Total Expenditures (Includes Subrecipients)</u>
Quantitative studies of influenza evolution	93.859	5R01GM109018-05			0	121,344
Quantitative studies of influenza evolution	93.859	5R01GM109018-05			0	1,714
					\$0	\$123,058
Regulation of Protein Synthesis in Bacteria by Ser/Thr Phosphorylation	93.859	5R01GM114213-04			0	221,851
Regulation of Protein Synthesis in Bacteria by Ser/Thr Phosphorylation	93.859	5R01GM114213-04			0	-7,720
					\$0	\$214,131
Post-selection inference and trajectory analysis	93.859	5R01GM095722-08			0	64,414
					\$0	\$64,414
Modeling SNARE-Mediated Membrane Fusion	93.859	5R01GM117046-04			0	298,112
					\$0	\$298,112
Structural and Functional Studies of Potassium Channels by Solid State NMR	93.859	5R01GM088724-08			0	124,391
Structural and Functional Studies of Potassium Channels by Solid State NMR	93.859	5R01GM088724-08			0	10,436
					\$0	\$134,827
The structural dynamics of translation initiation	93.859	5R01GM084288-09			0	16,368
					\$0	\$16,368
The structural dynamics of translation elongation and its regulation	93.859	5R01GM119386-04			57,895	125,243
					\$57,895	\$125,243
Asymmetric Synthesis of Nitrogen Heterocycles	93.859	5R01GM080442-12			0	51,733
					\$0	\$51,733
Selective Functionalization of Aliphatic Amines and Derivatives	93.859	5R01GM125206-04			0	221,454

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					<u>\$0</u>	<u>\$221,454</u>
Catalysis of Tin-Free Radical Reactions Under H2	93.859	5R01GM124295-04			111,488	557,583
Catalysis of Tin-Free Radical Reactions Under H2	93.859	5R01GM124295-04			0	63,828
					<u>\$111,488</u>	<u>\$621,411</u>
Cellular and molecular foundations of biomedical science	93.859	5T32GM008798-18			0	8,674
					<u>\$0</u>	<u>\$8,674</u>
Modular assembly of cytochrome oxidase	93.859	5R01GM111864-04			0	14,245
					<u>\$0</u>	<u>\$14,245</u>
Tropomyosin and tyrosine kinases in mechanics of cancer	93.859	5R01GM113022-04			0	4,686
					<u>\$0</u>	<u>\$4,686</u>
Microtubule networks and Virus Trafficking	93.859	5P01GM105536-05			49,705	225,063
Microtubule networks and Virus Trafficking	93.859	5P01GM105536-05			0	58,335
Microtubule networks and Virus Trafficking	93.859	5P01GM105536-05			0	28,833
					<u>\$49,705</u>	<u>\$312,231</u>
NMR Studies of Structure and Dynamic of Proteins	93.859	5R01GM050291-23			0	8,640
					<u>\$0</u>	<u>\$8,640</u>
Uncovering the Structure of Evolution using the Topology of Genomic Data with Applications to HIV	93.859	5R01GM117591-04			89,818	173,181
					<u>\$89,818</u>	<u>\$173,181</u>
Spatial, temporal and environmental regulation of early gonadogenesis in C. elegans	93.859	5R01GM115718-04			0	21,000
					<u>\$0</u>	<u>\$21,000</u>

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Mechanisms of Anesthetic Effects on Tachykinin Induced Airway Tone	93.859	5R01GM065281-16			19,335	244,579
					\$19,335	\$244,579
Development and Dissemination of Operational Real-Time Respiratory Virus Forecast	93.859	5U01GM110748-05			0	118,235
					\$0	\$118,235
IMSD at Columbia s Mailman School of Public Health	93.859	5R25GM062454-16			0	506,844
					\$0	\$506,844
Protein Motions in Recognition, Regulation and catalysis	93.859	5R01GM059273-19			0	70,824
					\$0	\$70,824
Morphogen control of organ growth in Drosophila	93.859	5R35GM127141-03			0	441,161
					\$0	\$441,161
The population genetics of disease risk and other quantitative traits	93.859	5R01GM115889-05			0	316,901
					\$0	\$316,901
Nanomechanics of bacterial adhesion	93.859	5R01GM116122-18			0	36,096
					\$0	\$36,096
Structural and functional studies of mRNA processing, stability and quality control	93.859	5R35GM118093-05			111,989	581,599
Structural and functional studies of mRNA processing, stability and quality control	93.859	5R35GM118093-05			0	23,661
Structural and functional studies of mRNA processing, stability and quality control	93.859	5R35GM118093-05			0	17,992
					\$111,989	\$623,252
Regulation of mRNA processing: Mechanisms and Consequences	93.859	5R35GM118136-05			0	438,579
Regulation of mRNA processing: Mechanisms and Consequences	93.859	5R35GM118136-05			0	-5,107

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$433,472
Continued Development and Maintenance of the 3DNA Suite of Programs	93.859	5R01GM096889-09			0	231,602
					\$0	\$231,602
Biophysical mechanisms of ABC-F proteins	93.859	5R01GM120579-04			0	38,305
Biophysical mechanisms of ABC-F proteins	93.859	5R01GM120579-04			0	30,668
Biophysical mechanisms of ABC-F proteins	93.859	5R01GM120579-04			0	22,066
					\$0	\$91,039
Natural Selection in Recent Human Evolution	93.859	5R01GM121372-04			0	132,470
					\$0	\$132,470
Genetic analysis of nematode cell differentiation	93.859	5R35GM122522-04			0	679,841
					\$0	\$679,841
Mutation rate variations in primates	93.859	5R01GM122975-04			0	321,869
					\$0	\$321,869
Structural Studies of Human Extracellular Calcium-Sensing Receptor	93.859	5R01GM112973-04			0	158,988
					\$0	\$158,988
Lipid biosynthesis and modification by integral-membrane enzymes	93.859	5R01GM111980-04			0	199,458
Lipid biosynthesis and modification by integral-membrane enzymes	93.859	5R01GM111980-04			10,011	10,011
Lipid biosynthesis and modification by integral-membrane enzymes	93.859	5R01GM111980-04			0	-7,873
					\$10,011	\$201,596
Mechanisms of Epigenetic inheritance	93.859	5R35GM118015-05			0	773,116

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Mechanisms of Epigenetic inheritance	93.859	5R35GM118015-05			0	84,265
Mechanisms of Epigenetic inheritance	93.859	5R35GM118015-05			0	22,714
					\$0	\$880,095
Mechanisms of Genome Integrity	93.859	5R35GM118026-05			0	356,346
					\$0	\$356,346
Interpreting and Deploying Genomic Information During Animal Development	93.859	5R35GM118336-05			0	408,836
Interpreting and Deploying Genomic Information During Animal Development	93.859	5R35GM118336-05			0	7,604
Interpreting and Deploying Genomic Information During Animal Development	93.859	5R35GM118336-05			0	1,009
					\$0	\$417,449
Structural Analysis of Macromolecular Assemblies	93.859	5R01GM029169-37			0	545,715
					\$0	\$545,715
Predocctoral Training Grant in Genetics and Development	93.859	5T32GM007088-46			0	333,463
					\$0	\$333,463
Molecular Mechanisms Underlying DNA Double-Strand Break and Crosslink Repair	93.859	5R35GM118180-05			0	761,571
					\$0	\$761,571
Transcriptional regulation by the DNA damage response	93.859	5R01GM117064-04			0	342,718
					\$0	\$342,718
Role of Nucleo-cytoskeleton Interactions in Cell Migration	93.859	5R01GM099481-08			0	205,153
					\$0	\$205,153
Cell polarity and cytokinesis	93.859	5R01GM117407-04			0	264,555

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$264,555
The Impact Of Surgery-Induced Neuroinflammation On Tau Pathology And Function	93.859	5R01GM101698-08			24,795	253,271
					\$24,795	\$253,271
New modes and mechanisms of negative regulation of LIN-12/Notch in C. elegans	93.859	5R01GM114140-04			0	170,839
					\$0	\$170,839
Molecular mechanism of nucleobase/vitamin C transporters	93.859	5R01GM119396-05			156,659	310,822
					\$156,659	\$310,822
Mitochondrial stress signal transduction from organelle to organism	93.859	5R35GM119793-05			0	277,660
					\$0	\$277,660
Structure and Function of Desmosomal Cadherins	93.859	5R01GM118584-04			116,627	341,851
					\$116,627	\$341,851
Mechanisms of cell competition that regulate growth during development	93.859	5R01GM078464-12			0	238,285
					\$0	\$238,285
Extended Methods and Software Development for Health NLP	93.859	5R01GM114355-03			333,644	538,508
					\$333,644	\$538,508
Computer Studies of Protein Structure and Function	93.859	5R01GM030518-39			0	285,253
					\$0	\$285,253
Reversible regulation of ribosome recycling by Ser/Thr phosphorylation	93.859	5F32GM122266-02			0	30,769
Reversible regulation of ribosome recycling by Ser/Thr phosphorylation	93.859	5F32GM122266-02			0	960
					\$0	\$31,729
Training in Cellular, Molecular and Biomedical Studies	93.859	5T32GM008224-34			0	476,613

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$476,613
Competition and morphogenesis in tip cell-mediated branching of tubular networks	93.859	7R01GM089782-08			0	24,319
					\$0	\$24,319
Modeling Contractile Ring Constriction in Fission Yeast	93.859	5R01GM086731-09			0	216,128
					\$0	\$216,128
Enhancing Secondary School STEM Education for Students and Teachers through Biomedical Engineering Design	93.859	5R25GM129217-05			0	309,523
					\$0	\$309,523
Hedgehog signaling in Drosophila	93.859	5R01GM041815-29			0	268,834
					\$0	\$268,834
Medical Scientist Training Program	93.859	5T32GM007367-45			0	1,316,195
Medical Scientist Training Program	93.859	5T32GM007367-45			0	-17,113
					\$0	\$1,299,082
The role of protein-protein interaction motifs in coordinating the DNA binding and regulatory specificity of Hox proteins	93.859	5F32GM125329-02			0	52,209
The role of protein-protein interaction motifs in coordinating the DNA binding and regulatory specificity of Hox proteins	93.859	5F32GM125329-02			0	12,058
					\$0	\$64,267
Data-driven drug discovery: investigating the molecular mechanisms of safety and efficacy	93.859	1R35GM131905-01			0	492,219
					\$0	\$492,219
Mitochondrial inheritance and quality control	93.859	5R35GM122589-03			0	443,190
					\$0	\$443,190
Identifying Remote Regulators of Complex I Biogenesis in Drosophila	93.859	5R35GM124717-04			0	366,155

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Identifying Remote Regulators of Complex I Biogenesis in Drosophila	93.859	5R35GM124717-04			0	6,999
					\$0	\$373,154
Identifying Novel Regulators of Mitochondrial Complex I Biogenesis	93.859	5F31GM125363-02			0	14,361
					\$0	\$14,361
Systems Level Characterization of a New Epigenetic Mechanism of Gene Expression and Cellular Adaptation	93.859	5F32GM125170-02			0	64,556
Systems Level Characterization of a New Epigenetic Mechanism of Gene Expression and Cellular Adaptation	93.859	5F32GM125170-02			0	7,389
					\$0	\$71,945
Mechanism of activation and modulation in human GABA(B) receptor	93.859	5R01GM125801-03			15,519	419,502
Mechanism of activation and modulation in human GABA(B) receptor	93.859	5R01GM125801-03			0	108,913
					\$15,519	\$528,415
Understanding Complex Gene Editing Systems and RNA Biology in Oxytricha	93.859	5R35GM122555-04			0	738,585
					\$0	\$738,585
Elucidation of regulation and function of amyloid-like assemblies	93.859	5R35GM124633-04			0	375,470
					\$0	\$375,470
Integrate cancer genomics data in genetic studies and diagnosis of developmental disorders	93.859	5R01GM120609-04			20,859	314,297
					\$20,859	\$314,297
Single-nucleotide resolution mapping of allelic protein-RNA interactions and splicing regulatory variants	93.859	5R01GM124486-03			0	363,681
Single-nucleotide resolution mapping of allelic protein-RNA interactions and splicing regulatory variants	93.859	5R01GM124486-03			95,162	135,197
					\$95,162	\$498,878
Circadian regulation of physiological functions	93.859	5R35GM127049-03			0	405,148

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						<u>Total Expenditures (Includes Subrecipients)</u>
Circadian regulation of physiological functions	93.859	5R35GM127049-03			0	66,520
					\$0	\$471,668
Anesthesiology Research Training	93.859	5T32GM008464-28			0	244,898
Anesthesiology Research Training	93.859	5T32GM008464-28			0	16,648
					\$0	\$261,546
PURINERGIC SIGNALING IN TRAUMA AND SEPSIS	93.859	5R01GM066189-17			0	398,354
					\$0	\$398,354
Atomic Level Analysis of Biomolecular Structure	93.859	5R01GM107462-07			88,735	308,196
Atomic Level Analysis of Biomolecular Structure	93.859	5R01GM107462-07			0	200,000
Atomic Level Analysis of Biomolecular Structure	93.859	5R01GM107462-07			0	156,219
					\$88,735	\$664,415
Long-Lasting Effects of Anesthetics on Synapse Development and Plasticity	93.859	7R01GM107469-06			0	306,150
					\$0	\$306,150
Macromolecular dynamics and conformational changes in biological function	93.859	5R35GM130398-02			0	547,854
					\$0	\$547,854
Mechanisms of Cell Competition in Growth and Development	93.859	5R35GM131871-02			0	27,285
					\$0	\$27,285
The roles of anesthetics and neuroimmune interactions in postoperative cognitive dysfunction	93.859	5R35GM131765-02			0	266,712
					\$0	\$266,712
Structural basis of integral membrane enzyme function	93.859	5R35GM132120-02			0	354,839

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$354,839
Systems Biology of Protein and Phenotypic Evolution	93.859	5R35GM131884-02			0	286,342
					\$0	\$286,342
Time-resolved Cryo-EM of Short-lived States in Eukaryotic Translation	93.859	5R01GM055440-23			48,990	393,526
					\$48,990	\$393,526
Mechanisms for histone segregation at DNA replication forks and implications for epigenetic inheritance	93.859	1K99GM134180-01			0	69,111
					\$0	\$69,111
A C. elegans model for studying blocks to EGFR signal transduction in quiescent cells	93.859	5F31GM126741-02			0	1,986
					\$0	\$1,986
Characterizing and Mapping Deleterious Mutations in Humans	93.859	5F32GM128318-03			0	41,265
Characterizing and Mapping Deleterious Mutations in Humans	93.859	5F32GM128318-03			0	7,056
Characterizing and Mapping Deleterious Mutations in Humans	93.859	5F32GM128318-03			0	-211
					\$0	\$48,110
Regulation of Protein Production Dynamics: RNA Binding Proteins and the Ribosome Code	93.859	5R35GM128802-03			0	787,220
					\$0	\$787,220
Somatic stem cells in the Drosophila ovary	93.859	5R01GM079351-11			0	500,438
					\$0	\$500,438
Mechanism of Heterochromatin Assembly and Oncogenic Histone Mutations	93.859	5R35GM126910-03			0	456,711
					\$0	\$456,711
Rational Engineering of Improved Protein Crystallization	93.859	5R01GM127883-02			0	392,947

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						R&D Cluster
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Rational Engineering of Improved Protein Crystallization	93.859	5R01GM127883-02			0	33,281
					\$0	\$426,228
Protein Dynamics Under Force	93.859	5R35GM129962-02			0	507,946
					\$0	\$507,946
Regulatory circuitry and mechanisms controlling cell fate in C. elegans	93.859	5R35GM131746-02			0	446,983
Regulatory circuitry and mechanisms controlling cell fate in C. elegans	93.859	5R35GM131746-02			0	17,783
					\$0	\$464,766
The Evolution of A Co-Opted Gene-Regulatory Network Underlying a Rapidly Evolving Morphological Trait	93.859	7R01GM112758-04			122,279	302,472
					\$122,279	\$302,472
Molecular physiology of TRPML channels	93.859	5R01GM085234-10			0	433,235
					\$0	\$433,235
Nanomechanical Imaging of Protein Dynamics Via Programmable DNA Interactions	93.859	5R01GM130948-02			0	310,438
					\$0	\$310,438
A Combined Rhodium-Photoredox-Catalyzed Approach to Alkene Carbofunctionalization by Carbon-Hydroge	93.859	5F32GM126609-02			0	-2,121
					\$0	\$-2,121
Super-multiplex vibrational imaging in living cells	93.859	5R01GM128214-03			0	306,356
					\$0	\$306,356
Ultrahigh-resolution and single-molecule stimulated Raman scattering (SRS) microscopy	93.859	5R01GM132860-02			0	216,754
					\$0	\$216,754
Conformational Landscape of TIA1 in Functional Aggregates by Solid-State NMR and Cryogenic Electron Microscopy	93.859	1F32GM128290-01A1			0	32,323
					\$0	\$32,323

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						<u>Total Expenditures (Includes Subrecipients)</u>
Asymmetric Synthesis of Nitrogen Heterocycles	93.859	5R01GM080442-14			0	245,300
					\$0	\$245,300
Mechanism and regulation of DNA double-strand break repair	93.859	5R35GM126997-03			0	582,523
					\$0	\$582,523
Competition and morphogenesis in tip cell-mediated branching of tubular networks	93.859	5R01GM089782-11			0	287,825
					\$0	\$287,825
Probing the spatiotemporal regulation of cell division	93.859	5R01GM130764-02			0	162,194
					\$0	\$162,194
Role of RILP in Autophagy	93.859	1R01GM132478-01A1			0	230,440
					\$0	\$230,440
Cell type-variation of cytokinesis	93.859	2R01GM117407-05A1			0	46,934
					\$0	\$46,934
Cytoskeleton, Nucleus and Integrin Recycling in Cell Migration	93.859	1R35GM136403-01			0	18,772
					\$0	\$18,772
Integrin Recycling and Adhesion Formation in Cell Migration	93.859	1R01GM133187-01			0	324,186
					\$0	\$324,186
Mechanistic Characterization of Calcium-Activated Chloride Channels in Retinal Pigment Epithelium	93.859	5R01GM127652-04			0	160,843
					\$0	\$160,843
Transcriptional and Epigenetic Control of Pluripotency and Development by Zfp281	93.859	5R01GM129157-04			0	172,843
					\$0	\$172,843
Characterization of protein motions in the intermediate timescale via MAS NMR	93.859	5F32GM135350-02			0	48,349

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					<u>\$0</u>	<u>\$48,349</u>
The Structural Dynamics of Translation Initiation	93.859	5R01GM084288-11			0	318,727
					<u>\$0</u>	<u>\$318,727</u>
Structural and Functional Studies of Potassium Channels by Solid State NMR	93.859	5R01GM088724-10			0	188,818
					<u>\$0</u>	<u>\$188,818</u>
Accurate Quantum Chemistry of Protein Active Sites using Auxiliary-Field Quantum Monte Carlo	93.859	1F32GM136105-01			0	31,002
					<u>\$0</u>	<u>\$31,002</u>
The structural dynamics of ribosomal frameshifting and ribosome rescue	93.859	1R01GM137608-01			0	16,824
					<u>\$0</u>	<u>\$16,824</u>
General and High-Throughput Small Molecule Screens and Selections for Metabolic Engineering	93.859	1R01GM134293-01A1			0	89,234
					<u>\$0</u>	<u>\$89,234</u>
					<u>\$1,473,510</u>	<u>\$31,860,329</u>

Child Health and Human Development Extramural Research

Predictors of High-Risk Behavior among Youth (MARTINS/BLANCO/CANINO/DUARTE)	93.865	5R01HD060072-10			11,215	140,930
					<u>\$11,215</u>	<u>\$140,930</u>
Columbia-Vietnam Social Science Training and Research Partnership: STAR II (Hirsch/Parker/Van)	93.865	5R24HD056691-10			49,706	94,788
					<u>\$49,706</u>	<u>\$94,788</u>
A Computational Framework for the Clinical Evaluation of the Soft Tissue Mechanics in Pregnancy	93.865	5R01HD091153-04			0	305,490
					<u>\$0</u>	<u>\$305,490</u>
Aspirin before Exercise: Antipyretic pretreatment to reduce exercise-induced overheating and exhaustion in RRMS patients	93.865	5R21HD091836-02			0	150,506
					<u>\$0</u>	<u>\$150,506</u>
Columbia Population Research Center	93.865	5P2CHD058486-10			0	-68

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$-68
Mitochondrial Encephalomyopathies: Approaches to Treatment	93.865	5P01HD080642-05			133,733	223,800
Mitochondrial Encephalomyopathies: Approaches to Treatment	93.865	5P01HD080642-05			5,427	50,942
Mitochondrial Encephalomyopathies: Approaches to Treatment	93.865	5P01HD080642-05			0	30,890
Mitochondrial Encephalomyopathies: Approaches to Treatment	93.865	5P01HD080642-05			0	25,794
Mitochondrial Encephalomyopathies: Approaches to Treatment	93.865	5P01HD080642-05			0	23,261
Mitochondrial Encephalomyopathies: Approaches to Treatment	93.865	5P01HD080642-05			0	1,975
					\$139,160	\$356,662
Host epigenetic and mitochondrial function in HIV-infected children	93.865	4R01HD073952-05			0	11,149
					\$0	\$11,149
Early Neonatal treatment and immune quiescence	93.865	5U01HD080441-05			265,827	541,665
					\$265,827	\$541,665
Decisions around chronic ventilation for children with life-limiting conditions	93.865	5K23HD082361-04			0	40,250
					\$0	\$40,250
Bone health in perinatally HIV-infected South African children on antiretrovirals	93.865	4R01HD073977-05			0	152,971
					\$0	\$152,971
Early Menarche and the Reproductive Health of Ghanaian Girls and Young Women.	93.865	5F31HD089592-03			0	-2,027
					\$0	\$-2,027
Systems analysis of mouse gastrulation	93.865	5R01HD085904-05			0	313,996

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Systems analysis of mouse gastrulation	93.865	5R01HD085904-05			0	40,111
					\$0	\$354,107
Calcium activated chloride channel modulation of myometrial excitability	93.865	5R01HD082251-05			10,515	380,569
					\$10,515	\$380,569
A Pilot Study to Improve Sleep Quality in Urban High School Students with Asthma	93.865	5R21HD086448-02			10,279	28,985
					\$10,279	\$28,985
Flu2Text: A Multi-Site Study assessing an Intervention for 2nd Dose of Influenza Vaccine	93.865	5R01HD086045-04			340,965	495,106
					\$340,965	\$495,106
Evaluation of Oxidative Capacity and Exercise Tolerance in Ambulatory Patients with Spinal Muscular Atrophy	93.865	5K01HD084690-04			0	137,677
					\$0	\$137,677
Preventing Postpartum Depression: A Dyadic Approach Adjunctive to Obstetric Care	93.865	5R01HD092062-04			66,854	761,827
					\$66,854	\$761,827
Assessing a Stroke Homehealth Aide Recovery Program (SHARP) as a Potential High Impact Strategy for Improving in Functional Mobility after Stroke	93.865	5R21HD089013-02			19,609	22,532
					\$19,609	\$22,532
Maternal Immune Activation And Fetal-Infant Neurobehavioral Development	93.865	5K23HD092589-03			0	149,184
					\$0	\$149,184
Maternal-Fetal Medicine Units (MFMU) Network	93.865	5UG1HD040485-21			0	241,224
Maternal-Fetal Medicine Units (MFMU) Network	93.865	5UG1HD040485-21			0	68,027
					\$0	\$309,251
Evaluating the role of human cervical smooth muscle cells in normal and premature cervical remodeling	93.865	5K08HD088758-04			0	178,354
					\$0	\$178,354

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Placenta-derived extracellular circulating RNA as a tool for monitoring placental function	93.865	5R01HD086327-04			682,910	1,090,763
					\$682,910	\$1,090,763
Identification and Characterization of the Genetic Causes of Lymphatic Anomalies	93.865	5R03HD092662-02			0	33,770
					\$0	\$33,770
Effectiveness of Pictographs to Prevent Wrong-Patient Errors in the NICU	93.865	5R01HD094793-03			170,140	449,489
					\$170,140	\$449,489
Targeting high risk teens in the emergency department: A user informed, theory-based intervention using text messaging to reduce teen pregnancy	93.865	5K23HD096060-03			0	181,785
					\$0	\$181,785
Regulation of neural progenitor competence	93.865	5R01HD092381-04			0	469,176
					\$0	\$469,176
Columbia University/Aga Khan University Global Network Research Unit	93.865	5UG1HD078438-08			358,191	457,249
Columbia University/Aga Khan University Global Network Research Unit	93.865	5UG1HD078438-08			65,713	65,713
Columbia University/Aga Khan University Global Network Research Unit	93.865	5UG1HD078438-08			0	7,273
Columbia University/Aga Khan University Global Network Research Unit	93.865	5UG1HD078438-08			0	-1,572
					\$423,904	\$528,663
Injuries in Children with Autism	93.865	1R21HD098522-01A1			9,591	91,881
					\$9,591	\$91,881
Structural and Social Transitions among Adolescents and young adults in Rakai (SSTAR)	93.865	5R01HD091003-04			179,741	730,567
Structural and Social Transitions among Adolescents and young adults in Rakai (SSTAR)	93.865	5R01HD091003-04			3,343	63,425
					\$183,084	\$793,992

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
GSH Training Grant	93.865	5T32HD049339-14			0	162,978
					\$0	\$162,978
CombinADO: a combination intervention strategy to improve health outcomes for adolescents living with HIV	93.865	5UG3HD096926-02			349,578	490,735
CombinADO: a combination intervention strategy to improve health outcomes for adolescents living with HIV	93.865	5UG3HD096926-02			0	301,541
CombinADO: a combination intervention strategy to improve health outcomes for adolescents living with HIV	93.865	5UG3HD096926-02			43,677	191,345
CombinADO: a combination intervention strategy to improve health outcomes for adolescents living with HIV	93.865	5UG3HD096926-02			0	111,582
					\$393,255	\$1,095,203
The Genetics and Neurobiology of Parental Care in Wild Mice	93.865	5R00HD084732-05			0	246,190
					\$0	\$246,190
Assisted Reproductive Technologies and Risk of Autism and Other Developmental Disabilities	93.865	5R01HD091205-03			37,203	545,442
					\$37,203	\$545,442
Transcriptional Regulation of Post-Embryonic Neuronal Maturation	93.865	5K99HD098371-02			0	129,629
					\$0	\$129,629
Obstetric Interventions, Neonatal Health, and Child Development	93.865	5R01HD090119-04			141,629	301,511
					\$141,629	\$301,511
Archiving and Documenting the New York City Longitudinal Study of Well-Being	93.865	5R03HD095017-02			0	75,925
					\$0	\$75,925
Columbia Population Research Center - Hatzenbuehler Seed Grant	93.865	5P2CHD058486-12			0	79,215
Columbia Population Research Center - Hatzenbuehler Seed Grant	93.865	5P2CHD058486-12			0	74,816

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Columbia Population Research Center - Hatzenbuenhier Seed Grant	93.865	5P2CHD058486-12			0	10,197
Columbia Population Research Center - Hatzenbuenhier Seed Grant	93.865	5P2CHD058486-12			0	9,723
Columbia Population Research Center - Hatzenbuenhier Seed Grant	93.865	5P2CHD058486-12			0	5,574
Columbia Population Research Center - Hatzenbuenhier Seed Grant	93.865	5P2CHD058486-12			0	2,309
Columbia Population Research Center - Hatzenbuenhier Seed Grant	93.865	5P2CHD058486-12			0	2,171
					\$0	\$184,005
Infection, fever and immunity and offspring ADHD i a population based pregnancy/birth cohort	93.865	5R01HD090051-04			26,892	417,837
					\$26,892	\$417,837
MATERNAL INFLAMMATION, DIET AND GUT MICROBIOME IN HIV: IMPACT ON INFANT OUTCOMES	93.865	5R00HD089753-05			33,175	156,015
					\$33,175	\$156,015
Prenatal Genetic Diagnosis by Genomic Sequencing: A Prospective Evaluation	93.865	5R01HD055651-12			453,158	832,056
Prenatal Genetic Diagnosis by Genomic Sequencing: A Prospective Evaluation	93.865	5R01HD055651-12			354,584	442,445
					\$807,742	\$1,274,501
Nanopore-based sequencing of placenta-cell-type-specific extracellular RNA for real time assessment of human placenta development and function	93.865	5R01HD100013-02			215,893	476,254
					\$215,893	\$476,254
The Educational Impact of Childhood-Onset Multiple Sclerosis	93.865	5K23HD098312-02			0	149,228
					\$0	\$149,228
Morphogenesis and patterning of the vertebrate gut tube	93.865	5R21HD099529-02			0	175,482
					\$0	\$175,482

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RNA-dependent chromatin targeting of TET2 for endogenous retrovirus control	93.865	7R01HD095938-03			0	226,933
					\$0	\$226,933
Defining Novel Molecular Pathways to Expanded Pluripotentiality	93.865	5R01HD097268-04			0	264,528
					\$0	\$264,528
					\$4,039,548	\$14,131,088

Aging Research

Understanding the role of Eph signaling in Alzheimer s disease	93.866	5R21AG061722-02			0	44,376
Understanding the role of Eph signaling in Alzheimer s disease	93.866	5R21AG061722-02			0	41,003
Understanding the role of Eph signaling in Alzheimer s disease	93.866	5R21AG061722-02			0	40,733
					\$0	\$126,112
Modernizing the Assessment of Financial Decision Making: Development and Evaluation of a Simulated Online Money Management Task in Older Adults	93.866	5K99AG062783-02			0	128,209
					\$0	\$128,209
The role of a novel atypical monoamine transporter in Alzheimer s disease	93.866	5K01AG047954-05			0	661
					\$0	\$661
Determinants of Critical Care Intensity for Hospitalized Older Adults: the Effect of Hospital-based Palliative Care Services	93.866	5K08AG051184-05			0	185,300
					\$0	\$185,300
Endoplasmic Reticulum Mitochondrial membranes in Alzheimer s Disease	93.866	5K01AG045335-05			0	-2
					\$0	\$-2
WHICAP -Genetic Epidemiology of Cerebrovascular Factors in Alzheimer s Disease	93.866	1RF1AG054023-01			0	1,811,843
WHICAP -Genetic Epidemiology of Cerebrovascular Factors in Alzheimer s Disease	93.866	1RF1AG054023-01			0	138,579

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
WHICAP -Genetic Epidemiology of Cerebrovascular Factors in Alzheimer s Disease	93.866	1RF1AG054023-01			0	69,493
					\$0	\$2,019,915
Long Life Family Study: Columbia University	93.866	5U01AG023749-13			0	250,331
Long Life Family Study: Columbia University	93.866	5U01AG023749-13			46,055	57,262
					\$46,055	\$307,593
Biomarkers of Alzheimer s Disease in Adults with Down Syndrome	93.866	5U01AG051412-05			3,494,959	4,183,398
Biomarkers of Alzheimer s Disease in Adults with Down Syndrome	93.866	5U01AG051412-05			28,671	400,225
Biomarkers of Alzheimer s Disease in Adults with Down Syndrome	93.866	5U01AG051412-05			356,805	356,826
Biomarkers of Alzheimer s Disease in Adults with Down Syndrome	93.866	5U01AG051412-05			0	15,059
Biomarkers of Alzheimer s Disease in Adults with Down Syndrome	93.866	5U01AG051412-05			-510	-510
					\$3,879,925	\$4,954,998
Exploring Cognitive Aging Using Reference Ability Neural Networks	93.866	2RF1AG038465-06			54,804	1,192,519
Exploring Cognitive Aging Using Reference Ability Neural Networks	93.866	2RF1AG038465-06			0	50,993
					\$54,804	\$1,243,512
Imaging inflammation and tau in elders with different clinical and biomarker profiles of Alzheimer s disease	93.866	5K23AG052633-05			0	111,110
					\$0	\$111,110
An Experimental Investigation into the Impact of Socioeconomic Context on Biological Markers of Aging, Health and Mortality	93.866	5R01AG054466-04			51,958	1,141,564
An Experimental Investigation into the Impact of Socioeconomic Context on Biological Markers of Aging, Health and Mortality	93.866	5R01AG054466-04			-3,379	-3,379
					\$48,579	\$1,138,185

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Diabetes Status and Brain Amyloid in Middle Aged Hispanics	93.866	5R01AG050440-05			101,480	596,290
					\$101,480	\$596,290
Columbia University Science of Behavior Change Resource and Coordinating Center	93.866	5U24AG052175-05			450,489	1,612,997
Columbia University Science of Behavior Change Resource and Coordinating Center	93.866	5U24AG052175-05			253,474	280,321
					\$703,963	\$1,893,318
Midcareer Mentoring Award for Patient Oriented Research in Geriatric Cardiology	93.866	5K24AG036778-09			0	125,898
					\$0	\$125,898
Midcareer Award for Research in Dementia Risk Factors and Prevention	93.866	5K24AG045334-04			0	160,451
					\$0	\$160,451
Understanding cognitive mechanisms of emotion regulation in aging	93.866	5R01AG043463-05			0	102,575
					\$0	\$102,575
Mitochondrial maintenance mechanisms of stem cells and aging	93.866	5R01AG055910-04			-945	247,198
					-\$945	\$247,198
Testing Olfaction in Primary care to detect Alzheimer s disease and other Dementias (TOPAD)	93.866	5R01AG057898-04			61,395	667,338
					\$61,395	\$667,338
Skeletal Disease in Type 2 Diabetes: a Novel Therapeutic Approach for the Elderly	93.866	5R21AG058210-02			11,641	120,171
					\$11,641	\$120,171
Alzheimer s Disease Research Center - Overall	93.866	5P50AG008702-30			0	768,552
Alzheimer s Disease Research Center - Overall	93.866	5P50AG008702-30			5,454	400,620
Alzheimer s Disease Research Center - Overall	93.866	5P50AG008702-30			0	315,844

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Alzheimer s Disease Research Center - Overall	93.866	5P50AG008702-30			0	227,058
Alzheimer s Disease Research Center - Overall	93.866	5P50AG008702-30			0	194,894
Alzheimer s Disease Research Center - Overall	93.866	5P50AG008702-30			0	169,202
Alzheimer s Disease Research Center - Overall	93.866	5P50AG008702-30			49,027	154,599
Alzheimer s Disease Research Center - Overall	93.866	5P50AG008702-30			0	149,796
Alzheimer s Disease Research Center - Overall	93.866	5P50AG008702-30			0	103,640
Alzheimer s Disease Research Center - Overall	93.866	5P50AG008702-30			0	92,556
Alzheimer s Disease Research Center - Overall	93.866	5P50AG008702-30			0	50,427
Alzheimer s Disease Research Center - Overall	93.866	5P50AG008702-30			0	36,117
Alzheimer s Disease Research Center - Overall	93.866	5P50AG008702-30			0	27,957
Alzheimer s Disease Research Center - Overall	93.866	5P50AG008702-30			0	13,119
Alzheimer s Disease Research Center - Overall	93.866	5P50AG008702-30			8,913	8,913
Alzheimer s Disease Research Center - Overall	93.866	5P50AG008702-30			0	6,240
Alzheimer s Disease Research Center - Overall	93.866	5P50AG008702-30			0	939
Alzheimer s Disease Research Center - Overall	93.866	5P50AG008702-30			0	493
Alzheimer s Disease Research Center - Overall	93.866	5P50AG008702-30			0	-95

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Alzheimer s Disease Research Center - Overall	93.866	5P50AG008702-30			0	-6,865
					\$63,394	\$2,714,006
Entorhinal-hippocampal circuit dysfunction in AD mice	93.866	5R01AG050425-05			8,219	256,367
Entorhinal-hippocampal circuit dysfunction in AD mice	93.866	5R01AG050425-05			0	1,479
					\$8,219	\$257,846
Extracellular tau oligomers and Alzheimer disease	93.866	5R01AG049402-05			0	126,512
					\$0	\$126,512
Genetic Studies of Alzheimer s Disease in Caribbean Hispanics	93.866	2RF1AG015473-16A1			0	54,048
Genetic Studies of Alzheimer s Disease in Caribbean Hispanics	93.866	2RF1AG015473-16A1			0	48,846
Genetic Studies of Alzheimer s Disease in Caribbean Hispanics	93.866	2RF1AG015473-16A1			0	6,533
Genetic Studies of Alzheimer s Disease in Caribbean Hispanics	93.866	2RF1AG015473-16A1			0	-46,365
					\$0	\$63,062
Pathogenic role for formin mediated microtubule stabilization pathways in Alzheimers disease	93.866	5R01AG050658-05			0	377,938
					\$0	\$377,938
An integrative analysis of DNA methylation, transcriptomic changes, and cognitive dysfunction in Alzheimer s disease	93.866	5K76AG054868-02			0	823
					\$0	\$823
Mitochondria-cytoskeleton communication and function in aging	93.866	5F31AG055326-04			0	25,694
Mitochondria-cytoskeleton communication and function in aging	93.866	5F31AG055326-04			0	18,372
					\$0	\$44,066

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						<u>Total Expenditures (Includes Subrecipients)</u>
Offspring Study of Mechanisms of Racial Disparities in Alzheimer s Disease	93.866	1RF1AG054070-01			0	1,940,814
Offspring Study of Mechanisms of Racial Disparities in Alzheimer s Disease	93.866	1RF1AG054070-01			0	303,553
Offspring Study of Mechanisms of Racial Disparities in Alzheimer s Disease	93.866	1RF1AG054070-01			0	108,404
					\$0	\$2,352,771
Statin Neuroprotection & Cognitive Dysfunction after Carotid Endarterectomy	93.866	5R01AG050819-03			2,700	25,991
					\$2,700	\$25,991
Cognitive training and neuroplasticity in mild cognitive impairment	93.866	5R01AG052440-04			560,484	716,541
					\$560,484	\$716,541
Role of C99 in the regulation of lipid metabolism- Relevance to Alzheimer s disease	93.866	5R01AG056387-04			0	444,796
					\$0	\$444,796
Are there ethnic differences in brain amyloid and tau in the seventh decade of life?	93.866	5R01AG055299-03			44,438	1,155,195
					\$44,438	\$1,155,195
Pathway discovery, validation and compound identification for Alzheimer s disease	93.866	7U01AG046152-05			1,054,469	1,314,767
Pathway discovery, validation and compound identification for Alzheimer s disease	93.866	7U01AG046152-05			0	139,584
					\$1,054,469	\$1,454,351
Anti-viral therapy in Alzheimer s disease	93.866	5R01AG055422-04			702,320	1,401,912
Anti-viral therapy in Alzheimer s disease	93.866	5R01AG055422-04			0	486,587
Anti-viral therapy in Alzheimer s disease	93.866	5R01AG055422-04			55,088	61,413
					\$757,408	\$1,949,912

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Deconstructing and modeling the single cell architecture of the Alzheimer brain	93.866	1RF1AG057473-01			464,222	604,348
Deconstructing and modeling the single cell architecture of the Alzheimer brain	93.866	1RF1AG057473-01			0	27,416
					\$464,222	\$631,764
Convergence of myeloid susceptibility protein function in Alzheimer s disease	93.866	1RF1AG058852-01			82,677	490,344
					\$82,677	\$490,344
Early life environment and later life dementia, cognition, neuropathology, and reserve	93.866	5K01AG050723-06			0	164,576
					\$0	\$164,576
The Brief Research in Aging and Interdisciplinary Neurosciences	93.866	5T35AG044303-08			0	756
					\$0	\$756
The Dialogue Between Bone and the Brain: Endocrine and Molecular Bases	93.866	5P01AG032959-10			0	477,564
The Dialogue Between Bone and the Brain: Endocrine and Molecular Bases	93.866	5P01AG032959-10			0	348,578
The Dialogue Between Bone and the Brain: Endocrine and Molecular Bases	93.866	5P01AG032959-10			0	334,462
The Dialogue Between Bone and the Brain: Endocrine and Molecular Bases	93.866	5P01AG032959-10			0	290,943
The Dialogue Between Bone and the Brain: Endocrine and Molecular Bases	93.866	5P01AG032959-10			0	127,937
The Dialogue Between Bone and the Brain: Endocrine and Molecular Bases	93.866	5P01AG032959-10			0	-71,365
					\$0	\$1,508,119
Interdisciplinary Research to Understand the Interplay of Diabetes, Cerebrovascular disease and Alzheimer s disease	93.866	1RF1AG051556-01			62,930	1,801,388
Interdisciplinary Research to Understand the Interplay of Diabetes, Cerebrovascular disease and Alzheimer s disease	93.866	1RF1AG051556-01			557,877	1,353,890

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Interdisciplinary Research to Understand the Interplay of Diabetes, Cerebrovascular disease and Alzheimer s disease	93.866	1RF1AG051556-01			785,774	1,191,559
Interdisciplinary Research to Understand the Interplay of Diabetes, Cerebrovascular disease and Alzheimer s disease	93.866	1RF1AG051556-01			129,404	129,404
					\$1,535,985	\$4,476,241
The Role of Actin in Cellular Aging	93.866	5R33AG051047-05			0	407,326
					\$0	\$407,326
Assessment of ultrasound-facilitated Neurotherapeutics in Alzheimer s Disease	93.866	5R01AG038961-10			0	743,614
					\$0	\$743,614
Analysis of Lumbar Spine Stenosis Specimens for Early Identification of TTR Cardiac Amyloidosis	93.866	5R21AG058348-02			10,795	101,373
					\$10,795	\$101,373
Using Twitter to Enhance the Social Support of Hispanic and Black Dementia Caregivers (Tweet-SS)	93.866	5R01AG060929-02			0	323,824
					\$0	\$323,824
Auditory, olfactory, and motor correlates of in-vivo AD neuropathology and cognitive decline in late-middle age	93.866	5R56AG061817-02			0	192,336
					\$0	\$192,336
Longitudinal Changes in White Matter Integrity Predicting Cognitive Changes in Reasoning and Vocabulary Abilities	93.866	5K01AG051777-05			0	109,363
					\$0	\$109,363
School Quality and Racial Disparities in Alzheimer s Disease in Project Talent	93.866	1RF1AG056164-01			29,149	160,206
School Quality and Racial Disparities in Alzheimer s Disease in Project Talent	93.866	1RF1AG056164-01			33,865	37,231
School Quality and Racial Disparities in Alzheimer s Disease in Project Talent	93.866	1RF1AG056164-01			21,217	25,048
School Quality and Racial Disparities in Alzheimer s Disease in Project Talent	93.866	1RF1AG056164-01			12,690	15,678
					\$96,921	\$238,163

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Toward Understanding Aging Mechanisms of Neuromusc	93.866	5R21AG052011-02			0	-5
					\$0	\$-5
Admixture mapping in late-onset Alzheimer s disease	93.866	5R21AG054832-02			0	-1
					\$0	\$-1
White Matter Hyperintensities in Aging and Dementia	93.866	2R56AG034189-06A1			0	137,854
					\$0	\$137,854
Factors Influencing Financial Capacity and Awareness of Capacity in Cognitive Aging	93.866	5F32AG053035-03			0	-8,773
					\$0	\$-8,773
Exploring the Latent Class Structure of Inhibition in Normal Aging	93.866	5K99AG055684-02			0	12,981
					\$0	\$12,981
Imaging of Cognition, Learning and Memory in Aging	93.866	5R01AG026158-14			20,655	886,051
					\$20,655	\$886,051
Predictors of Severity in Alzheimer s Disease	93.866	5R01AG007370-29			140,659	671,093
					\$140,659	\$671,093
Receptor-mediated clearance of synaptic tau as a novel therapy forAlzheimer s disease.	93.866	5K01AG055694-04			0	101,097
					\$0	\$101,097
Task-specific and person-specific factors related to SubjectiveCognitive Decline	93.866	5R01AG054525-04			0	446,262
					\$0	\$446,262
The National Institute on Aging (NIA) Late Onset of Alzheimer s Disease(LOAD) Family Based Study (FBS)	93.866	5U24AG056270-04			482,054	1,299,569
The National Institute on Aging (NIA) Late Onset of Alzheimer s Disease(LOAD) Family Based Study (FBS)	93.866	5U24AG056270-04			130,209	135,465

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The National Institute on Aging (NIA) Late Onset of Alzheimer s Disease(LOAD) Family Based Study (FBS)	93.866	5U24AG056270-04			0	40,727
					\$612,263	\$1,475,761
Mechanisms of BMP synthesis and alterations in Alzheimer s disease	93.866	5R21AG056758-02			0	72,335
					\$0	\$72,335
Resilience mechanisms underlying racial/ethnic disparities in Alzheimer s disease	93.866	5R01AG054520-04			0	603,863
Resilience mechanisms underlying racial/ethnic disparities in Alzheimer s disease	93.866	5R01AG054520-04			0	1,191
					\$0	\$605,054
On the role of microglia-derived extracellular vesicles in amyloid-beta induced changes in synaptic function and network activity.	93.866	1R56AG056108-01			25,981	50,173
					\$25,981	\$50,173
Biological aging in older HIV-infected African Americans	93.866	5R21AG056175-02			0	39,393
Biological aging in older HIV-infected African Americans	93.866	5R21AG056175-02			0	29,134
					\$0	\$68,527
Tauopathy in AD and FTD - Molecular Determinants of Phenotypic Diversity	93.866	1RF1AG056151-01A1			891,405	1,241,407
					\$891,405	\$1,241,407
Old SCHOOL Hip Hop: A randomized controlled trial to improve dementia knowledge	93.866	5R01AG054536-04			105,825	757,830
					\$105,825	\$757,830
Functional connectivity network in default mode regions provides the underlying infrastructure for task-based functional co-de/activation networks	93.866	5R01AG057962-02			0	135,299
					\$0	\$135,299
Summer of Translational Aging Research for Undergraduates (STARU)	93.866	5R25AG059557-03			0	155,760
					\$0	\$155,760

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						<u>Total Expenditures (Includes Subrecipients)</u>
Protective genetic factors of Alzheimer disease in PSEN1 Mutation Carriers in Puerto Rico	93.866	5R01AG058918-03			191,429	513,940
Protective genetic factors of Alzheimer disease in PSEN1 Mutation Carriers in Puerto Rico	93.866	5R01AG058918-03			0	143,094
					\$191,429	\$657,034
Apathy in Alzheimer s Disease: Investigation of the Interaction between Proline and COMT for Treatment Targeting to Positively Impact Quality of Life	93.866	5R21AG058020-02			0	120,474
					\$0	\$120,474
The role of methylation-sensitive PP2A isoforms in regulating the pathological response to tau	93.866	1RF1AG055125-01A1			0	638,157
					\$0	\$638,157
Tau PET imaging in racially/ethnically diverse middle aged adults	93.866	1RF1AG058067-01A1			21,442	614,956
Tau PET imaging in racially/ethnically diverse middle aged adults	93.866	1RF1AG058067-01A1			0	139,646
Tau PET imaging in racially/ethnically diverse middle aged adults	93.866	1RF1AG058067-01A1			0	49,089
					\$21,442	\$803,691
Columbia Center for Interdisciplinary Research on Alzheimer s Disease Disparities (CIRAD)	93.866	5P30AG059303-02			0	240,745
Columbia Center for Interdisciplinary Research on Alzheimer s Disease Disparities (CIRAD)	93.866	5P30AG059303-02			47,307	71,155
Columbia Center for Interdisciplinary Research on Alzheimer s Disease Disparities (CIRAD)	93.866	5P30AG059303-02			0	46,239
Columbia Center for Interdisciplinary Research on Alzheimer s Disease Disparities (CIRAD)	93.866	5P30AG059303-02			38,750	38,750
Columbia Center for Interdisciplinary Research on Alzheimer s Disease Disparities (CIRAD)	93.866	5P30AG059303-02			0	35,290
Columbia Center for Interdisciplinary Research on Alzheimer s Disease Disparities (CIRAD)	93.866	5P30AG059303-02			0	2,243
Columbia Center for Interdisciplinary Research on Alzheimer s Disease Disparities (CIRAD)	93.866	5P30AG059303-02			0	1,470

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Columbia Center for Interdisciplinary Research on Alzheimer s Disease Disparities (CIRAD)	93.866	5P30AG059303-02			0	826
					\$86,057	\$436,718
Collaboratory on Research Definitions for Cognitive Reserve and Resilience	93.866	5R24AG061421-03			58,106	415,150
					\$58,106	\$415,150
Regulation of retromer proteins through an Alzheimer s disease-specific transcription factor complex	93.866	1R56AG062354-01			0	93,466
					\$0	\$93,466
Identification of protective factors for cognitive resilience in adults with Down Syndrome: A multi-omic study	93.866	1R56AG061837-01			345,894	495,429
					\$345,894	\$495,429
Genetics of Alzheimer s Disease in Mexico	93.866	5R56AG059756-02			624,555	950,123
					\$624,555	\$950,123
Neuroanatomical associations with the factor structure underlying neuropsychiatric symptoms in Alzheimer s disease	93.866	5R01AG062268-03			56,403	380,247
					\$56,403	\$380,247
Pink1, amyloid pathology, and mitochondrial quality control in Alzheimer s Disease	93.866	7RF1AG054320-02			4,494	107,050
					\$4,494	\$107,050
Role of Cyclophilin D in Abeta-induced synaptic injury	93.866	7R37AG037319-10			0	180,415
					\$0	\$180,415
TOMM40-mediated mitochondrial dysfunction and Alzheimers disease	93.866	5R01AG053041-04			0	451,032
					\$0	\$451,032
Circadian-Regulated Aging Physiologies	93.866	5R01AG045842-07			0	410,589
					\$0	\$410,589
Circadian-Regulated Aging Physiologies	93.866	5R01AG045842-07			0	49,515
					\$0	\$49,515
					\$0	\$460,104

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<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Glyoxalase-1, amyloid pathology, mitochondrial and synaptic injury in AD	93.866	1R56AG064934-01			0	232,016
					\$0	\$232,016
RAGE, Mitochondria and Tau Pathology in AD	93.866	7R01AG61324-02			0	112,928
					\$0	\$112,928
PINK1 Signaling and Synaptic Mitochondria Integrity in AD	93.866	7R21AG058985-03			0	94,756
					\$0	\$94,756
The Health Impacts of the MyGoals Randomized Controlled Trial	93.866	1R56AG062486-01A1			181,455	351,635
					\$181,455	\$351,635
Expanding the knowledge base for emotion regulation in aging	93.866	1R56AG057202-01			0	85,622
					\$0	\$91,935
Expanding the knowledge base for emotion regulation in aging	93.866	1R56AG057202-01			0	6,313
					\$0	\$34,048
A Dyadic Experiment of Social Support in Older Adulthood	93.866	1F31AG063441-01			0	34,048
					\$0	\$127,328
Developing a Culturally-sensitive Volunteering Program to Reduce Stress of Dementia Caregivers in Chinese American Communities	93.866	5K01AG064028-02			0	127,328
					\$0	\$96,208
A pilot study to advance translation of molecular signatures in biological aging	93.866	7R21AG054846-03			0	96,208
					\$0	\$222,616
Inferential methods for functional data from wearable devices	93.866	5R01AG062401-02			0	222,616
					\$0	\$189,302
Genomic Analysis of the CALERIE Trial to Generate New Knowledge for Geroscience	93.866	5R01AG061378-02			54,633	189,302
					\$54,633	\$189,302

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Statins and Risk of Alzheimer Disease and Related Dementias: A Novel Quasi-Experimental Approach to Identify Causal Effects	93.866	1R56AG061177-01A1			57,931	274,014
					\$57,931	\$274,014
A binational study to understand dementia risk and disparities among Mexican Americans: The role of migration and social determinants	93.866	7RF1AG055486-02			160,467	490,368
					\$160,467	\$490,368
Genetic analysis of the Dutch Hunger Winter Families Study to Boost Rigor and Robustness for Testing In-Utero Famine Effects on Aging-Related Health Conditions and Biological Aging.	93.866	1R01AG066887-01			0	19,090
					\$0	\$19,090
Formin-mediated stabilization of dynamic microtubules in the pathogenesis of early-onset familial Alzheimers disease	93.866	5R03AG060025-02			0	87,903
					\$0	\$87,903
A Translational Bioinformatics Approach to Rescuing Synaptic and Neurophysiologic Dysfunction in Alzheimer s Disease	93.866	5R01AG059854-03			0	449,533
A Translational Bioinformatics Approach to Rescuing Synaptic and Neurophysiologic Dysfunction in Alzheimer s Disease	93.866	5R01AG059854-03			0	42,863
					\$0	\$492,396
ECSIT protects against neurodegeneration and Alzheimer s disease through the regulation of mitochondrial function and oxidative stress	93.866	1R56AG058449-01A1			0	168,108
ECSIT protects against neurodegeneration and Alzheimer s disease through the regulation of mitochondrial function and oxidative stress	93.866	1R56AG058449-01A1			0	115,586
					\$0	\$283,694
Investigating Rab35s role in modulating stress-induced Alzheimers neuropathology	93.866	1R56AG057560-01			0	134,231
					\$0	\$134,231
Contribution of BIN1 and Synj1 to endosomal pathogenesis Alzheimer s Disease and Down Syndrome	93.866	1R56AG062271-01A1			0	411,483
					\$0	\$411,483
A transcriptomic atlas of immune cells in a model of synucleinopathy	93.866	1R21AG064596-01			0	127,793
					\$0	\$127,793

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Trace mineral levels, the trajectory of cognitive decline and telomere attrition	93.866	7RF1AG056111-02			97,389	461,004
					\$97,389	\$461,004
From in vivo to in vitro heterochronic parabiosis to identify geronic factors	93.866	7R01AG057433-05			0	183,835
					\$0	\$183,835
Systems Modeling of Alzheimers Disease in C. elegans	93.866	7RF1AG057341-03			0	201,209
					\$0	\$201,209
Microglial TREM2 Interactome in Alzheimers Disease	93.866	1R01AG067606-01			0	52,752
					\$0	\$52,752
Genetic Contribution to Brain Arterial Dilatation and its Role in Cognition and dementia	93.866	5R01AG057709-03			198,109	845,265
					\$198,109	\$845,265
Olfactory Impairment in Offspring Study of Racial Disparities in Alzheimers Disease	93.866	5R01AG058767-03			0	322,034
					\$0	\$322,034
Identifying, validating and targeting AD susceptibility networks in monocytes	93.866	7R01AG048015-05			0	184,346
					\$0	\$184,346
Dietary Modulation of Neuroinflammation in Age-Related Memory Disorders	93.866	5R01AG058417-03			70,693	720,168
					\$0	\$276,916
Dietary Modulation of Neuroinflammation in Age-Related Memory Disorders	93.866	5R01AG058417-03			0	276,916
					\$0	\$66,134
Dietary Modulation of Neuroinflammation in Age-Related Memory Disorders	93.866	5R01AG058417-03			23,014	66,134
					\$93,707	\$1,063,218
Multi-omic network-directed proteoform discovery, dissection and functional validation to prioritize novel AD therapeutic targets	93.866	5U01AG061356-03			177,625	746,315
					\$338,831	\$514,621
Multi-omic network-directed proteoform discovery, dissection and functional validation to prioritize novel AD therapeutic targets	93.866	5U01AG061356-03			338,831	514,621

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$516,456	\$1,260,936
Accelerated non-atherosclerotic brain arterial aging relationship to Alzheimer s disease	93.866	5R01AG066162-02			0	261,239
Accelerated non-atherosclerotic brain arterial aging relationship to Alzheimer s disease	93.866	5R01AG066162-02			0	33,568
					\$0	\$294,807
Investigating the cause of APOE4-associated microglial activation and its resulting neurotoxicity of tauopathy-afflicted neurons	93.866	5K01AG061264-02			0	130,302
					\$0	\$130,302
The role of inflammation in the association between diet and Alzheimer s disease	93.866	5R01AG059013-02			34,646	716,666
					\$34,646	\$716,666
Utilizing Single-nucleus RNA-sequencing to Investigate the Cell-Type Specific Effects of APOE4 Expression in an AD-vulnerable Brain Region	93.866	5R03AG063278-02			0	126,220
					\$0	\$126,220
Differential vulnerability to tauopathy in Alzheimer s disease and Frontotemporal Lobe Dementia	93.866	1RF1AG063521-01			0	237,477
Differential vulnerability to tauopathy in Alzheimer s disease and Frontotemporal Lobe Dementia	93.866	1RF1AG063521-01			0	82,208
					\$0	\$319,685
The Role of Synaptic Proteolysis in Alzheimer s Disease and Therapeutic Implications	93.866	5R01AG064244-02			0	212,797
					\$0	\$212,797
Investigating the Effect of APOE4 Expression on AD-relevant Tauopathy	93.866	5R21AG061719-02			12,430	129,362
					\$12,430	\$129,362
Genetic Epidemiology and Multi-Omics Analyses in Familial and Sporadic Alzheimer s Disease Among Secular Caribbean Hispanics and Religious Orders	93.866	1R56AG063908-01			0	999,814
Genetic Epidemiology and Multi-Omics Analyses in Familial and Sporadic Alzheimer s Disease Among Secular Caribbean Hispanics and Religious Orders	93.866	1R56AG063908-01			0	84,058
					\$0	\$1,083,872

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						<u>Total Expenditures (Includes Subrecipients)</u>
ARF6, a new regulator of retromer function and cholesterol homeostasis in neurons.	93.866	5R03AG064628-02			0	13,559
					\$0	\$13,559
Diet in relation to brain and cognitive health in a middle-aged multiethnic population: nutritional implications for aging and Alzheimer s disease	93.866	1R56AG060156-01A1			0	139,907
					\$0	\$139,907
Decoding Early Signs of Alzheimer s Disease in The Lateral Entorhinal Cortex Using Machine Learning	93.866	5R21AG066168-02			0	101,434
					\$0	\$101,434
Impact of receiving Alzheimer s disease genetic risk information among Latinos in northern Manhattan	93.866	1R01AG062528-01A1			12,780	96,270
Impact of receiving Alzheimer s disease genetic risk information among Latinos in northern Manhattan	93.866	1R01AG062528-01A1			0	5,130
					\$12,780	\$101,400
Diet and Cognition within a Reserve framework	93.866	1R01AG061008-01A1			0	5,841
					\$0	\$5,841
Family-Based Methods To Analyze Sequence Data To Elucidate Ad Etiology	93.866	7RF1AG058131-02			0	69,409
					\$0	\$69,409
Electrophysiological Evaluation of Brain Regions Vulnerable to Alzheimer s Disease	93.866	1R01AG064066-01A1			0	14,234
					\$0	\$14,234
Factors of Resilience to Alzheimers Disease and Related Dementias among Latinx: The Role of Bilingualism Miguel Arce - SGV Rsch 7582302 (National Institute on Aging/NIH/DHHS)	93.866	1K99AG066932-01			0	15,020
					\$0	\$15,020
Alzheimer s Disease Research Center	93.866	1P30AG066462-01			0	27,036
Alzheimer s Disease Research Center	93.866	1P30AG066462-01			0	21,864
Alzheimer s Disease Research Center	93.866	1P30AG066462-01			0	8,932

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Alzheimer s Disease Research Center	93.866	1P30AG066462-01			0	5,625
Alzheimer s Disease Research Center	93.866	1P30AG066462-01			0	1,983
					\$0	\$65,440
Genetic Epidemiology and Multi-Omics Analyses in Familial and Sporadic Alzheimer s Disease Among Secular Caribbean Hispanics and Religious Order	93.866	1R01AG067501-01			0	3,833
					\$0	\$3,833
Gene Discovery in multi-ethnic late onset Alzheimer s disease families	93.866	1U01AG066752-01			0	2,159
					\$0	\$2,159
Nucleoskeleton-Cytoskeleton Connections and Cell Polarity in Aging	93.866	5R01AG064944-02			0	206,053
Nucleoskeleton-Cytoskeleton Connections and Cell Polarity in Aging	93.866	5R01AG064944-02			0	138,234
					\$0	\$344,287
Physical Activity and Preservation of Cognitive Function	93.866	5R00AG052830-04			0	190,779
					\$0	\$190,779
Anosmia as a predictor of preclinical Alzheimer s disease	93.866	1R56AG062454-01			0	652,775
					\$0	\$652,775
Metformin in Alzheimer s dementia Prevention (MAP)	93.866	5R01AG062624-02			283,270	434,124
Metformin in Alzheimer s dementia Prevention (MAP)	93.866	5R01AG062624-02			0	29,394
					\$283,270	\$463,518
Columbia Roybal Center for Fearless Behavior Change	93.866	5P30AG064198-02			0	295,771
Columbia Roybal Center for Fearless Behavior Change	93.866	5P30AG064198-02			0	41,982
					\$0	\$337,753

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						<u>Total Expenditures (Includes Subrecipients)</u>
Blood Pressure and ADRD in African Americans: the Jackson Heart Study	93.866	5R01AG066134-02			21,224	103,375
					\$21,224	\$103,375
Characterizing the computational and neural basis of deficits in decision making in Alzheimer s disease	93.866	1R21AG067108-01			0	10,384
					\$0	\$10,384
Mitochondrial degrading enzyme, synaptic mitochondrial function in AD mouse	93.866	7R01AG044793-06			0	131,627
					\$0	\$131,627
Microglia antigen presentation in the CNS of Alzheimer s disease	93.866	1R01AG067581-01			0	11,008
					\$0	\$11,008
					\$14,498,274	\$62,438,032

Vision Research

The Neurophysiology of Visual Search: Oculomotor and Visual Mechanisms	93.867	5R01EY017039-10			0	32,724
					\$0	\$32,724
Signaling Mechanisms of Lens Development	93.867	5R01EY017061-13			0	354,866
					\$0	\$354,866
PDGF signaling in lens development	93.867	5R01EY025933-05			0	265,384
					\$0	\$265,384
Growth and Guidance of Retinal Axon	93.867	5R01EY012736-28			0	-177
					\$0	\$-177
Top-down selection of task-relevant cues: neural mechanisms in the frontal and parietal lobes	93.867	5R01EY025965-05			0	336,330
					\$0	\$336,330
Studying models and mechanisms of optic nerve diseases	93.867	5R01EY002115-41			0	240,804
					\$0	\$240,804

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						<u>Total Expenditures (Includes Subrecipients)</u>
Optimal calcium imaging with shaped excitation	93.867	5R21EY027592-02			0	48,994
					\$0	\$48,994
Structural basis of receptor-mediated cellular vitamin A uptake	93.867	5R01EY027405-04			63,223	437,902
					\$63,223	\$437,902
Endogenous neural activity: neurophysiology, optical imaging, fMRI, and behavior.	93.867	5R01EY025330-04			123,291	123,291
Endogenous neural activity: neurophysiology, optical imaging, fMRI, and behavior.	93.867	5R01EY025330-04			0	-8,498
					\$123,291	\$114,793
Receptor Tyrosine Kinase Activity in Drosophila Eye Development	93.867	5R01EY026217-04			0	305,537
					\$0	\$305,537
Vision Sciences Training Grant	93.867	5T32EY013933-18			0	167,623
Vision Sciences Training Grant	93.867	5T32EY013933-18			0	20,481
					\$0	\$188,104
Gene Silencing and Gene Editing in Phototransduction	93.867	5R01EY024698-04			64,794	64,794
Gene Silencing and Gene Editing in Phototransduction	93.867	5R01EY024698-04			0	-603
					\$64,794	\$64,191
Therapeutic Corneal Cross-Linking using Formaldehyde Releasing agents	93.867	5R01EY020495-09			0	254,955
Therapeutic Corneal Cross-Linking using Formaldehyde Releasing agents	93.867	5R01EY020495-09			0	4,210
					\$0	\$259,165
Core Facilities for Vision Research	93.867	5P30EY019007-10			0	394,498

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Core Facilities for Vision Research	93.867	5P30EY019007-10			0	281,766
Core Facilities for Vision Research	93.867	5P30EY019007-10			0	38,350
Core Facilities for Vision Research	93.867	5P30EY019007-10			0	36,176
					\$0	\$750,790
Molecular physiology of cyclic nucleotide-gated channels	93.867	5R01EY027800-03			0	202,590
					\$0	\$202,590
Quantitative Fundus Autofluorescence in Retinal Disorders	93.867	5R01EY024091-06			0	362,863
					\$0	\$362,863
Stargardt disease with low lipofuscin	93.867	5R01EY028954-02			0	481,972
					\$0	\$481,972
Gene Silencing and Gene Editing in Phototransduction	93.867	5R01EY024698-06			0	446,188
					\$0	\$446,188
Integrated clinical, genetic and functional analysis of the ABCA4 locus	93.867	5R01EY029315-02			31,366	385,901
					\$31,366	\$385,901
Precision genome surgery in autologous stem cell transplant	93.867	5U01EY030580-02			0	388,450
					\$0	\$388,450
The role of cortical feedback in visual face processing	93.867	5R00EY022671-05			0	202,076
					\$0	\$202,076
The role of the cerebellum in visual learning	93.867	5R21EY028749-02			37,701	138,768
					\$37,701	\$138,768

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CRCNS: Theory-guided studies of cortical mechanisms of multi-input integration	93.867	5R01EY029999-02			197,688	355,778
					\$197,688	\$355,778
Neural circuit mechanisms for color vision	93.867	5R01EY029311-03			0	464,806
					\$0	\$464,806
The role of the ciliary margin zone and Cyclin D2 in patterning the binocular projection on	93.867	2R01EY015290-14A1			0	110,515
					\$0	\$110,515
Impact of Lipofuscin in Retinal Pigment Epithelial Cells	93.867	5R01EY012951-19			0	326,692
					\$0	\$326,692
Pharmacological treatment for atrophic age-related macular degeneration compounded by common forms of age-related amyloid disease	93.867	5R01EY028549-03			205,998	523,817
					\$205,998	\$523,817
Retinal Disease Promoted by Iron-Induced Bisretinoid Oxidation	93.867	5R01EY028131-03			94,666	467,464
					\$94,666	\$467,464
Defining Barriers to Gene Therapy	93.867	5R01EY018213-12			0	610,078
					\$0	\$610,078
Ocular hemodynamics of rat model of glaucoma	93.867	5R01EY028550-02			104,404	460,826
					\$104,404	\$460,826
Regulation of Glia-driven Neuroinflammation in Glaucoma	93.867	5R01EY028153-03			0	270,091
					\$0	\$270,091
Precision medicine for ABCA4 disease: modifier alleles	93.867	5R01EY028203-03			0	401,772
					\$0	\$401,772
Investigating the role of intracellular calcium concentration on STRA6- mediated retinol uptake	93.867	5F31EY029591-02			0	45,016

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$45,016
Imaging Functional Connectivity in Visual Cortex	93.867	5R01EY011787-19			0	466,734
Imaging Functional Connectivity in Visual Cortex	93.867	5R01EY011787-19			0	188,500
					\$0	\$655,234
Measures of Human Receptor and Post Receptor Activity	93.867	5R01EY009076-27			358,111	611,720
					\$358,111	\$611,720
Role of Neuronal Ensembles in Visual Processing	93.867	5F32EY029161-02			0	58,379
					\$0	\$58,379
Structural analysis of the bestrophin anion channel Best2	93.867	5F31EY030763-02			0	45,016
					\$0	\$45,016
Developing a novel, rapid-response biosensor and analyzing Notch signaling dynamics in cell fate decisions in vivo	93.867	1F31EY030331-01A1			0	24,544
					\$0	\$24,544
Regulation of FGF signaling in lacrimal gland development	93.867	5R01EY018868-11			0	307,441
					\$0	\$307,441
Spectral and spatial processing of wavelength information in the Drosophila visual system	93.867	5F31EY030319-02			0	45,016
					\$0	\$45,016
Mechanism of Csk signaling in lacrimal gland morphogenesis	93.867	1R01EY031210-01			0	207,512
					\$0	\$207,512
Early retinal development in pigmented and albino mice: Factors in the CMZ and RPE controlling RGC specification	93.867	2R01EY015290-15A1			0	234,444
					\$0	\$234,444
Signaling Mechanisms in Lens Development	93.867	2R01EY017061-15			0	79,971

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					<u>\$0</u>	<u>\$79,971</u>
Therapeutic gene editing and multimodal imaging in juvenile macular degeneration	93.867	1R24EY028758-01A1			0	38,097
Therapeutic gene editing and multimodal imaging in juvenile macular degeneration	93.867	1R24EY028758-01A1			0	25,095
					<u>\$0</u>	<u>\$63,192</u>
Drosophila Ommatidium: a model neural system for cell recruitment and fate specification during development	93.867	1R01EY030956-01A1			0	89,345
					<u>\$0</u>	<u>\$89,345</u>
					<u>\$1,281,242</u>	<u>\$12,466,884</u>

Medical Library Assistance

Training in Biomedical Informatics at Columbia University	93.879	5T15LM007079-24			0	-9,651
					<u>\$0</u>	<u>\$-9,651</u>
Training in Biomedical Informatics at Columbia University	93.879	5T15LM007079-28			0	846,009
Training in Biomedical Informatics at Columbia University	93.879	5T15LM007079-28			0	61,401
Training in Biomedical Informatics at Columbia University	93.879	5T15LM007079-28			0	7,807
Training in Biomedical Informatics at Columbia University	93.879	5T15LM007079-28			0	-17,566
					<u>\$0</u>	<u>\$897,651</u>
Conexion: A localized information resource for a low-income Hispanic community	93.879	5G08LM012689-03			0	89,625
					<u>\$0</u>	<u>\$89,625</u>
Bridging the Semantic Gap Between Research Eligibility Criteria and Clinical Data	93.879	5R01LM009886-10			112,016	492,194
					<u>\$112,016</u>	<u>\$492,194</u>
Probabilistic modeling of observational clinical data for high-throughput inference of disease phenotypes	93.879	5F31LM012894-03			0	50,016

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$50,016
Prefrontal cortex and adolescent binge drinking: Role of HCN channels	93.879	5F31LM013054-02			0	28,425
Prefrontal cortex and adolescent binge drinking: Role of HCN channels	93.879	5F31LM013054-02			0	25,008
					\$0	\$53,433
Big Data Methods for Comprehensive Similarity based Risk Prediction	93.879	5R01LM013061-02			0	115,615
Big Data Methods for Comprehensive Similarity based Risk Prediction	93.879	5R01LM013061-02			0	113,888
Big Data Methods for Comprehensive Similarity based Risk Prediction	93.879	5R01LM013061-02			0	34,635
					\$0	\$264,138
Deep phenotyping in Electronic Health Records for Genomic Medicine	93.879	5R01LM012895-02			151,994	409,348
Discovering and Applying Knowledge in Clinical Databases	93.879	5R01LM006910-20			29,354	520,796
					\$29,354	\$520,796
PhendoPHL:A Data-Science Enabled Personal Health Library to Manage Endometriosis	93.879	5R01LM013043-02			0	358,704
					\$0	\$358,704
SCH: Prediction of Preterm Birth in Nulliparous Women	93.879	5R01LM013327-02			3,489	50,252
SCH: Prediction of Preterm Birth in Nulliparous Women	93.879	5R01LM013327-02			0	43,288
					\$3,489	\$93,540
					\$296,853	\$3,219,794
International Research and Research Training						
Impact of a multimodal intervention to reduce dual stigma and improve treatment outcomes in HIV/Drugresistant TB co-infected patients in KwaZulu-Natal, South Africa	93.989	5R21TW011077-02			101,769	201,764

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					Subrecipients	Total Expenditures (Includes Subrecipients)
					<u>\$101,769</u>	<u>\$201,764</u>
Adapting the WHO Cardiovascular Disease Risk Management Package to the Ghanaian Community-Based Health Planning and Services (CHPS) Primary Care Model: An Implementation Pilot Study	93.989	5R21TW010452-02			0	15,769
					<u>\$0</u>	<u>\$15,769</u>
Domestic Violence Attitudes and Culturally Appropriate Prevention in Pakistan	93.989	5R21TW010443-02			0	71,285
					<u>\$0</u>	<u>\$71,285</u>
Health and Psychosocial Need: The Asenze study of risk and protection in adolescence	93.989	5R01TW011228-03			256,704	394,236
Health and Psychosocial Need: The Asenze study of risk and protection in adolescence	93.989	5R01TW011228-03			0	25,337
					<u>\$256,704</u>	<u>\$419,573</u>
					<u>\$358,473</u>	<u>\$708,391</u>
Total Direct Award Programs					<u>\$82,853,003</u>	<u>\$501,058,932</u>

Pass-through Awards

National Cancer Institute/NIH/DHHS

Integrative analysis genomic and proteomic data from The Cancer Genome Atlas	93	LEIDOS 15X036	HHSN261200800001E	LEIDOS BIOMEDICAL RESEARCH INC	0	-321
					<u>\$0</u>	<u>\$-321</u>
Breast Cancer Prevention Study	93	VENTWELL 17RWSK002	HHSN261201400002B	VENTUREWELL	0	1,380
					<u>\$0</u>	<u>\$1,380</u>
Patient-Derived Models Tissue Procurement Protocol for the National Cancer Institute	93	LEIDOS 17X152	HHSN261200800001E	LEIDOS BIOMEDICAL RESEARCH INC	0	2,880
					<u>\$0</u>	<u>\$2,880</u>
Integrated imaging and molecular analysis of glioblastoma using SCOPE-Seq on the AIR FLOW System	93	CMICRO 021820	75N91019C00029	CELL MICROSYSTEMS	0	12,906
					<u>\$0</u>	<u>\$12,906</u>

National Heart, Lung, and Blood Institute/NIH/DHHS

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						R&D Cluster
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Multi-Ethnic Study of Atherosclerosis (MESA) - Field Center	93	UWASH UWSC8537	HHSN268201500003I	UNIVERSITY OF WASHINGTON SEATTLE WASHINGTON	0	-528
					\$0	-\$528
PumpKIN Trial	93	NERI CU18-1664	HHSN2682012000001	NEW ENGLAND RESEARCH INSTITUTES	0	9,799
					\$0	\$9,799
Strong Heart Study Arizona Field Center	93	MERI 5001681646	75N2019D00023/TO-75N2019 F0001	Medstar Research Institute	0	33,050
Strong Heart Study Arizona Field Center	93	MERI 5001681646	75N2019D00023/TO-75N2019 F0001	Medstar Research Institute	0	3,213
					\$0	\$36,263
Jackson Heart Study Renewal - Coordinating Center	93	UMISSIP 66111350819-01	HHSN2682018000101	UNIVERSITY OF MISSISSIPPI	0	2,221
					\$0	\$2,221
Multi-Ethnic Study of Atherosclerosis Field Center	93	UWASH UWSC11309	HHSN268201500003I	UNIVERSITY OF WASHINGTON SEATTLE WASHINGTON	0	164,767
					\$0	\$164,767
National Institute of Child Health and Human Development/NIH/DHHS						
Efficacy, Safety and Pharmacokinetics of Topical Timolol in Infants with Infantile Hemangioma	93	CDUKE 218094	HHSN-2752010000031	DUKE CLINICAL RESEARCH INSTITUTE	0	39,863
					\$0	\$39,863
National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS						
Step-up Mentor Allowance	93	UAB CU19-2603	NIH STEP-UP	UNIVERSITY OF ALABAMA AT BIRMINGHAM	0	1,493
					\$0	\$1,493
National Institute on Drug Abuse/NIH/DHHS						
Increasing Provider Awareness and Prescription of Buprenorphine for Opioid Use Disorder in a New York City Emergency Department	93	SAEM CU19-3837	NIDA	SOCIETY FOR ACADEMIC EMERGENCY MEDICINE	0	1,645
					\$0	\$1,645

National Institutes of Health/DHHS

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						R&D Cluster
<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Advanced Cannula Development for Coronary Sinus Access	93	SPSLLC SPS-1	1R41HL129754-01A1	STRATEGIC PACING SYSTEMS LLC	0	31,054
					\$0	\$31,054
Pharmacokinetics and Safety Profile of Digoxin in Infants with Single Ventricle Congenital Heart Disease	93	DUKEU 243797	HHSN-275201800003I	DUKE UNIVERSITY	0	5,999
					\$0	\$5,999
CNT-Vectored Delivery of mRNA for HIV-Vaccines	93	LUNA 33483.02ADARC	75N93019C00034 3441-ARM-2S 3	LUNA INNOVATIONS	0	54,785
					\$0	\$54,785
					\$0	\$364,206
National Cancer Institute/NIH/DHHS						
Pilot Study of Denosumab in BRCA1/2 Mutation Carriers Scheduled for Risk-Reducing Salpingo-Oophorectomy	93.	UTMDA 3001109242/3001109711	HHSN261201200034I	UNIVERSITY OF TEXAS M.D. ANDERSON CANCERCENTER	0	4,386
Pilot Study of Denosumab in BRCA1/2 Mutation Carriers Scheduled for Risk-Reducing Salpingo-Oophorectomy	93.	UTMDA 3001109242/3001109711	HHSN261201200034I	UNIVERSITY OF TEXAS M.D. ANDERSON CANCERCENTER	0	2,841
					\$0	\$7,227
					\$0	\$7,227
Family Smoking Prevention and Tobacco Control Act Regulatory Research						
Harmful Constituents and Respiratory Effects of Waterpipe Smoke	93.077	JH 2003435348	R01HL134149	JOHNS HOPKINS UNIVERSITY	0	15,850
					\$0	\$15,850
Examining the Effects of Advertising, Packaging, and Labeling, and Perceptions, Use, and Exposure of Combustible Tobacco Products	93.077	RUTGER 1262	1U54CA229973-01	RUTGERS, THE STATE UNIVERSITY OF NEW JERDEPARTMENT OF	0	50,434
Examining the Effects of Advertising, Packaging, and Labeling, and Perceptions, Use, and Exposure of Combustible Tobacco Products	93.077	RUTGER 1262	1U54CA229973-01	RUTGERS, THE STATE UNIVERSITY OF NEW JERDEPARTMENT OF	0	12,836
					\$0	\$63,270
The Exposure to Metals from ECigarettes (EMIT) Study	93.077	JHU 2004225064	1R01ES030025-01	JOHNS HOPKINS UNIVERSITY	0	41,658
					\$0	\$41,658
					\$0	\$120,778

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R&D Cluster						
Environmental Health						
Personal Environmental Exposure Assessment using Wristbands for Epidemiological Studies in Disadvantaged Communities	93.113	OSU P0421A-B	4R33ES024718-02	OREGON STATE UNIVERSITY	0	32,965
					\$0	\$32,965
Participatory Interventions to Reduce Arsenic Exposure in American Indian Communities	93.113	JHU 2003073212	5R01ES025135-02	JOHNS HOPKINS UNIVERSITY	0	69,102
					\$0	\$69,102
Arsenic and Immune Response to Influenza Vaccination in Pregnant Women and Newborns	93.113	JHU 2003603451	R01ES026973	JOHNS HOPKINS UNIVERSITY	0	8,054
					\$0	\$8,054
Air Particulate, Metals, and Cognitive Performance in an Aging Cohort- Roles of Circulating Extracellular Vesicles and Non-coding RNAs	93.113	HARVARD 112557-5108340	1R01ES027747-01	HARVARD UNIVERSITY	0	197,920
					\$0	\$197,920
The Effects of Environmental Exposures on Semen Quality and the Sperm Epigenome.	93.113	BWH 118582	1R01ES028712-01	BRIGHAM AND WOMEN'S HOSPITAL	0	40,285
					\$0	\$40,285
Stress-Chemical Interactions and Neurobehavior in School Age Children	93.113	ISMMS 0255-5545-4609	5R01ES013744-13	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	0	85,218
Stress-Chemical Interactions and Neurobehavior in School Age Children	93.113	ISMMS 0255-5545-4609	5R01ES013744-13	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	0	13,125
					\$0	\$98,343
Maternal Exposure to Inorganic Arsenic in Drinking Water and Adverse Birth Outcomes in Rural Colorado	93.113	UCOL FY18.659.003	1R21ES028416-01A1	UNIVERSITY OF COLORADO	0	11,685
					\$0	\$11,685
The Programming Research in Obesity, Growth, Environmental and Social Stress (PROGRESS) Cohort	93.113	ISMM 0255-4921-4609	5R24ES028622-02	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	0	53,641
					\$0	\$53,641
Manganese-related Neurotoxicity in Asymptomatic Welders	93.113	PSU COLES019672	R01ES019672	PENNSYLVANIA STATE UNIVERSITY	0	24,070
					\$0	\$24,070
Impact of preconception and onward exposure to air pollution on growth trajectories of infants and children	93.113	DUKEU A03-3136	1R01ES029945-01A1	DUKE UNIVERSITY	0	8,537

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$8,537
Coordinating Center for the Breast Cancer and the Environment Research Program	93.113	UWM 855K610	5U01ES026127-04	UNIVERSITY OF WISCONSIN MADISON	0	65,825
					\$0	\$65,825
Human Health Exposure Analysis Resource (HHEAR) Data Center	93.113	0255-C751-4609	2U2CES026555-02	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	0	72,216
					\$0	\$72,216
Prenatal metal mixtures and neurodevelopment: Role of placental extracellular microRNAs	93.113	ISMMS 0255-B981-4609	5R01ES030302-02	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	0	37,029
					\$0	\$37,029
The impact of air pollution exposure on Alzheimer s disease and dementia: a national study	93.113	HARVARD 112518-5110043	3R01ES024332-04S1	HARVARD UNIVERSITY	0	19,966
					\$0	\$19,966
Xenobiotic Receptors in the Crossroad of Xenobiotic Metabolism and Endobiotic Metabolism	93.113	UPITT AWD00000936 (133648-2)	1R35ES030429-01	UNIVERSITY OF PITTSBURGH	0	15,274
					\$0	\$15,274
					\$0	\$754,912
Oral Diseases and Disorders Research						
Protease/PAR2/TRPV4 Axis and Oral Cancer Pain	93.121	NYU F8807-02	1R01DE026806-01A1	NEW YORK UNIVERSITY	0	98,518
					\$0	\$98,518
Development of Drug Delivery Technology for Stem Cell-Based TMJ Regeneration	93.121	WnT Scientific CU18-0546	1R41DE028215-01	WNT SCIENTIFIC LLC	0	47,085
					\$0	\$47,085
					\$0	\$145,603
Human Genome Research						
New York Center for Collaborative Research in Genomics	93.172	NYGC UM1-CU-TLapp-04	1UM1HG008901-01	NEW YORK GENOME CENTER	0	90,475
					\$0	\$90,475
New York Center for Collaborative Research in Common Disease Genomics	93.172	UMI-CU-Goldstein-3	1UM1HG008901-01	NEW YORK GENOME CENTER	0	29,291

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$29,291
Health Care Provider responses to receiving unsolicited genomic results	93.172	GENFD0001649725	1R01HG010004-01	CHILDREN'S HOSPITAL BOSTON	0	26,113
					\$0	\$26,113
Fully Integrated Single Cell Imaging and RNA-Seq Library Preparation	93.172	CMICRO CU17-1067	9R44HG010003-02A1	CELL MICROSYSTEMS	0	222,695
					\$0	\$222,695
Developing Clinical Translational Tools to Communicate Genetic Risk to Individuals who are at Clinical High Risk for Psychosis	93.172	NYU F1228-01	1R21HG010420-01A1	NEW YORK UNIVERSITY	0	10,215
					\$0	\$10,215
Exome sequencing in Diverse Populations in Colorado & Oregon	93.172	KAISER OOS030229-Columbia	2U01HG007292-06	Kaiser Foundation Research Institute--Division of Research	0	29,755
Exome sequencing in Diverse Populations in Colorado & Oregon	93.172	KAISER OOS030229-Columbia	2U01HG007292-06	Kaiser Foundation Research Institute--Division of Research	0	3,780
					\$0	\$33,535
ELSI.hub: National Center for ELSI Resources and Analysis	93.172	SU 62196601-139696	1U24HG010733-01	STANFORD UNIVERSITY	0	282,002
ELSI.hub: National Center for ELSI Resources and Analysis	93.172	SU 62196601-139696	1U24HG010733-01	STANFORD UNIVERSITY	0	27,219
					\$0	\$309,221
UW Center for Mendelian Genomics	93.172	UWSC11201	UM1HG006493	UNIVERSITY OF WASHINGTONSEATTLE WASHINGTON	0	85,077
UW Center for Mendelian Genomics	93.172	UWSC11201	UM1HG006493	UNIVERSITY OF WASHINGTONSEATTLE WASHINGTON	0	7,169
					\$0	\$92,246
Leveraging consanguinity and homozygosity to identify novel recessive variants	93.172	UCSF 11959sc	1R01HG010689-01	UNIVERSITY OF CALIFORNIA SAN FRANCISCO	0	40,986
					\$0	\$40,986
					\$0	\$854,777

Research Related to Deafness and Communication Disorders

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Randomized Controlled Trial of Valganciclovir for Asymptomatic Cytomegalovirus Infected Hearing Impaired Infants (ValEAR Trial)	93.173	UUMC 10041913-010	1U01DC014706-01A1	UNIVERSITY OF UTAH MEDICAL CENTER	0	1,325
					\$0	\$1,325
Implantable Microphones for Fully Implantable Hearing Prosthetics	93.173	MEA 530673	5R01DC016874-02	MASSACHUSETTS EYE AND EAR	0	45,019
					\$0	\$45,019
					\$0	\$46,344
Research and Training in Complementary and Integrative Health						
Metals in the Trial to Assess Chelation Therapy 2 (TACT2)	93.213	MSMCM R01 AT009273	1R01AT009273-01	MOUNT SINAI MEDICAL CENTER-MIAMI	0	319,695
					\$0	\$319,695
Comprehensive CBT via reSET for a Hub and Spoke MAT System of Care	93.213	PSU COLAT010118	1R21AT010118-01	PENNSYLVANIA STATE UNIVERSITY	0	55,435
					\$0	\$55,435
					\$0	\$375,130
Mental Health Research Grants						
Functional Brain Networks Mediating Individuals Differences in Valence Bias	93.242	UNL 24-1219-0001-002	5R01MH111640-03	UNIVERSITY OF NEBRASKA-LINCOLN	0	24,747
					\$0	\$24,747
Neurophysiology of Auditory Emotion Recognition in the Human Brain	93.242	FIMR 500771CU	1R21MH114166-02	FEINSTEIN INSTITUTE FOR MEDICAL RESEARCH	0	80,161
					\$0	\$80,161
Determinants for Resilience in Youth with HIV infection and Youth affected by HIV	93.242	HJFAMM 832613	5R01MH102151-03	Jackson (Henry M.) Foundation for the Advancement of Military Medicine	0	73,866
					\$0	\$73,866
Mechanisms and Longitudinal Effects of Stigma on Women s Adherence and Outcomes	93.242	UAB 000506211-005	1R01MH104114-01	UNIVERSITY OF ALABAMA AT BIRMINGHAM	0	6,149
					\$0	\$6,149
EEG/MRI Controlled TMS Real-Time Neural Feedback in Anti-Depressive Treatment	93.242	MUSC A00-1979-S001	4R33MH106775-04	MEDICAL UNIVERSITY OF SOUTH CAROLINA	0	65,408
					\$0	\$65,408

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Federal Grantor / Pass-through Grantor	CFDA	Project No	Pass-through Contract Number	Passthrough Name	Subrecipients	R&D Cluster
						Total Expenditures (Includes Subrecipients)
ED-SAFE-2: Translating Safety Planning into Practice	93.242	UMASS WA00318982/RFS2016003	5R01MH106726-02	UNIVERSITY OF MASSACHUSETTS WORCESTER	0	46,520
					\$0	\$46,520
Suicide Risk Reduction in the Year Following Jail Release	93.242	MSU RC105383CU	1U01MH106660-01A1	MICHIGAN STATE UNIVERSITY	0	50,610
					\$0	\$50,610
Improving the Emergency Department Management of Deliberate Self-Harm	93.242	UPENN 568947/10052478/19439	1R01MH107452-01A1	UNIVERSITY OF PENNSYLVANIA	0	79,167
					\$0	\$79,167
Peer-Led Healthy Lifestyle Program in Supportive Housing	93.242	WASHU WU-17-430	7R01MH10457-04	WASHINGTON UNIVERSITY	0	100,877
					\$0	\$100,877
Improving Cognition via Exercise in Schizophrenia	93.242	MSSM 0255-3351-4609	1R01MH110623-01A1	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	0	84,954
Improving Cognition via Exercise in Schizophrenia	93.242	MSSM 0255-3351-4609	1R01MH110623-01A1	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	0	5,579
Improving Cognition via Exercise in Schizophrenia	93.242	MSSM 0255-3351-4609	1R01MH110623-01A1	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	0	2,889
					\$0	\$93,422
Transforming mental health delivery through behavioral economics and implementation science	93.242	UPENN 577594	1P50MH113840-01	UNIVERSITY OF PENNSYLVANIA	0	21,341
					\$0	\$21,341
Addressing Psychiatrist Workforce Shortages in the U.S. with Psychiatric Advanced Practice Registered Nurses	93.242	UMARY 1802161	1R01MH113650-01	UNIVERSITY OF MARYLAND	0	14,686
					\$0	\$14,686
NNCI Synapse: Development of a mobile application to disseminate neuroscience training to medical professionals	93.242	CFSI CU17-1085	1R44MH11546-01	The Center for Social Innovation	0	27,321
NNCI Synapse: Development of a mobile application to disseminate neuroscience training to medical professionals	93.242	CFSI CU17-1085	1R44MH11546-01	The Center for Social Innovation	0	8,951
					\$0	\$36,272
Biomarkers of Conversion Risk and Treatment Response in Early-Stage Schizophrenia	93.242	CUMC 202992	1R01MH110270-01A1	WEILL (JOAN AND SANFORD I.) MEDICAL COLLEGE OF CORNELL UNIVERSITY	0	98,680

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$98,680
Connectomes Related to Anxiety and Depression in Adolescents	93.242	MIT S5416 PO194771	1U01MH108168-01	MASSACHUSETTS INSTITUTE OF TECHNOLOGY	0	2,274
					\$0	\$2,274
An Adaptive Algorithm-Based Approach to Treatment for Adolescent Depression	93.242	UMINN N006073701	1R01MH113748-01	UNIVERSITY OF MINNESOTA	0	17,915
					\$0	\$17,915
Mobile Adaptation and Testing of a Uniquely Targeted HIV Intervention for Young Transgender Women	93.242	BU 00001275	1R56MH113684-01A1	BROWN UNIVERSITY	0	18,884
					\$0	\$18,884
A unified intervention for young gay and bisexual men s minority stress, mental health, and HIV risk	93.242	YU GR105649 (CON-80001695)	5R01MH109413-04	YALE UNIVERSITY	0	37,069
					\$0	\$37,069
Biopsychosocial mechanisms underlying internalizing psychopathology in a prospective, population-based cohort of sexual minority young adults	93.242	YU GR105699 (CON-80001709)	1R01MH118245-01	YALE UNIVERSITY	0	166,773
					\$0	\$166,773
Hippocampal memory circuits in delusions	93.242	NYU 17-A1-00-006880-01	5R01MH112733-02	NEW YORK UNIVERSITY	0	202,217
					\$0	\$202,217
Effect of GABAergic Inhibition of Dendritic Spines on Synaptic Pruning in mPFC During Adolescence	93.242	SUNYRF 100-1151016-83329	1R01MH11590001A1	RESEARCH FOUNDATION OF THE STATE UNIVERSITY OF NEW YORK	0	475,015
					\$0	\$475,015
Suubi4Her: A Combination Intervention Addressing HIV Risk Behaviors Among Older Adolescent Girls Transitioning into Adulthood in Uganda	93.242	WU-18-219	1R01MH113486-01	WASHINGTON UNIVERSITY	0	11,876
					\$0	\$11,876
Web-Based Therapist Training on Complicated Grief Therapy	93.242	CFT C001	1R41MH118126-01A1	CENTER FOR TELEPSYCHOLOGY	17,773	134,804
					\$17,773	\$134,804
Family psychoeducation for adults with psychotic disorders in Tanzania (Study)	93.242	DU A030978	1R34MH106663-01A1	DUKE UNIVERSITY	0	27,000
					\$0	\$27,000

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						<u>Total Expenditures (Includes Subrecipients)</u>
Characterizing Cognition Across the Lifespan in Untreated Psychosis in China	93.242	NYU F8752-04	7R01MH108385-03	NEW YORK UNIVERSITY	0	79,382
					\$0	\$79,382
Biotyping Placebo and Treatment-Specific Responses for Precision Medicine	93.242	17-A0-00-007642-01	2R01MH099003-06	NEW YORK UNIVERSITY MEDICAL CENTER	0	104,906
Biotyping Placebo and Treatment-Specific Responses for Precision Medicine	93.242	17-A0-00-007642-01	2R01MH099003-06	NEW YORK UNIVERSITY MEDICAL CENTER	0	44,565
					\$0	\$149,471
VITAL Start (Video-intervention to Inspire Treatment Adherence for Life): Brief facility based video intervention to improve retention and adherence to ART among pregnant and breastfeeding women	93.242	BCM 7000000715	1R01MH115793-01A1	BAYLOR COLLEGE OF MEDICINE-- HOUSTON	0	39,377
					\$0	\$39,377
Prenatal and Neonatal Risk Factors for Adverse Neurodevelopmental Outcomes in Childhood and Early Adulthood	93.242	SUBK00009692	1R21MH120824-01A1	UNIVERSITY OF MICHIGAN	0	28,849
					\$0	\$28,849
Nonparametric depth-based methods for analyzing high dimensional data. Applications to biomedical r	93.242	500667-78050	1R21MH120534-01	NORTHEASTERN UNIVERSITY	0	46,628
					\$0	\$46,628
Optimizing Study Design to Test a Community-level Intervention to Reduce Intersectional Stigma and Increase HIV Testing and Prevention among African-American/Black MSM	93.242	CCNY 00003796-00	1R34MH121295-01	City College of New York	0	23,861
					\$0	\$23,861
Genetic neuroscience: How human genes and alleles shape neuronal phenotypes	93.242	BRINST 5000486-5500001084	5U01MH115727-03	BROAD INSTITUTE	0	86,326
					\$0	\$86,326
Large-Aperture Electrically Tunable Lenses with 40 Microsecond Hysteresis-Free Response for Remote Focusing	93.242	BNLS CU17-2671	5R44MH117430-03	Boulder Nonlinear Systems	0	99,290
					\$0	\$99,290
Mobile Assessment for the Prediction of Suicide (MAPS)	93.242	OREGON 281450B	5U01MH1163923-02	UNIVERSITY OF OREGON	0	43,171
Mobile Assessment for the Prediction of Suicide (MAPS)	93.242	OREGON 281450B	5U01MH1163923-02	UNIVERSITY OF OREGON	0	3,636
					\$0	\$46,807

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						<u>Total Expenditures (Includes Subrecipients)</u>
OnTrackChile for First Episode Psychosis	93.242	UOH CU17-1224	5R01MH15502-02	UNIVERSIDAD DE O'HIGGINS	0	201,223
					\$0	\$201,223
In Utero Assessment of the Human Neural Connectome and Later Child Behavior	93.242	NYU 18-A0-00-1001852	7R01MH110793-04	NEW YORK UNIVERSITY	0	14,917
					\$0	\$14,917
Inflammatory Biomarkers and Kynurenine Metabolites Tracking Suicidal Ideation and Behavior	93.242	VAI V3362-R1-2	1R01MH118211-01A1	VAN ANDEL INSTITUTE	0	121,776
					\$0	\$121,776
Engaging Black Youth in Depression and Suicide Prevention Treatment with Urban Schools: A Preliminary Study	93.242	NYU F1106-01	1R34MH119290-01	NEW YORK UNIVERSITY	0	22,806
					\$0	\$22,806
Decisions Processes in Late-life Suicide	93.242	UPITT AWD00001169 (133478-1)	2R01MH085651-10	UNIVERSITY OF PITTSBURGH	0	23,642
					\$0	\$23,642
Variational Inference to Reveal Genetic Heterogeneity Across Neuropsychiatric Traits	93.242	FIMR 504786CU	3R01MH117646-02S1	FEINSTEIN INSTITUTE FOR MEDICAL RESEARCH	0	78,966
					\$0	\$78,966
High-throughput Physiological Micro-connectivity Mapping in Vivo	93.242	UCB 00010181	5RF1MH120680-02	UNIVERSITY OF CALIFORNIA, BERKELEY	0	194
					\$0	\$194
Ultra-high channel count electrophysiology and data processing for freely-moving animals	93.242	LEAF CU19-3964	5R44MH114783-03	LEAFLABS	0	104,260
					\$0	\$104,260
Yunnan-ADARC HIV Prevention Program: Developing and Testing a Model to Implement and Sustain PrEP Delivery in China	93.242	ADARC A15-CUIMC-Zucker	1R01MH119884-01A1	AARON DIAMOND AIDS RESEARCH CENTER	0	2,856
					\$0	\$2,856
Impact of Trauma Exposure on Critical Periods in Brain Development and Fear Processing in Children	93.242	WAYNE WSU20005-A2	7R01MH111682-04	WAYNE STATE UNIVERSITY	0	101,375
					\$0	\$101,375
A Translational and Neurocomputational Evaluation of a D1R Partial Agonist for Schizophrenia	93.242	YU GR107870 (CON 8002100)	1U01MH121766-01	YALE UNIVERSITY	0	48,437

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					Subrecipients	Total Expenditures (Includes Subrecipients)
					\$0	\$48,437
					\$17,773	\$3,206,176
Alcohol Research Programs						
A Randomized Trial of Abandoned Housing Remediation, Substance Abuse and Violence	93.273	UPENN 569453	1R01AA024941-01	UNIVERSITY OF PENNSYLVANIA	0	166,721
					\$0	\$166,721
Sexual Orientation, Discrimination, and Health Disparities in DSM-5 Alcohol Use Disorder	93.273	UMICHG 300914461	1R01AA0256841-01	UNIVERSITY OF MICHIGAN	0	24,512
					\$0	\$24,512
Structural Analysis of Alcohol-Dependent Activation of GIRKs	93.273	ISMMS 0255-5042-4609	2R01AA018734-06A1	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	0	17,237
Structural Analysis of Alcohol-Dependent Activation of GIRKs	93.273	ISMMS 0255-5042-4609	2R01AA018734-06A1	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	0	6,464
					\$0	\$23,701
Alcohol Actions-Molecular Targets on Brain Proteins	93.273	UTEXAUS UTA16-000568	R01AA06399	UNIVERSITY OF TEXAS AT AUSTIN	0	52,108
					\$0	\$52,108
Next Generation Rare Variant Discovery in Multiplex AD Families	93.273	UPITT 0045432	1R01AA021746-01	UNIVERSITY OF PITTSBURGH	0	20,713
					\$0	\$20,713
Dose and Pattern of Adverse Effects in the Diagnosis of Fetal Alcohol Spectrum Disorders: A Secondary Analysis of Data from Five Cohorts	93.273	WSU18044	1R01AA025905-01	WAYNE STATE UNIVERSITY	0	33,852
					\$0	\$33,852
Impact of supportive policies on minority stress, drinking and health among women	93.273	UIL 16343	2R01AA013328-10A1	UNIVERSITY OF ILLINOIS, BOARD OF TRUSTEES	0	248,919
Impact of supportive policies on minority stress, drinking and health among women	93.273	UIL 16343	2R01AA013328-10A1	UNIVERSITY OF ILLINOIS, BOARD OF TRUSTEES	0	24,010
					\$0	\$272,929
					\$0	\$594,536

Drug Abuse and Addiction Research Programs

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						<u>Total Expenditures (Includes Subrecipients)</u>
Florida Node Alliance of the Drug Abuse Clinic Trials Network-CTN 0064	93.279	UMIAMI SPC-001112	3UG1DA013720-16S1	UNIVERSITY OF MIAMI	0	392,528
					\$0	\$392,528
Florida Node Alliance of the Drug Abuse Clinic Trials Network	93.279	UMIAMI SPC-001088	2UG1DA013720-16	UNIVERSITY OF MIAMI	0	145,555
					\$0	\$145,555
Clinical Trials Network: Greater New York Node	93.279	19-A0-S1-003671-01	2UG1DA013035-14	NEW YORK UNIVERSITY	0	79,534
					\$0	\$79,534
New York State Health Home Impact on HIV Treatment Cascade	93.279	CASAC CU13-3389	5R01DA038193-05	CASA COLUMBIA	0	-2,175
					\$0	-\$2,175
Metropolitan Trajectories of HIV Epidemics, Drug Use, and Responses in US Key Populations	93.279	EMORYU T425319	5R01DA037568-02	EMORY UNIVERSITY	0	45,321
					\$0	\$45,321
A Natural History Study of Buprenorphine Diversion, Self Treatment and Engagement with Formal Treatment Services	93.279	WSU 670244-1	1R01DA040811-01A1	WRIGHT STATE UNIVERSITY	0	27,330
					\$0	\$27,330
CRCNS: Computational and Neural Mechanisms of Memory-guided Decisions	93.279	PU SUB0000170	5R01DA038891-04	PRINCETON UNIVERSITY	0	103,216
					\$0	\$103,216
Micro- to Nanoscale Neurotransmitter Sensors	93.279	UCLA 2000GVG295	1R01DA045550-01	UNIVERSITY OF CALIFORNIA, LOS ANGELES	0	358,454
					\$0	\$358,454
CERC-501: Kappa Antagonist for nicotine dependence	93.279	CEREC CER-10141HF	1R01DA040976-01	CERECOR INC	0	233
					\$0	\$233
Sexual Orientation Differences: Prevalence and Correlates of Substance Use and Abuse	93.279	PHI 00394	5R01DA036606-03	Public Health Institute	0	74,532
					\$0	\$74,532
Does medical cannabis reduce opioid analgesics in HIV+ and HIV adults with pain?	93.279	AECM 311147	1R01DA044171-01A1	ALBERT EINSTEIN COLLEGE OF MEDICINE SHIVA UNIVERSITY	0	15,365

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$15,365
Clinical Trials Network: Greater New York Node (CTN-BIOSTAT))	93.279	NYU 19-A0-S1-003671-01 CTN-BIO	3UG1DA013036-18S1	NEW YORK UNIVERSITY	0	108,042
					\$0	\$108,042
Clinical Trials Network: Greater New York Node (CTN-0068)	93.279	NYU 19-A0-S1-003671	3UG1DA013035-16S3	NEW YORK UNIVERSITY	0	13,419
					\$0	\$13,419
Social Networks, Physician Characteristics, and Inappropriate Prescribing of Commonly Misused Prescription Drugs	93.279	YU GR102657(CON-80001241)	1R01DA044981-01A1	YALE UNIVERSITY	0	21,523
					\$0	\$21,523
Systems Biology of HIV, methamphetamine and antiretrovirals interactions	93.279	SCRIPPS 5-53656	1R01DA041750-01	Scripps Research Institute	0	86,846
					\$0	\$18,375
Systems Biology of HIV, methamphetamine and antiretrovirals interactions	93.279	SCRIPPS 5-53656	1R01DA041750-01	Scripps Research Institute	0	18,375
					\$0	\$105,221
Acute Pain Management and Longterm Opioid Use after Surgery	93.279	SBRI 2017-1217	1R01DA042299-01A1	SUNNYBROOK RESEARCH INSTITUTE	0	9,191
					\$0	\$9,191
Monitoring the Future: Drug Use and Lifestyles of American Youth	93.279	UMICHG 3004489406	2R01DA001411-43	UNIVERSITY OF MICHIGAN	0	52,307
					\$0	\$52,307
Florida Node Alliance of the Drug Abuse Clinic Trials Network CTN 0067	93.279	UMIAMI SPC-001111	2UG1DA013720-16	UNIVERSITY OF MIAMI	0	101,415
					\$0	-185
Florida Node Alliance of the Drug Abuse Clinic Trials Network CTN 0067	93.279	UMIAMI SPC-001111	2UG1DA013720-16	UNIVERSITY OF MIAMI	0	-185
					\$0	\$101,230
The Florida Node Alliance of the National Drug Abuse Treatment Clinical Trials Network (CTN-0082) (Supplemental Funding)	93.279	UMIAMI SPC-001239	3UG1DA013720-S1	UNIVERSITY OF MIAMI	0	48,811
					\$0	\$48,811
HIV/Drug Abuse Prevention Research Ethics Training Institute	93.279	FORDUN FORD0048	5R25DA031608-09	FORDHAM UNIVERSITY	0	9,300
					\$0	\$9,300

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Healthcare Provider Stigma Related to the Opioid Use Epidemic and its Impact on Patient Treatment and Clinical Management: A Proposal for a National Provider Survey	93.279	UMIAMI SPC-001430	3UG1DA013720-20S4	UNIVERSITY OF MIAMI	0	74,759
					\$0	\$74,759
Pharmacological Probes Based on Mitragynine Pseudoindoxyl	93.279	SLCP 807-1-01	1R21DA045884-01	ST. LOUIS COLLEGE OF PHARMACY	0	106,625
					\$0	\$106,625
NIDA CU17-2611 2017 NIDA Insem Drug abuse Research Fellowship	93.279	NIDA CU17-2611	NIDA	National Institute on Drug Abuse/NIH/DHHS	0	24,559
					\$0	\$24,559
HIV/Drug Abuse Prevention Research Ethics Training Institute	93.279	FORD0034	5R25DA031608-07	FORDHAM UNIVERSITY	0	315
					\$0	\$315
Drug Use Among Nightclub and Dance Festival Attendees in New York City	93.279	NYUSM 18-A1-00-007403-01	1R01DA044207-01A1	NEW YORK UNIVERSITY MEDICAL CENTER	0	57,566
					\$0	\$57,566
The health and social consequences of national marijuana legalization	93.279	NYUSM 19-A0-00-1001918	7R01DA040924-04	NEW YORK UNIVERSITY	0	70,898
					\$0	\$70,898
Prescription drug monitoring programs and opioid-related harm	93.279	19-A0-00-1001809	7R01DA039962-04	NEW YORK UNIVERSITY	0	26,755
					\$0	\$26,755
Examining the synergistic effects of cannabis and prescription opioid policies on chronic pain, opioid prescribing, and opioid poisoning	93.279	19-A0-00-1002539	1R01DA045872-01A1	NEW YORK UNIVERSITY	0	204,293
					\$0	\$204,293
Missing Data Matters: Substance Use Disorder Clinical Trials	93.279	JHU 2004036781	1R01DA046534-01	JOHNS HOPKINS UNIVERSITY	0	11,061
					\$0	\$11,061
Vaccines for Fentanyl and Its Derivatives: A Strategy to Reduce Illicit Use and Overdose	93.279	UMINN N007622802	1UG3DA048386-01	UNIVERSITY OF MINNESOTA	0	15,036
Vaccines for Fentanyl and Its Derivatives: A Strategy to Reduce Illicit Use and Overdose	93.279	UMINN N007622802	1UG3DA048386-01	UNIVERSITY OF MINNESOTA	0	7,966
					\$0	\$23,002

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						<u>Total Expenditures (Includes Subrecipients)</u>
Clinical Trials Network: Greater New York Node (CTN-0097: SWIFT (Naltrexone Induction))	93.279	NYU 19-A0-S4-003671	3UG1DA013035-17SB	NEW YORK UNIVERSITY MEDICAL CENTER	0	71,316
Clinical Trials Network: Greater New York Node (CTN-0097: SWIFT (Naltrexone Induction))	93.279	NYU 19-A0-S4-003671	3UG1DA013035-17SB	NEW YORK UNIVERSITY MEDICAL CENTER	0	6,496
					\$0	\$77,812
Individual Level Predictive Modeling of Opioid Use Disorder Treatment Response using Aggregate CTN Datasets	93.279	NYU 19-A0-S4-003671 CTN-0094	3UG1DA013035-18S4	NEW YORK UNIVERSITY MEDICAL CENTER	0	32,158
Individual Level Predictive Modeling of Opioid Use Disorder Treatment Response using Aggregate CTN Datasets	93.279	NYU 19-A0-S4-003671 CTN-0094	3UG1DA013035-18S4	NEW YORK UNIVERSITY MEDICAL CENTER	0	1,688
					\$0	\$33,846
Opioid Overdoses Among Medicaid Beneficiaries: Predictors, Outcomes and State Policy Effect	93.279	RUTGER 1284	1R01DA047347-01	RUTGERS, THE STATE UNIVERSITY OF NEW JERSEY DEPARTMENT OF	0	7,975
					\$0	\$7,975
Emergency Department-Initiated Buprenorphine Validation (ED-INNOVATION)	93.279	MCLEANH 401655	3UG1DA015831-18S9	MCLEAN HOSPITAL	0	69,905
					\$0	\$69,905
Sex-dependent effects of cannabis: Assessing abuse-related and pharmacokinetic differences between men and women	93.279	UCLA 2000 G XK823	1R01DA047296-01A1	UNIVERSITY OF CALIFORNIA, LOS ANGELES	0	28,506
					\$0	\$28,506
					\$0	\$2,526,814
Discovery and Applied Research for Technological Innovations to Improve Human Health						
Tissue Engineering Resource Center (TERC)	93.286	TUFTS 100228	5P41EB002520-15	TUFTS UNIVERSITY	0	6,945
					\$0	\$6,945
Bio-electrochemical detectors for in vivo continuous monitoring	93.286	USCB KK1836	1R01EB022015-01A1	UNIVERSITY OF CALIFORNIA, SANTA BARBARA	0	126,342
					\$0	\$126,342
Fast Functional MRI with sparse sampling and model-based reconstruction	93.286	UM SUBK00009808	3R01EB023618-02S1	UNIVERSITY OF MICHIGAN	0	9,283
					\$0	\$9,283

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Imaging Human brain Function with Minimal Mobility Restrictions	93.286	UMINN N006264801	U01EB025153	UNIVERSITY OF MINNESOTA	0	377,449
Imaging Human brain Function with Minimal Mobility Restrictions	93.286	UMINN N006264801	U01EB025153	UNIVERSITY OF MINNESOTA	0	283,975
Imaging Human brain Function with Minimal Mobility Restrictions	93.286	UMINN N006264801	U01EB025153	UNIVERSITY OF MINNESOTA	0	82,000
Imaging Human brain Function with Minimal Mobility Restrictions	93.286	UMINN N006264801	U01EB025153	UNIVERSITY OF MINNESOTA	0	67,044
Imaging Human brain Function with Minimal Mobility Restrictions	93.286	UMINN N006264801	U01EB025153	UNIVERSITY OF MINNESOTA	0	-4,192
Imaging Human brain Function with Minimal Mobility Restrictions	93.286	UMINN N006264801	U01EB025153	UNIVERSITY OF MINNESOTA	0	-25,311
					\$0	\$780,965
Causal Inference for Neuroimaging	93.286	JH 2003851642	5R01EB016061-06	JOHNS HOPKINS UNIVERSITY	0	67,450
					\$0	\$67,450
FEBio Software Suite	93.286	UUTAH 10052732-COL	1U24EB029007-01	UNIVERSITY OF UTAH	0	49,993
					\$0	\$49,993
Tools for modeling state-dependent sensory encoding by neural populations across spatial and temporal scales	93.286	ORHSUN 1014876 COLUMBIA	1R01EB028155-01	OREGON HEALTH SCIENCES UNIVERSITY	0	76,036
					\$0	\$76,036
					\$0	\$1,117,014
Minority Health and Health Disparities Research						
Racial Disparity Reduction in the National Kidney Allocation Policy	93.307	EMORY T436682	1R01MD010290-01	EMORY UNIVERSITY	0	16,487
					\$0	\$16,487
Peer-Administered Asthma Self-Management Intervention in Urban Middle Schools	93.307	RIH 710-7137328	1R01MD012225-01	RHODE ISLAND HOSPITAL	0	29,536
					\$0	\$29,536

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Maternal trauma, circulating microRNA in extracellular vesicles, and programming of childhood respiratory outcomes	93.307	ISMMS 0255-B281-4609	1R01MD013310-01	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	0	114,278
					\$0	\$114,278
Social Stress Epigenetics and Cardio-Metabolic Health Among Latinos	93.307	EMORYU A193700	1R01MD013320-01A1	EMORY UNIVERSITY	0	119,515
					\$0	\$119,515
Maternal Stress and the Gut-Brain Axis in African American Infants	93.307	EU A242229	5R01MD009746	EMORY UNIVERSITY	0	13,313
					\$0	\$13,313
Yale Transdisciplinary Collaborative Center for Health Disparities Research (YALE-TCC)	93.307	GR109819 (CON-80002412)	5U54MD010711-04	YALE UNIVERSITY	0	4,758
					\$0	\$4,758
Identifying and exploring solutions to the ethical challenges of Apo1 testing of donors with recent African ancestry through mixed methods research with stakeholders	93.307	WU-20-108-MOD-1	1R01MD014161-01	WASHINGTON UNIVERSITY	0	51,920
					\$0	\$51,920
Using agent-based modeling to compare strategies that can reduce rural-urban disparities in cardiovascular disease	93.307	UGA SUB00002060	1R01MD013886-01	UNIVERSITY OF GEORGIA	0	10,150
					\$0	\$10,150
Data Driven Methods for Missing Data Imputation in Surgical Disparities Research	93.307	GWU 19-M111	1R01MD013901-01A1	GEORGE WASHINGTON UNIVERSITY	0	30,503
					\$0	\$30,503
					\$0	\$390,460

Trans-NIH Research Support

Mount Sinai CHEAR Network Laboratory HUB	93.310	ISMMS 0855-0502-4609	1U2CES026561-01	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	0	26,446
					\$0	\$26,446
ECHO Consortium on Perinatal Programming of Neurodevelopment	93.310	ISMMS 0255-2294-4609	1UG3OD023337-01	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	0	110,540
					\$0	\$110,540
ECHO Consortium on Perinatal Programming of Neurodevelopment	93.310	ISMMS 0255-2294-4609	1UG3OD023337-01	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	0	14,141
					\$0	\$14,141
					\$0	\$124,681

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Environmental Influences on Child Health Outcomes (ECHO) Coordinating Center	93.310	DUKEU A03-2319	1U2COD023375-01	DUKE UNIVERSITY	0	21,207
Environmental Influences on Child Health Outcomes (ECHO) Coordinating Center	93.310	DUKEU A03-2319	1U2COD023375-01	DUKE UNIVERSITY	0	7,958
					\$0	\$29,165
Exposome Contributors to Child Health Originating from National Fetal Growth Study (ECCHO-NFGS)	93.310	A00-2818-S001	1UG3OD023316-01	MEDICAL UNIVERSITY OF SOUTH CAROLINA	0	334,704
Exposome Contributors to Child Health Originating from National Fetal Growth Study (ECCHO-NFGS)	93.310	A00-2818-S001	1UG3OD023316-01	MEDICAL UNIVERSITY OF SOUTH CAROLINA	0	23,100
					\$0	\$357,804
Environmental Influences on Child Health Outcomes in the Northern Plains Safe Passage Study Cohort	93.310	AMH 5UH3OD023279-B2	4UH3OD023279	AVERA MCKENNAN HOSP & UNIV HEALTH CTR	0	368,664
Environmental Influences on Child Health Outcomes in the Northern Plains Safe Passage Study Cohort	93.310	AMH 5UH3OD023279-B2	4UH3OD023279	AVERA MCKENNAN HOSP & UNIV HEALTH CTR	0	35,755
					\$0	\$404,419
Data and Research Support Center	93.310	VUMC 59350	1U2COD23196-01	VANDERBILT UNIVERSITY MEDICAL CENTER	0	768,053
Data and Research Support Center	93.310	VUMC 59350	1U2COD23196-01	VANDERBILT UNIVERSITY MEDICAL CENTER	0	627,790
Data and Research Support Center	93.310	VUMC 59350	1U2COD23196-01	VANDERBILT UNIVERSITY MEDICAL CENTER	0	261,925
					\$0	\$1,657,768
Physical Activity Genomics, Epigenomics/transcriptomics Site	93.310	ISMMS 0255-2446-4609	1U24DK112331-01	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	0	9,542
Physical Activity Genomics, Epigenomics/transcriptomics Site	93.310	ISMMS 0255-2446-4609	1U24DK112331-01	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	0	5,614
					\$0	\$15,156
Children s Respiratory Research and Environment Workgroup (CREW)	93.310	UWM 800K450	1UG3OD023282-01	UNIVERSITY OF WISCONSIN MADISON	0	147,173
Children s Respiratory Research and Environment Workgroup (CREW)	93.310	UWM 800K450	1UG3OD023282-01	UNIVERSITY OF WISCONSIN MADISON	0	73,553

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Children s Respiratory Research and Environment Workgroup (CREW)	93.310	UWM 800K450	1UG3OD023282-01	UNIVERSITY OF WISCONSIN MADISON	0	13,259
					\$0	\$233,985
Children s Respiratory and Environmental Workgroup (CREW)	93.310	UWIS 777K335	5UG3OD023282-02	UNIVERSITY OF WISCONSIN MADISON	0	-27
					\$0	\$-27
National Exposure Assessment Laboratory at Emory	93.310	EMORYU A065065	1U2CES026560-01	EMORY UNIVERSITY	0	318,688
					\$0	\$318,688
Environmental Influences on Child Health Outcomes in the Northern Plains Safe Passage Study Cohort	93.310	AVERA 5UH3OD023279-A2	4UH3OD023279-04	AVERA MCKENNAN HOSP & UNIV HEALTH CTR	0	277,734
Environmental Influences on Child Health Outcomes in the Northern Plains Safe Passage Study Cohort	93.310	AVERA 5UH3OD023279-A2	4UH3OD023279-04	AVERA MCKENNAN HOSP & UNIV HEALTH CTR	0	50,326
Environmental Influences on Child Health Outcomes in the Northern Plains Safe Passage Study Cohort	93.310	AVERA 5UH3OD023279-A2	4UH3OD023279-04	AVERA MCKENNAN HOSP & UNIV HEALTH CTR	0	43,323
					\$0	\$371,383
CHEAR Center for Data Science	93.310	0255-0221-4609	1U2CES026555-01	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	0	58,437
					\$0	\$58,437
An integrated and diverse genomic medicine program for undiagnosed diseases	93.310	DUKEU A031792	2U01HG007672-05	DUKE UNIVERSITY MEDICAL CENTER	0	231,991
An integrated and diverse genomic medicine program for undiagnosed diseases	93.310	DUKEU A031792	2U01HG007672-05	DUKE UNIVERSITY MEDICAL CENTER	0	16,449
					\$0	\$248,440
Children s Respiratory Research and Environment Workgroup (CREW)	93.310	UWM 000000447	5UH3OD023282-04	UNIVERSITY OF WISCONSIN MADISON	0	331,631
					\$0	\$331,631
Re-engineering Precision Therapeutics Through N-of-1 Trials	93.310	FIMR 500811CU	7R01LM012836-03	FEINSTEIN INSTITUTE FOR MEDICAL RESEARCH	0	24,090
					\$0	\$24,090
Mega-Scale Identification Tools for Xenobiotic Metabolism	93.310	EMORYU A319044	5U2CES030163-02	EMORY UNIVERSITY	0	29,474

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					<u>\$0</u>	<u>\$29,474</u>
					<u>\$0</u>	<u>\$4,231,540</u>
National Center for Advancing Translational Sciences						
Systemic Inflammation in Microphysiological Models of Muscle and Vascular Disease	93.350	DUKEU A03-1893	4UH3TR002142-03	DUKE UNIVERSITY	0	192,000
					<u>\$0</u>	<u>\$192,000</u>
University of Pittsburgh Clinical and Translational Science Institute ACT Supplement	93.350	AWD000000243 (134445-1)	3UL1TR001857-01S1	UNIVERSITY OF PITTSBURGH	56,365	152,225
					<u>\$56,365</u>	<u>\$152,225</u>
Improving Clinical Trial Enrollment and Recruitment Education at CTSA hubs (I-CERCH)	93.350	VUMC 59243	1U24TR001579-01	VANDERBILT UNIVERSITY MEDICAL CENTER	0	19,435
Improving Clinical Trial Enrollment and Recruitment Education at CTSA hubs (I-CERCH)	93.350	VUMC 59243	1U24TR001579-01	VANDERBILT UNIVERSITY MEDICAL CENTER	0	-4,653
					<u>\$0</u>	<u>\$14,782</u>
Open Health Natural Language Processing Collaboratory	93.350	MAORO COL-231278/65497608	1U01TR002062-01	Mayo Clinic -- Rochester	0	293,581
Open Health Natural Language Processing Collaboratory	93.350	MAORO COL-231278/65497608	1U01TR002062-01	Mayo Clinic -- Rochester	0	65,820
					<u>\$0</u>	<u>\$359,401</u>
STeriods to REduce Systemic inflammation after neonatal heart Surgery	93.350	DUKEU 203-8371	5U01TR001803-02	DUKE UNIVERSITY	0	14,498
					<u>\$0</u>	<u>\$14,498</u>
Coordinated medical treatment of opioid use disorder and infectious disease	93.350	YU GR107397 (CON-80001903)	1U01TR002763-01	YALE UNIVERSITY	0	99,660
					<u>\$0</u>	<u>\$99,660</u>
					<u>\$56,365</u>	<u>\$832,566</u>
Research Infrastructure Programs						
The Jackson Laboratory Center for Precision Genetics: From New Models to Novel Therapeutics	93.351	JACKSONLAB CU14-2766	1U54OD020351-01	JACKSON LABORATORY	0	16,950
					<u>\$0</u>	<u>\$16,950</u>

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The Jackson Laboratory Center for Precision Genetics: From New Models to Novel Therapeutics	93.351	JACKSONLAB CU16-1083	1U54OD020351-01	JACKSON LABORATORY	0	31,939
					\$0	\$31,939
National Primate Research Center	93.351	UCAL A18-1798-S002	NIH R01	UNIVERSITY OF CALIFORNIA, DAVIS	0	1,401
					\$0	\$1,401
					\$0	\$50,290
21st Century Cures Act - Beau Biden Cancer Moonshot						
Transition to Metastatic State: Lung Cancer, Pancreatic Cancer and Brain Metastasis-Functional Unit 3	93.353	MSKCC BD524105A	5U2CCA233284-02	MEMORIAL SLOAN-KETTERING CANCER CENTER	0	64,960
Transition to Metastatic State: Lung Cancer, Pancreatic Cancer and Brain Metastasis-Functional Unit 3	93.353	MSKCC BD524105A	5U2CCA233284-02	MEMORIAL SLOAN-KETTERING CANCER CENTER	0	13,686
					\$0	\$78,646
					\$0	\$78,646
Nursing Research						
Neighborhoods, networks, and the HIV care continuum among HIV infected MSM in NYC	93.361	NYBC IDP-NIH620	1R01MH118960-01A1	NEW YORK BLOOD CENTER	0	49,453
					\$0	\$49,453
					\$0	\$49,453
Cancer Cause and Prevention Research						
Defining the Role of ERG in Modulating the AR Cistrome and Antiandrogen Sensitivity	93.393	MSKCC BD517911C	1R01CA193837-01	MEMORIAL SLOAN-KETTERING CANCER CENTER	0	47,835
					\$0	\$47,835
Returning genetic research panel results for breast cancer susceptibility	93.393	UPENN 565533	1R01CA19871-01 REVISED	UNIVERSITY OF PENNSYLVANIA	0	40,860
					\$0	\$40,860
Detroit Research on Cancer Survivors (Detroit POCS)	93.393	WSU19061	1U01CA199240-01A1	WAYNE STATE UNIVERSITY	0	40,018
Detroit Research on Cancer Survivors (Detroit POCS)	93.393	WSU19061	1U01CA199240-01A1	WAYNE STATE UNIVERSITY	0	4,578

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$44,596
CT DOSE COLLABORATORY	93.393	UCSF 9390sc	5R01CA181191-02	UNIVERSITY OF CALIFORNIA SAN FRANCISCO	0	10,000
					\$0	\$10,000
Role of the p53 C-terminal domain in tissue homeostasis, tumor suppression, and oncogenesis	93.393	ISMMS 0255-0481-4609	5R01CA196234-05	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	0	197,868
Role of the p53 C-terminal domain in tissue homeostasis, tumor suppression, and oncogenesis	93.393	ISMMS 0255-0481-4609	5R01CA196234-05	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	0	186,374
					\$0	\$384,242
(PQ#9) Targeting leaky ryanodine receptor (RyR2) to treat and prevent chemotherapy-associated cognitive dysfunction in patients with breast cancer	93.393	INDU IN4687672COL	1R01CA206025-01	INDIANA UNIVERSITY	0	217,496
(PQ#9) Targeting leaky ryanodine receptor (RyR2) to treat and prevent chemotherapy-associated cognitive dysfunction in patients with breast cancer	93.393	INDU IN4687672COL	1R01CA206025-01	INDIANA UNIVERSITY	0	16,701
					\$0	\$234,197
Predictors of long-term cardiovascular disease among breast cancer survivors in an integrated health system	93.393	KFDNI RNG209338-CU-01	1R01CA214057-01A1	Kaiser Foundation Research Institute--Division of Research	0	14,713
					\$0	\$14,713
Molecular pathways of Interleukin-13 in cutaneous T-cell lymphoma	93.393	UPITT 0051797 (128253-1)	1R21CA209107-01	UNIVERSITY OF PITTSBURGH	0	-1
					\$0	\$-1
Structural Cell Biology of DNA Repair Machines	93.393	LBNL 7341650	2P01CA092584-16	LAWRENCE BERKELEY NATIONAL LABORATORY	0	43,346
					\$0	\$43,346
Health, Stress, and Tobacco Use Disparities among Sexual Minority Populations	93.393	UMICH 3004610081	1R01CA212517	UNIVERSITY OF MICHIGAN	0	7,052
					\$0	\$7,052
Advanced Development and Dissemination of EMERSE for Cancer Phenotyping from Medical Records	93.393	UMICHG 3004700011	U24CA204863	UNIVERSITY OF MICHIGAN	0	43,684
Advanced Development and Dissemination of EMERSE for Cancer Phenotyping from Medical Records	93.393	UMICHG 3004700011	U24CA204863	UNIVERSITY OF MICHIGAN	0	6,637
					\$0	\$50,321

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Adoption, Diffusion, And Implementation of Tobacco 21 Policies To Address Health Disparities	93.393	RUTGER 1054	5R01CA231139-02	RUTGERS, THE STATE UNIVERSITY OF NEW JERDEPARTMENT OF	0	39,368
					\$0	\$39,368
Genetics of Prostate Cancer in South Africa	93.393	WHC 1242102	5U01CA184374-03	WITS HEALTH CONSORTIUM	0	1,457
					\$0	\$1,457
Genetics of Prostate Cancer in South Africa	93.393	DFCI 1204304	5U01CA184374-04	DANA-FARBER CANCER INSTITUTE	0	18,893
					\$0	\$18,893
Detroit Research on Cancer Survivors	93.393	WSU20042	5U01AA199240-03	WAYNE STATE UNIVERSITY	0	93,112
					\$0	\$93,112
Enhancing responses to immune checkpoint blockade in melanoma via modulation of the microbiome	93.393	UTMD 3001244409	1R01CA219896-01A1	UNIVERSITY OF TEXAS M.D. ANDERSON CANCERCENTER	0	44,448
					\$0	\$44,448
					\$0	\$1,074,439
Cancer Detection and Diagnosis Research						
Informatics Tools for Optimized Imaging Biomarkers for Cancer Research & Discovery	93.394	MGH 224943	5U24CA180927-02	MASSACHUSETTS GENERAL HOSPITAL	0	8,159
					\$0	\$8,159
caCDE-QA: A Quality Assurance Platform for Cancer Study Common Data Elements	93.394	MAORO COL-192324-01	5U01CA180940-02	Mayo Clinic -- Rochester	0	-46
					\$0	\$-46
Circulating Biomarker Consortium for Pancreatic Cancer Early Detection	93.394	DFCI 1283204	1U01CA210171-01	DANA-FARBER CANCER INSTITUTE	0	55,013
					\$0	\$55,013
Tethered Capsule Endomicroscopy Natural History Study of Barrett sEsophagus	93.394	MGH 224449	5R01CA184102-03	MASSACHUSETTS GENERAL HOSPITAL	0	80
					\$0	\$80
Computational modeling of tumor burden by CT to advance cancer therapeutics	93.394	INOVA FP-152539-A	R01CA194783	INOVA HEALTH SYSTEM	0	246,432
					\$0	\$246,432

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Quantitative imaging tools to derive DW-MRI oncological biomarkers	93.394	MSKCC BD522043A	U01CA211205	MEMORIAL SLOAN-KETTERING CANCER CENTER	0	197,488
Quantitative imaging tools to derive DW-MRI oncological biomarkers	93.394	MSKCC BD522043A	U01CA211205	MEMORIAL SLOAN-KETTERING CANCER CENTER	0	36,480
					\$0	\$233,968
Precision Management of Cystic Precursors to Pancreatic Cancer	93.394	MGH 234610	1R01CA237133-01A1	MASSACHUSETTS GENERAL HOSPITAL	0	30,991
					\$0	\$30,991
Using Markers to Improve Pancreatic Cancer Screening and surveillance	93.394	JHU 2004290640	5U01CA210170-03	JOHNS HOPKINS UNIVERSITY	0	43,269
					\$0	\$43,269
High Resolution Microendoscopy for the Management of Esophageal Neoplasia	93.394	BCMh 7000000989	5R01CA181275-06	BAYLOR COLLEGE OF MEDICINE-- HOUSTON	0	39,456
					\$0	\$39,456
					\$0	\$657,322

Cancer Treatment Research

SWOG NCORP Research Base	93.395	ORHSUN 1005019 Columbia	1UGCA189974-01	OREGON HEALTH SCIENCES UNIVERSITY	0	54,488
					\$0	\$54,488
Phase 2 Clinical Trials Program for Experimental Therapeutics Clinical Trials Network	93.395	Mayo - THE-213126-03	3UM1CA186686-03S1	Mayo Clinic -- Rochester	0	4,731
					\$0	\$4,731
Investigating the molecular mechanism that mediates the addiction of inflammatory breast cancer cells to HDAC6 function	93.395	ISMMS 0255-1701-4609	1R01CA201162-01A1	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	0	37,497
					\$0	\$37,497
SWOG NCORP Research Base	93.395	ORHSUN 1005019 Columbia Crew	5UG1CA189974-03	OREGON HEALTH SCIENCES UNIVERSITY	0	5,573
					\$0	\$5,573
Study Chairs COG NCORP Grant UG1CA189955	93.395	CHOP 950010078-10c	5UG1CA189955-04	CHILDREN'S HOSPITAL OF PHILADELPHIA	0	14,572
					\$0	\$14,572

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Maximizing Local Access to Therapeutic Deliveries in Glioblastoma	93.395	WFUHS 441111 CORE 3	P01CA207206	WAKE FOREST UNIVERSITY	0	257,722
Maximizing Local Access to Therapeutic Deliveries in Glioblastoma	93.395	WFUHS 441111 CORE 3	P01CA207206	WAKE FOREST UNIVERSITY	0	203,934
					\$0	\$461,656
SWOG Network Group Operations Center of the NCTN	93.395	ORHSUN 1013080	2U10CA180888-06	OREGON HEALTH SCIENCES UNIVERSITY	0	59,207
SWOG Network Group Operations Center of the NCTN	93.395	OHSU 1013080	2U10CA180888-06	OREGON HEALTH SCIENCES UNIVERSITY	0	38,591
					\$0	\$38,591
A Phase II, Open Label, Multi-Center Study in Adults with Recurrent High Grade Glioma	93.395	ONCI CU19-1093	2R44CA192427-04	ONCOCEUTICS IN	0	37,208
					\$0	\$37,208
ECOG-ACRIN Integrated Leukemia Translational Research Center	93.395	MSKCC BD525251	1UG1CA233332-01	MEMORIAL SLOAN-KETTERING CANCER CENTER	0	129,024
					\$0	\$129,024
A prospective observational cohort study to develop a predictive model of taxane-induced peripheral neuropathy	93.395	ORHSUN 1005019 COLUMBIA Trived	5UG1CA189974-05	OREGON HEALTH SCIENCES UNIVERSITY	0	3,715
					\$0	\$3,715
Towards Precision ImmunoOncology: Unraveling the GenomicDeterminants and Mechanisms Underlying Immunotherapy Sensitivity and Resistance	93.395	MSKCC BD524104A	1R35CA232097-01	MEMORIAL SLOAN-KETTERING CANCER CENTER	0	18,273
Towards Precision ImmunoOncology: Unraveling the GenomicDeterminants and Mechanisms Underlying Immunotherapy Sensitivity and Resistance	93.395	MSKCC BD524104A	1R35CA232097-01	MEMORIAL SLOAN-KETTERING CANCER CENTER	0	8,327
Towards Precision ImmunoOncology: Unraveling the GenomicDeterminants and Mechanisms Underlying Immunotherapy Sensitivity and Resistance	93.395	MSKCC BD524104A	1R35CA232097-01	MEMORIAL SLOAN-KETTERING CANCER CENTER	0	-49
					\$0	\$26,551
					\$0	\$872,813

Cancer Biology Research

Nuclear Dysfunction in Cancer: The Role of Mechanical Stresses Transmitted by the LINC Complex	93.396	UFLRDA SUB0002193	1U01CA225566-01A1	UNIVERSITY OF FLORIDA	0	25,308
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					Subrecipients	Total Expenditures (Includes Subrecipients)
					\$0	\$25,308
Dectin-1 signaling drives pancreatic oncogenesis by inducing macrophage-mediated adaptive immune suppression (Collaborative Activities to Promote Cancer Cachexia Research (Admin Supp - Clinical Trial	93.396	NYU 18-S1-00-006678	3R01CA215471-01A1S1	NEW YORK UNIVERSITY MEDICAL CENTER	0	52,838
					\$0	\$52,838
					\$0	\$78,146
Cancer Centers Support Grants						
Investigation of a nonparticle albumin-bound mTOR inhibitor, nabrapamycin, for the intravesical treatment of BCG recurrent or refractory non-muscle invasive transitional cell bladder cancer	93.397	AAI 12-2573	1R42CA171552-01	AAI, LLC	0	22,227
					\$0	\$22,227
MSK SPORE in Lymphoma (Career Enhancement Program)	93.397	MSKCC BD520441C	1P50CA192937-01A1	MEMORIAL SLOAN-KETTERING CANCER CENTER	0	9,124
MSK SPORE in Lymphoma (Career Enhancement Program)	93.397	MSKCC BD520441C	1P50CA192937-01A1	MEMORIAL SLOAN-KETTERING CANCER CENTER	0	1,230
					\$0	\$10,354
MSK SPORE in Lymphoma-(Project 4: Targeting Acetyltransferase Gene Inactivation in Diffuse Large B Cell Lymphoma)	93.397	MSKCC BD520439C	1P50CA192937-01A1	MEMORIAL SLOAN-KETTERING CANCER CENTER	0	216,959
MSK SPORE in Lymphoma-(Project 4: Targeting Acetyltransferase Gene Inactivation in Diffuse Large B Cell Lymphoma)	93.397	MSKCC BD520439C	1P50CA192937-01A1	MEMORIAL SLOAN-KETTERING CANCER CENTER	0	45,084
					\$0	\$262,043
Towards Understanding Prostate Cancer Heterogeneity	93.397	WCMC 17030366-4	1P50CA211024-01A1	WEILL (JOAN AND SANFORD I.) MEDICAL COLLEGE OF CORNELL UNIVERSITY	0	104,058
Towards Understanding Prostate Cancer Heterogeneity	93.397	WCMC 17030366-4	1P50CA211024-01A1	WEILL (JOAN AND SANFORD I.) MEDICAL COLLEGE OF CORNELL UNIVERSITY	0	2,173
					\$0	\$106,231
Mechanistic Role of VAV1 alterations in T-cell differentiation and Peripheral T-cell Lymphoma	93.397	MSKCC BD524719	5P50CA192937-03	MEMORIAL SLOAN-KETTERING CANCER CENTER	0	15,850
					\$0	\$15,850
Human prostate cancer immune phenotypes and master regulators after androgen deprivation therapy.	93.397	CU 183700-12	5P50CA211024-02	CORNELL UNIVERSITY	0	69,049
					\$0	\$69,049

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						<u>Total Expenditures (Includes Subrecipients)</u>
Systems Pharmacology of Therapeutic and Adverse Responses to Immune Checkpoint and Small Molecule Drugs	93.397	HMS 152308.5115347.0311	5U54CA225088-02	HARVARD MEDICAL SCHOOL	0	51,921
Systems Pharmacology of Therapeutic and Adverse Responses to Immune Checkpoint and Small Molecule Drugs	93.397	HMS 152308.5115347.0311	5U54CA225088-02	HARVARD MEDICAL SCHOOL	0	49,303
					<u>\$0</u>	<u>\$101,224</u>
					\$0	\$586,978
Cancer Control						
NRG Oncology NCORP Research Base	93.399	NCORP-Kachnic-GY6	2UG1CA189867-06	NRG ONCOLOGY	0	63,075
					<u>\$0</u>	<u>\$63,075</u>
SWOG NCORP Research Base	93.399	ORHSUN 1014562 COLUMBIA	2UG1CA189974-06	OREGON HEALTH SCIENCES UNIVERSITY	0	166,691
					<u>\$0</u>	<u>\$166,691</u>
Committee Leadership: COG NCORP Research Base	93.399	CHOP 2U10CA180886	2UG1CA189955-06	CHILDREN'S HOSPITAL OF PHILADELPHIA	0	6,297
					<u>\$0</u>	<u>\$6,297</u>
STUDY CHAIR: COG NCORP Research Base	93.399	CHOP 2U10CA180886	2UG1CA189955-06	CHILDREN'S HOSPITAL OF PHILADELPHIA	0	6,298
					<u>\$0</u>	<u>\$6,298</u>
					\$0	\$242,361
Supporting and Maintaining a Surveillance System for Chronic Kidney Disease (CKD) in the United States						
Genomic and Transcriptomic Analysis of Emphysema and Subclinical ILD	93.833	UV GB10323 152721	1R01HL131565-01	UNIVERSITY OF VIRGINIA	0	24,325
					<u>\$0</u>	<u>\$24,325</u>
					\$0	\$24,325
Cardiovascular Diseases Research						
New approaches to cardiothoracic tolerance induction	93.837	MGH 225421	2P01HL018646-36A1	MASSACHUSETTS GENERAL HOSPITAL	0	19,566
					<u>\$0</u>	<u>\$19,566</u>

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RLDC: Molecular Pathway-Driven Diagnostics & Therapeutics for Rare Lung Diseases	93.837	CINCMC 135461	1U54HL127672-01	CINCINNATTI CHILDREN'S MEDICAL CENTER	0	303
RLDC: Molecular Pathway-Driven Diagnostics & Therapeutics for Rare Lung Diseases	93.837	CINCMC 135461	1U54HL127672-01	CINCINNATTI CHILDREN'S MEDICAL CENTER	0	-1
					\$0	\$302
REPRIEVE A5332 and A5333S	93.837	BWH CU15-0282	1U01HL123336-01	BRIGHAM AND WOMEN'S HOSPITAL	0	45,976
					\$0	\$45,976
International Study of Comparative Health Effectiveness with Medical and Invasive Approaches	93.837	NYU CU13-1776	U01HL105907	NEW YORK UNIVERSITY MEDICAL CENTER	0	5,271
					\$0	\$5,271
Reference Profiles of ExRNAs in Normal Human Pregnancy	93.837	UCSD 75649782	5U01HL126494-03	UNIVERSITY OF CALIFORNIA, SAN DIEGO	0	6,996
					\$0	\$6,996
Randomized, Multicenter, Controlled Trial to Compare Best Endovascular versus Best Surgical Therapy in Patients with Critical Limb Ischemia	93.837	NERI CU15-1318	5U01HL107407-02	NEW ENGLAND RESEARCH INSTITUTES	0	4,000
					\$0	\$4,000
Chronic Hypertension and Pregnancy-CHAP Clinical Coordinating Center	93.837	UAB 00503570-002	5U01HL120338-02	UNIVERSITY OF ALABAMA AT BIRMINGHAM	133,393	196,356
Chronic Hypertension and Pregnancy-CHAP Clinical Coordinating Center	93.837	UAB 00503570-002	5U01HL120338-02	UNIVERSITY OF ALABAMA AT BIRMINGHAM	0	14,852
Chronic Hypertension and Pregnancy-CHAP Clinical Coordinating Center	93.837	UAB 00503570-002	5U01HL120338-02	UNIVERSITY OF ALABAMA AT BIRMINGHAM	0	13,229
					\$133,393	\$224,437
Clinical & Basic Science Studies in Long QT Syndrome Type 3 (LQT3)	93.837	ROCHSTR 416473-G	1R01HL123483-01	UNIVERSITY OF ROCHESTER	0	646
Clinical & Basic Science Studies in Long QT Syndrome Type 3 (LQT3)	93.837	ROCHSTR 416473-G	1R01HL123483-01	UNIVERSITY OF ROCHESTER	0	-646
					\$0	\$0
A Highly Sensitive and Targeted Non-Invasive test for the Surveillance of Rejection in Cardiac Transplant Recipients	93.837	MCW 1	1R01HL119747-01	MEDICAL COLLEGE OF WISCONSIN	0	32,324
					\$0	\$32,324

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Cardiac Biomarkers in Pediatric Cardiomyopath (per patient)	93.837	WAYNE WSU14112-A3	7R01HL109090	WAYNE STATE UNIVERSITY	0	363	
					\$0	\$363	
administrative Coordinating Center (ACC) for the NHLBI Cardiovascular Development (CvDC) and Pediatric Cardiac Genomics (PCGC) Consortia	93.837	CINCMC 138281	U01HL131003	CINCINNATI CHILDREN'S MEDICAL CENTER	0	33,985	
					\$0	\$33,985	
Atrial fibrillation burden, vascular disease of the brain and cardiac MRI in MESA	93.837	UWASH UWSC8531	1R01HL127659-01	UNIVERSITY OF WASHINGTON SEATTLE WASHINGTON	0	140,577	
					\$0	\$140,577	
Transitioning from Risk Factors to Heart Failure: Prevalence, Pathogenesis, and Phenomics	93.837	WFUHS 114487	1R01HL127028-01	WAKE FOREST UNIVERSITY	0	43,705	
					\$0	\$43,705	
Ezh2-mediated Epigenetic Effects and Alloimmunity	93.837	TEMPLE 257154-03-01	1R01HL127351-01A1	TEMPLE UNIVERSITY	0	66,545	
					\$0	\$66,545	
CMR Myocardial Tissue Based on Prediction of Ischemic MR Revascularization Response	93.837	CUMC 15040456-04	1R01HL128278-01	WEILL (JOAN AND SANFORD I.) MEDICAL COLLEGE OF CORNELL UNIVERSITY	0	50,958	
CMR Myocardial Tissue Based on Prediction of Ischemic MR Revascularization Response	93.837	CUMC 15040456-04	1R01HL128278-01	WEILL (JOAN AND SANFORD I.) MEDICAL COLLEGE OF CORNELL UNIVERSITY	0	-3	
CMR Myocardial Tissue Based on Prediction of Ischemic MR Revascularization Response	93.837	CUMC 15040456-04	1R01HL128278-01	WEILL (JOAN AND SANFORD I.) MEDICAL COLLEGE OF CORNELL UNIVERSITY	0	-677	
					\$0	\$50,278	
RAGE/mDla 1, Macrophage Trafficking and Inflammation In Regression of Diabetic Atherosclerosis	93.837	NYU 16-A1-00-006521-01	1R01HL132516-01A1	NEW YORK UNIVERSITY MEDICAL CENTER	0	10,929	
RAGE/mDla 1, Macrophage Trafficking and Inflammation In Regression of Diabetic Atherosclerosis	93.837	NYU 16-A1-00-006521-01	1R01HL132516-01A1	NEW YORK UNIVERSITY MEDICAL CENTER	0	5,098	
					\$0	\$16,027	
Calmodulin regulation of Na+ channels in neurons and cardiomyocytes	93.837	WCMC 17020250	7R01HL122967-03	WEILL (JOAN AND SANFORD I.) MEDICAL COLLEGE OF CORNELL UNIVERSITY	0	4,612	
					\$0	\$4,612	
Macrophage-lipoprotein Interactions	93.837	WCMC 17050688	2R01HL093324-08A1	WEILL (JOAN AND SANFORD I.) MEDICAL COLLEGE OF CORNELL UNIVERSITY	0	-1	

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$-1
Incorporation of a Hypertension Working Group into the Jackson Heart Study	93.837	UAB 000515198-002	2R01HL117323-04A1	UNIVERSITY OF ALABAMA AT BIRMINGHAM	0	23,115
					\$0	\$23,115
International Study of Comparative Health Effectiveness with Medical and Invasive Approaches - ISCHEMIA	93.837	NYU CU17-1333	U01HL105907	NEW YORK UNIVERSITY MEDICAL CENTER	0	5,622
					\$0	\$5,622
The ISCHEMIA-CKD Trial	93.837	NYU CU17-1334	4U01HL117905 04	NEW YORK UNIVERSITY MEDICAL CENTER	0	1,524
					\$0	\$1,524
Administrative Coordinating Center (ACC) for the NHLBI Cardiovascular Development (CvDC) and Pediatric Cardiac Genomics (PCGC) Consortia	93.837	CINCMC 138281	1U01HL131003-01	CINCINNATI CHILDREN'S MEDICAL CENTER	0	57,194
Administrative Coordinating Center (ACC) for the NHLBI Cardiovascular Development (CvDC) and Pediatric Cardiac Genomics (PCGC) Consortia	93.837	CINCMC 138281	1U01HL131003-01	CINCINNATI CHILDREN'S MEDICAL CENTER	0	52,301
					\$0	\$109,495
Multi-Component Technology Intervention for African American Emerging Adults With Asthma	93.837	WAYNE WSU17001	1R01HL133506-01	WAYNE STATE UNIVERSITY	0	33,984
					\$0	\$33,984
Eating, Activity, and Weight-Related Problems Across the Life Course in Diverse Populations	93.837	UMINN P006297201	1R35HL139853-01	UNIVERSITY OF MINNESOTA	0	17,452
Eating, Activity, and Weight-Related Problems Across the Life Course in Diverse Populations	93.837	UMINN P006297201	1R35HL139853-01	UNIVERSITY OF MINNESOTA	0	12,730
					\$0	\$30,182
Telomeres and Female Fecundity	93.837	RUTGER 0070	1R01HL134840-01	RUTGERS, THE STATE UNIVERSITY OF NEW JERSEY DEPARTMENT OF	0	19,895
					\$0	\$19,895
PREGNANCY AS A WINDOW TO FUTURE CARDIOVASCULAR HEALTH: ADVERSE PREGNANCY OUTCOMES	93.837	RTI 11-312-0214047-52915L	4U10HL119991-04	RESEARCH TRIANGLE INSTITUTE	6,015	100,538
					\$6,015	\$100,538
Pathogenic Role of Selected Cardiac Myocyte- and Fibroblast-Specific Epigenetic Changes in Laminopathies	93.837	UTEXHOUS 0011823B	1R01HL132401-01	UNIVERSITY OF TEXAS HOUSTON HEALTH SCIENCE CENTER	0	52,194
					\$0	\$52,194

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						Total Expenditures (Includes Subrecipients)
Clinical Implementation of Clopidogrel Pharmacogenetics: The TAILOR-PCI Trial - CCC - Lead Application	93.837	MAORO COL-215432	1U01HL128606-01A1	Mayo Clinic -- Rochester	0	56,547
					\$0	\$56,547
Individual Response to Vitamin D Treatment	93.837	UWASH UWSC9378	2R01HL096875-05A1	UNIVERSITY OF WASHINGTON SEATTLE WASHINGTON	0	9,400
Individual Response to Vitamin D Treatment	93.837	UWASH UWSC9378	2R01HL096875-05A1	UNIVERSITY OF WASHINGTON SEATTLE WASHINGTON	0	3,175
					\$0	\$12,575
A Longitudinal Epigenetic Study of Atherosclerosis	93.837	WUBGSM WFUHS 116827	1R01HL1350039-01	WAKE FOREST UNIVERSITY	0	13,148
					\$0	\$13,148
Population Effects of Motivation Interviewing on Pediatric Obesity in Primary Care	93.837	AAP 817102Columbia	R01HL128231-01A1	AMERICAN ACADEMY OF PEDIATRICS	0	11,784
					\$0	\$11,784
Pediatric Heart Network U24HL135691	93.837	NERI CU17-3862	U24HL135691	NEW ENGLAND RESEARCH INSTITUTES	0	8,590
Pediatric Heart Network U24HL135691	93.837	NERI CU17-3862	U24HL135691	NEW ENGLAND RESEARCH INSTITUTES	0	4,038
Pediatric Heart Network U24HL135691	93.837	NERI CU17-3862	U24HL135691	NEW ENGLAND RESEARCH INSTITUTES	0	3,604
Pediatric Heart Network U24HL135691	93.837	NERI CU17-3862	U24HL135691	NEW ENGLAND RESEARCH INSTITUTES	0	-412
					\$0	\$15,820
Macrophage Dysfunction in Obesity, Diabetes and Atherosclerosis	93.837	NYUMC 16-A1-00-004888	1P01HL131481-01A1	NEW YORK UNIVERSITY MEDICAL CENTER	0	-3,989
					\$0	-\$3,989
Notch in Angiogenesis and Vascular Biology	93.837	UIL 16880-00	R01HL112626	UNIVERSITY OF ILLINOIS, BOARD OF TRUSTEES	0	38,755
					\$0	\$38,755
Calmodulin Regulation Na Channels: From Function and Structure to Disease	93.837	JH 200433029	R01HL128743	JOHNS HOPKINS UNIVERSITY	0	285,631
					\$0	\$285,631

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Serotonin Signaling in Mitral Valve Homeostasis, Maintenance and Restoration	93.837	CHPHI FP20409 Sub06 01	5R01HL131872-02	CHILDREN'S HOSPITAL OF PHILADELPHIA	0	238,007
					\$0	\$238,007
Cardiac MR imaging of hemorrhagic reperfusion injury after myocardial infarction	93.837	UPENN 574412	1R01HL137984-01A1	UNIVERSITY OF PENNSYLVANIA	0	86,161
					\$0	\$86,161
Biomechanical Indicators of Bicuspid Aortic Valve Dysfunction	93.837	UTEXAUS CU17-2783	1R01HL142504-01	UNIVERSITY OF TEXAS AT AUSTIN	0	95,252
					\$0	\$95,252
Oxidation-mediated structural degeneration of Bioprosthetic Heart Valves	93.837	CHPHI 3201170622	1R01HL143008-01	CHILDREN'S HOSPITAL OF PHILADELPHIA	0	299,431
					\$0	\$299,431
RAGE/DIAPH1 and Myocardial Infarction (Project 1)	93.837	NYUMC 18-A0-00-1001609	1P01HL146367-01	NEW YORK UNIVERSITY MEDICAL CENTER	0	4,681
					\$0	\$4,681
RAGE/DIAPH1 and Hand Limb Ischemia (Project 2)	93.837	NYUMC 18-1577	1P01HL146367-01	NEW YORK UNIVERSITY MEDICAL CENTER	0	4,688
					\$0	\$4,688
Childhood Adversity and Cardiovascular Health among Puerto Rican Youth	93.837	EMORYU A112942	7R01HL125761-03	EMORY UNIVERSITY	0	48,651
					\$0	\$48,651
Atlanta MACS/WIHS Combined Cohort Study Clinical Research Site	93.837	EMORYU A322408	1U01HL46241-01	EMORY UNIVERSITY	0	57,173
					\$0	\$57,173
Atlanta MACS/WIHS Combined Cohort Study Clinical Research Site	93.837	EMORYU A322408	1U01HL46241-01	EMORY UNIVERSITY	0	11,554
					\$0	\$68,727
Role of angiogenic Notch in uterine decidualization and placentation	93.837	RUTGER 0780	7R01HL127013-03	RUTGERS, THE STATE UNIVERSITY OF NEW JERSEY DEPARTMENT OF	0	11,997
					\$0	\$11,997
Deep probabilistic predictive models for stroke and coronary heart disease	93.837	NYU F1182-01	1R01HL148248-01	NEW YORK UNIVERSITY	0	161,166
					\$0	\$161,166

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Constructing a hypertension continuum of care for HIV-infected formerly incarcerated Black men	93.837	100-1091654-83591	5R25HL10544610	STATE UNIVERSITY OF NEW YORK, DOWNSTATEMEDICAL CENTER	0	6,232
					\$0	\$6,232
Evaluating novel approaches forestimating awake and sleep blood pressure	93.837	UAB 000518835-SC001	1R01HL139716-01A1	UNIVERSITY OF ALABAMA AT BIRMINGHAM	0	245,957
					\$0	\$245,957
Ambulatory blood pressure and falls in older treated patients with hypertension	93.837	KFDNI#OOS030382-CU	1R01HL136445-01A1	Kaiser Foundation Research Institute--Division of Research	0	68,962
					\$0	\$68,962
Optically Guided Catheter Ablation of Atrial Fibrillation	93.837	CWRU RES514542	1R01HL149369-01	CASE WESTERN RESERVE UNIVERSITY	0	119,550
					\$0	\$119,550
Association of Second-Trimester Uterine Artery Doppler Abnormalities with Maternal Hypertension 2-7 Years After Delivery	93.837	RTI 21-312-0214047-65952L	1U10HL119991-01	RESEARCH TRIANGLE INSTITUTE	0	20,001
					\$0	\$20,001
					\$139,408	\$2,981,246
Lung Diseases Research						
PATINA - Precision Administration of Treatment in Neutrophilic severe Asthma	93.838	BWH 118345	1UG1HL139124-01	BRIGHAM AND WOMEN'S HOSPITAL	0	25,711
					\$0	\$25,711
Data Fusion: A Sustainable Scalable, Open Source Registry Advancing PVD Research	93.838	UCOL FY20.369.007	1U01HL121518-01	UNIVERSITY OF COLORADO	0	19,066
					\$0	\$19,066
Pulmonary Vascular Disease Phenomic Program (PVDOMICS)Data Coordinating	93.838	CLEVELCL 743-SUB	5U01HL125177-03	CLEVELAND CLINIC	0	1,000
					\$0	\$1,000
Frailty and patient centered outcomes in candidates for lung transplantation	93.838	UCSF 10296sc	1R01HL134851-01A1	UNIVERSITY OF CALIFORNIA SAN FRANCISCO	0	61,173
					\$0	\$61,173
(1 of 2) Genetic Epidemiology of COPD	93.838	NJMRCCS 20073011	2U01HL089897	National Jewish Health	0	264,832
					\$0	\$264,832

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SPIROMICS II: Biological underpinnings of COPD heterogeneity and progression	93.838	UCSF CU17-3435	1U01HL137880-01	UNIVERSITY OF CALIFORNIA SAN FRANCISCO	0	333,528
SPIROMICS II: Biological underpinnings of COPD heterogeneity and progression	93.838	UCSF CU17-3435	1U01HL137880-01	UNIVERSITY OF CALIFORNIA SAN FRANCISCO	0	-99
					\$0	\$333,429
The CAPTURE Study: Validating a Unique COPD Screening Tool in Primary Care	93.838	WCMC 16121993-6	1R01HL136682-01	WEILL (JOAN AND SANFORD I.) MEDICAL COLLEGE OF CORNELL UNIVERSITY	0	34,297
					\$0	\$34,297
ORal Bacterial EXtracts (ORBEX): Primary Prevention of Asthma and Wheezing in Children	93.838	UA 330411	1U01HL130045-01	UNIVERSITY OF ARIZONA	0	66,118
ORal Bacterial EXtracts (ORBEX): Primary Prevention of Asthma and Wheezing in Children	93.838	UA 330411	1U01HL130045-01	UNIVERSITY OF ARIZONA	0	9,473
					\$0	\$75,591
Study of Clinical Efficacy of Antimicrobial Therapy Strategy Using Pragmatic Design in Idiopathic Pulmonary Fibrosis	93.838	UPITT 9012549 (130129-56)	5U01HL128954-03	UNIVERSITY OF PITTSBURGH MEDICAL CENTER	0	1,000
					\$0	\$1,000
The Road to Destination Therapy: Optimizing Long-Term Mechanical Cardiopulmonary Support for Pulmonary Hypertension	93.838	VUMC 67475	1R01HL140231-01A1	VANDERBILT UNIVERSITY MEDICAL CENTER	0	40,022
The Road to Destination Therapy: Optimizing Long-Term Mechanical Cardiopulmonary Support for Pulmonary Hypertension	93.838	VUMC 67475	1R01HL140231-01A1	VANDERBILT UNIVERSITY MEDICAL CENTER	0	-3
					\$0	\$40,019
Genetic and developmental mechanisms of congenital diaphragmatic hernia	93.838	UWIS 0000000031	1R01HL146859-01	UNIVERSITY OF WISCONSIN MADISON	0	20,785
					\$0	\$20,785
Network Management Core (NEMO) for the Pulmonary Trials Cooperative (PTC)	93.838	CNVA00046691 (133106-18)	5U01HL128954-04	UNIVERSITY OF PITTSBURGH MEDICAL CENTER	0	25,425
Network Management Core (NEMO) for the Pulmonary Trials Cooperative (PTC)	93.838	CNVA00046691 (133106-18)	5U01HL128954-04	UNIVERSITY OF PITTSBURGH MEDICAL CENTER	0	11,492
					\$0	\$36,917
Long Term Follow-up of the Lung Transplant Outcomes Group (LTOG) Cohort	93.838	IUP 577454	1U01HL145435-01	UNIVERSITY OF PENNSYLVANIA	0	45,458
					\$0	\$45,458

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						Total Expenditures (Includes Subrecipients)
Detecting pleiotropic effects through integration of omics data	93.838	YALE GR105810 (CON-80001760)	1R01HL145660-01A1	YALE UNIVERSITY	0	276,075
					\$0	\$276,075
Alzheimer s Disease Genetics Consortium	93.838	UPENN CU 18-3583	U01AG032984	UNIVERSITY OF PENNSYLVANIA	0	75,544
					\$0	\$75,544
CT-Based Modeling of Bone Micro Architecture and Fracture-Risk in COPD	93.838	UIO S00925-01	5R01HL142042-02	UNIVERSITY OF IOWA	0	134,796
					\$0	\$134,796
Data, Modeling, and Coordination Center for PrecISE Network	93.838	UNC-CH 5114474-H3COLUMBIA	5U24HL138998-03	UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL	0	54,291
					\$0	\$54,291
					\$0	\$1,499,984

Blood Diseases and Resources Research

Platelet and megakaryocyte biology in the normal and injured lung	93.839	UCSF 10277sc	R01HL107386	UNIVERSITY OF CALIFORNIA SAN FRANCISCO	0	47,187
					\$0	\$47,187
Immunobiology of Transfusion	93.839	839-Columbia-2019	5P01HL132819-02	BLOODWORKS NORTHWEST	0	13,499
					\$0	\$13,499
Immunobiology of Transfusion	93.839	UVA GB10756. PO#2218568	7P01HL132819-03	UNIVERSITY OF VIRGINIA	0	41,308
					\$0	\$41,308
DISPLACE: Dissemination and Implementation of Stroke Prevention looking at the Care Environment	93.839	UAB 000524452-010	7R01HL133896-03	UNIVERSITY OF ALABAMA AT BIRMINGHAM	0	40,951
					\$0	\$40,951
TET2-mediated transcriptional and epigenetic control of normal and malignant hematopoiesis	93.839	UTHSCSA 166754/165804	7R01HL146664-02	UNIVERSITY OF TEXAS HEALTH SCIENCE CENTER AT SAN ANTONIO	0	152,854
					\$0	\$152,854
					\$0	\$295,799

Translation and Implementation Science Research for Heart, Lung, Blood Diseases, and Sleep Disorders

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						<u>Total Expenditures (Includes Subrecipients)</u>
IMPlentation to Achieve Clinical Transformation (IMPACT): The Colorado Training Program	93.840	FY20.904.006	5K12HL137862-03	UNIVERSITY OF COLORADO	0	5,897
					\$0	\$5,897
Implementation of Childhood Obesity Treatment Innovations to Improve Outcomes of Low-Income Children: The Connect for Health II Study	93.840	MGH 234862	1R01HL146782-01	MASSACHUSETTS GENERAL HOSPITAL	0	9,800
					\$0	\$9,800
					\$0	\$15,697
Arthritis, Musculoskeletal and Skin Diseases Research						
Treatments Against RA and Effect on FDG PET/Ct: The Target Trial	93.846	BWH 113296	1U01AR068043-01	BRIGHAM AND WOMEN'S HOSPITAL	0	66,160
Treatments Against RA and Effect on FDG PET/Ct: The Target Trial	93.846	BWH 113296	1U01AR068043-01	BRIGHAM AND WOMEN'S HOSPITAL	0	44,008
					\$0	\$110,168
A multiplex assay for early detection of Cutaneous T-Cell Lymphoma	93.846	ALLIS CU17-0320	1R43AR070084-01A1	ALLIED INNOVATIVE SYSTEMS	0	-2
					\$0	\$-2
Evolving Adaptive and Effector Mechanisms from Pre-RA Through Established Disease	93.846	NWU 60044689CU	UH2AR067681	NORTHWESTERN UNIVERSITY	0	75,471
					\$0	\$75,471
Complement citrullination in RA pathogenesis	93.846	JHU 2004010096	5R01HL122967-04	JOHNS HOPKINS UNIVERSITY	0	19,967
					\$0	\$19,967
Genetic and Immunologic Etiology of Chronic Recurrent Multifocal Osteomyelitis (CRMO)	93.846	UIO 1001838760	5R01AR059703-07	UNIVERSITY OF IOWA	0	1,683
					\$0	\$1,683
Engineering Polymers to Scavenge DAMPs in Arthritis and Lupus	93.846	DUKEU A031921	5R01AR073935-02	DUKE UNIVERSITY	0	119,649
Engineering Polymers to Scavenge DAMPs in Arthritis and Lupus	93.846	DUKEU A031921	5R01AR073935-02	DUKE UNIVERSITY	0	60,756
					\$0	\$180,405

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Withdrawal of Hydroxychloroquine in Elderly Lupus Patients	93.846	NYU 111836	R34AR075283	NEW YORK UNIVERSITY MEDICAL CENTER	0	21,645
					\$0	\$21,645
					\$0	\$409,337
Diabetes, Digestive, and Kidney Diseases Extramural Research						
The Nephrotic Syndrome Study Network	93.847	MICHG 3001819806	U54 DK083912	UNIVERSITY OF MICHIGAN	0	3,728
					\$0	\$3,728
Glycemic Reduction Approaches in Diabetes (GRADE) Study	93.847	GWU SGRD1213-EA7	5U01DK098246-02	GEORGE WASHINGTON UNIVERSITY	0	-3,680
Glycemic Reduction Approaches in Diabetes (GRADE) Study	93.847	GWU SGRD1213-EA7	5U01DK098246-02	GEORGE WASHINGTON UNIVERSITY	0	-14,648
					\$0	\$-18,328
Targeting RAGE-MDia1 Signal Transduction in Diabetic Complications: Mechanisms and Therapeutics	93.847	NYUMC 14-A0-00-002489-01	5R24DK103032-03	NEW YORK UNIVERSITY MEDICAL CENTER	0	-1
					\$0	\$-1
Methylomics of Prenatal GDM: Natural History & Lifestyle Intervention in Children	93.847	LSU 50363-S3	5R01DK100790-02	LOUISIANA STATE UNIVERSITY (BOARD OF SUPERVISORS OF LSU & A&M)	0	70,961
					\$0	\$70,961
Treatment Options For Type 2 Diabetes In Adolescents and Youth (Today) Trial T2P2	93.847	GWU 16-D06	2U01DK061230-12	GEORGE WASHINGTON UNIVERSITY	0	313,357
					\$0	\$313,357
RAGE/mDia 1, Macrophage Trafficking and Inflammation in High Fat Feeding	93.847	NYUMC 15-A0-00-005301-01	1R01DK109675-01	NEW YORK UNIVERSITY MEDICAL CENTER	0	12,355
					\$0	\$12,355
Epidemiology of Diabetes Interventions and Complications	93.847	CWRU RES514950	3U01DK094157-06S1	CASE WESTERN RESERVE UNIVERSITY	0	69,817
Epidemiology of Diabetes Interventions and Complications	93.847	CWRU RES514950	3U01DK094157-06S1	CASE WESTERN RESERVE UNIVERSITY	0	-14,999
					\$0	\$54,818

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Continuation of the Glycemia Reduction Approaches in Diabetes: A Comparative Effectiveness (GRADE) Study	93.847	GWU S-GRD1718-LL41	2U01DK098246-06	GEORGE WASHINGTON UNIVERSITY	0	31,685
Continuation of the Glycemia Reduction Approaches in Diabetes: A Comparative Effectiveness (GRADE) Study	93.847	GWU S-GRD1718-LL41	2U01DK098246-06	GEORGE WASHINGTON UNIVERSITY	0	29,490
					\$0	\$61,175
Study of coding variants in human obesity and their functional characterization using human iPSC-derived cellular models	93.847	ISMMS 0255-2211-4609	1R01DK110113-01	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	0	130,207
					\$0	\$130,207
Novel pharmacotherapy strategies for obesity in schizophrenia	93.847	UNC-CH 510499	1R01DK105526-01A1	UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL	0	193,528
					\$0	\$193,528
Diabetes Prevention Program Outcomes Study (DPPOS)	93.847	GWU S-DPP1617-JB22	2U01DK048489-23	GEORGE WASHINGTON UNIVERSITY	16,056	120,570
					\$16,056	\$120,570
Long-term Consequences of HIV in the Kidney	93.847	BCMh 7000000385	2P01DK056492-01	BAYLOR COLLEGE OF MEDICINE-- HOUSTON	0	154,857
					\$0	\$154,857
Pathogenesis of compromised bone quality and mechanics in chronic kidney disease	93.847	IUSM IN46887773CU	1R01DK110871-01	INDIANA UNIVERSITY SCHOOL OF MEDICINE	0	121,224
					\$0	\$121,224
Probing the Biochemical Mechanisms of Amyloid Disease	93.847	SCRIPPS 5-53806	2R01DK046335-25A1	Scripps Research Institute	0	73,136
					\$0	\$73,136
Glycemia Reduction Approaches in Diabetes: A Comparative Effectiveness (GRADE) Study	93.847	GW S-GRD1718-LL7	2U01DK098246-06	GEORGE WASHINGTON UNIVERSITY	0	703,063
Glycemia Reduction Approaches in Diabetes: A Comparative Effectiveness (GRADE) Study	93.847	GW S-GRD1718-LL7	2U01DK098246-06	GEORGE WASHINGTON UNIVERSITY	0	115,073
Glycemia Reduction Approaches in Diabetes: A Comparative Effectiveness (GRADE) Study	93.847	GW S-GRD1718-LL7	2U01DK098246-06	GEORGE WASHINGTON UNIVERSITY	0	-90,747
					\$0	\$727,389
Losartan for the Treatment of Pediatric NAFLD: A Phase 2 Randomized, Placebo-Controlled Trial (STOP-NAFLD).	93.847	JH 2003854718	U01DK061730	JOHNS HOPKINS UNIVERSITY	0	6,435

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$6,435
Center for Identification and Study of Individuals with Atypical Diabetes Mellitus	93.847	FP068366-01 H	1U54DK118612-01	UNIVERSITY OF CHICAGO	0	60,797
					\$0	\$60,797
Epigenetic Markers of Severity in Nonalcoholic Fatty Liver Disease	93.847	DISTEFANO-18-04	7R01DK107735	TRANSLATIONAL GENOMICS RES. INST.	0	-1
					\$0	-\$1
Data Coordinating for Type 1 Diabetes TrialNet (UC4)	93.847	USF 6163-1051-00-B	1UC4DK117009-01	UNIVERSITY OF SOUTH FLORIDA	0	222,976
					\$0	\$222,976
siRNA Protection of Islet Grafts in Baboons	93.847	MSU RC108393CUNY	5R01DK105503-05	MICHIGAN STATE UNIVERSITY	0	331,212
					\$0	\$331,212
siRNA Protection of Composite Islet-Kidney Transplant in Baboons	93.847	MSU RC108392CUNY	7R01DK105468-04	MICHIGAN STATE UNIVERSITY	0	212,716
					\$0	\$212,716
Trialnet Type 1 Diabetes Natural History Study	93.847	UFLRDA 260937	NIDDK	UNIVERSITY OF SOUTH FLORIDA	0	43,897
					\$0	\$43,897
Prospective Longitudinal Study of IWITH Screen Failures Secondary to Histopathology	93.847	USCF 11509sc	5R01DK114180-03	UNIVERSITY OF CALIFORNIA SAN FRANCISCO	0	6,089
					\$0	\$6,089
The Subgingival Microbiome and Impaired Glucose Regulation	93.847	UM P006923603	7R01DK102932-04	UNIVERSITY OF MINNESOTA	0	192,167
					\$0	\$192,167
The Subgingival Microbiome and Impaired Glucose Regulation	93.847	UM P006923603	7R01DK102932-04	UNIVERSITY OF MINNESOTA	0	-272
					\$0	-\$272
					\$0	\$191,895
Dissecting the Pathogenesis and Outcomes of PSC Using Mutimomics by Studying the Exposome and Genome	93.847	COL-245818-01/PO#6682945 2	1RC2DK118619-01	Mayo Clinic -- Rochester	0	38,431
					\$0	\$38,431
Dissecting the Pathogenesis and Outcomes of PSC Using Mutimomics by Studying the Exposome and Genome	93.847	COL-245818-01/PO#6682945 2	1RC2DK118619-01	Mayo Clinic -- Rochester	0	4,415
					\$0	\$4,415
					\$0	\$42,846

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QSM to Guide Iron Chelating Therapy in Transfusional Iron Overload	93.847	CUMC 201485	1R01K116126-01A1	WEILL (JOAN AND SANFORD I.) MEDICAL COLLEGE OF CORNELL UNIVERSITY	0	39,915
QSM to Guide Iron Chelating Therapy in Transfusional Iron Overload	93.847	CUMC 201485	1R01K116126-01A1	WEILL (JOAN AND SANFORD I.) MEDICAL COLLEGE OF CORNELL UNIVERSITY	0	34,778
					\$0	\$74,693
Behavioral adherence in emerging adults with type 2 diabetes	93.847	SUNYRF 1138946-77867	5R01DK110456-03	RESEARCH FOUNDATION OF THE STATE UNIVERSITY OF NEW YORK	0	3,300
					\$0	\$3,300
Emotional Distress in a Comparative Effectiveness Trial of Diabetes Treatments	93.847	GWU CU14-1924	5R01DK104845-05	GEORGE WASHINGTON UNIVERSITY	0	22,318
					\$0	\$22,318
REPRIEVE A5332 Kidney Function Sub Study / Effect of Pitavastatin on Kidney Function in HIV-infected Persons	93.847	UCLA 1560 B XA412	5R01DK108438-04	UNIVERSITY OF CALIFORNIA, LOS ANGELES	0	20,883
					\$0	\$20,883
Modulating pathogenic T cells in Type 1 diabetes	93.847	YU GR106198	2R01DK057846-15	YALE UNIVERSITY	0	32,400
					\$0	\$32,400
Data Coordinating Center for Type 1 Diabetes TrialNet	93.847	USF 6163-1082-00-B	2U01DK106993-02	UNIVERSITY OF SOUTH FLORIDA	0	132,268
					\$0	\$132,268
The Insulin-Only Bionic Pancreas Pivotal Trial: Testing the iLet in Adults and Children with Type 1 Diabetes	93.847	JCHR CU20-0743	1UC4DK108612-01	Jaeb Center for Health Research	0	44,108
					\$0	\$44,108
Converting gut endocrine cells to glucose-responsive insulin producing cells by selective Foxo1 inhibition to cure insulin-dependent diabetes	93.847	FBL CU18-2834	1R43DK120177-01A1	FORKHEAD BIOTHERAPEUTICS, LLC	0	55,296
					\$0	\$55,296
Improving Medication Adherence in adolescents who had a Liver Transplant: iMALT	93.847	ISMMS 0255-A942-4609	5U01DK119200-02	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	0	20,824
					\$0	\$20,824
					\$16,056	\$3,543,928

Extramural Research Programs in the Neurosciences and Neurological Disorders

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Neurological Emergencies Treatment Trials (NETT)-SHINE	93.853	UMICHG 3002925824-SHN	5U01NS069498-03	UNIVERSITY OF MICHIGAN	0	2,325
					\$0	\$2,325
CREST-2 Clinical Coordinating Center	93.853	MAOJF 187276-02	1U01NS080168-01A1	Mayo Clinic Jacksonville	0	-2,947
					\$0	-\$2,947
Spinal Muscular Atrophy (SMA) Biomarkers in the Immediate Postnatal Period of Development NN101	93.853	NEURONEXT NN101	1U10NS077423-01	MASSACHUSETTS GENERAL HOSPITAL	0	9,059
					\$0	\$9,059
High density - cellular resolution multielectrode arrays with spatially selective unidirectional and rotating fields for investigation of neuronal networks	93.853	UMINN N006207501	1U01NS103569-01	UNIVERSITY OF MINNESOTA	0	144,501
					\$0	\$144,501
Engineering stem cell therapies to understand and overcome glioblastoma adaption	93.853	UNC-CH 5109024	5R01NS099368-03	UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL	0	25,580
					\$0	\$25,580
SUDEP Translational Research Alliance (SUTRA): The Central Autonomic Network, Serotonin, and Adenosine: SUTRA 4 of 7	93.853	UCL CU14-1548	5U01NS090415-04	UNIVERSITY COLLEGE LONDON	0	57,461
					\$0	\$57,461
Using Cell-Penetrant Peptides to Target ATF5 in Mouse Glioma Models	93.853	UCD 201303503-01	5R01NS083795-02	UNIVERSITY OF CALIFORNIA, DAVIS	0	-1
					\$0	-\$1
PATHOLOGOMICS: ESSENTIAL TREMOR IN THE BROADER CONTEXT OF NEURODEGENERATION	93.853	YALE M15A12205 (A10281)	7R01NS088257-02	YALE UNIVERSITY	0	240,392
PATHOLOGOMICS: ESSENTIAL TREMOR IN THE BROADER CONTEXT OF NEURODEGENERATION	93.853	YALE M15A12205 (A10281)	7R01NS088257-02	YALE UNIVERSITY	0	37,784
					\$0	\$278,176
Center for Stroke Disparities Solution (Core A)	93.853	NYU 12-02247 101975	1U54NS081765-01	NEW YORK UNIVERSITY MEDICAL CENTER	0	-6,335
					\$0	-\$6,335
Center for Stroke Disparities Solution, Project III	93.853	NYU 12-02247 101974-108621	1U54NS081765-01	NEW YORK UNIVERSITY MEDICAL CENTER	0	-1,006
					\$0	-\$1,006

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Center for SUDEP Research (CSR): Autonomic and Imaging Biomarkers of SUDEP	93.853	CWRU RES513483	5R01NS090407-01	CASE WESTERN RESERVE UNIVERSITY	0	-11,060
					\$0	\$-11,060
The Frontotemporal Lobar Degeneration Clinical Research Consortium	93.853	UCSF 8570SC	1U54NS092089-01	UNIVERSITY OF CALIFORNIA SAN FRANCISCO	0	40,470
					\$0	\$40,470
Clinical-Pathological Study of Cognitive Impairment in Essential Tremor	93.853	YU GK000100 (CON-80000453)	R01NS086736	YALE UNIVERSITY	0	-1
					\$0	\$-1
Established Status Epilepticus Treatment Trial (ESSETT)	93.853	UV GB10094-14858/151272	1U01NS088031-01	UNIVERSITY OF VIRGINIA	0	26,055
					\$0	\$26,055
An Exploratory Phase II Study to Determine the Tolerability, Safety, and Activity of a Novel Vasopressin 1a Receptor Antagonist (SRX246) in Irritable Subjects with Huntington s Disease (HD) (NN105) -	93.853	UMASS CU16-1638	1U10NS077423-01	MASSACHUSETTS GENERAL HOSPITAL	0	1,502
					\$0	\$1,502
Environmental Epidemiology of Essential Tremor	93.853	YU GK000165 (COM-80000475)	1R01NS094607-01	YALE UNIVERSITY	0	177,931
					\$0	\$177,931
Carotid Revascularization and Medical Management for Asymptomatic Carotid Stenosis Trial (CREST-2) Trial (93.853	MAOJF COU-224063-03	5U01NS080168-07	Mayo Clinic Jacksonville	0	20,985
					\$0	\$20,985
Neurological Emergencies Treatment Trials (NETT)- ESETT	93.853	SUBK00004095-ESETT	5U01NS088034-04	UNIVERSITY OF MICHIGAN	0	-17,039
					\$0	\$-17,039
Risk Factors FOR Stroke and Cognitive Decline in a Tri-Ethnic Region	93.853	UMIAMI SPC-001240	2R01NS029993-23A1	UNIVERSITY OF MIAMI	0	1,029,089
Risk Factors FOR Stroke and Cognitive Decline in a Tri-Ethnic Region	93.853	UMIAMI SPC-001240	2R01NS029993-23A1	UNIVERSITY OF MIAMI	0	76,886
Risk Factors FOR Stroke and Cognitive Decline in a Tri-Ethnic Region	93.853	UMIAMI SPC-001240	2R01NS029993-23A1	UNIVERSITY OF MIAMI	0	52,405
Risk Factors FOR Stroke and Cognitive Decline in a Tri-Ethnic Region	93.853	UMIAMI SPC-001240	2R01NS029993-23A1	UNIVERSITY OF MIAMI	0	22,213

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Risk Factors FOR Stroke and Cognitive Decline in a Tri-Ethnic Region	93.853	UMIAMI SPC-001240	2R01NS029993-23A1	UNIVERSITY OF MIAMI	0	-182
					\$0	\$1,180,411
Close-loop intervention in epileptogenesis	93.853	SU 61104536-120534	1R01NS094668-01	STANFORD UNIVERSITY	0	234,898
					\$0	\$234,898
Modeling enteric nervous system development and Hirschsprung s disease in human pluripotent stem cells	93.853	MSKCC BD520455	1R01NS099270-01	MEMORIAL SLOAN-KETTERING CANCER CENTER	0	84,385
Modeling enteric nervous system development and Hirschsprung s disease in human pluripotent stem cells	93.853	MSKCC BD520455	1R01NS099270-01	MEMORIAL SLOAN-KETTERING CANCER CENTER	0	16,195
					\$0	\$100,580
The Epilepsy Bioinformatics Study for Antiepileptogeic Therapy (EpiBioS4Rx)	93.853	USC 85727780	5U54NS100064-04	UNIVERSITY OF SOUTHERN CALIFORNIA	0	21,000
					\$0	\$21,000
Long-term outcome in unruptured brain arteriovenous malformation patients	93.853	UCSF 10177sc	1R01NS099268-01A1	UNIVERSITY OF CALIFORNIA SAN FRANCISCO	0	117,682
Long-term outcome in unruptured brain arteriovenous malformation patients	93.853	UCSF 10177sc	1R01NS099268-01A1	UNIVERSITY OF CALIFORNIA SAN FRANCISCO	0	23,779
					\$0	\$141,461
The Effect of Lower Pressure over the Life Course on Late-life Cognition in Black	93.853	UMICHG 300465879	1R01NS102715-01	UNIVERSITY OF MICHIGAN	0	61,444
					\$0	\$61,444
Carotid Revascularization and Medical Management for Asymptomatic Carotid Stenosis Trial - Hemodynamics (CREST-H)	93.853	MAOJF COL-232483	1R01NS097876-01A1	Mayo Clinic Jacksonville	0	7,309
					\$0	\$7,309
The Inherited Neuropathy Consortium (INC) RDCRC	93.853	UIO W001054741	5U54NS065712-10	UNIVERSITY OF IOWA	0	20,350
					\$0	\$20,350
EFFECTS OF AFQ056 ON LANGUAGE LEARNING IN YOUNG CHILDREN WITH FRAGILE X SYNDROME (FXS)	93.853	MGH CU18-1125	U01NS077423	MASSACHUSETTS GENERAL HOSPITAL	0	75,510
					\$0	\$75,510

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						<u>Total Expenditures (Includes Subrecipients)</u>
MRI Predictors of Disease and Disability Progression in African Americans With Multiple Sclerosis	93.853	ISMMS 0255-4191-4609	1R01NS10081-01A1	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	0	39,455
					\$0	\$39,455
Mechanisms of Regulation of Progenitor Proliferation and Transformation	93.853	RFCUNY 42012-00-12	7R01NSO52738	RESEARCH FOUNDATION OF CITY UNIVERSITY OF NEW YORK	0	160,998
Mechanisms of Regulation of Progenitor Proliferation and Transformation	93.853	RFCUNY 42012-00-12	7R01NSO52738	RESEARCH FOUNDATION OF CITY UNIVERSITY OF NEW YORK	0	32,802
Mechanisms of Regulation of Progenitor Proliferation and Transformation	93.853	RFCUNY 42012-00-12	7R01NSO52738	RESEARCH FOUNDATION OF CITY UNIVERSITY OF NEW YORK	0	-2,055
					\$0	\$191,745
Targeting Kif11 to Treat Glioblastoma Invasion and Proliferation	93.853	MAOJF COL-232390	7R01NSO73610-06	Mayo Clinic Jacksonville	0	125,953
					\$0	\$125,953
Optimizing flexible, active electrode arrays for chronic, large-scale recording and stimulation on the scale of 100,000 electrodes	93.853	DUKE A03-0340	5U01NS099697-03	DUKE UNIVERSITY	0	405,400
					\$0	\$405,400
NeuroGrid: A scalable system for large-scale recording of action potentials from the brain surface	93.853	NYU 16-A0-00-006398-01	5U01NS099705-03	NEW YORK UNIVERSITY MEDICAL CENTER	0	-2,253
					\$0	-\$2,253
Deep brain photoacoustic tomography at single-neuron resolution using arrays of photonic emitters and high-frequency ultrasound transducers	93.853	CALTECH 67C-1097568/S389076	U01NS099717	CALIFORNIA INSTITUTE OF TECHNOLOGY	0	153,373
					\$0	\$153,373
Wide Deployment of Massively Multiplexed Nanosystems for Brain Activity Mapping	93.853	CALTECH S389576	U01NS099726	CALIFORNIA INSTITUTE OF TECHNOLOGY	0	491,207
Wide Deployment of Massively Multiplexed Nanosystems for Brain Activity Mapping	93.853	CALTECH S389576	U01NS099726	CALIFORNIA INSTITUTE OF TECHNOLOGY	0	-1,367
					\$0	\$489,840
Circuitry underlying response summation in mouse and primate: theory and experiment	93.853	SALK CU17-3850	1U01NS108683-01	SALK INSTITUTE FOR BIOLOGICAL STUDIES	0	205,906
					\$0	\$205,906
Towards a Complete Description of the Circuitry Underlying SharpWave-Mediated Memory Replay	93.853	SU CU17-0676	1U19NS104590-01	STANFORD UNIVERSITY	0	503,517

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$503,517
High-Speed Volumetric imaging of neural activity throughout the livingbrain	93.853	UCB 00009591	1U01NS103489-01	UNIVERSITY OF CALIFORNIA, BERKELEY	0	199,254
					\$0	\$199,254
Project 2 - Neural Basis of Motor Pattern Loops	93.853	CIT 21B-1098370	U19NS104655	CALIFORNIA INSTITUTE OF TECHNOLOGY	136,009	394,219
Project 2 - Neural Basis of Motor Pattern Loops	93.853	CIT 21B-1098370	U19NS104655	CALIFORNIA INSTITUTE OF TECHNOLOGY	14,225	16,942
					\$150,234	\$411,161
Project 1 - The Neural Basis of Muscle Action Loops	93.853	UWSC10310	U19NS104655	UNIVERSITY OF WASHINGTONSEATTLE WASHINGTON	0	138,618
Project 1 - The Neural Basis of Muscle Action Loops	93.853	UWSC10310	U19NS104655	UNIVERSITY OF WASHINGTONSEATTLE WASHINGTON	0	6,992
					\$0	\$145,610
Topiramate as a Disease Altering Therapy for Cryptogenic Sensory Peripheral Neuropathy (CSPN) (NN108) Study	93.853	MGH CU18-2043	1U01NS095388-01A1	MASSACHUSETTS GENERAL HOSPITAL	0	27,590
					\$0	\$27,590
Mapping representational format across the human brain	93.853	BROWNU 00001239	1R21NS108380-01	BROWN UNIVERSITY	0	16,216
					\$0	\$16,216
Androgen Receptors and Sex Differences in the Biological Clock	93.853	ORHSUN 1012987 COLUMBIA	5R01NS102962-03	OREGON HEALTH SCIENCES UNIVERSITY	0	103,900
					\$0	\$103,900
CRCNS: Neural Representation of Object Compliance in the Periphery	93.853	UV GB10477.156396	R01NS105241	UNIVERSITY OF VIRGINIA	0	600
					\$0	\$600
Consequences of Prolonged Febrile Seizures in Childhood	93.853	AECM 311436	R37NS043209	ALBERT EINSTEIN COLLEGE OF MEDICINEESHIVA UNIVERSITY	0	248,737
					\$0	\$248,737
Novel regulation and function of the lncRNA Gomafu in human neurons	93.853	EMORYU A228115	1R01NS110110-01A1	EMORY UNIVERSITY	0	62,903
					\$0	\$62,903

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						<u>Total Expenditures (Includes Subrecipients)</u>
Mitochondrial control of protein translation in Fragile X	93.853	YU GR107040 (CON-80001842)	1R01NS112706-01	YALE UNIVERSITY	0	223,304
					\$0	\$223,304
Clinical Pathological Study of Cognitive Impairment	93.853	GR107457 (CON-80002038)	2R01NS086736-06	YALE UNIVERSITY	0	26,790
Clinical Pathological Study of Cognitive Impairment	93.853	GR107457 (CON-80002038)	2R01NS086736-06	YALE UNIVERSITY	0	16,386
Clinical Pathological Study of Cognitive Impairment	93.853	GR107457 (CON-80002038)	2R01NS086736-06	YALE UNIVERSITY	0	7,201
					\$0	\$50,377
Discovery and analysis of the C. elegans neuronal gene expression network (CENGEN)	93.853	YU GR101260 (CON-80001884)	5R01NS100547-03	YALE UNIVERSITY	0	200,822
Discovery and analysis of the C. elegans neuronal gene expression network (CENGEN)	93.853	YU GR101260 (CON-80001884)	5R01NS100547-03	YALE UNIVERSITY	0	24,758
					\$0	\$225,580
Built environments on stroke risk and stroke disparities in a national sample	93.853	SUBK00011335	5R01NS092706-04	UNIVERSITY OF MICHIGAN	0	24,880
					\$0	\$24,880
Lab-to-Marketplace: Commercialization of a stretchable microelectrode array	93.853	BEEDINC 2R44NS086118-03A1-CU	5R44NS086118-04	BIOMED STRETCH. ELASTIC DEVICES, LLC	0	127,584
					\$0	\$127,584
kHz-rate in Vivo Imaging of Neural Activity throughout the Living Brain	93.853	UCB 00009979	1UF1NS107696-01	UNIVERSITY OF CALIFORNIA, BERKELEY	0	83,336
					\$0	\$83,336
miR regulation of the neurovasculature function in health and disease	93.853	UCI 2018-3616	1R01NS107344-01	UNIVERSITY OF CALIFORNIA, IRVINE	0	6,250
					\$0	\$6,250
Maternal Outcomes and Neurodevelopmental Effects of Antiepileptic Drugs (MONEAD) II	93.853	SU 61865504-125439	2U01NS038455-16A1	STANFORD UNIVERSITY	0	33,359
					\$0	\$33,359
NSTN National Clinical Coordinating Center Administrative Agreement	93.853	UCINCI 011414-Adm-Marshall	2U01NS086872-06	UNIVERSITY OF CINCINNATI	0	18,307

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NSTN National Clinical Coordinating Center Administrative Agreement	93.853	UCINCI 011414-Adm-Marshall	2U01NS086872-06	UNIVERSITY OF CINCINNATI	0	2,622	
					\$0	\$20,929	
ICH Recovery Grant	93.853	UCINCI 011078-010	5R01NS100417-02	UNIVERSITY OF CINCINNATI, COLLEGE OF MEDICINE	0	57,500	
					\$0	\$57,500	
Mechanisms of Rapid, Flexible Cognitive Control in Human Prefrontal Cortex	93.853	BCMH 7000000870	1U01NS108923-01	BAYLOR COLLEGE OF MEDICINE-- HOUSTON	0	171,230	
Mechanisms of Rapid, Flexible Cognitive Control in Human Prefrontal Cortex	93.853	BCMH 7000000870	1U01NS108923-01	BAYLOR COLLEGE OF MEDICINE-- HOUSTON	0	102,673	
Mechanisms of Rapid, Flexible Cognitive Control in Human Prefrontal Cortex	93.853	BCMH 7000000870	1U01NS108923-01	BAYLOR COLLEGE OF MEDICINE-- HOUSTON	0	64,619	
Mechanisms of Rapid, Flexible Cognitive Control in Human Prefrontal Cortex	93.853	BCMH 7000000870	1U01NS108923-01	BAYLOR COLLEGE OF MEDICINE-- HOUSTON	0	17,433	
					\$0	\$355,955	
Innate and Adaptive Immunity in Parkinson Disease - Clinical Research Core.	93.853	UAB 000519299-SP002-001	1P50NS108675-02	UNIVERSITY OF ALABAMA AT BIRMINGHAM	0	7,321	
					\$0	\$7,321	
Propagation patterns in microelectrode-recorded human interictal epileptiform discharges	93.853	UUTAH 10051440-01	1R21NS113031-01	UNIVERSITY OF UTAH	0	19,758	
					\$0	\$19,758	
Vascular contributions to cognitive impairment and dementia and Stroke in a Bi-racial National Sample	93.853	UAB 000513792-005	2U01NS041588-17	UNIVERSITY OF ALABAMA AT BIRMINGHAM	0	308,203	
Vascular contributions to cognitive impairment and dementia and Stroke in a Bi-racial National Sample	93.853	UAB 000513792-005	2U01NS041588-17	UNIVERSITY OF ALABAMA AT BIRMINGHAM	0	95,270	
					\$0	\$403,473	
A Randomized-Clinical Trial of a Communication Tool to Improve Access to Palliative Care for Patients with End-Stage Renal Disease	93.853	UWM 0000000108	1R56AG060991-01	UNIVERSITY OF WISCONSIN MADISON	0	28,165	
					\$0	\$28,165	
Using Direct Brain Stimulation to Study Cognitive Electrophysiology	93.853	UPENN 577998	1U01NS113198-01	UNIVERSITY OF PENNSYLVANIA	0	237,678	
					\$0	\$237,678	

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Synergistic Interaction of amyloid-beta and alpha-synuclein in Lewy body Dementia - Project 3	93.853	MAOJF COL-259090	1U54NS110435-01A1	Mayo Clinic Jacksonville	0	42,965
					\$0	\$42,965
Autonomic and Imaging Biomarkers of SUDEP	93.853	UTEXHOUS 0014556B	7U01NS090407-06	UNIVERSITY OF TEXAS HOUSTON HEALTH SCIENCE CENTER	0	32,484
					\$0	\$32,484
Understanding the fast and slow spatiotemporal dynamics of human seizures	93.853	BU 4500003407	1R01NS110669-01	BOSTON UNIVERSITY	0	30,454
					\$0	\$30,454
miR regulation of the neurovasculature function in health and disease	93.853	SCII CU20-1446	5R01NS107344-03	SCINTILLON INSTITUTE	0	46,860
					\$0	\$46,860
Dynamic Neural Mechanisms of Audiovisual Speech Perception	93.853	BCMh 7000001115	1U01NS113339-01	BAYLOR COLLEGE OF MEDICINE-- HOUSTON	0	178,087
					\$0	\$178,087
					\$150,234	\$8,153,825

Allergy and Infectious Diseases Research

HVTN Scientific Leadership (Hammer)	93.855	FHCRC 0001011814	2UM1AI068614-08	HUTCHINSON (FRED) CANCER RESEARCH CENTER	0	33,363
HVTN Scientific Leadership (Hammer)	93.855	FHCRC 0001011814	2UM1AI068614-08	HUTCHINSON (FRED) CANCER RESEARCH CENTER	0	4,602
					\$0	\$37,965
HVTN Protocol Funding	93.855	FHCRC 0000966184	2UMAI068614-08	HUTCHINSON (FRED) CANCER RESEARCH CENTER	0	68,374
HVTN Protocol Funding	93.855	FHCRC 0000966184	2UMAI068614-08	HUTCHINSON (FRED) CANCER RESEARCH CENTER	0	37,948
HVTN Protocol Funding	93.855	FHCRC 0000966184	2UMAI068614-08	HUTCHINSON (FRED) CANCER RESEARCH CENTER	0	-1,876
					\$0	\$104,446
Inhibitors of Purine Import into Plasmodium falciparum Kill Malaria Parasites	93.855	AECM 310838	1R01AI116665-01	ALBERT EINSTEIN COLLEGE OF MEDICINEESHIVA UNIVERSITY	0	98,959

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$98,959
Miami Womens Interagency HIV Study (WIHS)	93.855	UMIAMI SPC-000610	1U01AI103397-01	UNIVERSITY OF MIAMI	0	51,272
Miami Womens Interagency HIV Study (WIHS)	93.855	UMIAMI SPC-000610	1U01AI103397-01	UNIVERSITY OF MIAMI	0	13,651
Miami Womens Interagency HIV Study (WIHS)	93.855	UMIAMI SPC-000610	1U01AI103397-01	UNIVERSITY OF MIAMI	0	-1,206
					\$0	\$63,717
HIV/AIDS Prevention Trials Network (HPTN) Leadership Group	93.855	FHI 860/0080.0015	UM1AI068619	FAMILY HEALTH INTERNATIONAL	0	70,043
HIV/AIDS Prevention Trials Network (HPTN) Leadership Group	93.855	FHI 860/0080.0015	UM1AI068619	FAMILY HEALTH INTERNATIONAL	0	34,893
					\$0	\$104,936
Units for HIV/AIDS Clinical Trials Network	93.855	CAPRISA1 2002 024027 08	2UM1AI069469-08	CENTRE FOR THE AIDS PROGRAMME OF RESEARCH IN SOUTH AFRICA	0	180,332
Units for HIV/AIDS Clinical Trials Network	93.855	CAPRISA1 2002 024027 08	2UM1AI069469-08	CENTRE FOR THE AIDS PROGRAMME OF RESEARCH IN SOUTH AFRICA	0	131,360
					\$0	\$311,692
International Maternal Pediatric Adolescent AIDS Clinical Trials Group (IMPAACT)	93.855	JH 2002127548	UM1AI068632	JOHNS HOPKINS UNIVERSITY	0	23,898
					\$0	\$23,898
Safety, pharmacokinetics, and resistance to bedaquiline in XDR TB and HIV	93.855	AECM 14-2397	1R01AI114304-01A1	ALBERT EINSTEIN COLLEGE OF MEDICINE SHIVA UNIVERSITY	0	37,046
					\$0	\$37,046
HIV s Effects on Breast Cancer Treatment and Outcomes in South Africa	93.855	WHCL D1404280	1R01CA192627-01	WITS HEALTH CONSORTIUM	0	119,609
					\$0	\$119,609
Central Africa International Epidemiology Database to Evaluate AIDS (CA-leDEA)	93.855	AECM 31614H	2U01AI096299-07	ALBERT EINSTEIN COLLEGE OF MEDICINE SHIVA UNIVERSITY	0	40,577
Central Africa International Epidemiology Database to Evaluate AIDS (CA-leDEA)	93.855	AECM 31614H	2U01AI096299-07	ALBERT EINSTEIN COLLEGE OF MEDICINE SHIVA UNIVERSITY	0	6,334

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Central Africa International Epidemiology Database to Evaluate AIDS (CA-leDEA)	93.855	AECM 31614H	2U01AI096299-07	ALBERT EINSTEIN COLLEGE OF MEDICINEESHIVA UNIVERSITY	0	-625
					\$0	\$46,286
Immune Tolerance Network	93.855	BRI FY16ITN109	5UM1AI109565-02	BENAROYA RESEARCH INSTITUTE	0	21,758
					\$0	\$21,758
Delivery of Rectal Enema as Microbicide	93.855	JHU 2002342875	1U19AI113127-01	JOHNS HOPKINS UNIVERSITY	0	90,412
					\$0	\$90,412
HIV Prevention Trials Network: Protocol Leadership: HPTN078	93.855	FHI PO20000646	UM1AI068619	FAMILY HEALTH INTERNATIONAL	0	17,751
HIV Prevention Trials Network: Protocol Leadership: HPTN078	93.855	FHI PO20000646	UM1AI068619	FAMILY HEALTH INTERNATIONAL	0	9,326
					\$0	\$27,077
HPTN Leadership and Operations Center	93.855	FHI FCO 104112/ID 0080.0239	UM1AI068619	FAMILY HEALTH INTERNATIONAL	0	4,343
					\$0	\$4,343
Sofosbuvir and Ledipasvir in HIV/HCV Coinfected Pre & Post Liver Transplant	93.855	UCSF 8658sc	1U01AI115714-01	UNIVERSITY OF CALIFORNIA SAN FRANCISCO	0	14,024
					\$0	\$14,024
AIDS Clinical Trials Group (ACTG)	93.855	BWH 110140	5UM1AID68636-10	BRIGHAM AND WOMEN'S HOSPITAL	0	-802
					\$0	\$-802
INNER CITY ASTHMA CONSORTIUM (ICAC3): CORE	93.855	UWIS 0000000177	1UM1AI114271-01	UNIVERSITY OF WISCONSIN	0	800,113
INNER CITY ASTHMA CONSORTIUM (ICAC3): CORE	93.855	UWIS 0000000177	1UM1AI114271-01	UNIVERSITY OF WISCONSIN	0	318,638
INNER CITY ASTHMA CONSORTIUM (ICAC3): CORE	93.855	UWIS 0000000177	1UM1AI114271-01	UNIVERSITY OF WISCONSIN	0	222,715
INNER CITY ASTHMA CONSORTIUM (ICAC3): CORE	93.855	UWIS 0000000177	1UM1AI114271-01	UNIVERSITY OF WISCONSIN	0	-190,463
					\$0	\$1,151,003

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HPTN076 Protocol	93.855	FHID PO15001918	UM1 AI068619	FAMILY HEALTH INTERNATIONAL	0	67,198
					\$0	\$67,198
East Africa international Epidemiologic Database to Evaluate AIDS (leDEA) Regional Consortium	93.855	IN4688916COL	2U01AI09629911-11	INDIANA UNIVERSITY	0	76,941
East Africa international Epidemiologic Database to Evaluate AIDS (leDEA) Regional Consortium	93.855	IN4688916COL	2U01AI09629911-11	INDIANA UNIVERSITY	0	47,072
					\$0	\$124,013
School Inner-City Asthma Intervention Study	93.855	CHB GENFD0001578885	5U01AI110397-02	CHILDREN'S HOSPITAL BOSTON	0	198,088
					\$0	\$198,088
Strategies for Tuberculosis Control in Prisons	93.855	SU 61485127-124916	1R01AI13005801	STANFORD UNIVERSITY	0	14,656
					\$0	\$14,656
HPTN 085 - Bronx Prevention Center CRS	93.855	FHID PO15004262	UM1AI068619	FHI DEVELOPMENT 360 LLC	0	63,769
					\$0	\$63,769
HPTN 085 - Harlem Prevention Center CRS	93.855	FHID PO15004260	UM1AI068619	FHI DEVELOPMENT 360 LLC	0	44,577
					\$0	\$44,577
HVTN 703/ HPTN 081 Site Readiness	93.855	FHCRC 0000888693	5UM1AI068614-09	HUTCHINSON (FRED) CANCER RESEARCH CENTER	0	60,796
					\$0	\$60,796
HPTN 083 Protocol Funding - Development Cost	93.855	FHID PO16002898	5UM1AI068619	FHI DEVELOPMENT 360 LLC	105,444	113,231
					\$105,444	\$113,231
Listeria monocytogenes physiology and host pathogen interactions	93.855	UWASH UWSC8286	5R01AI116669-05	UNIVERSITY OF WASHINGTON SEATTLE WASHINGTON	0	52,322
					\$0	\$52,322
Immune Tolerance Network	93.855	FY15ITN159	5UM1AI109565-02	BENAROYA RESEARCH INSTITUTE	0	1,434
					\$0	\$1,434

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Chronic Graft Destruction: Interplay of Allo- and Autoantibodies and Nonadherence	93.855	VUMC40877	6U01AI104336-05	VANDERBILT UNIVERSITY MEDICAL CENTER	0	8,924
					\$0	\$8,924
Rituximab Plus Cyclophosphamide Followed by Belimumab for the Treatment of Lupus Nephritis	93.855	BRI FY15ITN152	5UM1AI109565-02	BENAROYA RESEARCH INSTITUTE	0	15,938
					\$0	\$15,938
Function of antimalarial drug resistance proteins	93.855	GU 411310	2R01AI056312-10A1	GEORGETOWN UNIVERSITY	0	112,460
					\$0	\$112,460
Parasite-specific proteasome inhibitors to combat multi-drug resistant malaria	93.855	SU 61424825-123798	1R21AI127581-01	STANFORD UNIVERSITY	0	200,500
Parasite-specific proteasome inhibitors to combat multi-drug resistant malaria	93.855	SU 61424825-123798	1R21AI127581-01	STANFORD UNIVERSITY	0	30,138
Parasite-specific proteasome inhibitors to combat multi-drug resistant malaria	93.855	SU 61424825-123798	1R21AI127581-01	STANFORD UNIVERSITY	0	-5,370
					\$0	\$225,268
Identification and validation of molecular markers of piperazine resistance	93.855	UMB 1701550	1R01AI25579-02	UNIVERSITY OF MARYLAND	0	4,687
					\$0	\$4,687
HPTN 081/085 Protocol Funding - Implementation - Centralized Laboratory and Other Operational Support	93.855	FHID PO16003322	UM1 AIO68619	FHI DEVELOPMENT 360 LLC	0	216,672
					\$0	\$216,672
IL-33 Blockade as a Novel Therapeutic for T-cell Mediated Hypercytokinemia Syndromes	93.855	CHPHI 3200280521	1R01AI121250-01A1	CHILDREN'S HOSPITAL OF PHILADELPHIA	0	38,499
IL-33 Blockade as a Novel Therapeutic for T-cell Mediated Hypercytokinemia Syndromes	93.855	CHPHI 3200280521	1R01AI121250-01A1	CHILDREN'S HOSPITAL OF PHILADELPHIA	0	-301
					\$0	\$38,198
Autoimmunity Center of Excellence Clinical Research Program	93.855	UCSF 9882SC	5UM1AI110498-03	UNIVERSITY OF CALIFORNIA SAN FRANCISCO	0	102,480
					\$0	\$102,480
Optimizing clinical use of Polymyxin B: Teaching old drug to treat superbugs	93.855	UMICHG 3004415914	7R01AI119446-03	UNIVERSITY OF MICHIGAN	0	95,589

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					Subrecipients	Total Expenditures (Includes Subrecipients)
					\$0	\$95,589
Antigen-independent antibody diversification in GALT of young children	93.855	LOYAU 1-210155	1R21AI140254-01	LOYOLA UNIVERSITY CHICAGO	0	39,891
Antigen-independent antibody diversification in GALT of young children	93.855	LOYAU 1-210155	1R21AI140254-01	LOYOLA UNIVERSITY CHICAGO	0	-3,816
					\$0	\$36,075
High-dimensional phenotypic and functional characterization of human NK cells from lymphoid and non-lymphoid sites	93.855	ISMMS 0255-8673-4609	5U19AI118610-04	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	0	-23,198
					\$0	\$-23,198
Targeting Inflammation and Alloimmunity in Heart Transplant Recipients with Tocilizumab , (Study)	93.855	MGH 232560	1U01AI136816-01	MASSACHUSETTS GENERAL HOSPITAL	0	14,818
					\$0	\$14,818
Hope in Action: A Clinical Trial of HIV-to-HIV Deceases Donor Kidney Transplantation	93.855	JHU 2003649381	1U01AI134591-01	JOHNS HOPKINS UNIVERSITY	0	1,877
					\$0	\$1,877
ACTG Protocol Funding - Core Funding	93.855	UCLA CU18-2702	7UM1AI068636-13	UNIVERSITY OF CALIFORNIA, LOS ANGELES	0	93,744
					\$0	\$93,744
Vaccine induced immunity in the young and aged	93.855	EMORYU A160032	2U19AI057266-16	EMORY UNIVERSITY	0	121,500
Vaccine induced immunity in the young and aged	93.855	EMORYU A160032	2U19AI057266-16	EMORY UNIVERSITY	0	17,917
					\$0	\$139,417
Creation of Generalizable ED-based Antimicrobial Stewardship ProgramUsing Electronic Health Record Clinical Decision Support	93.855	UCOL FY18.777.004	1R21AI139839-01	UNIVERSITY OF COLORADO	0	7,772
					\$0	\$7,772
Dengue Human Immunology Project Consortium (DHIPC)	93.855	ISMMS 0255-8689-4609	5U19AI118610-03	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	0	67,161
					\$0	\$67,161
Generation of Anti-Donor CAR Tregs to Enhance Mixed Chimerism and Tolerance to Deceased Donor Kidney Transplants	93.855	UWM CU18-2952	2U01AI102456-06	UNIVERSITY OF WISCONSIN MADISON	0	82,811
					\$0	\$82,811

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Heme utilization by Mycobacterium tuberculosis	93.855	UAB 000521324-SC001	1R01AI137338-01A1	UNIVERSITY OF ALABAMA AT BIRMINGHAM	0	72,252
					\$0	\$72,252
HOPE in Action: A clinical trial of HIV-to-HIV Liver Transplantation	93.855	JH 2004360332	1U01AI138897-01	JOHNS HOPKINS UNIVERSITY	0	8,429
					\$0	\$8,429
HVTN 130/HPTN 089 Protocol Funding Implementation Budget Request	93.855	FHID PO19002447	UM1 AI068619	FHI DEVELOPMENT 360 LLC	0	24,277
					\$0	\$24,277
The Role of Casual Contact and Migration in XDR TB Transmission in South Africa: a Geospatial, Genomic and Social Network study	93.855	EU T937299	1R01AI138646-01	EMORY UNIVERSITY	0	15,785
					\$0	\$15,785
HPTN 084: A Phase 3 Double Blind Safety and Efficacy Study of Long-Acting Injectable Cabotegravir Compared to Daily Oral TDF/FTC for Pre- Exposure Prophylaxis in HIVUninfected Women	93.855	FHI360 PO18001958	UM1AI068619	FHI DEVELOPMENT 360 LLC	105,103	569,688
HPTN 084: A Phase 3 Double Blind Safety and Efficacy Study of Long-Acting Injectable Cabotegravir Compared to Daily Oral TDF/FTC for Pre- Exposure Prophylaxis in HIVUninfected Women	93.855	FHI360 PO18001958	UM1AI068619	FHI DEVELOPMENT 360 LLC	0	-1,317
					\$105,103	\$568,371
A dual-beta-lactam strategy for treating multi drug resistant M abscessus	93.855	HMH 19022	R01AI141805	HACKENSACK MERIDIAN HEALTH	0	67,429
					\$0	\$67,429
Innovative contact tracing strategies for detecting TB in mobile rural and urban South African populations	93.855	2004483467	1R01AL147681-01	JOHNS HOPKINS UNIVERSITY	0	14,602
					\$0	\$14,602
International Maternal Pediatric Adolescent AIDS Clinical Trials Network	93.855	JHC 2004512905	5UM1AI068632-14	JOHNS HOPKINS UNIVERSITY	0	17,268
					\$0	\$17,268
The molecular basis of the carbapenem resistance epidemic	93.855	HMH G10063-19028	7R01AI090155-10	HACKENSACK MERIDIAN HEALTH	0	28,960
					\$0	\$28,960
Differentially culturable tubercle Bacteria: The missing link in TB Transmission	93.855	WHC D1811140-04	1R01AL147349-01	WITS HEALTH CONSORTIUM	0	69,894
					\$0	\$69,894

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						<u>Total Expenditures (Includes Subrecipients)</u>
Point-of-care assay for serodiagnosis of Leptospirosis	93.855	ITI CU18-1165	5R43AI136551-02	IMMUNO TECHNOLOGIES, INC.	0	46,952
					\$0	\$46,952
Rhinovirus respiratory infection and sphingolipid metabolism	93.855	CUMC 182171	1R21AI140724-01	WEILL (JOAN AND SANFORD I.) MEDICAL COLLEGE OF CORNELL UNIVERSITY	0	10,780
					\$0	\$10,780
Monochromatic 222 nm UV light: Development of safe, cost-effective technology for the efficient reduction of bacterial and viral infection and transmission	93.855	EPINIHSUB19-01	2R42AI125006-2A1	EDEN PARK ILLUMINATION	0	209,114
Monochromatic 222 nm UV light: Development of safe, cost-effective technology for the efficient reduction of bacterial and viral infection and transmission	93.855	EPINIHSUB19-01	2R42AI125006-2A1	EDEN PARK ILLUMINATION	0	47,920
					\$0	\$257,034
New tools for antimalarial target identification	93.855	UCT29162	1R01AI143521-01	UNIVERSITY OF CAPE TOWN	0	23,666
					\$0	\$23,666
Immune Tolerance Network Efficacy of Belimumab and Rituximab Compared to Rituximab Alone for the Treatment of Primary Membranous Nephropathy	93.855	FY20ITN326	5UM1AI109565-06	BENAROYA RESEARCH INSTITUTE	0	31,267
					\$0	\$31,267
ALE09 - A Phase 2, Double-blind, Randomized, Placebo-controlled Multicenter Study to Evaluate Efficacy, Safety, and Tolerability of JBT-101 in Systemic Lupus Erythematosus	93.855	EMORYU A243204	2U19AI110483-06	EMORY UNIVERSITY	0	243
					\$0	\$243
Rapid Low-Cost Paper-based Radiation Biodosimetry	93.855	ASU B00000501	1U01AI148319-01	ARIZONA STATE UNIVERSITY	0	20,317
					\$0	\$20,317
					\$210,547	\$5,514,672
Microbiology and Infectious Diseases Research						
The Role of RHOA in Diffuse Gastric Cancer	93.856	DFCI 1203001	1R01CA224428-01	DANA-FARBER CANCER INSTITUTE	0	255,150
					\$0	\$255,150
					\$0	\$255,150
Biomedical Research and Research Training						

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						<u>Total Expenditures (Includes Subrecipients)</u>
FEBio- Finite Elements for Biomechanics and Biophy	93.859	UUTAH 10026950-COLUMBIA	5R01GM083925-12	UNIVERSITY OF UTAH	0	179,151
					\$0	\$179,151
A minimally invasive synthetic biology-driven approach for natural products discovery	93.859	RFU CU14-2989	U01GM110714-01A1	ROCKEFELLER UNIVERSITY	0	359,953
A minimally invasive synthetic biology-driven approach for natural products discovery	93.859	RFU CU14-2989	U01GM110714-01A1	ROCKEFELLER UNIVERSITY	0	-320
					\$0	\$359,633
Semiparametric analysis of censored data in current medical studies	93.859	UNC-CH-5101930	5R01GM047845-27	UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL	0	-2,659
					\$0	\$-2,659
Spatial Models of Cell Regulatory Networks	93.859	ISMMS 0225-0651-4609	5R01GM072853-12	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	0	74,264
					\$0	\$74,264
Statistical Methods for Single-Cell Transcriptomics	93.859	UPENN 572782	1R01GM125301-01	UNIVERSITY OF PENNSYLVANIA	0	14,190
					\$0	\$14,190
Methods for integrated analysis of multi-level omics data	93.859	MHC GD9311	1R01GM127862-01	MOUNT HOLYOKE COLLEGE	0	15,514
					\$0	\$15,514
The role of the nuclear pore-associated Aladin protein in RNA export	93.859	UMICH SUBK00011359	U54 AI150470-08	UNIVERSITY OF MICHIGAN	0	77,267
The role of the nuclear pore-associated Aladin protein in RNA export	93.859	UMICH SUBK00011359	U54 AI150470-08	UNIVERSITY OF MICHIGAN	0	8,317
					\$0	\$85,584
UNDERSTANDING THE BIOLOGICAL FUNCTION OF MCM10	93.859	UMINN N005495702	R01GM074917	UNIVERSITY OF MINNESOTA	0	17,993
					\$0	\$17,993
Regulatory modifiers of coding variant penetrance	93.859	NYGC R01GM122924-COL-4	1R01GM122924-01	NEW YORK GENOME CENTER	0	72,111
					\$0	\$72,111

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Structure-Based Antagonism of HIV1 Envelope Function in Cell Entry	93.859	DREXEL 800132-Columbia	2P01GM056550-22	DREXEL UNIVERSITY	0	266,775
Structure-Based Antagonism of HIV1 Envelope Function in Cell Entry	93.859	DREXEL 800132-Columbia	2P01GM056550-22	DREXEL UNIVERSITY	0	32,036
					\$0	\$298,811
Efficient Statistical Learning Methods for Personalized Medicine Using Large Scale Biomedical Data.	93.859	UNC-CH 5110020	1R01GM124104-01A1	UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL	0	126,302
					\$0	\$126,302
New Methods for the Synthesis of Biologically Active Peroxides	93.859	NYU F0501-01	5R01GM118730-04	NEW YORK UNIVERSITY	0	71,906
					\$0	\$71,906
Next-Generation Fluorescent Probes for Biological Research	93.859	STCRH 112643090-7895955	7R01GM098859-09	ST. JUDE CHILDREN'S RESEARCH HOSPITAL	0	35,773
					\$0	\$35,773
Center on Macromolecular Dynamics by NMR Spectroscopy	93.859	NYSBC G09112-01	5P41GM118302-02	NEW YORK STRUCTURAL BIOLOGY CENTER	0	95,170
					\$0	\$95,170
The mechanism through which mRNA translation enhancer elements drive cap-independent translation	93.859	RFCUNY CM00002680-00	1R01GM128239-01A1	RESEARCH FOUNDATION OF CITY UNIVERSITY OF NEW YORK	0	135,130
					\$0	\$135,130
Kyaterekeru Project: A Combination Intervention Addressing Sexual Risk-Taking Behaviors Among Vulnerable Women in Uganda	93.859	WASHU WU-19-203-MOD-1	1R01MH116768-01A1	WASHINGTON UNIVERSITY	0	59,964
					\$0	\$59,964
Modulation of KCNQ1 Channel Activity	93.859	UMIAMI SPC-001089	2R01GM109762-05	UNIVERSITY OF MIAMI	0	286,948
					\$0	\$286,948
Methods for integrated analysis of multi-level omics data	93.859	MGH 235245	7R01GM127862-03	MASSACHUSETTS GENERAL HOSPITAL	0	18,644
					\$0	\$18,644
					\$0	\$1,944,429

Child Health and Human Development Extramural Research

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						<u>Total Expenditures (Includes Subrecipients)</u>
Fluid Therapy and Cerebral Injury in Pediatric Diabetic Ketoacidosis	93.865	UCD 09-000148-06	U01HD062417	UNIVERSITY OF CALIFORNIA, DAVIS	0	-6,605
					\$0	-\$6,605
Inhibitors of Purine Import into Plasmodium falciparum Kill Malaria Parasites	93.865	AECM 310838	1R01AI116665-01	ALBERT EINSTEIN COLLEGE OF MEDICINEESHIVA UNIVERSITY	0	169,304
					\$0	\$169,304
Parenting and Men s Health: The Utility of the fathers and Sons Program	93.865	UMICHG 3004148036	5R01HD084526-02	UNIVERSITY OF MICHIGAN	0	31,461
					\$0	\$31,461
The Maternal Fetal Medicine Unit Network	93.865	GWU CU14-1338	2U10HD036801-16	GEORGE WASHINGTON UNIVERSITY	332,143	969,632
					\$332,143	\$969,632
Clinical Diagnostic Sequencing of Structural Variation	93.865	MGH 225991	1R01HD081256-01A1	MASSACHUSETTS GENERAL HOSPITAL	0	44,160
					\$0	\$44,160
PEDIATRIC SCIENTIST DEVELOPMENT PROGRAM (PSDP) K12	93.865	CHMCO 138406	5K12HD000850-30	CHILDREN'S HOSPITAL MEDICAL CENTER - OHIO	0	-1,549
					\$0	-\$1,549
Delivery mode, environment and the gut microbiome: influence on childhood body size	93.865	HFHS 87645	1R01HD082147-01A1	HENRY FORD HEALTH SYSTEM	0	1,569
					\$0	\$1,569
Impact of Perinatal Depression treatment on child developmental outcomes	93.865	UNC 5105594	7R01HD075875-04	UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL	0	146,580
					\$0	\$146,580
Medical Optimization & Management of Pregnancies with Overt Type 2 Diabetes (MOMPOD)	93.865	UNC 5106225	1R01HD086139-01A1	UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL	0	20,950
Medical Optimization & Management of Pregnancies with Overt Type 2 Diabetes (MOMPOD)	93.865	UNC 5106225	1R01HD086139-01A1	UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL	0	10,074
					\$0	\$31,024
Impact of Combined Use of Depot Medroxyprogesterone Acetate Contraception and Tenofovir PreExposure Prophylaxis on Bone Health (Depo-PrEP)	93.865	UWSC9850	1R01HD089843-01A1	UNIVERSITY OF WASHINGTONSEATTLE WASHINGTON	0	12,980
					\$0	\$12,980

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						Total Expenditures (Includes Subrecipients)
PEDIATRIC SCIENTIST DEVELOPMENT PROGRAM (PSDP) K12	93.865	CINCMC 130474	5K12HD000850-31	CINCINNATI CHILDREN'S MEDICAL CENTER	0	-2,715
					\$0	-\$2,715
TIMING OF INGUINAL HERNIA REPAIR IN PREMATURE INFANTS: A RANDOMIZED TRIAL	93.865	VU VUMC56646	5U01HD076733-02	VANDERBILT UNIVERSITY MEDICAL CENTER	0	3,735
					\$0	\$3,735
Burden and Reducing Risk of Neurological, Cognitive and Behavioral Impairment of Pediatric Sickle Cell Disease in Uganda	93.865	MU MakCHS092016	1R21HD089791-01	MAKERERE UNIVERSITY	0	1,644
					\$0	\$1,644
The Pediatric HIV/AIDS Cohort Study (PHACS)	93.865	TUL-HSC-557530-19/20	5U01HD052104-14	TULANE UNIVERSITY	0	7,902
The Pediatric HIV/AIDS Cohort Study (PHACS)	93.865	TUL-HSC-557530-19/20	5U01HD052104-14	TULANE UNIVERSITY	0	688
					\$0	\$8,590
Molecular mechanisms of infection-mediated cervical ripening	93.865	UTSW GMO 160410	5R01HD086495-04	UNIVERSITY OF TEXAS SOUTHWESTERN MEDICALCENTER AT DALLAS	0	17,997
					\$0	\$17,997
Mechanisms by which steroid hormones modulate cervical extracellular matrix structure and function during pregnancy and provide therapeutic protection against preterm birth	93.865	UTSW GMO 170904	5R01HD088481-03	UNIVERSITY OF TEXAS SOUTHWESTERN MEDICALCENTER AT DALLAS	0	68,287
					\$0	\$68,287
Mobile Augmented Screening (MAS) Tool to Increase Adolescent HIV Testing and Linkage to Care	93.865	DHE CU19-0372	2R42HD088325-02A1	DIGITAL HEALTH EMPOWERMENT	0	105,480
					\$0	\$105,480
Innovative PK/PD Approaches to Optimize TBM Treatment in Children (PATCH Study)	93.865	JHU 2002824937	R01HD074944-02	JOHNS HOPKINS UNIVERSITY	0	16,698
					\$0	\$16,698
Protection Against Cognitive Decline in MS: Longitudinal Investigation of Reserve	93.865	MSSM 0255-1471-4609	R01HD082176	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	0	117,862
Protection Against Cognitive Decline in MS: Longitudinal Investigation of Reserve	93.865	MSSM 0255-1471-4609	R01HD082176	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	0	20,573
					\$0	\$138,435

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Developmental Mechanisms of Trachea-Esophageal Birth Defects,project 1	93.865	CHMCO 140554	1P01HD093363-01	CINCINNATTI CHILDREN'S MEDICAL CENTER	0	120,812
					\$0	\$120,812
Gene Mutation and Rescue in Diaphragmatic Hernia	93.865	MGH 230914	5P01HD068250-08	MASSACHUSETTS GENERAL HOSPITAL	0	219,990
					\$0	\$219,990
PSDP Fellowship	93.865	CHMC 139469	5K12HD000850-34	CINCINNATTI CHILDREN'S MEDICAL CENTER	0	-3,163
					\$0	\$-3,163
VentFirst: A multicenter RCT ofassisted ventilation during delayedcord clamping for extremely preterm infants	93.865	GB10318 159922	5R01HD087413-02	UNIVERSITY OF VIRGINIA	0	81
					\$0	\$81
Predictive Informatics Monitoring in the Neonatal Intensive Care Unit	93.865	UV GB10607-PO#2230352	2R01HD072071-04A1	UNIVERSITY OF VIRGINIA	0	121,937
					\$0	\$121,937
Developmental Mechanisms of Trachea-Esophageal Birth Defects	93.865	CHMC 140553	1P01HD093363-01	CHILDREN'S HOSPITAL MEDICAL CENTER - OHIO	0	86,836
					\$0	\$86,836
Novel retinoic acid receptor alphaselective antagonists--Project 1	93.865	UMINN P006822801	1U54HD093540-01	UNIVERSITY OF MINNESOTA	0	243,193
Novel retinoic acid receptor alphaselective antagonists--Project 1	93.865	UMINN P006822801	1U54HD093540-01	UNIVERSITY OF MINNESOTA	0	88,247
					\$0	\$331,440
Contraceptive Discovery, Development and Behavioral Research Center - Project # 3	93.865	UMINN P006247402	1U54HB093540-01	UNIVERSITY OF MINNESOTA	0	-8,013
					\$0	\$-8,013
Contraceptive Discovery, Development and Behavioral Research Center - Project # 2	93.865	UMINN P006247401	1U54HD093540-01	UNIVERSITY OF MINNESOTA	0	65,293
Contraceptive Discovery, Development and Behavioral Research Center - Project # 2	93.865	UMINN P006247401	1U54HD093540-01	UNIVERSITY OF MINNESOTA	0	19,322
					\$0	\$84,615

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Using Smart Phones to Understand the Link between Social and Geographical Context and HIV Risk Behavior Among MSM	93.865	YU GR101489 (CON-80001024)	1R01HD092185-01	YALE UNIVERSITY	0	14,012
					\$0	\$14,012
FANMI: A community-based cohort model for HIV adolescent care in Haiti	93.865	194124	1R01HD091935-01A1	WEILL (JOAN AND SANFORD I.) MEDICAL COLLEGE OF CORNELL UNIVERSITY	0	19,571
FANMI: A community-based cohort model for HIV adolescent care in Haiti	93.865	194124	1R01HD091935-01A1	WEILL (JOAN AND SANFORD I.) MEDICAL COLLEGE OF CORNELL UNIVERSITY	0	6,680
					\$0	\$26,251
Place matters - Adaptable Solutions to Violence at the Community Level	93.865	TUL-HSC-557611-19/20	1R01HD095609-01	TULANE UNIVERSITY	0	34,615
					\$0	\$34,615
Building Research Capacity for Firearm Among Children	93.865	SUBK00011262	5R24HD087149-02	UNIVERSITY OF MICHIGAN	0	30,189
					\$0	\$30,189
Innovation across the spectrum of pediatric HIV care	93.865	MGH 235202	2R01HD079214-06A1	MASSACHUSETTS GENERAL HOSPITAL	0	20,488
					\$0	\$20,488
Women s HIV Cohort Study: HIV infection and treatment among women of reproductive age	93.865	UM SPC-001401	1R01HD101352-01	UNIVERSITY OF MIAMI	0	4,365
					\$0	\$4,365
Sexual-Minority Health	93.865	UUTAH 2C10048964	1R01HD0914505-01	UNIVERSITY OF UTAH	0	21,547
					\$0	\$21,547
A randomized controlled trial of pravastatin to prevent preeclampsia in high-risk women	93.865	UTMD 19-84509-01	1R01HD07549-01	UNIVERSITY OF TEXAS MEDICAL AT GALVESTON	0	4,654
					\$0	\$4,654
A multi-modality, multi-scale approach to understanding parturition	93.865	UWIS 865K196	2R01HD072077-06	UNIVERSITY OF WISCONSIN MADISON	0	165,497
A multi-modality, multi-scale approach to understanding parturition	93.865	UWIS 865K196	2R01HD072077-06	UNIVERSITY OF WISCONSIN MADISON	0	126,292
					\$0	\$291,789

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						Total Expenditures (Includes Subrecipients)
Socioeconomic Disparities in Cognitive & Neural Development in the First 3 Years	93.865	TC 512158-01	1R01HD093707-01	TEACHERS COLLEGE COLUMBIA UNIVERSITY	0	57,528
					\$0	\$57,528
Using EV-microRNAs to identify a non-invasive biomarker of uterine fibroid outcomes	93.865	GWU 19-M30	1R21HD096248-01A1	GEORGE WASHINGTON UNIVERSITY	0	27,533
					\$0	\$27,533
PSDP Fellowship	93.865	DUKEU 3021482	7K12HD000850-35	DUKE UNIVERSITY MEDICAL CENTER	0	98,411
					\$0	\$98,411
Burden and Risk of Neurological and Cognitive Impairment in Pediatric Sickle Cell Anemia in Uganda (BRAIN SAFE II)	93.865	GHU CU18-3693	1R01HD096559-01A1	GLOBAL HEALTH UGANDA	0	12,449
					\$0	\$12,449
The NICU Antibiotics and Outcomes (NANO) Trial	93.865	UPITT AWD0001006 (133278-2)	1R01HD097578-01A1	UNIVERSITY OF PITTSBURGH	0	31,616
					\$0	\$31,616
Precision Gait Retraining for Children with Cerebral Palsy	93.865	ALTEC AP-082319-A	1R43HD100209-01	ALTEC INC	0	73,134
					\$0	\$73,134
Fragile Families and the Transition to Adulthood	93.865	PU SUB0000361	2R01HD036916-16A1	PRINCETON UNIVERSITY	0	54,545
					\$0	\$54,545
					\$332,143	\$3,514,368

Aging Research

Replication and Extension in African Americans of AD Sequencing	93.866	UMIAMI SPC-000756	1U01AG052410-01	UNIVERSITY OF MIAMI	0	130,539
Replication and Extension in African Americans of AD Sequencing	93.866	UMIAMI SPC-000756	1U01AG052410-01	UNIVERSITY OF MIAMI	0	12,400
Replication and Extension in African Americans of AD Sequencing	93.866	UMIAMI SPC-000756	1U01AG052410-01	UNIVERSITY OF MIAMI	0	-1,199
Replication and Extension in African Americans of AD Sequencing	93.866	UMIAMI SPC-000756	1U01AG052410-01	UNIVERSITY OF MIAMI	0	-35,529

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					Subrecipients	Total Expenditures (Includes Subrecipients)
					\$0	\$106,211
National Alzheimer s Coordinating Center	93.866	UWSC7720	2U01AGB016976-16	UNIVERSITY OF WASHINGTONSEATTLE WASHINGTON	0	42,731
National Alzheimer s Coordinating Center	93.866	UWSC7720	2U01AGB016976-16	UNIVERSITY OF WASHINGTONSEATTLE WASHINGTON	0	1,745
					\$0	\$44,476
Longitudinal Evaluation of Familial Frontotemporal Dementia Subjects (LEFFTDS)	93.866	MAORO TRU-194007-07	1U01AG045390-01A1	Mayo Clinic -- Rochester	0	60,762
					\$0	\$60,762
Re-visiting Methods for MCI Diagnosis to Improve Biomarker and Trial Findings	93.866	UCSD 73333288	1R01AG049810-01A1	UNIVERSITY OF CALIFORNIA, SAN DIEGO	0	72,671
					\$0	\$72,671
Alzheimer s Disease Genetics Consortium	93.866	UPENN 573992	5U01AG032988	UNIVERSITY OF PENNSYLVANIA	0	219,982
					\$0	\$219,982
Genomic Characterization of Alzheimer s Disease Risk in the Puerto Rican population	93.866	UMIAMI 667606	1RF1AG054074-01	UNIVERSITY OF MIAMI	0	52,539
					\$0	\$52,539
Integrative Pathways to Health & Illness	93.866	UWIS 0000000096	1U19051426-01A1	UNIVERSITY OF WISCONSIN	0	179,276
Integrative Pathways to Health & Illness	93.866	UWIS 0000000096	1U19051426-01A1	UNIVERSITY OF WISCONSIN	0	12,088
					\$0	\$191,364
Einstein Aging Study - Project 2	93.866	AECM 31043W	2P01AG003949-32	ALBERT EINSTEIN COLLEGE OF MEDICINEESHIVA UNIVERSITY	0	110,080
Einstein Aging Study - Project 2	93.866	AECM 31043W	2P01AG003949-32	ALBERT EINSTEIN COLLEGE OF MEDICINEESHIVA UNIVERSITY	0	-14,837
					\$0	\$95,243
Genetic Epidemiology of EarlyOnset Alzheimer s disease in Caribbean Hispanics and nonHispanic Whites	93.866	UMIAMI SPC-000135	1RF1AG054080-01	UNIVERSITY OF MIAMI	0	343,091
Genetic Epidemiology of EarlyOnset Alzheimer s disease in Caribbean Hispanics and nonHispanic Whites	93.866	UMIAMI SPC-000135	1RF1AG054080-01	UNIVERSITY OF MIAMI	0	106,185

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					Subrecipients	Total Expenditures (Includes Subrecipients)
					\$0	\$449,276
Identifying the molecular systems, networks, and key molecules that underlie cognitive resilience	93.866	RUMC 17021705-Sub02	1R01AG057911-01	RUSH UNIVERSITY MEDICAL CENTER	0	66,298
					\$0	\$66,298
Tau-Sliceosome Interactions in Alzheimer s Disease	93.866	BCMh 7000000572	5R01AG053960-02	BAYLOR COLLEGE OF MEDICINE-- HOUSTON	0	45,507
					\$0	\$45,507
Mindfulness Meditation and Insomnia in Alzheimer Disease Caregivers: Inflammatory and Biological Aging Mechanism	93.866	UCLA 2000 G VK311	5R01AG056424-02	UNIVERSITY OF CALIFORNIA, LOS ANGELES	0	17,660
					\$0	\$17,660
Prevention of Alzheimer s disease in women: risks and benefits of hormone therapy	93.866	MAORO THE-234899-02	1RF1AG057547-01	Mayo Clinic -- Rochester	0	257,141
Prevention of Alzheimer s disease in women: risks and benefits of hormone therapy	93.866	MAORO THE-234899-02	1RF1AG057547-01	Mayo Clinic -- Rochester	0	68,335
					\$0	\$325,476
Role of permanently farnesylated prelamins in the cardiovascular disease of aging	93.866	JHU 2003965088	1R21AG058032-01	JOHNS HOPKINS UNIVERSITY	0	159,209
					\$0	\$159,209
Long-term impact of random assignment to intensive lifestyle intervention on Alzheimer s disease and related dementias: The Action for Health in Diabetes ADRD study (LookAHEAD-MIND)	93.866	WFUHS 552702	1R01AG058571-01	WAKE FOREST UNIVERSITY	0	19,969
					\$0	\$19,969
Subclinical Vascular Contributions to Alzheimer s Disease: The Multi Ethnic Study of Atherosclerosis (MESA) Multisite Study of AD	93.866	WFUHS 551083	1R01AG058969-01	WAKE FOREST UNIVERSITY	0	384,785
					\$0	\$384,785
Pitavastatin to Reduce Physical Function Impairment and Frailty in HIV (PREPARE)	93.866	UCLA CU19-0515	5R01AG054366-03	UNIVERSITY OF CALIFORNIA, LOS ANGELES	0	232
					\$0	\$232
Coordinating Center for Genetics and Genomics of Alzheimer s Disease (CGAD)	93.866	UPENN 576386	1U54AG052427-01	UNIVERSITY OF PENNSYLVANIA	0	34,727
Coordinating Center for Genetics and Genomics of Alzheimer s Disease (CGAD)	93.866	UPENN 576386	1U54AG052427-01	UNIVERSITY OF PENNSYLVANIA	0	22,258
					\$0	\$56,985

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						R&D Cluster
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Coordinating Center for Genetics and Genomics of Alzheimer s Disease (CGAD)	93.866	UPENN 576386	1U54AG052427-01	UNIVERSITY OF PENNSYLVANIA	0	69,734
Coordinating Center for Genetics and Genomics of Alzheimer s Disease (CGAD)	93.866	UPENN 576386	1U54AG052427-01	UNIVERSITY OF PENNSYLVANIA	0	44,148
					\$0	\$113,882
Psychosocial protective factors in cognitive and brain aging	93.866	UMICH 3004295136	4R00AG47963-03	UNIVERSITY OF MICHIGAN	0	20,579
					\$0	\$20,579
Alzheimer s Disease Cooperative Study - A4 Study	93.866	USC 75679119	U19AG010483	UNIVERSITY OF SOUTHERN CALIFORNIA	0	-11,907
					\$0	\$-11,907
Alzheimer s Disease Neuroimaging Initiative 3 (ADNI3)	93.866	USC 79634713	U19AG02	UNIVERSITY OF SOUTHERN CALIFORNIA	0	8,607
					\$0	\$8,607
PP2A Dysregulation in the Pathogenesis of alphaSynucleinopathies	93.866	RUTGERS 0131	1R01NS101134-01	RUTGERS, THE STATE UNIVERSITY OF NEW JERDEPARTMENT OF	0	30,352
PP2A Dysregulation in the Pathogenesis of alphaSynucleinopathies	93.866	RUTGERS 0131	1R01NS101134-01	RUTGERS, THE STATE UNIVERSITY OF NEW JERDEPARTMENT OF	0	3,419
					\$0	\$33,771
Whole Genome Sequencing in Ethnically Diverse Cohorts for the ADSP Follow Up Study (FUS)	93.866	UMIAMI SPC-001254	U01AG057659	UNIVERSITY OF MIAMI	0	138,634
Whole Genome Sequencing in Ethnically Diverse Cohorts for the ADSP Follow Up Study (FUS)	93.866	UMIAMI SPC-001254	U01AG057659	UNIVERSITY OF MIAMI	0	32,765
Whole Genome Sequencing in Ethnically Diverse Cohorts for the ADSP Follow Up Study (FUS)	93.866	UMIAMI SPC-001254	U01AG057659	UNIVERSITY OF MIAMI	0	6,663
					\$0	\$178,062
ARMADA: Advancing Reliable Measurement in Alzheimer s Disease and cognitive Aging	93.866	NWU 60048330CU	U2CAG057441	NORTHWESTERN UNIVERSITY	0	202,723
ARMADA: Advancing Reliable Measurement in Alzheimer s Disease and cognitive Aging	93.866	NWU 60048330CU	U2CAG057441	NORTHWESTERN UNIVERSITY	0	9,164
					\$0	\$211,887

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The Four Repeat Tauopathy Neuroimaging Initiative	93.866	UCSF 10375sc	R01AG038791	UNIVERSITY OF CALIFORNIA SAN FRANCISCO	0	76,392
The Four Repeat Tauopathy Neuroimaging Initiative	93.866	UCSF 10375sc	R01AG038791	UNIVERSITY OF CALIFORNIA SAN FRANCISCO	0	4,279
The Four Repeat Tauopathy Neuroimaging Initiative	93.866	UCSF 10375sc	R01AG038791	UNIVERSITY OF CALIFORNIA SAN FRANCISCO	0	3,075
					\$0	\$83,746
Health and Retirement Study Yrs 29-34	93.866	UMICHG 3005916841	U01AG009740	UNIVERSITY OF MICHIGAN	0	24,475
Health and Retirement Study Yrs 29-34	93.866	UMICHG 3005916841	U01AG009740	UNIVERSITY OF MICHIGAN	0	4,245
					\$0	\$28,720
Health and Retirement Study Yrs 29- 34: Harmonized Cognitive Assessment Protocol (HCAP)	93.866	UMICHG 3004832623	U01AG058499	UNIVERSITY OF MICHIGAN	0	15,353
Health and Retirement Study Yrs 29- 34: Harmonized Cognitive Assessment Protocol (HCAP)	93.866	UMICHG 3004832623	U01AG058499	UNIVERSITY OF MICHIGAN	0	8,144
					\$0	\$23,497
Alzheimer s Clinical Trials Consortium (ACTC) (U24)	93.866	USC 105637272	U24AG057437	UNIVERSITY OF SOUTHERN CALIFORNIA	0	119,978
Alzheimer s Clinical Trials Consortium (ACTC) (U24)	93.866	USC 105637272	U24AG057437	UNIVERSITY OF SOUTHERN CALIFORNIA	0	81,071
					\$0	\$201,049
Sustaining Quality of Life of the Aged: Heart Transplant or Mechanical Support?	93.866	NWU 60040682 CU	5R01AG047416-03	NORTHWESTERN UNIVERSITY	0	27,611
Sustaining Quality of Life of the Aged: Heart Transplant or Mechanical Support?	93.866	NWU 60040682 CU	5R01AG047416-03	NORTHWESTERN UNIVERSITY	0	5,275
Sustaining Quality of Life of the Aged: Heart Transplant or Mechanical Support?	93.866	NWU 60040682 CU	5R01AG047416-03	NORTHWESTERN UNIVERSITY	0	-1
					\$0	\$32,885
Predicting post-transplant mortality and global functional health based on pre-transplant functional status in liver transplantation	93.866	UCSF 10865sc	1R01AG059183-01	UNIVERSITY OF CALIFORNIA SAN FRANCISCO	0	50,000
					\$0	\$50,000

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						<u>Total Expenditures (Includes Subrecipients)</u>
Understanding cellular and transcriptional regulatory changes in human aging	93.866	AECM 311426	1R01AG057422-01A1	ALBERT EINSTEIN COLLEGE OF MEDICINE SHEVA UNIVERSITY	0	43,691
					\$0	\$43,691
Postoperative Delirium and Alzheimer s Disease Related Dementias	93.866	BWH 234365	1R01AG062509-01	BRIGHAM AND WOMEN'S HOSPITAL	0	51,660
					\$0	\$51,660
What Does Health Insurance Do? Evidence from the Oregon Health	93.866	NBER 4126B.COLUMBIA	2R01AG034151-06A1	National Bureau of Economic Research	0	42,470
					\$0	\$42,470
Improving Health Outcomes for an Aging Population	93.866	NBER 4135G.30.16.Columbia	2P01AG005842-30	National Bureau of Economic Research	0	48,781
					\$0	\$48,781
Stress, Epigenetics, and Aging	93.866	EMORYU A008616	1R01AG058704-01	EMORY UNIVERSITY	0	259,527
					\$0	\$259,527
Loss of Numb in Muscle Dysfunction in Aging	93.866	BVMRF 1R01AG060341-1	1R01AG060341-01	BRONX VETERANS MEDICAL RESEARCH FOUNDATION	0	36,151
					\$0	\$36,151
Communities Designed to Support Cardiovascular Health for Older Adults	93.866	DU 800180	5R01AG049970	DREXEL UNIVERSITY	0	-656
					\$0	-\$656
Communities Designed to Support Cardiovascular Health for Older Adults	93.866	DU 800180	3R01AG049970-04S1	DREXEL UNIVERSITY	0	37,228
					\$0	\$37,228
Life Course Process of Alzheimer s Disease: Sex Difference and Biosocial Mechanisms	93.866	5113228	5R01AG057800-02	UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL	0	22,983
					\$0	\$22,983
Healthy Heart, Healthy Brain? A pooled life-course cohort for dementia risk assessment	93.866	11276sc	1RF1AG054443-01	UNIVERSITY OF CALIFORNIA SAN FRANCISCO	0	27,720
					\$0	\$27,720
Biomarkers of Cognitive Decline Among Normal Individuals: The Biocard Cohort	93.866	JHU 2004408143	2U19AG033655-11	JOHNS HOPKINS UNIVERSITY	0	54,554

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$54,554
Human tissue specific age-related gene expression changes, their genetic regulations and the link to human diseases	93.866	MSSM 0255-4711-4609	5R01AG055501-03	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	0	118,204
					\$0	\$118,204
Combinatorial Actions of Genetic Variants and Gender Bias of Alzheimer s Disease	93.866	UCSD 131780734	5R01AG057706-03	UNIVERSITY OF CALIFORNIA, SAN DIEGO	0	122,633
					\$0	\$122,633
Genetic Variant-Based Drug Discovery Targeting Conserved Pathways of Aging	93.866	AECM 31086B	5U19AG056278-04	ALBERT EINSTEIN COLLEGE OF MEDICINEESHIVA UNIVERSITY	0	167,140
					\$0	\$167,140
Combinatorial regulation of the enhancer codes in senescence	93.866	UCSD 131072963 MP Invoice/P0 S	R01AG061521	UNIVERSITY OF CALIFORNIA, SAN DIEGO	0	112,645
					\$0	\$112,645
Acute Effects of Cannabis on Cognition and Mobility in Older HIV-Infected and Uninfected Women	93.866	AECM 311343	1R21AG059505-01	ALBERT EINSTEIN COLLEGE OF MEDICINEESHIVA UNIVERSITY	0	33,223
					\$0	\$33,223
Exploring the Role of the Brain Epigenome: Cognitive Decline and Life Experience	93.866	RUMC 09111306-sub3	1RF1AG036042-01	RUSH UNIVERSITY MEDICAL CENTER	0	87,843
					\$0	\$87,843
Building Novel Predictive Networks for High- throughput In-Silico Key Driver Prioritization to Enhance Drug Target Discovery in AMP-AD and M2OVE-AD	93.866	UA 469320	7RF1AG057457-02	UNIVERSITY OF ARIZONA	0	68,110
					\$0	\$68,110
Temporal Trends, Novel Imaging and Molecular Characterization of Preclinical and Clinical Alzheimer s Disease in the Framingham Cohorts	93.866	UTHSCSA 164208/163074	7R01AG054076-03	UNIVERSITY OF TEXAS HEALTH SCIENCE CENTER AT SAN ANTONIO	0	109,949
					\$0	\$109,949
Therapeutic target discovery in ADSP data via comprehensive whole-genome analysis incorporating ethnic diversity and systems	93.866	BU 450003185	1U01AG058589-01A1	BOSTON UNIVERSITY	0	113,445
					\$0	\$113,445
The Action for Health in Diabetes ADRD study (LookAHEAD-MIND)	93.866	WFUHS 552702	1R01AG058571-01	WAKE FOREST UNIVERSITY	0	66,853
					\$0	\$66,853

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						<u>Total Expenditures (Includes Subrecipients)</u>
Child Maltreatment and Risk for Mild Cognitive Impairment and Alzheimer s Disease	93.866	RFCUNY CM00001842-00	1R01AG05863-01A	RESEARCH FOUNDATION OF CITY UNIVERSITY OF NEW YORK	0	143,803
					\$0	\$143,803
Slow wave sleep (SWS) and the effect of African ancestry on amyloid burden, a longitudinal study	93.866	NYU 17-A1-00-007453-01	1R01AG056531-01A1	NEW YORK UNIVERSITY	0	39,729
Slow wave sleep (SWS) and the effect of African ancestry on amyloid burden, a longitudinal study	93.866	NYU 17-A1-00-007453-01	1R01AG056531-01A1	NEW YORK UNIVERSITY	0	5,036
					\$0	\$44,765
Cognitive Function, Alzheimer s Disease and Related Disorders in the HAALSI Cohort	93.866	HARVARD 116362-5111693	1R01AG054066-01A1	HARVARD UNIVERSITY	0	186,936
					\$0	\$186,936
Early Onset AD Consortium - the LEAD Study (LEADS)	93.866	IN-4683237-COL	1U01AG057195-01A1	INDIANA UNIVERSITY	0	11,538
Early Onset AD Consortium - the LEAD Study (LEADS)	93.866	IN-4683237-COL	1U01AG057195-01A1	INDIANA UNIVERSITY	0	5,314
					\$0	\$16,852
Educational and Early Life Predictors of Mild Cognitive Impairment: New Evidence about Mediators and Moderators from High School & Beyond	93.866	UMINN H007058802	1R01AG058719-01A1	UNIVERSITY OF MINNESOTA	0	15,639
					\$0	\$15,639
The Long Life Family Study: Columbia University	93.866	WUSOM WU-20-212	1U19AG063893-01	Washington University School of Medicine in St. Louis	0	645,343
The Long Life Family Study: Columbia University	93.866	WUSOM WU-20-212	1U19AG063893-01	Washington University School of Medicine in St. Louis	0	268,977
The Long Life Family Study: Columbia University	93.866	WUSOM WU-20-212	1U19AG063893-01	Washington University School of Medicine in St. Louis	0	231,894
The Long Life Family Study: Columbia University	93.866	WUSOM WU-20-212	1U19AG063893-01	Washington University School of Medicine in St. Louis	0	104,852
The Long Life Family Study: Columbia University	93.866	WUSOM WU-20-212	1U19AG063893-01	Washington University School of Medicine in St. Louis	0	55,814
The Long Life Family Study: Columbia University	93.866	WUSOM WU-20-212	1U19AG063893-01	Washington University School of Medicine in St. Louis	0	3,344

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						<u>Total Expenditures (Includes Subrecipients)</u>
The Long Life Family Study: Columbia University	93.866	WUSOM WU-20-212	1U19AG063893-01	Washington University School of Medicine in St. Louis	0	1,028
					\$0	\$1,311,252
Dissecting the genomic etiology of non-Mendelian early-onset Alzheimer disease and related phenotypes	93.866	UMIAMI SPC-001236	1R01AG064614-01	UNIVERSITY OF MIAMI	0	98,682
Dissecting the genomic etiology of non-Mendelian early-onset Alzheimer disease and related phenotypes	93.866	UMIAMI SPC-001236	1R01AG064614-01	UNIVERSITY OF MIAMI	0	16,236
					\$0	\$114,918
Additional Sequencing Cohorts for the Alzheimer s Disease Sequencing Project	93.866	UMIAMI SPC-001303	1U01AG062943-01	UNIVERSITY OF MIAMI	0	7,474
					\$0	\$7,474
The Alzheimer Disease Sequence Analysis Collaborative	93.866	CWRU CU18-0913	1U01AG058654-01A1	CASE WESTERN RESERVE UNIVERSITY	0	43,719
The Alzheimer Disease Sequence Analysis Collaborative	93.866	CWRU CU18-0913	1U01AG058654-01A1	CASE WESTERN RESERVE UNIVERSITY	0	16,752
					\$0	\$60,471
Enhancing Retrospective Life History Data in the Health and Retirement Study	93.866	SUBK00010395	2R01AG051142-05	UNIVERSITY OF MICHIGAN	0	1,688
					\$0	\$1,688
UCD A20-0610-S002 The Neuropathologic Landscape of Alzheimer s Disease Hispanic decedents	93.866	UCD A20-0610-S002	1R01AG062517-01A1	UNIVERSITY OF CALIFORNIA, DAVIS	0	46,341
					\$0	\$46,341
Exploring the Latent Class Structure of Inhibition in Aging	93.866	USC 127427367	4R00AG055684-03	UNIVERSITY OF SOUTHERN CALIFORNIA	0	3,412
					\$0	\$3,412
ARTFL LEFFTDS Longitudinal Frontotemporal Lobar Degeneration (ALLFTD) - Clinical Core Fixed	93.866	MAORO CBL-263134	1U19AG063911-01	Mayo Clinic -- Rochester	0	4,423
					\$0	\$4,423
ARTFL LEFFTDS Longitudinal Frontotemporal Lobar Degeneration (ALLFTD) - Clinical Core	93.866	MAORO COL-263134	IUI9AG063911-01	Mayo Clinic -- Rochester	0	63,423
					\$0	\$63,423

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						R&D Cluster
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ARTFL LEFFTDS Longitudinal Frontotemporal Lobar Degeneration (ALLFTD) - Project 1	93.866	MAORO BIA-263134	1U19AG063911-01	Mayo Clinic -- Rochester	0	18,872
					\$0	\$18,872
Pathogenesis of Postoperative Cognitive Dysfunction	93.866	MGH 235316	2R01AG041274-06A1	MASSACHUSETTS GENERAL HOSPITAL	0	28,026
					\$0	\$28,026
					\$0	\$7,035,872
Vision Research						
Ocular Hypertension Treatment Study 20-Year Follow-Up Clinical Center Grant	93.867	WU-16-137	1UG1EY025181-01	WASHINGTON UNIVERSITY	0	25,125
Ocular Hypertension Treatment Study 20-Year Follow-Up Clinical Center Grant	93.867	WU-16-137	1UG1EY025181-01	WASHINGTON UNIVERSITY	0	-140
					\$0	\$24,985
Mechanistic Studies on Regenerative Medicine Approaches to Childhood Blindness	93.867	UIO 1001607458	R01EY026682-01	UNIVERSITY OF IOWA	0	145,235
					\$0	\$145,235
HEY: Hispanic Study	93.867	UTEXAS 1R21EY029605-01(01)	1R21EY029605-01	UNIVERSITY OF TEXAS - RIO GRANDE VALLEY	0	15,029
					\$0	\$15,029
The BCI (Brain Computer Interface) Glaucoma Study: Objective Home-Based Detection of Progressive Visual Function Loss in Glaucoma	93.867	DUMC A031422	1R01EY029885-01	DUKE UNIVERSITY MEDICAL CENTER	0	47,714
					\$0	\$47,714
African Descent and Glaucoma Evaluation Study (ADAGES) IV: Alterations of the lamina cribrosa in progression	93.867	UAB 000512884-002	1R01EY026574-01A1	UNIVERSITY OF ALABAMA AT BIRMINGHAM	0	132,662
					\$0	\$132,662
Translational Gene Therapy for CNGB1 Retinitis Pigmentosa	93.867	MSU RC108391UC	R24EY027285	MICHIGAN STATE UNIVERSITY	0	109,641
Translational Gene Therapy for CNGB1 Retinitis Pigmentosa	93.867	MSU RC108391UC	R24EY027285	MICHIGAN STATE UNIVERSITY	0	44,188
					\$0	\$153,829

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3D-Fast Optical Interface for Rapid Volumetric Neural Sensing and Modulation	93.867	UCOL FY20.946.002	5R21EY029458-02	UNIVERSITY OF COLORADO	0	56,827
					<u>\$0</u>	<u>\$56,827</u>
					<u>\$0</u>	<u>\$576,281</u>
Medical Library Assistance						
Casual Inference in Large - Scale Time - Series with Rare Events and Latent Variables	93.879	SIT 2102255-01	5R01LM011826-07	STEVENS INSTITUTE OF TECHNOLOGY	0	125,458
					<u>\$0</u>	<u>\$125,458</u>
Mechanistic Machine Learning	93.879	UCD CU19-2358	7R01LM012734	UNIVERSITY OF COLORADO	0	147,053
					<u>\$0</u>	<u>\$147,053</u>
					<u>\$0</u>	<u>\$272,511</u>
National Institutes of Health Acquired Immunodeficiency Syndrome Research Loan Repayment Program						
HIV Prevention Trials Network (HPTN) Leadership Group	93.936	FHI 0080-0025	U01 AI068619	FAMILY HEALTH INTERNATIONAL	14,542	359,396
					<u>\$14,542</u>	<u>\$359,396</u>
					<u>\$14,542</u>	<u>\$359,396</u>
International Research and Research Training						
Bangladesh Center for Global Environmental and Occupational Health	93.989	UCHICAGO FP056723-D	1U2RTW010122-01	UNIVERSITY OF CHICAGO	0	6,789
					<u>\$0</u>	<u>\$10,696</u>
Bangladesh Center for Global Environmental and Occupational Health	93.989	UCHICAGO FP056723-D	1U2RTW010122-01	UNIVERSITY OF CHICAGO	0	3,907
					<u>\$0</u>	<u>\$18,507</u>
Circulating microRNAs in extracellular vesicles, household air pollution and lung development in Ghana	93.989	MSSM 0255-A051-4609	1R21TW010957-01	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	0	18,507
					<u>\$0</u>	<u>\$18,507</u>
KNMU-SUNY HIV Research Training Program	93.989	RFSUNY 100-1132446-74921	5DA43TW010046-03	RESEARCH FOUNDATION OF THE STATE UNIVERSITY OF NEW YORK	0	8,204
					<u>\$0</u>	<u>\$8,204</u>

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						<u>Total Expenditures (Includes Subrecipients)</u>
Injury and Trauma Research Training program for Botswana	93.989	UPenn 570884	1-D43-TW-010448-01	UNIVERSITY OF PENNSYLVANIA	0	15,803
					\$0	\$15,803
Capacity development for HIV and mental health research in Asia (CHIMERA)	93.989	AMFAR 109915-66-ISTA	1D43TW011302-01	AMERICAN FOUNDATION FOR AIDS RESEARCH (AMFAR)	0	23,820
					\$0	\$23,820
					\$0	\$77,030
Total Pass-through Programs					\$937,068	\$55,732,381
Total National Institute of Health					\$83,790,071	\$556,791,313
Grand Total: Department of Health & Human Services					\$85,321,977	\$582,216,563

National Science Foundation

Direct Awards

Engineering

CAREER: A Data-driven Robust Approach for Large Scale Dynamic Optimization	47.041	CMMI-1351838			0	98,562
					\$0	\$98,562
Collaborative Research: Joint UFL/CUI/UCR Center for Particulate and Surfactant Systems	47.041	IIP-1362078			0	1,454
					\$0	\$1,454
CAREER: Growth and Remodeling of the Uterine Cervix During Pregnancy	47.041	CMMI-1454412			0	104,729
					\$0	\$104,729
CAREER: Structure and Functional Imaging of the Atrial Myocardium	47.041	CBET-1454365			0	30,061
					\$0	\$30,061
Wireless control of implantable microdevices	47.041	ECCS-1509748			9,728	9,728
Wireless control of implantable microdevices	47.041	ECCS-1509748			0	-9,728
					\$9,728	\$0

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Collaborative Research: A Contact Lens-Based Glucose Nanosensor Using Affinity Polymer-Functionalized Graphene	47.041	ECCS-1509760			0	95,786
					\$0	\$95,786
Compressive Sampling for Uncertainty Modeling and Quantification of Dynamical Systems Subject to Highly Limited/Incomplete Data	47.041	CMMI-1724930			0	98,338
					\$0	\$98,338
Predictive Optimization of T cell Expansion	47.041	CBET-1743420			54,242	100,677
					\$54,242	\$100,677
Phase II IUCRC Columbia University: Center for Energy Harvesting Materials and Systems (CEHMS)	47.041	IIP-1738802			0	104,006
Phase II IUCRC Columbia University: Center for Energy Harvesting Materials and Systems (CEHMS)	47.041	IIP-1738802			0	36,563
Phase II IUCRC Columbia University: Center for Energy Harvesting Materials and Systems (CEHMS)	47.041	IIP-1738802			0	8,000
					\$0	\$148,569
NRI: FND: Scalable Multimodal Tactile Sensing for Robotic Manipulators in Manufacturing	47.041	CMMI-1734557			0	70,995
NRI: FND: Scalable Multimodal Tactile Sensing for Robotic Manipulators in Manufacturing	47.041	CMMI-1734557			0	54,166
NRI: FND: Scalable Multimodal Tactile Sensing for Robotic Manipulators in Manufacturing	47.041	CMMI-1734557			0	51,681
NRI: FND: Scalable Multimodal Tactile Sensing for Robotic Manipulators in Manufacturing	47.041	CMMI-1734557			0	-1,347
					\$0	\$175,495
SuSChem: Environmentally Sustainable Pathways for Extracting Valuable Elements from Electronic Wastes	47.041	CBET-1706905			0	150,743
					\$0	\$150,743
Molecular scale Breaking due to Repeated Loading in Molecular Shuttles	47.041	CMMI-1662329			0	159,791
					\$0	\$159,791

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
GOALI: Laser Forming of Metal Foam with Controlled Dimensional and Mechanical Properties	47.041	CMMI-1725980			0	94,147
GOALI: Laser Forming of Metal Foam with Controlled Dimensional and Mechanical Properties	47.041	CMMI-1725980			0	7,690
					\$0	\$101,837
E2CDA: Type I: Collaborative Research: Interconnects Beyond Cu	47.041	ECCS-1740270			0	21,757
					\$0	\$21,757
CAREER: Optimization-based Quantification of Statistical Uncertainty in Stochastic and Simulation Analysis	47.041	CMMI-1834710			0	103,672
					\$0	\$103,672
CAREER: Exploiting Many-Particle Physics for Low-Energy Nanoelectronics	47.041	ECCS-1752401			0	97,663
					\$0	\$97,663
Coastal SEES (Track 2) Collaborative: Developing High Performance Green Infrastructure Systems to Sustain Coastal Cities	47.041	CMMI-1325676			12,457	67,221
Coastal SEES (Track 2) Collaborative: Developing High Performance Green Infrastructure Systems to Sustain Coastal Cities	47.041	CMMI-1325676			0	-6,273
					\$12,457	\$60,948
Managing Patient Flows with Congestion Effect	47.041	CMMI-1350059			0	41,490
					\$0	\$41,490
CAREER: Operationally aware design of Matching Markets	47.041	CMMI 1653477			0	467
					\$0	\$467
Collaborative ResearchL Strategic Planning of Internet Services in the Presence of User-Initiated Innovations: Implications for Network Neutrality	47.041	CMMI-1435378			0	22,438
					\$0	\$22,438
A Robust Framework for Modeling Preferences and its Applications in Revenue Management	47.041	CMMI-1636046			0	112,858
					\$0	\$112,858

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						<u>Total Expenditures (Includes Subrecipients)</u>
A phase field Arlequin model for resolving nonlocal hydromechanical effects of porous media across time and spatial scales	47.041	CMMI-1462760			0	203,057
A phase field Arlequin model for resolving nonlocal hydromechanical effects of porous media across time and spatial scales	47.041	CMMI-1462760			0	40,431
					\$0	\$243,488
Online algorithms for service systems	47.041	CMMI-1538088			0	43,631
					\$0	\$43,631
EARS: Cross Layering in Full Duplex - From Integrated Circuits to Networking	47.041	ECCS-1547406			0	55,831
EARS: Cross Layering in Full Duplex - From Integrated Circuits to Networking	47.041	ECCS-1547406			0	53,385
EARS: Cross Layering in Full Duplex - From Integrated Circuits to Networking	47.041	ECCS-1547406			0	8,075
					\$0	\$117,291
High Fidelity Probabilistic Structural Health Monitoring	47.041	CMMI 1563364			0	124,332
					\$0	\$124,332
Data Driven Queueing Models for Healthcare: Accounting for Stochastic Dependence and Time Dependence	47.041	CMMI-1634133			0	6,717
					\$0	\$6,717
EFRI ACQUIRE: Development of Heterogenous Platform for Chip Based Quantum Information Applications	47.041	EFMA-1641094			380,238	380,238
EFRI ACQUIRE: Development of Heterogenous Platform for Chip Based Quantum Information Applications	47.041	EFMA-1641094			0	20,939
					\$380,238	\$401,177
Assembling Nanoparticle Arrays at Fluid Interfaces	47.041	CBET-1603043			0	90,577
					\$0	\$90,577
EFRI NewLAW: Novel Approaches to RF Non-Reciprocity in Semiconductor Systems	47.041	EFMA-1641100			79,125	85,232

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						<u>Total Expenditures (Includes Subrecipients)</u>
EFRI NewLAW: Novel Approaches to RF Non-Reciprocity in Semiconductor Systems	47.041	EFMA-1641100			0	77,901
EFRI NewLAW: Novel Approaches to RF Non-Reciprocity in Semiconductor Systems	47.041	EFMA-1641100			0	17,190
EFRI NewLAW: Novel Approaches to RF Non-Reciprocity in Semiconductor Systems	47.041	EFMA-1641100			0	7,214
EFRI NewLAW: Novel Approaches to RF Non-Reciprocity in Semiconductor Systems	47.041	EFMA-1641100			0	4,924
					\$79,125	\$192,461
DMREF: Collaborative Research: Designing Optimal Nanoparticle Shapes and Ligand Parameters for Polymer Grafted Nanoparticle Membranes	47.041	CBET-1629502			0	92,111
DMREF: Collaborative Research: Designing Optimal Nanoparticle Shapes and Ligand Parameters for Polymer Grafted Nanoparticle Membranes	47.041	CBET-1629502			0	52,512
					\$0	\$144,623
CAREER: Tailoring Rheological Behavior and Interlayer Properties of 3 D Printing Concrete	47.041	CMMI-1653419			0	94,876
CAREER: Tailoring Rheological Behavior and Interlayer Properties of 3 D Printing Concrete	47.041	CMMI-1653419			0	8,000
					\$0	\$102,876
CAREER: Virtual Modular Power (VMP) Conversion	47.041	ECCS-1653574			0	2,116
					\$0	\$2,116
CAREER: Optimization Methods to Support Real time Personalized Consumer Transactions	47.041	CMMI 1653770			0	77,902
					\$0	\$77,902
Collaborative Research: REU Site: Nano-NY	47.041	EEC-1659808			0	16,366
Collaborative Research: REU Site: Nano-NY	47.041	EEC-1659808			0	11,623
					\$0	\$27,989
GOALI: Omics and metabolically informed out selection of Nitrospira spp. and Comammox bacteria from energy efficient engineered nitrogen removal processes	47.041	CBET-1706726			0	50,626

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						<u>Total Expenditures (Includes Subrecipients)</u>
GOALI: Omics and metabolically informed out selection of Nitrospira spp. and Comammox bacteria from energy efficient engineered nitrogen removal processes	47.041	CBET-1706726			0	38,617
					\$0	\$89,243
Collaborative Research: Hybrid Discrete Continuum Numerical Simulation of Granular Materials	47.041	CBET-1706689			0	21,568
					\$0	\$21,568
Collaborative Research: SusCHEM: Environmental Sustainability of Lead Perovskite Solar Cells	47.041	CBET-1705606			0	32,614
					\$0	\$32,614
Multi-Component Reactive Pressure-dependent Chemistry Verified by Multi-Scale Uncertainty Quantification	47.041	CBET-1706252			0	81,198
Multi-Component Reactive Pressure-dependent Chemistry Verified by Multi-Scale Uncertainty Quantification	47.041	CBET-1706252			0	4,600
					\$0	\$85,798
GOALI/Collaborative Research:Improving Patient Flow in Hospitals	47.041	CMMI-1762544			0	16,059
					\$0	\$16,059
PFI-TT: Pushing the limits of color quality and efficiency in solid state lighting with colloidal quantum dots	47.041	IIP-1827726			0	52,830
					\$0	\$52,830
Collaborative Research: Continuous Manufacturing of Hetero-nanostructures by Colloidal Atomic Layer	47.041	CMMI-1903112			0	91,339
					\$0	\$91,339
PFI-RP: Next-Generation Microcontroller for the Era of Internet of Smart Things	47.041	IIP-1919147			0	7,220
					\$0	\$7,220
CAREER: Biophysical Mechanisms Underlying the Generation of Tissue Structure and Mechanics	47.041	CMMI-1751841			0	110,896
					\$0	\$110,896
CAREER: Systemic Risk and Strategic Formation in Stochastic Networks	47.041	CMMI-1752326			0	117,481

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
CAREER: Systemic Risk and Strategic Formation in Stochastic Networks	47.041	CMMI-1752326			0	1,650
					\$0	\$119,131
CAREER: SusChEM: Tunable Electrocatalysis at Buried Interfaces	47.041	CBET-1752340			0	124,333
					\$0	\$124,333
CAREER: A Path Integral Methodology for Accurate and Computationally Efficient Stochastic Analysis of Diverse Dynamical Systems	47.041	CMMI-1748537			0	90,025
					\$0	\$90,025
Virtual Experiments and Design of Particulate Composites with the Inclusion based Boundary Element Method (iBEM)	47.041	CMMI 1762891			0	82,241
					\$0	\$82,241
Collaborative Research: Active Transport of Lipid Vesicles in Osmotic Gradients	47.041	CBET-1804332			0	151,937
					\$0	\$151,937
Collaborative Research: Operations Driven Machine Learning	47.041	CMMI 1763000			0	30,484
					\$0	\$30,484
CDS&E: Collaborative Research: Autonomous Systems for Experimental and Computational Data Generation and Data Driven Modeling of Combustion Kinetics	47.041	CBET 1761491			0	102,946
					\$0	\$102,946
Concurrent Enhancement of Fatigue Life and Corrosion Resistance via Laser Shock Peening	47.041	CMMI 1761344			0	125,081
Concurrent Enhancement of Fatigue Life and Corrosion Resistance via Laser Shock Peening	47.041	CMMI 1761344			0	4,246
					\$0	\$129,327
RoL: EAGER: DESYN-C3: Mimicking Mitochondria: Developing Synthetic Pathways to Power Pseudo-Cell Functions using Diverse Fuel Resources	47.041	CBET 1844254			0	138,579
					\$0	\$138,579
RoL: EAGER: DESYN C3 Enzyme cascades in synthetic membraneless organelles	47.041	CBET 1844149			0	103,544

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RoL: EAGER: DESYN C3 Enzyme cascades in synthetic membraneless organelles	47.041	CBET 1844149			0	50,219
					\$0	\$153,763
Planning Grant: Engineering Research Center for Advanced Streetscape Sensing, Communications and Computing (ASTRSCC)	47.041	EEC-1840540			15,834	92,174
					\$15,834	\$92,174
EAGER SitS: Signaling the Health Of Tree-pit Soil (SHOTS)	47.041	CMMI 1841615			0	116,011
EAGER SitS: Signaling the Health Of Tree-pit Soil (SHOTS)	47.041	CMMI 1841615			0	4,572
					\$0	\$120,583
CAREER: Engineering Bacteria Swarming for Biotechnology	47.041	CBET 1847356			0	155,012
CAREER: Engineering Bacteria Swarming for Biotechnology	47.041	CBET 1847356			0	4,000
					\$0	\$159,012
CAREER: Computational Failure Mechanics Across Multiple Scales with Deep Reinforcement Learning	47.041	CMMI 1846875			0	97,623
					\$0	\$97,623
CAREER: Enhancing Perception and Cognition while Minimizing Side Effects through Closed-Loop Peripheral Neural Stimulation	47.041	CBET 1847315			0	24,910
					\$0	\$24,910
CAREER: Consumer Behavior Aware Learning for Revenue Management	47.041	CMMI 1846792			0	72,777
					\$0	\$72,777
I Corps: 3D Capturing Technology Based on Light Fields	47.041	IIP 1916337			0	40,907
					\$0	\$40,907
I Corps: Novel Material System and Design for Thermal Management of Asphalt Pavements	47.041	IIP 1935773			0	45,593
					\$0	\$45,593

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Collaborative Research: AccelNet: Sustainable Capture and Conversion of CO2 to Chemicals and Fuels using Renewable Electrons (SCO2RE)	47.041	CBET 1927336			0	63,268
					\$0	\$63,268
Collaborative Research: INFEWS: U.S. China: Sustainable Decentralized Wastewater Management: Simultaneous Nutrient Recovery and Pharmaceutical Degradation of Source Separated Urine	47.041	CBET 1903705			0	79,985
					\$0	\$79,985
Planning Grant: Engineering Research Center for Integrated Mechanobiology for Women's Health (IMWEL)	47.041	EEC 1937094			0	37,732
					\$0	\$37,732
CAREER: Extrapolatable, Uncertainty Quantified Modeling of Nitrogen Kinetics Informed by Data Across Multiple Scales	47.041	CBET 1944004			0	1,760
					\$0	\$1,760
CAREER: Soft, biocompatible ion-based transistors for responsive neuroelectronic devices	47.041	ECCS-1944415			0	13,411
					\$0	\$13,411
Active emulsions: Magneto-capillary dynamics of particles at curved interfaces	47.041	CBET-1935228			0	37,941
					\$0	\$37,941
I-Corps: A Technology for Complementary Metal-Oxide Semiconductors (CMOS) -Integrated Vapor Sensors	47.041	IIP-2011426			0	17,400
					\$0	\$17,400
Holographic Meta-Lenses for Point-Spread Function Engineering	47.041	ECCS-2004685			0	1,739
					\$0	\$1,739
COVID-19 - RAPID:Novel Foam formulations for decontamination of surfaces with minimum wastewater generation	47.041	COVID-19			0	20,233
					\$0	\$20,233
COVID-19 - RAPID: Viral Structure-Function-Activity in the Engineered Wastewater Cycle	47.041	COVID-19			0	712
					\$0	\$712
NSF EAGER: Ionic communication: high resolution, non-invasive data communication for bioelectronics	47.041	ECCS-2027135			0	8,892

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					<u>\$0</u>	<u>\$8,892</u>
					<u>\$551,624</u>	<u>\$5,869,500</u>
Mathematical and Physical Sciences						
The XENON1T Dark Matter Project: A Project Proposal from the US Institutions of the XENON Collaboration	47.049	PHY-1209979			0	91,048
The XENON1T Dark Matter Project: A Project Proposal from the US Institutions of the XENON Collaboration	47.049	PHY-1209979			0	8,586
					<u>\$0</u>	<u>\$99,634</u>
Excitations in Landau Levels of Two-dimensional Quantum Fluids	47.049	DMR-1306976			0	16,118
					<u>\$0</u>	<u>\$16,118</u>
p-adic Automorphic forms, p-adic L-functions and Selmer groups	47.049	DMS-1407239			0	1,831
					<u>\$0</u>	<u>\$1,831</u>
Stochastic Controls, Portfolios, and Competing Particle Systems	47.049	DMS-1405210			0	28,363
					<u>\$0</u>	<u>\$28,363</u>
Columbia University Materials Research Science and Engineering Center	47.049	DMR-1420634			560,257	560,257
Columbia University Materials Research Science and Engineering Center	47.049	DMR-1420634			0	416,025
Columbia University Materials Research Science and Engineering Center	47.049	DMR-1420634			0	303,898
Columbia University Materials Research Science and Engineering Center	47.049	DMR-1420634			0	237,917
Columbia University Materials Research Science and Engineering Center	47.049	DMR-1420634			0	204,769
Columbia University Materials Research Science and Engineering Center	47.049	DMR-1420634			0	171,439
Columbia University Materials Research Science and Engineering Center	47.049	DMR-1420634			0	150,161

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Columbia University Materials Research Science and Engineering Center	47.049	DMR-1420634			0	114,486
Columbia University Materials Research Science and Engineering Center	47.049	DMR-1420634			0	109,472
Columbia University Materials Research Science and Engineering Center	47.049	DMR-1420634			0	106,381
Columbia University Materials Research Science and Engineering Center	47.049	DMR-1420634			0	102,021
Columbia University Materials Research Science and Engineering Center	47.049	DMR-1420634			0	93,759
Columbia University Materials Research Science and Engineering Center	47.049	DMR-1420634			0	92,391
Columbia University Materials Research Science and Engineering Center	47.049	DMR-1420634			0	88,299
Columbia University Materials Research Science and Engineering Center	47.049	DMR-1420634			0	71,854
Columbia University Materials Research Science and Engineering Center	47.049	DMR-1420634			0	71,706
Columbia University Materials Research Science and Engineering Center	47.049	DMR-1420634			0	61,054
Columbia University Materials Research Science and Engineering Center	47.049	DMR-1420634			0	60,139
Columbia University Materials Research Science and Engineering Center	47.049	DMR-1420634			0	54,332
Columbia University Materials Research Science and Engineering Center	47.049	DMR-1420634			0	52,072
Columbia University Materials Research Science and Engineering Center	47.049	DMR-1420634			0	49,999
Columbia University Materials Research Science and Engineering Center	47.049	DMR-1420634			0	49,303
Columbia University Materials Research Science and Engineering Center	47.049	DMR-1420634			0	44,472

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Columbia University Materials Research Science and Engineering Center	47.049	DMR-1420634			0	42,677
Columbia University Materials Research Science and Engineering Center	47.049	DMR-1420634			0	40,879
Columbia University Materials Research Science and Engineering Center	47.049	DMR-1420634			0	40,000
Columbia University Materials Research Science and Engineering Center	47.049	DMR-1420634			0	37,915
Columbia University Materials Research Science and Engineering Center	47.049	DMR-1420634			0	35,950
Columbia University Materials Research Science and Engineering Center	47.049	DMR-1420634			0	35,698
Columbia University Materials Research Science and Engineering Center	47.049	DMR-1420634			0	26,388
Columbia University Materials Research Science and Engineering Center	47.049	DMR-1420634			0	16,452
Columbia University Materials Research Science and Engineering Center	47.049	DMR-1420634			0	1,984
Columbia University Materials Research Science and Engineering Center	47.049	DMR-1420634			0	1,903
					\$560,257	\$3,546,052
Multi-Scale Computational Methods for Coastal Flooding	47.049	DMS-1720288			0	55,906
					\$0	\$55,906
Quantum Processing via Four-Wave Mixing	47.049	PHY-1707918			0	159,380
					\$0	\$159,380
Collaborative Research: Statistical Methods, Algorithms, and Theory for Large Tensors	47.049	DMS-1803450			0	110,147
					\$0	\$110,147
CHaS: The Circumgalactic H-alpha Spectrograph	47.049	AST-1407652			0	311,339

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						<u>Total Expenditures (Includes Subrecipients)</u>
CHaS: The Circumgalactic H-alpha Spectrograph	47.049	AST-1407652			0	-79,638
					\$0	\$231,701
Metallacarbatrane, Hydride Fluoride, and Metal-Metal Bonded Compounds of the Main Group Elements: Synthesis and Applications	47.049	CHE-1465095			0	104,277
					\$0	\$104,277
Dynamics and Transport in Strongly Interfacing	47.049	CHE-1464802			0	159,342
					\$0	\$159,342
Ideal Probe Single Molecule Imaging for the Study of Small Molecule and Polymeric Glass Formers	47.049	CHE 1660392			0	140,707
					\$0	\$140,707
SusChEM: Unjamming the Growth of Metal Pnictide Synthesis	47.049	CHE-1710352			0	32,620
					\$0	\$32,620
SusChEM: The Use of Ti-C Bonds for RNC Insertions and Dynamic Kinetic Resolutions	47.049	CHE-1664566			0	133,463
					\$0	\$133,463
CAREER: Fixing Stellar Chronometers with Open Clusters	47.049	AST-1255419			0	7,155
					\$0	\$7,155
CAREER: Searching for Dark Matter and Studying Galactic Particle Accelerators with VERITAS	47.049	PHY-1352567			0	71,060
					\$0	\$71,060
CAREER: Precision Measurements with Ultracold Diatomic Molecules	47.049	PHY-1349725			0	6,968
					\$0	\$6,968
CAREER: Fractal Bandstructure by Superlattice Patterning	47.049	DMR-1462383			0	-1
					\$0	\$-1
Waves in Complex Media and Applications	47.049	DMS-1412560			0	124,684

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$124,684
Construction of the TPC Readout Electronics for the LAr1-ND Experiment	47.049	PHY-1505313			0	40,062
					\$0	\$40,062
A Bridge to the Future	47.049	AST-1539931			0	219
					\$0	\$219
CAREER: Statistical inference of network and relational data	47.049	DMS-1554804			0	29,897
					\$0	\$29,897
Symbiotic Stars and Citizen Science in the Age of Time-Domain Astrophysics	47.049	AST-1616646			30,000	127,841
					\$30,000	\$127,841
Periodic Phenomena and the Evolution of Cataclysmic Variable Binary Stars	47.049	AST-1615456			0	89,485
					\$0	\$89,485
Laboratory Measurements of three deuterium substitution reactions important in interstellar chemistry	47.049	AST-1613267			0	72,079
					\$0	\$72,079
CDS&E: The development of open-source software with an application to modeling the formation of globular star clusters	47.049	AST-1615955			0	79,444
					\$0	\$79,444
The Microscopic Electronic Structure of Iron Superconductors Under Strain: New Frontiers in Scanning Probe Microscopy	47.049	DMR-1610110			0	170,025
					\$0	\$170,025
A Study of the Faint Debris Remnant of Large Galaxy, Small Galaxy Interactions	47.049	AST-1614743			0	33,407
					\$0	\$33,407
Collaborative Research: A Multi-Frequency Campaign to Probe Neptune s Dynamics and Deep Atmospheric Structure	47.049	AST-1615448			0	17,017
					\$0	\$17,017

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						<u>Total Expenditures (Includes Subrecipients)</u>
REU Site: Nevis Labs, Columbia University for Summers 2017-2019	47.049	PHY-1659528			0	25,891
					\$0	\$25,891
Infrared spectroscopy and nano-imaging of iron arsenide superconductors	47.049	DMR-1608096			0	224,398
					\$0	\$224,398
FRG: Collaborative Research: Integrable Probability	47.049	DMS-1664650			0	102,795
FRG: Collaborative Research: Integrable Probability	47.049	DMS-1664650			0	15,827
					\$0	\$118,622
Experimental Physics Research Program at Columbia University/Nevis Laboratories	47.049	PHY-1707971			0	685,664
Experimental Physics Research Program at Columbia University/Nevis Laboratories	47.049	PHY-1707971			0	481,266
Experimental Physics Research Program at Columbia University/Nevis Laboratories	47.049	PHY-1707971			0	58,059
					\$0	\$1,224,989
IsoDAR Neutrino Target R&D and Engineering	47.049	PHY-1707969			0	41,038
					\$0	\$41,038
Understanding Discoveries, Maximizing Science and Enabling Best Data of Advanced LIGO During the Regular Detection Era	47.049	PHY-1708028			0	55,425
Understanding Discoveries, Maximizing Science and Enabling Best Data of Advanced LIGO During the Regular Detection Era	47.049	PHY-1708028			0	36,733
					\$0	\$92,158
Collaborative Research: Rational Design of Anticancer Drug Combinations using Dynamic Multidimensional Theory	47.049	NSF 1545805			0	45,932
					\$0	\$45,932
DMREF: Deblurring our View of Atomic Arrangements in Complex Materials for Advanced Technologies	47.049	DMR-1534910			0	78,641

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						<u>Total Expenditures (Includes Subrecipients)</u>
DMREF: Deblurring our View of Atomic Arrangements in Complex Materials for Advanced Technologies	47.049	DMR-1534910			0	2,470
					\$0	\$81,111
A Novel Statistical Framework For Big Data Prediction	47.049	DMS-1513408			0	16,431
					\$0	\$16,431
Photoactivator Chemistry in Atmospheric Aerosols	47.049	CHE-1506789			15,058	15,058
Photoactivator Chemistry in Atmospheric Aerosols	47.049	CHE-1506789			0	-10,797
					\$15,058	\$4,261
Collaborative Research: SusChEM:Rational Design of Non-Precious Metal Catalysts for a Future Biorefining Industry	47.049	CHE-1566104			0	26,359
					\$0	\$26,359
Nonlinear Geometric Partial Differential Equations: Entire Solutions and Regularity	47.049	DMS-1600658			0	14,126
					\$0	\$14,126
The Stacks Project in Algebraic Geometry	47.049	DMS-1601160			0	1,234
					\$0	\$1,234
Family Floer Cohomology	47.049	DMS-1609148			0	54,506
					\$0	\$54,506
FRG: Collaborative Research: Crossing the Walls in Enumerative Geometry	47.049	DMS-1564497			0	5,907
FRG: Collaborative Research: Crossing the Walls in Enumerative Geometry	47.049	DMS-1564497			0	5,018
					\$0	\$10,925
FRG: Collaborative Research: Floer homotopy theory	47.049	DMS-1564172			0	55,098
					\$0	\$55,098

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						R&D Cluster
<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Signatures of Shocks and Particle Acceleration from Novae in our Galaxy	47.049	AST-1615084			0	144,225
					\$0	\$144,225
Momentum conversation in optoelectronic processes at 2D van der Waals semiconductor heterojunctions	47.049	DMR-1608437			0	9,258
					\$0	\$9,258
OP: Collaborative Research: Landau levels and Dirac points in Continuous Photonic Systems	47.049	DMS-1620418			0	8,489
					\$0	\$8,489
Quantum Phase Transitions in Mott Insulator Systems and Itinerant Electron Magnets: MuSR Studies of Magnetic Order, Volume Evolution and Spin Fluctuations	47.049	DMR-1610633			0	78,083
					\$0	\$78,083
The Role of Grafting Mechanism on the Self Assembly and Properties of Polymer Nanocomposites	47.049	DMR-1709061			0	266,939
					\$0	\$266,939
Estimation, Computation, and Uncertainty Quantification in Structured Regression Models	47.049	DMS-1712822			0	29,216
					\$0	\$29,216
CDS&E: Scanning Electrochemical Microscopy with Compressed Sensing: Beyond the Point Probe	47.049	CHE-1710400			0	82,049
CDS&E: Scanning Electrochemical Microscopy with Compressed Sensing: Beyond the Point Probe	47.049	CHE-1710400			0	19,688
					\$0	\$101,737
Modeling Spin Configurations and Ranking	47.049	DMS-1712037			0	52,428
					\$0	\$52,428
Quantum Groups, Special Functions, and Integrable Probability	47.049	DMS-1701654			0	50,905
					\$0	\$50,905
Incomplete Markets and Financial Bubbles in Mathematical Finance	47.049	DMS-1714984			0	59,632
					\$0	\$59,632

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Mathematics and Control of Systemic and High Frequency Trading Risks	47.049	DMS-1716145			0	62,782
					\$0	\$62,782
Criticality and Nonlinearity in Interacting Particle Systems and Stochastic Partial Differential Equations	47.049	DMS-1712575			0	19,989
					\$0	\$19,989
FRG: Collaborative Research: Categorifying Quantum Three Manifold Invariants	47.049	DMS-1664255			0	56,990
					\$0	\$56,990
Langlands Correspondences and Motivic L Functions	47.049	DMS-1701651			0	32,623
					\$0	\$32,623
Numerical Analysis of Smoothed Particle Hydrodynamics Type Methods via Nonlocal Models	47.049	DMS-1719699			0	86,265
					\$0	\$86,265
Energizing Photospheres of Gamma-Ray Bursts	47.049	AST-1816484			0	130,707
					\$0	\$130,707
Collaborative research: Discrete and topological models for template guided genome rearrangements	47.049	DMS 1764366			0	187,584
					\$0	\$187,584
Collaborative Research: Mergers of Massive Black Holes at the Centers of Galaxies	47.049	AST-1715661			0	103,011
					\$0	\$103,011
Physical Manifestations of Chaos and Regularity Around Galaxies	47.049	AST-1715582			0	38,563
					\$0	\$38,563
Improving and Extending Models of Gamma-Ray Burst Afterglows	47.049	AST-1716567			0	156,874
					\$0	\$156,874
Collaborative Research:The Hierarchical Mergers of Low Mass Galaxies	47.049	AST-1715944			0	4,939

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$4,939
Collaborative Research: Continuation of the Dark Matter Search with XENON1T at LNGS	47.049	PHY-1719286			0	503,204
Collaborative Research: Continuation of the Dark Matter Search with XENON1T at LNGS	47.049	PHY-1719286			0	161,568
Collaborative Research: Continuation of the Dark Matter Search with XENON1T at LNGS	47.049	PHY-1719286			5,104	51,357
					\$5,104	\$716,129
CAREER: Enabling a Rich Astro-particle and Exotic Physics Program in DUNE	47.049	PHY-1753228			0	117,904
CAREER: Enabling a Rich Astro-particle and Exotic Physics Program in DUNE	47.049	PHY-1753228			0	20,418
					\$0	\$138,322
Assessing the Columbia Bridge-to-PhD Program s First Decade	47.049	AST-1742716			0	1,069
					\$0	\$1,069
Novae as IR Transients	47.049	AST-1816100			0	19,146
					\$0	\$19,146
GOALI: Multiprobe Investigations of Electron Transport in 2D Electronic Devices	47.049	DMR-1809122			0	105,241
					\$0	\$105,241
CAREER: Two-Dimensional Quantum Fabric of Ultracold Dipolar Molecules	47.049	PHY-1848466			0	198,324
					\$0	\$198,324
Observing Periodic Phenomena in Variable Stars and Cataclysmic Binary Stars	47.049	AST-1908582			0	13,403
					\$0	\$13,403
WoU-MMA Collaborative Research: Turbulence and Reconnection in Magnetically-Dominated Astrophysical Plasmas	47.049	PHY-1903412			0	5,551
					\$0	\$5,551

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						<u>Total Expenditures (Includes Subrecipients)</u>
QII - TAQS: Enhancing Quantum Coherence by Dissipation in Programmable Atomic Arrays	47.049	OMA-1936359			0	219,471
QII - TAQS: Enhancing Quantum Coherence by Dissipation in Programmable Atomic Arrays	47.049	OMA-1936359			0	219,458
QII - TAQS: Enhancing Quantum Coherence by Dissipation in Programmable Atomic Arrays	47.049	OMA-1936359			0	57,004
					\$0	\$495,933
The Vibrational Structure of Atomically-Precise Nanostructures: From Molecular Clusters to Quantum Dots	47.049	CHE-1709464			0	2,203
					\$0	\$2,203
Towards Self-Assembling active micro-structures	47.049	DMR-1703873			0	130,397
					\$0	\$130,397
Molecular Conductance and Induced Reactivity in Group 14 Constructs	47.049	CHE-1764256			0	93,816
Molecular Conductance and Induced Reactivity in Group 14 Constructs	47.049	CHE-1764256			0	87,796
Molecular Conductance and Induced Reactivity in Group 14 Constructs	47.049	CHE-1764256			0	58,658
					\$0	\$240,270
NSF/DMR-BSF: Auger Recombination in Two-Dimensional Quantum Confined Semiconductors	47.049	DMR-1809680			0	248,478
					\$0	\$248,478
Control and Characterization of the Morphology and Photophysics of Conjugated Molecules in Isolation and in Aggregate	47.049	CHE-1807931			0	158,563
					\$0	\$158,563
MRI: Acquisition of a Lifetime Fluorimeter for Columbia University's Precision Biomolecular Characterization Facility	47.049	CHE-1828491			0	209,091
					\$0	\$209,091
Probing the structure and electronics of self-assembled carbene monolayers	47.049	CHE-1807654			0	90,559

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Probing the structure and electronics of self-assembled carbene monolayers	47.049	CHE-1807654			0	78,677
					\$0	\$169,236
CAREER: Two-Dimensional Materials with Addressable Surfaces	47.049	DMR-1751949			0	46,012
					\$0	\$46,012
CAREER: Spectroscopy of Metals from Ab Initio Quantum Chemistry	47.049	CHE-1848369			0	120,018
					\$0	\$120,018
Electronic Resonant Stimulated Raman Scatteri	47.049	CHE-1904684			0	77,079
					\$0	\$77,079
Mathematical Theory of Resonances and Applications	47.049	DMS-1800086			0	50,403
					\$0	\$50,403
Random Planar Geometry	47.049	DMS-1811092			0	43,861
					\$0	\$43,861
Qualitative Properties of Solutions to Nonlinear Elliptic Partial Differential Equations	47.049	DMS-1800645			0	79,899
					\$0	\$79,899
Scaling Limits of Growth in Random Media	47.049	DMS 1811143			0	25,511
					\$0	\$25,511
Singularity Formation in Geometric Flows	47.049	DMS-1806190			0	69,436
					\$0	\$69,436
Homological Invariants in Low Dimensional Topology	47.049	DMS-1811210			0	20,034
					\$0	\$20,034
Problems in General Relativity and Geometric Flows	47.049	DMS-1810856			0	67,003

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$67,003
Collaborative Research: New Structures in Link Homology and Categorification	47.049	DMS-1807425			0	49,996
					\$0	\$49,996
Risk Assessment and Decision Making Under Uncertainty with Applications	47.049	DMS 1812661			0	88,985
					\$0	\$88,985
Heegner Points, L Functions of Elliptic Curves, and Generalizations	47.049	DMS 1802269			0	44,831
					\$0	\$44,831
Creating Dynamic and Adaptive Force Producing Nanostructures	47.049	DMR-1807514			0	162,459
					\$0	\$162,459
EAGER: Enabling Quantum Leap: Scalable, Controllable and Tunable Room-Temperature Quantum Emitters in Monolayer WSe2	47.049	DMR-1838475			0	81,111
EAGER: Enabling Quantum Leap: Scalable, Controllable and Tunable Room-Temperature Quantum Emitters in Monolayer WSe2	47.049	DMR-1838475			0	1,240
					\$0	\$82,351
The Trace Formula Method and the Arithmetic and Geometry of Modular Varieties in the Langlands Program	47.049	DMS 1802292			0	20,655
					\$0	\$20,655
Collaborative Research: Consistent Risk Estimation under High Dimensional Asymptotics	47.049	DMS 1810888			0	37,403
					\$0	\$37,403
Collaborative Research: Plasmonic lasing with two dimensional heterostructures in the intrinsic regime	47.049	DMR 1809361			0	78,985
					\$0	\$78,985
Collaborative Research: MRI: Development of Apparatus for the Cold Molecule Nuclear Time Reversal Experiment (CeNTREX)	47.049	PHY 1827964			0	13,157
					\$0	\$13,157
Towards One-Dimensional Single-Molecule Topological Insulators	47.049	DMR-1807580			0	15,274

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$15,274
CAREER: Complex Coacervation in Cells	47.049	DMR 1848388			0	114,658
					\$0	\$114,658
ACM IMS Interdisciplinary Summit on the Foundations of Data Science	47.049	DMS 1934146			0	23,565
					\$0	\$23,565
Inverse Problems and Imaging with Nonlinear Physics	47.049	DMS-1913309			0	50,119
					\$0	\$50,119
Problems in Complex Analysis, Partial Differential Equations, and Mathematical Physics	47.049	DMS-1855947			0	120,856
					\$0	\$120,856
Collaborative Research: WoU-MMA: Development of an Advanced Data Selection System for the DUNE Far Detector	47.049	PHY-1914065			0	45,084
					\$0	\$45,084
Porous Organic Solid-State Materials for Energy Storage	47.049	DMR-2002634			0	5,442
					\$0	\$5,442
Molecular Lattice Clock for Precision Measurements and Ultracold Chemistry	47.049	PHY 1911959			0	136,434
					\$0	\$136,434
Derived Categories, Hodge Theory, and Birational Geometry	47.049	DMS-1902060			0	32,666
					\$0	\$32,666
Nonlinear Geometric Flows: Ancient Solutions, Non Compact Surfaces, and Regularity	47.049	DMS 1900702			0	62,305
					\$0	\$62,305
Critical Factors Controlling Gas Separations by Polymeric Membranes	47.049	DMR 1829655			0	89,440
					\$0	\$89,440

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						<u>Total Expenditures (Includes Subrecipients)</u>
EAGER: (ST1) Dissipative Self Assembly of Metabolic Soft Matter	47.049	DMR 1938303			0	47,525
					\$0	\$47,525
Collaborative Research: Towards a Predictive Theory of Microstructure Evolution in Polycrystalline Materials	47.049	DMS-1905492			0	60,982
					\$0	\$60,982
QII-TAQS: All-Photonic Quantum Network	47.049	OMA-1936345			0	246,703
QII-TAQS: All-Photonic Quantum Network	47.049	OMA-1936345			0	117,299
QII-TAQS: All-Photonic Quantum Network	47.049	OMA-1936345			0	28,557
					\$0	\$392,559
Hyper-Kahler Geometry via Lagrangian Fibrations and Symplectic Resolutions	47.049	DMS 1949812			0	61,024
					\$0	\$61,024
DMREF: Collaborative Research: Complex Nanofeatures in Crystals: Theory and Experiment Meet in the Cloud	47.049	DMR-1922234			0	136,313
					\$0	\$136,313
Pin(2)-Symmetry in Monopole Floer Homology	47.049	DMS-1948820			0	60,600
					\$0	\$60,600
Talking Across Fields	47.049	DMS 1939082			0	25,818
					\$0	\$25,818
3D Organized Nanoscale Reactors	47.049	DMR 1905920			0	6,446
					\$0	\$6,446
Collaborative Research: C1: Learning the Universal Free Energy Function	47.049	DMR-1940290			0	7,050
					\$0	\$7,050

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Electronic Structure, Dynamics and Transport in Strongly Interacting Systems	47.049	CHE-1954791			0	5,442
					\$0	\$5,442
Label-Free, High-Time Resolution, Single-Molecule Studies of RNA Folding and Dynamics	47.049	CHE-2004016			0	5,442
Label-Free, High-Time Resolution, Single-Molecule Studies of RNA Folding and Dynamics	47.049	CHE-2004016			0	5,442
					\$0	\$10,884
MREFC: US ATLAS HL-LHC Upgrade Project	47.049	PHY-1948993			0	330,242
MREFC: US ATLAS HL-LHC Upgrade Project	47.049	PHY-1948993			0	78,472
MREFC: US ATLAS HL-LHC Upgrade Project	47.049	PHY-1948993			0	75,767
MREFC: US ATLAS HL-LHC Upgrade Project	47.049	PHY-1948993			0	36,741
MREFC: US ATLAS HL-LHC Upgrade Project	47.049	PHY-1948993			20,260	32,821
MREFC: US ATLAS HL-LHC Upgrade Project	47.049	PHY-1948993			18,259	29,579
MREFC: US ATLAS HL-LHC Upgrade Project	47.049	PHY-1948993			11,755	19,043
MREFC: US ATLAS HL-LHC Upgrade Project	47.049	PHY-1948993			7,034	11,395
					\$57,308	\$614,060
RAPID: Inference, Forecasting and Intervention Modeling of COVID-19	47.049	DMS 2027369			0	28,639
					\$0	\$28,639
					\$667,727	\$15,589,820

Geosciences

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Collaborative Research: Tectonic and Magmatic Processes During Early-Stage Rifting: An Integrated Study of Northern Lake Malawi, Africa	47.050	EAR-1110921			42,695	253,399
					\$42,695	\$253,399
Collaborative Research: Improving Constraints on Tropical Climate Feedbacks with Inverse Modeling of the Stable Isotopic Composition of Atmospheric Water Vapor	47.050	AGS-1737813			0	5,573
					\$0	\$5,573
Collaborative Research: Role of Cloud Albedo and Land Atmosphere Interactions on Continental Tropical Climates	47.050	AGS-1734156			40,771	102,015
					\$40,771	\$102,015
EaSM-3 Collaborative Research: Local and remote regional climate responses to regional forcings from short-lived climate forcings	47.050	AGS-1419398			121,374	121,685
					\$121,374	\$121,685
Collaborative Research: EaSM2: Linking Near-term Future Changes in Weather and Hydroclimate in Western North America to Adaption for Ecosystem and Water Management	47.050	AGS-1243204			0	58,025
					\$0	\$58,025
LTER Palmer, Antarctica (PAL) Land-Shelf-Ocean Connections, Ecosystem Resilience and Transformation in a Sea-Ice Influenced Pelagic Ecosystem	47.050	PLR-1440435			292,017	373,399
LTER Palmer, Antarctica (PAL) Land-Shelf-Ocean Connections, Ecosystem Resilience and Transformation in a Sea-Ice Influenced Pelagic Ecosystem	47.050	PLR-1440435			0	76,997
					\$292,017	\$450,396
Collaborative Research: Development and support of the MB-System software package for processing and display of swatch mapping	47.050	OCE-1260599			0	33
					\$0	\$33
CNH: Competing demands and future vulnerability of groundwater: Drinking water quality and food security in arsenic-impacted South and Southeast Asia	47.050	ICER-1414131			146,091	192,068
					\$146,091	\$192,068
Collaborative Research: Holocene Indian Summer Monsoon Variability Reconstructed for Decadally Resolved Tibetan Lake Sediments	47.050	EAR-1402133			0	8,185
					\$0	\$8,185
Collaborative Research: U.S. Geotraces Arctic Section: 230th, 232th and 231Pa tracers of trace element supply and removal	47.050	OCE-1434479			0	178,952
					\$0	\$178,952

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						<u>Total Expenditures (Includes Subrecipients)</u>
GEOTRACES Arctic Section: Improving Understanding of Controls on the Distributions of Selected Anthropogenic Radionuclides in the Amerasian Basin	47.050	OCE-1439319			0	72,294
					\$0	\$72,294
Collab Res U.S. GEOTRACES Arctic Section - Water Mass Composition Circulation and Mean Residence Times Derived from Measurements of 18O/D, CFCs. SF6, 3H/3He and 14c	47.050	OCE-1436666			0	52,699
					\$0	\$52,699
EarthCube RCN: iSampLEs: The internet of Samples in the Earth Sciences	47.050	ICER-1440351			0	12,771
EarthCube RCN: iSampLEs: The internet of Samples in the Earth Sciences	47.050	ICER-1440351			0	89
					\$0	\$12,860
Collaborative Research: Testing Arctic Ice Sheet Sensitivity to Abrupt Climate Change	47.050	PLR-1417675			0	9,405
					\$0	\$9,405
Rolling Deck to Repository (R2R) 2014-2019	47.050	OCE-1447797			427,738	777,427
					\$427,738	\$777,427
WSC-Category 3 Collaborative: America s Water-The Changing Landscape of Risk, Competing Demands and Climate	47.050	EAR-1360446			0	29,281
WSC-Category 3 Collaborative: America s Water-The Changing Landscape of Risk, Competing Demands and Climate	47.050	EAR-1360446			0	8
WSC-Category 3 Collaborative: America s Water-The Changing Landscape of Risk, Competing Demands and Climate	47.050	EAR-1360446			0	-9
					\$0	\$29,280
Collaborative Research: Arctic GEOTRACES - Nd isotopes and REEs in the Arctic	47.050	OCE-1459716			0	160,878
					\$0	\$160,878
Was Subantarctic dust a major driver of past CO2 variability	47.050	OPP-1405204			0	2,252
					\$0	\$2,252
A Proposal to Manage the U.S. Science Support Program Office associated with the International Ocean Discovery Program (USSSP-IODP)	47.050	OCE-1450528			3,844,383	5,947,843

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A Proposal to Manage the U.S. Science Support Program Office associated with the International Ocean Discovery Program (USSSP-IODP)	47.050	OCE-1450528			0	234,019
A Proposal to Manage the U.S. Science Support Program Office associated with the International Ocean Discovery Program (USSSP-IODP)	47.050	OCE-1450528			0	164,036
					\$3,844,383	\$6,345,898
Collaborative Research: Ice Sheet Sensitivity in a Changing Arctic System - using Geologic Data and Modeling to test the Stable Greenland Ice Sheet Hypothesis	47.050	OPP-1503959			0	237,903
					\$0	\$237,903
Collaborative Research: Insights into North African climate variability over the last 1.1 million years from dust fluxes and leaf wax isotopes	47.050	OCE-1502925			0	200,488
					\$0	\$200,488
Response of high-latitude forests to a warmer and CO2-enriched atmosphere: tree rings in a process-based model	47.050	OPP-1504134			0	27,555
					\$0	\$27,555
Improved Locations for Global Seismic Events using Surface Waves	47.050	EAR-1520657			0	3,122
					\$0	\$3,122
Collaborative Research: Rapid Magma Ascent Recorded in Volatile Diffusion Profiles	47.050	EAR-1524542			0	42,412
					\$0	\$42,412
Collaborative Research: Alteration of Mantle Peridotite: Geochemical Fluxes and Dynamics of far from Equilibrium Transport	47.050	EAR-1516300			0	99,460
Collaborative Research: Alteration of Mantle Peridotite: Geochemical Fluxes and Dynamics of far from Equilibrium Transport	47.050	EAR-1516300			0	352
					\$0	\$99,812
Support for the U.S. GEOTRACES Project Office	47.050	OCE-1536294			0	91,268
Support for the U.S. GEOTRACES Project Office	47.050	OCE-1536294			0	43,834
					\$0	\$135,102
Collaborative Research Assessing the Simulated Arctic Freshwater System in CMIP5 Models the CESM Large Ensemble, and Forced Simulations	47.050	PLR-1504023			0	37,502

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$37,502
A Global Survey of Marine Magnetic Anomalies to Constrain the Late Cretaceous-Survey of Marine Magnetic Anomalies	47.050	OCE-1535937			0	43,261
					\$0	\$43,261
Collaborative Research: Multidisciplinary Analysis of Antarctic Blue Ice Moraine Formation and their Potential as Climate Archives over Multiple Glacial Cycles	47.050	PLR-1443213			0	21,830
					\$0	\$21,830
Collaborative Research: A systems approach to understanding linkages between the Ross Ocean and ice Shelf Environment, and Tectonic settling Through Aerogeophysical surveys and modeling (ROSETTA)	47.050	OPP-1443534			0	14,964
					\$0	\$14,964
Collaborative Research: Ecosystem Dynamics of Western Pacific Hydrothermal Vent Communities Associated with Polymetallic Sulfide Deposits	47.050	OCE-1536650			0	-59
					\$0	\$-59
CAREER: Evolution of Ocean Mesoscale Turbulence in a Changing Climate	47.050	OCE-1553593			0	168,001
					\$0	\$168,001
Comprehensive High-precision Relocation of Global Seismicity	47.050	EAR-1547560			0	3,599
					\$0	\$3,599
Tectonics in the Western Anatolian Extensional Province from sequence stratigraphic modeling of multichannel seismic data in the Gulf of Kusadasi	47.050	OCE-1559098			0	16,138
					\$0	\$16,138
Collaborative Research: Defining the biogeochemical drivers of diatom physiological ecology in the North Atlantic	47.050	OCE-1558506			0	110,773
					\$0	\$110,773
Collaborative Research: A High-Sensitivity 10Be and Extraterrestrial 3He Record from an Ice Core at South Pole	47.050	OPP-1443448			68,000	140,458
					\$68,000	\$140,458
Water mass structure and bottom water formation in the ice-age Southern Ocean	47.050	PLR-1542962			0	183,845
					\$0	\$183,845

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Reconstruction and Dynamics of Interhemispheric Hydroclimate Variability Between the Americas	47.050	AGS-1602581			0	48,759
Reconstruction and Dynamics of Interhemispheric Hydroclimate Variability Between the Americas	47.050	AGS-1602581			0	32,923
					\$0	\$81,682
Collaborative Research: Reconstructing Spatiotemporal Climatic Patterns for Northeastern Canada	47.050	AGS-1602022			0	91,899
					\$0	\$91,899
Lamont Doherty Core Repository: Curation, Service Professional Development, Outreach	47.050	OCE-1559059			0	250,003
					\$0	\$250,003
Collaborative Research: Open Core Data: Transformative Data Infrastructure for Integrating and Accessing Scientific Drilling and Coring Data	47.050	EAR-1550887			0	45,916
					\$0	\$45,916
The Impact of the Stratosphere on Arctic Climate	47.050	OPP-1603350			0	71,216
The Impact of the Stratosphere on Arctic Climate	47.050	OPP-1603350			0	42,055
					\$0	\$113,271
Formation and evolution of upper oceanic crust from seismic data acquired over mature oceanic crust near the Sumatra and Alaska Subduction zones	47.050	OCE-1634625			0	105,557
					\$0	\$105,557
Facility Support: The Global CMT Project	47.050	EAR-1639131			0	72,371
					\$0	\$72,371
Collaborative Research:Refreezing in the firm of the Greenland Ice Sheet: Spatiotemporal Variability and Implications for Ice Sheet Mass Balance	47.050	OPP-1603331			0	110,004
					\$0	\$110,004
Heinrich event iceberg flux, melting, and ocean circulation in the North Atlantic	47.050	AGS-1635019			0	197,893
					\$0	\$197,893

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RCN: Improving reconstructions of Cenozoic pCO2 and temperature change	47.050	OCE-1636005			0	17,282
					\$0	\$17,282
CEDAR: Analysis of High Resolution Stratospheric Observations of Polar Mesospheric Clouds	47.050	AGS-1452183			7,195	7,195
					\$7,195	\$7,195
Collaborative Research: Persistent Presence in the Ocean Interior: Developing a Low-power, Autonomous System for Geo-referenced Navigation	47.050	OCE-1634215			0	13,480
					\$0	\$13,480
Understanding the Integrity of Deep Ice in Antarctica from Geophysical Data Sets and Physical Models	47.050	OPP-1643970			0	124,319
					\$0	\$124,319
Collaborative Research: Dynamics and Variability of Freshwater Components in the Arctic Ocean	47.050	OPP-1504404			0	107,744
					\$0	\$107,744
Love-wave Propagation in Oceanic Upper Mantle: Constraints on Radial Anisotropy and Implications for Dynamics of the Asthenosphere	47.050	OCE-1538229			0	11,288
					\$0	\$11,288
Collaborative Research: The North Anatolian Fault system in the Marmara Sea, Turkey - Insights from the Plio-Quaternary evolution of a multi-stranded transform	47.050	OCE-1537614			0	52,663
					\$0	\$52,663
Collaborative Research: An Experimental Investigation of Reactive Melt channelization in Partially Molten Rocks	47.050	OCE-1459664			0	52
					\$0	\$52
Earthcube IA: Collaborative Proposal: Interdisciplinary Earth Data Alliance as a Model for Integrating Earthcube Technology Resources and Engaging the Broad Community	47.050	ICER-1541022			0	36,368
Earthcube IA: Collaborative Proposal: Interdisciplinary Earth Data Alliance as a Model for Integrating Earthcube Technology Resources and Engaging the Broad Community	47.050	ICER-1541022			0	34,719
					\$0	\$71,087
Imaging the Fine Structure of Earthquakes and Faults with High-Precision Aftershocks	47.050	EAR-1520680			0	70,043
					\$0	\$70,043

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						<u>Total Expenditures (Includes Subrecipients)</u>
Modeling aqueous secondary organic aerosol formation	47.050	AGS-1546136			0	23,096
					\$0	\$23,096
CAREER: Departure from Monin-Obukhov Similarity Theory (MOST) using high-resolution turbulence models	47.050	EAR-1552304			0	5,209
					\$0	\$5,209
The Madden Julian Oscillation and the Maritime Continent	47.050	AGS-1543932			0	40,730
					\$0	\$40,730
The Madden Julian Oscillation and the Maritime Continent	47.050	AGS-1543932			0	16,536
					\$0	\$16,536
Collaborative Proposal: Determining the Vulnerability and Resilience of Boreal Forests and Shrubs across Northwestern North America	47.050	PLR-1603473			0	139,180
					\$0	\$139,180
Collaborative Research: Adding animals to the equation: assessing herbivore impacts on carbon cycling in northern Alaska	47.050	PLR-1603777			0	231,833
					\$0	\$231,833
Collaborative Research: East Antarctic Glacial Landscape Evolution (EAGLE): A study using combined thermochronology, geochronology and provenance analysis	47.050	OPP-1443565			0	13,336
					\$0	\$13,336
Collaborative Research: East Antarctic Glacial Landscape Evolution (EAGLE): A study using combined thermochronology, geochronology and provenance analysis	47.050	OPP-1443565			0	-8,629
					\$0	\$-8,629
Collaborative Research: P2C2--Derivation of Ensemble and Joint-Variable Climate Field Reconstructions of the Common Era Using New Random Field Methods	47.050	AGS-1602920			0	49,710
					\$0	\$49,710
Understanding Forced Asian Monsoon Changes in Observations and Coupled Model Intercomparison Project - Phase 5 (CMIP5) Models	47.050	AGS-1607348			0	75,073
					\$0	\$75,073
Sea Surface Temperature-Forced Monsoon Evolution and Variability in West Africa	47.050	AGS-1612904			0	158,080
					\$0	\$158,080

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The Essential Dynamics of Tropical Rain Belts: Monsoons and Inter-Tropical Convergence Zone (ITCZ) in a Multi-model Ensemble of Idealized Simulations	47.050	AGS-1565522			36,707	167,327
					\$36,707	\$167,327
Collaborative Research: Dynamics of Unsaturated Downdrafts, Cold Pools, and Their Roles in Convective Initiation and Organization	47.050	AGS-1649770			0	38,631
					\$0	\$38,631
IEDA 2016-2021: Operation of a Multi-Disciplinary Data Facility for the Earth Science Community - EarthChem/SESAR	47.050	OCE-1636653			327,957	613,057
IEDA 2016-2021: Operation of a Multi-Disciplinary Data Facility for the Earth Science Community - EarthChem/SESAR	47.050	OCE-1636653			52,997	506,114
IEDA 2016-2021: Operation of a Multi-Disciplinary Data Facility for the Earth Science Community - EarthChem/SESAR	47.050	OCE-1636653			51,291	312,428
IEDA 2016-2021: Operation of a Multi-Disciplinary Data Facility for the Earth Science Community - EarthChem/SESAR	47.050	OCE-1636653			0	212,970
IEDA 2016-2021: Operation of a Multi-Disciplinary Data Facility for the Earth Science Community - EarthChem/SESAR	47.050	OCE-1636653			64,545	186,207
IEDA 2016-2021: Operation of a Multi-Disciplinary Data Facility for the Earth Science Community - EarthChem/SESAR	47.050	OCE-1636653			0	218
					\$496,790	\$1,830,994
Collaborative Research: Rio Grande Rise: New Questions on Plume Dynamics Atlantic Tectonic Evolution and an Important Window to the African LLSVP	47.050	OCE-1558734			0	57,160
Collaborative Research: Rio Grande Rise: New Questions on Plume Dynamics Atlantic Tectonic Evolution and an Important Window to the African LLSVP	47.050	OCE-1558734			0	933
					\$0	\$58,093
Collaborative Research: An Eocene Perspective on Future Recovery Rates of Climate and Ocean Chemistry	47.050	OCE-1657848			0	31,136
					\$0	\$31,136
Collaborative Research: Taking the Reliability of Cenozoic Boron Isotope pH and pCO2 Reconstructions to the Next Level	47.050	OCE-1657974			0	87,333
					\$0	\$87,333
Causes of Climate Extremes-generating Ocean States	47.050	OCE-1657209			0	300,949

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$300,949
Advanced Imaging Techniques Combined with In Situ Analyses used to Assess Diagenesis in Benthic Foraminifera	47.050	OCE-1658230			0	90,594
					\$0	\$90,594
Along-strike Variations in Synrift Magmatism on the Eastern North American Margin	47.050	OCE-1654629			0	35,490
					\$0	\$35,490
P2C2: Decomposition and Reconstruction of Drought Variability Across the Continental United States and Northern Mexico	47.050	AGS-1703029			0	179,164
					\$0	\$179,164
CAREER: Investigating the Impact of Temporal and Spatial Variations on Lava Emplacement Through Numerical and Physical Models	47.050	EAR-1654588			0	101,564
					\$0	\$101,564
GP-IMPACT: Science Technology Engineering and Math Student Experiences Aboard Ships (STEMSEAS)	47.050	ICER-1701168			0	106,093
					\$0	\$141,828
GP-IMPACT: Science Technology Engineering and Math Student Experiences Aboard Ships (STEMSEAS)	47.050	ICER-1701168			0	35,735
					\$0	\$24,210
Water in the Lithosphere: The Fidelity of Mantle Xenoliths	47.050	EAR-1731784			0	24,210
					\$0	\$50,395
Collaborative Research: Inferences on Cascadia Deformation Front and Plate Interface Properties from Advanced Studies of Active Source Seismic Data	47.050	OCE-1657737			0	50,395
					\$0	\$35,433
Synthesis of Internal Wave and Turbulence Observations Across the Antarctic Circumpolar Current	47.050	OCE-1737325			0	35,433
					\$0	\$721
Collaborative Research: Assessing the Role of Compound-specific Phosphorus Hydrolase Transformations in the Marine Phosphorus Cycle	47.050	OCE-1737083			0	721
					\$0	\$10,260
Mapping Variability in the Thermo-mechanical Structure of the North American Plate and Upper Mantle	47.050	EAR-1736165			0	10,260

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$10,260
Collaborative Research: Deep Circulation over the Flanks of a Mid-Ocean Ridge	47.050	OCE-1735618			0	25,700
					\$0	\$25,700
The Systematics of Helium in Diamond-forming Metasomatic Mantle Fluids	47.050	EAR-1725323			0	17,850
					\$0	\$17,850
Collaborative Research: Impact of the Amazon River Plume on Nitrogen Availability and Planktonic Food Web Dynamics in the Western Tropical North Atlantic	47.050	OCE-1737128			0	157,878
Collaborative Research: Impact of the Amazon River Plume on Nitrogen Availability and Planktonic Food Web Dynamics in the Western Tropical North Atlantic	47.050	OCE-1737128			0	11,345
					\$0	\$169,223
2017-2020 Provision of Log Data Reduction and Database Services for Scientific Ocean Drilling	47.050	OCE-1741698			0	525,494
					\$0	\$525,494
Ventilation History of the Sulu Sea: Record of Abrupt Changes in the Tropical Western Pacific Thermocline	47.050	OCE-1736602			0	30,341
					\$0	\$30,341
Collaborative Research: US GEOTRACES Pacific Meridional Transect: Sources and Sinks of Neodymium Isotopes and Rare Earth Elements	47.050	OCE-1737318			0	1,141
					\$0	\$1,141
Collaborative Research: Closing the Gaps in Climate Models Surface Albedo Schemes of Processes Driving the Darkening of the Greenland Ice Sheet	47.050	OPP-1713072			0	156,864
					\$0	\$156,864
Collaborative Research: Subduction below Extreme Sedimentation A Multidisciplinary Transect from the Ganges-Brahmaputra Delta to the IndoBurma Backarc	47.050	EAR-1714892			28,989	317,040
Collaborative Research: Subduction below Extreme Sedimentation A Multidisciplinary Transect from the Ganges-Brahmaputra Delta to the IndoBurma Backarc	47.050	EAR-1714892			0	18,255
Collaborative Research: Subduction below Extreme Sedimentation A Multidisciplinary Transect from the Ganges-Brahmaputra Delta to the IndoBurma Backarc	47.050	EAR-1714892			0	6,644
					\$28,989	\$341,939

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Collaborative Research: Imaging Small-scale Convection and Structure of the Mantle in the South Pacific a US Contribution to International Collaboration PacificArray	47.050	OCE-1658491			0	76,063
Collaborative Research: Imaging Small-scale Convection and Structure of the Mantle in the South Pacific a US Contribution to International Collaboration PacificArray	47.050	OCE-1658491			0	4,894
					\$0	\$80,957
Collaborative Research: Climate, Human and Ecosystem Interactions in the face of a Rapidly Changing North Asian Biome	47.050	OPP-1737788			0	98,653
Collaborative Research: Climate, Human and Ecosystem Interactions in the face of a Rapidly Changing North Asian Biome	47.050	OPP-1737788			0	3,600
					\$0	\$102,253
Development of low Nitrogen: Phosphorus Ratios in the Euphotic Zone - The Phosphorus Side of the Story	47.050	OCE-1737240			0	379,580
Development of low Nitrogen: Phosphorus Ratios in the Euphotic Zone - The Phosphorus Side of the Story	47.050	OCE-1737240			0	56,057
Development of low Nitrogen: Phosphorus Ratios in the Euphotic Zone - The Phosphorus Side of the Story	47.050	OCE-1737240			0	13,895
					\$0	\$449,532
Collaborative Proposal: EarthCube Integration: Pangeo: An Open Source Big Data Climate Science Platform	47.050	OCE-1740648			127,823	309,129
					\$127,823	\$309,129
Collaborative Research: Calibrating Southeast Asian Proxies Speleothems and Tree Rings	47.050	AGS-1602629			0	72,757
					\$0	\$72,757
Mechanisms of Mediterranean Region Hydroclimate Variability and Change	47.050	AGS-1734760			0	350,976
Mechanisms of Mediterranean Region Hydroclimate Variability and Change	47.050	AGS-1734760			0	38,363
					\$0	\$389,339
Collaborative Research: U.S. GEOTRACES Pacific Meridional Transect: Thorium-232, Thorium-231 and Proactinium-231 as Tracers of Trace Element Supply and Removal	47.050	OCE-1737224			0	81,457
					\$0	\$81,457

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Evaluating Mechanisms for the Formation, Propagation and Evolution of Volcanic Rifts and Margins	47.050	OCE-1654745			0	66,923
					\$0	\$66,923
Collaborative Proposal: EarthCube Integration: THROUGHPUT: Standards and Services for Community Curated Repositories	47.050	ICER-1740663			0	48,193
					\$0	\$48,193
CAREER: Monsoon and the Upper Troposphere Lower Stratosphere	47.050	AGS-1802248			44,802	95,222
					\$44,802	\$95,222
Collaborative Research: P2C2-Inferring Spatio-Temporal Variations in the Risk of Extreme Precipitation in the Western United States from Tree Ring Chronologies	47.050	AGS-1702184			0	57,076
Collaborative Research: P2C2-Inferring Spatio-Temporal Variations in the Risk of Extreme Precipitation in the Western United States from Tree Ring Chronologies	47.050	AGS-1702184			0	51,105
					\$0	\$108,181
Collaborative Research: Quantifying Past Water Table Depth and Hydroclimate with Dissolved Noble Gas Isotopes in Groundwater	47.050	EAR-1702571			0	8,351
					\$0	\$8,351
Assessing the Impacts of Arctic Amplification on the Midlatitude Circulation with a Hierarchy of Atmospheric General Circulation Models	47.050	AGS-1815138			1,338	1,338
Assessing the Impacts of Arctic Amplification on the Midlatitude Circulation with a Hierarchy of Atmospheric General Circulation Models	47.050	AGS-1815138			0	-1,338
					\$1,338	\$0
Collaborative Research: Uncertainty in Predictions of 21st Century Ocean Biogeochemical Change	47.050	OCE-1818501			0	5,801
					\$0	\$5,801
Real-Time Power: A Thermoelectric System for Powering Seafloor Instrumentation	47.050	OCE-1820547			0	6,747
					\$0	\$6,747
Collaborative Research: P2C2 - Reconstructing South American Monsoon Sensitivity to Internal and External Forcing: Reconciling Models and Tree-ring Proxies in the Central Andes	47.050	AGS-1702789			0	112,583
Collaborative Research: P2C2 - Reconstructing South American Monsoon Sensitivity to Internal and External Forcing: Reconciling Models and Tree-ring Proxies in the Central Andes	47.050	AGS-1702789			0	6,525

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$119,108
Collaborative Research: Dynamics of Dissolved Organic Phosphorus Production, Composition and Bioavailability along a Natural Marine Phosphate Gradient	47.050	OCE-1756337			0	37,416
					\$0	\$37,416
Collaborative Research: Influence of Surfactants on Air-Sea Gas Exchange: 3He/SF6 Experiments in the Baltic Sea	47.050	OCE-1756757			0	3,914
					\$0	\$3,914
Hikurangi Trench Regional Electromagnetic Survey to Image the Subduction Thrust	47.050	OCE-1737328			25,826	140,135
					\$25,826	\$140,135
Collaborative Research: Along Strike Variation in Shallow, Offshore Strain Accumulation and Slow Slip at Hikurangi Subduction Margin, New Zealand	47.050	OCE-1754929			0	59,840
					\$0	\$59,840
West Antarctic Ice Shelf - Ocean Interactions	47.050	OPP-1644159			0	98,908
West Antarctic Ice Shelf - Ocean Interactions	47.050	OPP-1644159			0	24,846
					\$0	\$123,754
REU Site: Interdisciplinary Cutting-Edge Research though the Analysis of Global Data	47.050	OCE-1757602			0	169,171
REU Site: Interdisciplinary Cutting-Edge Research though the Analysis of Global Data	47.050	OCE-1757602			0	28,873
					\$0	\$198,044
Collaborative Research: Seismic Imaging of Volcano Construction, Underplating and Flexure along the Hawaii-Emperor Seamount Chain	47.050	OCE-1737245			0	133,485
Collaborative Research: Seismic Imaging of Volcano Construction, Underplating and Flexure along the Hawaii-Emperor Seamount Chain	47.050	OCE-1737245			0	21,148
Collaborative Research: Seismic Imaging of Volcano Construction, Underplating and Flexure along the Hawaii-Emperor Seamount Chain	47.050	OCE-1737245			0	4,548
					\$0	\$159,181
NSFGEO-NERC: Collaborative Research: The Central Apennines Earthquake Cascade under a New Microscope	47.050	EAR-1759782			0	86,776

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$86,776
Collaborative Research: Landscape Rvolution in the McMurdo Dry Valleys: Erosion Rates and Real-time Monitoring of Rock Breakdown in a Hyperarid, Subzero Environment	47.050	OPP-1744895			0	73,464
					\$0	\$73,464
Oceanographic Technical Services, LDEO, 2018 - 2023	47.050	OCE-1827282			0	1,869,224
					\$0	\$1,869,224
Collaborative Research: Marine EM Survey of Fluids in the Alaskan Megathrust	47.050	OCE-1654652			357,419	502,670
					\$357,419	\$502,670
Sulfur Isotopic Evidence on the Age of Recycled Surface Material in the Tristan-Gough Plume Source	47.050	EAR-1755514			0	30,765
					\$0	\$30,765
2018-2023 Ship Operations -R/V Marcus G. Langseth	47.050	OCE-1829304			0	3,935,241
2018-2023 Ship Operations -R/V Marcus G. Langseth	47.050	OCE-1829304			0	983,482
2018-2023 Ship Operations -R/V Marcus G. Langseth	47.050	OCE-1829304			0	601,167
					\$0	\$5,519,890
Collaborative Proposal: GP-IMPACT: Ambassadors for STEM Training to Enhance Participation (A-STEP)	47.050	ICER-1801634			0	26,714
					\$0	\$26,714
A Southern Hemispheric Perspective on Holocene Climate Variability Based on Mountain Glacial Chronologies	47.050	EAR-1804816			0	237,799
					\$0	\$237,799
Satellite Observations and Modelling of Surface Meltwater Flow and its Impact on Ice Shelves	47.050	OPP-1743310			18,797	206,138
					\$18,797	\$206,138
Collaborative Research: Constraints on Sediment Physical Properties at the Cape Fear and Currituck Landslides from Velocity Analysis of New, Open Access Seismic Reflection Data	47.050	OCE-1830717			0	217,958
					\$0	\$217,958

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
RAPID: High-Resolution Gravity for Thwaites Glacier	47.050	OPP-1842064			0	55,625
					\$0	\$55,625
Support for the U. S. GEOTRACES Project Office	47.050	OCE-1829563			0	150,763
					\$0	\$150,763
Collaborative Research: Investigating the Air-Sea Energy Exchange in the Presence of Surface Gravity Waves by Measurements of Turbulence Dissipation, Production and Transport	47.050	OCE-1756839			0	139,770
					\$0	\$139,770
Reconstructing the Paleo-Budget of 231Protactinium in the North Pacific	47.050	OCE-1835997			0	97,932
					\$0	\$97,932
Collaborative Research: Examining Linkages Between the Agulhas Leakage and Ocean Overturning in the Last Glacial Cycle and Through the Mid-Pleistocene Transition	47.050	OCE-1831415			0	115,625
					\$0	\$115,625
Antarctic Cryospheric Change: Mechanisms and Feedback on Climate	47.050	OPP-1745029			0	215,718
					\$0	\$215,718
Collaborative Research: Navigating the New Arctic (NNA): Soundscape Ecology to Assess Environmental and Anthropogenic Controls on Wildlife Behavior	47.050	OPP-1839198			0	23,543
					\$0	\$23,543
Collaborative Research: Illuminating the Cascadia Plate Boundary Zone and Accretionary Wedge with a Regional-scale Ultra-long Offset Multi-channel Seismic Study	47.050	OCE-1827452			0	25,730
					\$0	\$25,730
Collaborative Research: Magnitude and Pathway of Gaseous Atmospheric Mercury Deposition in Forests	47.050	AGS-1848618			0	34,494
					\$0	\$34,494
Understanding Wave Energy Transport Through the Complex Chromosphere and Transition Region	47.050	AGS-1834822			0	1,156
					\$0	\$1,156
Dynamic and Thermodynamic Controls on Deep Convection in Organization of Tropical East Pacific Convection (OTREC)	47.050	AGS-1758603			0	75,955

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$75,955
Testing the Observation of Annual Seismic Velocity Variations at Axial Volcano	47.050	OCE-1834261			0	8,591
					\$0	\$8,591
Testing the Slab Connection: A Beryllium Isotope Tracer Study in the Trans-Mexican Volcanic Belt	47.050	EAR-1836032			0	67,756
					\$0	\$67,756
P2C2: Diagnosing the Dynamics of Past and Future North American Megadroughts	47.050	AGS-1805490			0	165,938
					\$0	\$165,938
Assessing Transport Pathways into the Arctic and Their Efficiencies	47.050	OPP-1825858			0	115,780
					\$0	\$115,780
Reconstructing Last Interglacial Sea Level Based on Models and Observation from the Bahamas	47.050	OCE-1841888			0	100,846
					\$0	\$100,846
Collaborative Research: Calibration of Deep-sea Coral Paleoproxies for Nutrients, Carbonate Ion, and Temperature	47.050	OCE-1841970			0	23,652
					\$0	\$23,652
PREEVENTS Track 1: Meteorology and Impacts of Correlated Climate Extremes: New York, NY: May 28-31, 2019	47.050	ICER-1928623			0	28,169
					\$0	\$28,169
PREEVENTS Track 1: Meteorology and Impacts of Correlated Climate Extremes: New York, NY: May 28-31, 2019	47.050	ICER-1928623			0	16,623
					\$0	\$44,792
Collaborative Research: Seismic Attenuation and Anelasticity in the Upper Mantle: The Effect of Continuous Far-field Dislocation Creep	47.050	EAR-1855423			0	30,090
					\$0	\$30,090
NSFGEO-NERC: Ice-Shelf Instability Caused by Active Surface Meltwater Production, Movement, Ponding and Hydrofracture	47.050	OPP-1841739			0	44,088
					\$0	\$44,088
Collaborative Research: Terrestrial Hydrology during the Last Deglaciation	47.050	EAR-1903518			0	12,294

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$12,294
Asthenospheric Melting and Melt-induced Evolution of the Lithosphere Beneath the Colorado Plateau and the Basin and Range from a Seismic Characterization of Mantle Layering	47.050	EAR-1853296			0	51,843
					\$0	\$51,843
Collaborative Research: Measurements and Modelling of the Indonesian Throughflow International Experiment (MINTIE)	47.050	OCE-1851257			0	114,856
					\$0	\$114,856
Laboratory Study of Substrate Control and Cryoseismicity of Glacier Basal Motion	47.050	OPP-1854629			0	61,206
					\$0	\$61,206
Collaborative Research: P2C2 - Reconstructing Atmospheric 14C across the Inter Tropical Convergence Zone Using Tropical Tree Rings from South America and Central Africa	47.050	AGS-1903687			0	15,949
					\$0	\$15,949
Collaborative Research: Optimization of the Multibeam Sonar Systems of the U.S. Academic Fleet through Coordinated System Testing, Tool Development, and Community Outreach	47.050	OCE-1933776			0	9,952
					\$0	\$9,952
Collaborative Research: Linking Sea Ice and Snow Cover Changes to Greenland Mass Balance through Stratospheric and Tropospheric Pathways	47.050	OPP-1901603			0	58,427
					\$0	\$58,427
P2C2: Towards a Precipitation History of Easter Island Since the Last Glacial Period	47.050	EAR-1903676			0	93,766
					\$0	\$93,766
P2C2: New Zealand Climate in Three Warm Periods	47.050	EAR-1903652			0	103,522
					\$0	\$103,522
Collaborative Research: P2C2: Reconstructing Holocene Climate Change in the Southern Hemisphere from Southern Alps Mountain Glaciers and Tree Rings	47.050	EAR-1903334			0	61,956
					\$0	\$61,956
Collaborative Research: Exploring the Linkages between Sea-Level Change, Sediment Transport and Geomorphology on Coastal Freshwater Water Sequestration	47.050	EAR-1925821			0	135,646
					\$0	\$135,646

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Collaborative Research: Testing Source vs. Crustal Processing in High-Mg# Arc Magmas by Os-O-He-Olivine Systematics	47.050	EAR-1921624			0	62,119
					\$0	\$62,119
NSF/GEO-NERC: Collaborative Research: Multi-scale Investigation of Rheology and Emplacement of Multi-phase Lava	47.050	EAR-1929008			0	53,187
					\$0	\$53,187
GP-IMPACT: The Community College Compass - Mapping a Guided Pathway into Geosciences	47.050	ICER-1911580			0	17,717
GP-IMPACT: The Community College Compass - Mapping a Guided Pathway into Geosciences	47.050	ICER-1911580			140	15,986
					\$140	\$33,703
Sampling Peculiarity of Sea Surface Temperature Data Sets from Drifting Buoys due to the Lagrangian Nature of Observing Platforms	47.050	OCE-1853717			0	140,203
					\$0	\$140,203
Ocean Gravity-Capillary Waves: Dependence on Sea-Surface Processes and Microlayer Properties	47.050	OCE-1923935			0	82,306
					\$0	\$82,306
Collaborative Research: P2C2 - Hydroclimatic Response of El Nino-Southern Oscillation to Natural and Anthropogenic Radiative Forcing	47.050	AGS-1903634			0	7,527
					\$0	\$7,527
NSFGEO-NERC: Sulfur Cycling at Subduction Zones	47.050	OCE-1933773			0	54,393
					\$0	\$54,393
Aleutian - Alaska Workshop at Lamont for GeoPrisms Synthesis	47.050	OCE-1941699			0	8,314
Aleutian - Alaska Workshop at Lamont for GeoPrisms Synthesis	47.050	OCE-1941699			0	5,750
					\$0	\$14,064
Collaborative Research: Vertical Gradients in Southern Ocean Radiocarbon Across the Major Climate Transitions of the Last 30,000 Years	47.050	OCE-1903699			0	38,729
					\$0	\$38,729

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EAGER: Measurement of Sulfur Hexafluoride and Argon-39 on Archived Samples from the Atlantic Ocean Collected in the 1980s	47.050	OCE-1936746			0	30,650
					\$0	\$30,650
Supporting Marine Geoscience Research with Ongoing Growth of the Global Multi-Resolution Topography Synthesis and Maintenance of GeoMapApp	47.050	OCE-1929655			0	124,137
					\$0	\$124,137
Three Compliance Instruments for Axial Volcano to Observe Long Term Evolution of the Magma Chamber and in Support of OOI Observations	47.050	OCE-1924024			0	63,590
Three Compliance Instruments for Axial Volcano to Observe Long Term Evolution of the Magma Chamber and in Support of OOI Observations	47.050	OCE-1924024			0	4,207
					\$0	\$67,797
Collaborative Research: Estuarine Metabolism and Gas Exchange Determined from Dissolved Oxygen Time Series: Method Development, Field Evaluation, and Application to Historical Data	47.050	OCE-1924445			0	187
					\$0	\$187
NNA Track 1: Predicting Coastal Responses to a Changing Greenland Ice Sheet	47.050	ICER-1928146			0	253,388
					\$0	\$253,388
EarthCube Data Capabilities: Collaborative Proposal: Reducing Time-To-Science in the Earth Sciences: Annotations to Foster Convergence, Inclusion, and Credit	47.050	ICER-1928333			0	5,652
					\$0	\$5,652
Marine Geoscience Data System 2020: Optimizing Established Data Infrastructure for the Future	47.050	OCE-1933512			0	208,282
					\$0	\$208,282
R2R Data Management Services for the Academic Fleet: 2020-2024	47.050	OCE-1949707			36,748	110,669
					\$36,748	\$110,669
Collaborative Research: Interhemispheric and Zonal Asymmetries of the ITCZ	47.050	AGS-1934363			0	5,507
					\$0	\$5,507
RAPID - Assessing the Response of the Seychelles-Chagos Thermocline Ridge Ecosystem to an Indian Ocean Dipole Event	47.050	OCE-2019983			0	65,738
					\$0	\$65,738

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						R&D Cluster
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CAREER: Developing Novel Biomarker Proxies to Constrain Neogene Changes in African Woody Cover and Paleoeological Contexts of Hominin Evolution	47.050	EAR-1945446			0	822
					\$0	\$822
Collaborative Research: Forced Drivers of Trends in Ocean Biogeochemistry: Volcanos and Atmospheric Carbon Dioxide	47.050	OCE-1948624			0	43,256
					\$0	\$43,256
Community Facility Support: The Global CMT Project	47.050	EAR-1936254			0	17,998
					\$0	\$17,998
Collaborative Research: A Flexible Framework for Radiation Parameterizations Traceable to Benchmarks	47.050	AGS-1916908			0	839
					\$0	\$839
Testing an Arc Volcanism - Climate Link in a High-Latitude Plio-Pleistocene Marine Tephra Archive at ODP Site 882 (Northwest Pacific)	47.050	OCE-1950006			0	61,110
					\$0	\$61,110
Collaborative Research: P2C2 - Synthesizing Asian Monsoon Hydroclimate & Indo-Pacific Variability on Seasonal to Multi-Decadal Timescales Using Tree-Rings & Coupled Climate Models	47.050	AGS-2001949			0	90
					\$0	\$90
Collaborative Research: EarthChem & SESAR - Data Infrastructure for Geochemistry and Earth Science Samples Communities	47.050	EAR-1948806			0	41,104
					\$0	\$41,104
Collaborative Research: Thermodynamics and thermoelasticity of iron-bearing phases	47.050	EAR-1918126			0	206,672
					\$0	\$206,672
Collaborative Research: Thermodynamics and thermoelasticity of iron-bearing phases	47.050	EAR-1918126			0	86,479
					\$0	\$293,151
Understanding the Direct and Ozone-Mediated Impacts of (CO2) and Ozone Depleting Substances (ODS) on the Climate System	47.050	AGS-1914569			0	41,913
					\$0	\$41,913
					\$6,165,643	\$32,614,021

Computer and Information Science and Engineering

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
TWC: Small: Virtual Private Social Networks	47.070	CNS-1318415			0	-1
					\$0	\$-1
Naturalistic computation and signaling by neural populations in the primate retina	47.070	IIS-1430239			0	219,931
					\$0	\$219,931
CAREER: Addressing Emerging Variability Challenges for Margin-Free VLSI Computing Platform Design	47.070	CCF-1453142			0	164,624
					\$0	\$164,624
CAREER: Simulating Nonlinear Audiovisual Dynamics for Simulated Environments and Interactive Applications	47.070	IIS-1453101			0	46,616
CAREER: Simulating Nonlinear Audiovisual Dynamics for Simulated Environments and Interactive Applications	47.070	IIS-1453101			0	219
					\$0	\$46,835
SHF: Small: Rethinking CAD for System-Level Design via Interactivity, Learning, and Collaboration	47.070	CCF-1527821			0	158,265
					\$0	\$158,265
CRISP Type 1: Protecting Coastal Infrastructure in a Changing Climate by Integrating Optimization Modeling and Stakeholder Observations	47.070	OAC-1735609			6,927	189,840
CRISP Type 1: Protecting Coastal Infrastructure in a Changing Climate by Integrating Optimization Modeling and Stakeholder Observations	47.070	OAC-1735609			0	16,100
					\$6,927	\$205,940
CHS: Small: Physically-Based Simulation of Strand-Liquid Interaction	47.070	IIS-1717178			0	73,595
CHS: Small: Physically-Based Simulation of Strand-Liquid Interaction	47.070	IIS-1717178			0	2,639
					\$0	\$76,234
AITF: Learning and Adapting Sparse Recovery Algorithms for RF Spectrum Sensing	47.070	CCF-1733857			0	149,828
AITF: Learning and Adapting Sparse Recovery Algorithms for RF Spectrum Sensing	47.070	CCF-1733857			0	67,609
					\$0	\$217,437

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TRIPODS: From Foundations to Practice of Data Science and Back	47.070	CCF-1740833			0	168,986
TRIPODS: From Foundations to Practice of Data Science and Back	47.070	CCF-1740833			0	132,356
TRIPODS: From Foundations to Practice of Data Science and Back	47.070	CCF-1740833			0	61,486
TRIPODS: From Foundations to Practice of Data Science and Back	47.070	CCF-1740833			0	60,419
TRIPODS: From Foundations to Practice of Data Science and Back	47.070	CCF-1740833			0	26,872
TRIPODS: From Foundations to Practice of Data Science and Back	47.070	CCF-1740833			0	23,483
TRIPODS: From Foundations to Practice of Data Science and Back	47.070	CCF-1740833			0	14,716
TRIPODS: From Foundations to Practice of Data Science and Back	47.070	CCF-1740833			0	12,566
					\$0	\$500,884
Cybersecurity Risk Conference	47.070	IIS-1748395			0	7,898
					\$0	\$7,898
BIGDATA: F: Statistical Foundation of Predictivity: A Novel Architecture for Big Data Learning	47.070	IIS-1741191			0	96,668
					\$0	\$96,668
SCH:INT: Large -Scale Probabilistic Phenotyping Applied to Patient Record Summarization	47.070	IIS-1344668			0	142,082
SCH:INT: Large -Scale Probabilistic Phenotyping Applied to Patient Record Summarization	47.070	IIS-1344668			0	10,020
					\$0	\$152,102
SHF: Large: Collaborative Research: Molecular computing for the real world	47.070	CCF 1832985			0	98,940
					\$0	\$98,940

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						R&D Cluster
<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
SHF: Medium: Collaborative Research: Biocompatible I/O interfaces for robust bioorthogonal molecular computing	47.070	CCF 1763632			0	30,476
					\$0	\$30,476
ClF: Small: Collaborative: Communication with Energy Harvesting Nodes	47.070	CCF-1526215			0	40,538
					\$0	\$40,538
SI2-SSI: Collaborative Research: ENKI: Software infrastructure that Enables Knowledge integration for modeling coupled geochemical and geodynamical processes	47.070	ACI-1550337			0	2,694
					\$0	\$2,694
Molecular Computing in Real Life	47.070	CCF-1518715			0	66,492
					\$0	\$66,492
CI-SUSTAIN: Stan for the Long Run	47.070	CNS-1730414			0	332,108
					\$0	\$332,108
SaTC: TTP: Small: Easy Email Encryption	47.070	CNS-1717801			0	112,961
					\$0	\$112,961
SaTC: TTP: Small: Easy Email Encryption	47.070	CNS-1717801			0	31,807
					\$0	\$144,768
RI: Small: Creating Text-to-Speech Synthesis for Low Resource Languages	47.070	IIS-1717680			0	64,109
					\$0	\$64,109
Integration of Environmental Factors and Causal Reasoning Approaches for Large-Scale Observational Health Research	47.070	IIS 1636832			28,809	72,482
					\$28,809	\$72,482
SaTC: TTP Option: Medium: Scalable Web Transparency: New Scientific Building Blocks, Tools, and Measurements to Tame the Data-Driven Web	47.070	CNS-1514437			0	186,841
					\$0	\$186,841
NRI: Collaborative Research: Dynamic Braces for Quantification and Treatment of Abnormal Curves in the Human Spine	47.070	IIS-1527087			0	255,157
					\$0	\$255,157

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CHS: Medium: Collaborative Research: Augmented Reality for Multiple People Perspectives, Platforms, and Tasks	47.070	IIS-1514429			0	15,132
					\$0	\$15,132
III: Small: Collaborative Research: Towards Interactive Data Visualization Management Systems	47.070	IIS-1527765			0	47,749
III: Small: Collaborative Research: Towards Interactive Data Visualization Management Systems	47.070	IIS-1527765			0	764
					\$0	\$48,513
RI: Medium: Assessing Speaker and Teacher Effectiveness Through Gestural Analysis, EEG Recordings, and Eye Tracking	47.070	IIS-1513853			16,730	40,194
RI: Medium: Assessing Speaker and Teacher Effectiveness Through Gestural Analysis, EEG Recordings, and Eye Tracking	47.070	IIS-1513853			0	749
					\$16,730	\$40,943
BIGDATA: Collaborative Research: IA: Hardware and software for spike detection and sorting in massively parallel electrophysiological recording systems for the brain	47.070	IIS-1546296			0	13,116
BIGDATA: Collaborative Research: IA: Hardware and software for spike detection and sorting in massively parallel electrophysiological recording systems for the brain	47.070	IIS-1546296			0	11,297
BIGDATA: Collaborative Research: IA: Hardware and software for spike detection and sorting in massively parallel electrophysiological recording systems for the brain	47.070	IIS-1546296			0	5,038
					\$0	\$29,451
BD Hubs: NORTHEAST: The Northeast Big Data Innovation Hub	47.070	IIS-1550284			0	125,795
BD Hubs: NORTHEAST: The Northeast Big Data Innovation Hub	47.070	IIS-1550284			51,069	60,301
BD Hubs: NORTHEAST: The Northeast Big Data Innovation Hub	47.070	IIS-1550284			0	14,517
BD Hubs: NORTHEAST: The Northeast Big Data Innovation Hub	47.070	IIS-1550284			0	-40,823
					\$51,069	\$159,790
CAREER: From Grasp Quality to Hand Quality: Analysis and Optimization for Effective Robot Hands	47.070	IIS-1551631			0	54,374
					\$0	\$54,374

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						<u>Total Expenditures (Includes Subrecipients)</u>
CAREER: Unifying Provable Security Techniques for Advanced Cryptographic Systems	47.070	CNS-1552932			0	3,015
					\$0	\$3,015
TWC: Medium: Collaborative: Efficient Repair of Learning Systems via Machine Unlearning	47.070	CNS-1564055			0	92,068
					\$0	\$92,068
III: Medium: Adaptive Information Extraction from Social Media for Actionable Inference in Public Health	47.070	IIS-1563785			0	129,018
					\$0	\$224,277
III: Medium: Adaptive Information Extraction from Social Media for Actionable Inference in Public Health	47.070	IIS-1563785			0	95,259
					\$0	\$131,011
AF: Medium: Collaborative Research: Circuit Lower Bounds via Projections	47.070	CCF-1563155			0	131,011
					\$0	\$131,011
AF: Small: Nearest Neighbor Search in High Dimensional Spaces	47.070	CCF-1617955			0	82,710
					\$0	\$82,710
NRI: Collaborative Research: Multimodal Brain Computer Interface for Human Robot Interaction	47.070	IIS-1527747			0	143,022
					\$0	\$225,373
NRI: Collaborative Research: Multimodal Brain Computer Interface for Human Robot Interaction	47.070	IIS-1527747			0	82,351
					\$0	\$214,837
TWC: Medium: Toward Trustworthy Mutable Replay for Security Patches	47.070	CNS-1563555			0	214,837
					\$0	\$205,880
TWC: Medium: Toward Trustworthy Mutable Replay for Security Patches	47.070	CNS-1563555			0	205,880
					\$0	\$420,717
CAREER: Biologically Inspired neural network models for robust speech processing	47.070	IIS-1555079			0	98,574
					\$0	\$98,574
III: Medium: Collaborative Research: Composing Interactive Data Visualizations	47.070	IIS 1564049			0	118,007

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$118,007
TWC: Small: Collaborative: Automated Detection and Repair of Error Handling Bugs in SSL/TLS Implementations	47.070	CNS 1617670			0	40,232
					\$0	\$40,232
E2CDA: Type I: Collaborative Research: Energy Efficient Computing with Chip-Based Photonics	47.070	CCF-1640108			0	62,694
E2CDA: Type I: Collaborative Research: Energy Efficient Computing with Chip-Based Photonics	47.070	CCF-1640108			0	51,066
E2CDA: Type I: Collaborative Research: Energy Efficient Computing with Chip-Based Photonics	47.070	CCF-1640108			0	34,354
E2CDA: Type I: Collaborative Research: Energy Efficient Computing with Chip-Based Photonics	47.070	CCF-1640108			0	19,822
					\$0	\$167,936
NeTS: Small: RDMA over Ethernet: A Control Theoretic Approach	47.070	CNS-1618911			0	193,792
NeTS: Small: RDMA over Ethernet: A Control Theoretic Approach	47.070	CNS-1618911			0	12,400
					\$0	\$206,192
BIGDATA: Collaborative Research: IA: F: Latent and Graphical Models for Complex Dependent Data in Education	47.070	IIS 1633360			0	298,855
					\$0	\$298,855
EAGER: Collaborative Research: Lighting a Dark Fiber Experimental Research Network in Harlem	47.070	CNS-1650685			0	9,977
EAGER: Collaborative Research: Lighting a Dark Fiber Experimental Research Network in Harlem	47.070	CNS-1650685			0	8,940
EAGER: Collaborative Research: Lighting a Dark Fiber Experimental Research Network in Harlem	47.070	CNS-1650685			0	2,671
					\$0	\$21,588
EAGER: Collaborative Research: Supporting Public Access to Supplemental Scholarly products Generated from Grant Funded Research	47.070	OAC-1649703			0	29,916
					\$0	\$29,916

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CRII: ACI: Unveiling the Origin of the Highest Energy Particles in the Universe with Large Scale First Principle Fully Kinetic Simulations	47.070	ACI-1657507			0	16,402
					\$0	\$16,402
CAREER: Adaptive Algorithms for Combinatorial Optimization in Stochastic Networks	47.070	CNS-1652115			0	25,742
					\$0	\$25,742
WiFiUS: Collaborative Research: Scaling, Securing and Validating Massive Heterogeneous IoT Systems	47.070	CNS-1702952			0	38,093
					\$0	\$38,093
AF: Medium: New Frontiers in Equilibrium Computation	47.070	CCF-1703925			0	143,779
AF: Medium: New Frontiers in Equilibrium Computation	47.070	CCF-1703925			0	107,246
					\$0	\$251,025
CSR: CHS: Medium: Collaborative Research: Improving Pedestrian Safety in Urban Cities using Intelligent Wearable Systems	47.070	CNS-1704899			0	57,892
CSR: CHS: Medium: Collaborative Research: Improving Pedestrian Safety in Urban Cities using Intelligent Wearable Systems	47.070	CNS-1704899			0	888
					\$0	\$58,780
RAISE: Deep Gravitational Wave Exploration, Instrumental Insights and Noise Removal Through Machine Learning	47.070	CCF-1740391			0	66,006
RAISE: Deep Gravitational Wave Exploration, Instrumental Insights and Noise Removal Through Machine Learning	47.070	CCF-1740391			0	46,233
RAISE: Deep Gravitational Wave Exploration, Instrumental Insights and Noise Removal Through Machine Learning	47.070	CCF-1740391			0	39,791
					\$0	\$152,030
AF:Small:Beyond Worst Case Running time: Algorithms for Routing, Scheduling and Matching	47.070	CCF-1714818			0	134,654
					\$0	\$134,654
EAGER: USBRCCR: Researching Internet Routing Security in the Wild	47.070	CNS-1740883			0	76,090
					\$0	\$76,090

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NeTS: Small: A Theoretical Approach to MAC Design for Communication Between Low Cost, Ultra Low Power Devices	47.070	CNS-1717867			0	133,153
NeTS: Small: A Theoretical Approach to MAC Design for Communication Between Low Cost, Ultra Low Power Devices	47.070	CNS-1717867			0	42,367
NeTS: Small: A Theoretical Approach to MAC Design for Communication Between Low Cost, Ultra Low Power Devices	47.070	CNS-1717867			0	1,307
					\$0	\$176,827
AF: Small: Collaborative Research: Computational Representations for Design and Fabrication of Developable Surfaces	47.070	CCF-1717268			0	45,444
					\$0	\$45,444
RI:Medium:Incorporating Biologically-Motivated Circuit Motifs into Large-Scale Deep Neural Network Models of the Brain	47.070	IIS 1704938			0	152,586
					\$0	\$152,586
Collaborative Research: SI2-SSI: Inquiry-Focused Volumetric Data Analysis Across Scientific Domains: Sustaining and Expanding the Yt Community	47.070	OAC-1663893			0	69,514
					\$0	\$69,514
Collaborative Research: Framework: Software: NSCI: Enzo for the Exascale Era (Enzo-E)	47.070	OAC-1835509			0	95,233
					\$0	\$95,233
CRCNS Research Proposal: Topological and dynamical structures of brain development and sexual-dimorphism in C. elegans	47.070	DMS 1912194			0	105,688
CRCNS Research Proposal: Topological and dynamical structures of brain development and sexual-dimorphism in C. elegans	47.070	DMS 1912194			0	91,122
CRCNS Research Proposal: Topological and dynamical structures of brain development and sexual-dimorphism in C. elegans	47.070	DMS 1912194			0	62,111
					\$0	\$258,921
SI2-SSE: Improving Scikit-Learn Usability and Automation	47.070	OAC-1740305			0	152,775
					\$0	\$152,775
CRCNS Research Proposal: Collaborative Research: Prioritization of Memory Reactivation for Decision-Making	47.070	IIS-1822619			0	159,551
					\$0	\$159,551

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Collaborative Research: Community Planning for Scalable Cyberinfrastructure to Support Multi-Messenger Astrophysics	47.070	OAC-1841588			0	15,352
					\$0	\$15,352
EAGER: Globally-Analog Locally-Digital Computing for Accelerating Scientific Computation	47.070	CCF-1840763			0	46,664
					\$0	\$46,664
Data Science Leadership Summit	47.070	IIS-1821451			0	17,080
					\$0	\$17,080
Student Travel Support for CCC 2018	47.070	CCF-1822097			0	9,023
					\$0	\$9,023
AF: Medium: Research in Algorithms and Complexity: Total Functions, Games, and the Brain	47.070	CCF-1763970			0	260,519
AF: Medium: Research in Algorithms and Complexity: Total Functions, Games, and the Brain	47.070	CCF-1763970			0	159,315
					\$0	\$419,834
SHF : Medium : Collaborative Research: Decentralized On Chip Infrastructure for Robustness and Portability in Heterogeneous Multicores	47.070	CCF-1764000			0	12,652
					\$0	\$12,652
AF: Small: Collaborative Research: Boolean Function Analysis Meets Stochastic Design	47.070	CCF 1814873			0	72,198
					\$0	\$72,198
CI-New: Collaborative Research: An Open Platform for Internet Routing Experiments	47.070	CNS-1835252			0	479,987
					\$0	\$479,987
CSR: NeTS: Medium: Collaborative Research: Cloud Support for Latency-Sensitive Web Services	47.070	CNS-1835253			0	197,231
					\$0	\$197,231
SHF: Small: Preponderance of the Evidence for Behavioral Code Similarities	47.070	CCF 1815494			0	135,591
					\$0	\$135,591

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CIF: Small: Massive MIMO for Massive Machine-Type Communication	47.070	CCF-1814803			0	106,191
					\$0	\$106,191
CAREER: Routing for the Emerging Topologies of Modern Internet Services	47.070	CNS 1836872			0	32,999
					\$0	\$32,999
SaTC: CORE: Medium: Collaborative: Towards Trustworthy Deep Neural Network Based AI: A Systems Approach	47.070	CNS 1801426			0	131,399
					\$0	\$131,399
CSR: Small: Collaborative Research: Overheard at Home Mitigating Overhearing of Continuous Listening Devices	47.070	CNS 1815274			0	81,965
					\$0	\$81,965
Spokes: MEDIUM: NORTHEAST: Collaborative Research: Data Science Foundry: A Collaborative Platform for Computational Social Science	47.070	IIS 1761810			0	65,519
					\$0	\$65,519
CHS: Small: Collaborative Research: Computational Acoustic Design for Digital Manufacturing	47.070	IIS 1816041			0	46,558
					\$0	\$46,558
EAGER: Tagging and Browsing Videos According to the Preferences of Differing Affinity Groups	47.070	IIS 1841670			0	78,879
					\$0	\$78,879
EAGER: Finding Semantic Security Bugs with Pseudo Oracle Testing	47.070	CNS 1842456			0	133,417
					\$0	\$133,417
EAGER: Finding Semantic Security Bugs with Pseudo Oracle Testing	47.070	CNS 1842456			0	5,983
					\$0	\$5,983
					\$0	\$139,400
CHS: Small: Optimizing Human Machine Performance via Neurofeedback and Adaptive Autonomy	47.070	IIS 1816363			0	159,624
					\$0	\$159,624
Collaborative Research: HDR Elements: Software for a new machine learning based parameterization of moist convection for improved climate and weather prediction using deep learning	47.070	OAC 1835769			0	68,642
					\$0	\$68,642
					\$0	\$68,642

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

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SPX: Collaborative Research: Moving Towards Secure and Massive Parallel Computing	47.070	CCF 1822809			0	19,511
					\$0	\$19,511
EAGER: Collaborative Research:Automated Instruction Assistant for Argumentative Essays	47.070	IIS 1847853			0	10,292
EAGER: Collaborative Research:Automated Instruction Assistant for Argumentative Essays	47.070	IIS 1847853			0	3,000
					\$0	\$13,292
BIGDATA: F: Big Data Analysis via Non-Standard Property Testing	47.070	IIS 1838154			0	103,012
BIGDATA: F: Big Data Analysis via Non-Standard Property Testing	47.070	IIS 1838154			0	83,368
					\$0	\$186,380
BIGDATA: F: Multiaffine Constrained Optimization for High Dimensional Big Data Models	47.070	IIS 1838061			0	160,984
					\$0	\$160,984
CPS: Medium: Collaborative Research: Building Information, Inhabitant, Interaction and Intelligent Integrated Modeling (BI5M)	47.070	CNS-1837022			0	41,179
					\$0	\$41,179
I-Corps: Integrated Multi-Tissue Human Models for Drug Development	47.070	CNS-1842068			0	18,087
					\$0	\$18,087
Translational Data Science Workshop	47.070	IIS 1848988			0	8,887
					\$0	\$8,887
CAREER: Information Theoretic Methods in Data Structures	47.070	CCF 1844887			0	67,089
					\$0	\$67,089
S&AS:FND:COLLAB:Unsupervised Rare Event Learning With Applications on Autonomous Vehicles	47.070	IIS 1849280			0	58,915
					\$0	\$58,915

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CRII: CIF: Approximate Message Passing Algorithms for High Dimensional Estimation	47.070	CCF 1849883			0	66,770
					\$0	\$66,770
CAREER: Systematic Software Testing for Deep Learning Applications	47.070	CCF 1845893			0	113,948
CAREER: Systematic Software Testing for Deep Learning Applications	47.070	CCF 1845893			0	2,254
					\$0	\$116,202
CAREER: Efficient Fuzzing with Neural Program Smoothing	47.070	CNS 1845995			0	62,382
					\$0	\$62,382
BD Hubs: NORTHEAST: The Northeast Big Data Innovation Hub	47.070	OAC-1916585			13,601	581,752
BD Hubs: NORTHEAST: The Northeast Big Data Innovation Hub	47.070	OAC-1916585			16,137	16,137
					\$29,738	\$597,889
CRII: RI: Learning Predictive Representations from Unlabeled Video	47.070	IIS 1850069			0	30,299
					\$0	\$30,299
AF: Small: New Directions in Algorithmic Game Theory	47.070	CCF 1929788			66,734	202,125
					\$66,734	\$202,125
FMitF: Track I: A Secure and Verifiable Commodity Hypervisor	47.070	CCF 1918400			0	236,622
					\$0	\$236,622
CHS: Small: Translating Compilers for Visual Computing in Dynamic Languages	47.070	CCF 1936523			0	6,120
					\$0	\$6,120
Aging in place through enhanced mobility and social connectedness: An integrated robot and wearable	47.070	IIS-1838725			0	35,613
					\$0	\$35,613

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						<u>Total Expenditures (Includes Subrecipients)</u>
TWC: Small: Collaborative: Automated Detection and Repair of Error Handling Bugs in SSL/TLS Implementations	47.070	CNS-1946068			0	43,077
					\$0	\$43,077
AF: Small: Collaborative Research: A Computational Theory of Brain Function	47.070	CCF 1910700			0	5,832
					\$0	\$5,832
Workshop on Deep Learning and Software Engineering	47.070	CCF 1945999			0	18,967
					\$0	\$18,967
NRI: FND: Learning Visual Dynamics from Interaction	47.070	IIS 1925157			0	87,697
					\$0	\$87,697
NRI: FND: Learning Visual Dynamics from Interaction	47.070	IIS 1925157			0	1,365
					\$0	\$1,365
CAREER: Visual Database Interfaces	47.070	IIS 1845638			0	1,191
					\$0	\$1,191
CPS: Small: Naming, Twinning and Observing Towards Scalable, Reliable and Resilient CPS	47.070	CNS 1932418			0	74,004
					\$0	\$74,004
CHS: Small: Embedding Discreet Digital Data in Physical Artifacts	47.070	IIS 1910839			0	3,702
					\$0	\$3,702
Collaborative Research: I AIM: Interpretable Augmented Intelligence for Multiscale Material Discovery	47.070	OAC 1940203			0	51,392
					\$0	\$51,392
NSF RI: Medium: Collaborative Research: Causal Inference: Identification, Learning, and Decision-Making	47.070	IIS 2011463			0	282,565
					\$0	\$282,565
CAREER: Approximate Causal Inference	47.070	IIS 2011497			0	108,080
					\$0	\$108,080

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
SaTC: CORE: Medium: Collaborative: Cryptographic Provenance for Digital Publishing	47.070	CNS-1940670			0	28,037
					\$0	\$28,037
COVID-19 - RAPID: Collaborative Research: The Internet under Widespread Shelter-in-Place: Resilience, Response, and Lessons for the Future	47.070	COVID-19			0	12,294
					\$0	\$12,294
Collaborative Research: Frameworks: Scalable Modular Software and Methods for High-Accuracy Materials and Condensed Phase Chemistry Simulation	47.070	OAC-1931321			0	7,012
					\$0	\$7,012
					\$200,007	\$12,484,112
Biological Sciences						
The Molecular Basis of Cadherin-Mediated Cell Adhesion	47.074	MCB-1412472			0	13,084
					\$0	\$13,084
A systems Approach to Study Horizontal Acquisition of Regulatory DNA	47.074	MCB-1453219			0	133,890
					\$0	\$133,890
Collaborative Research: Does a transition in nitrogen fixation strategy explain the latitudinal distribution of nitrogen-fixing trees?	47.074	DEB-1457650			21,104	21,104
					\$21,104	\$21,104
Meeting: Coordinating Global Brain Projects, Rockefeller University, September 19th, 2016	47.074	DBI-1644405			0	40,619
					\$0	\$40,619
Large-Scale CMOS electrochemical imagers for the study of metabolites in multicellular films	47.074	DBI-1353553			0	412,759
					\$0	\$412,759
Large-Scale CMOS electrochemical imagers for the study of metabolites in multicellular films	47.074	DBI-1353553			0	-146
					\$0	\$412,613
NSF INCLUDES Early Engagement in Research: key to long-term STEM retention	47.074	DBI-1649310			0	19,620
					\$0	\$19,620

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						R&D Cluster
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NSF INCLUDES Early Engagement in Research: key to long-term STEM retention	47.074	DBI-1649310			0	14,079
NSF INCLUDES Early Engagement in Research: key to long-term STEM retention	47.074	DBI-1649310			0	12,066
					\$0	\$45,765
CAREER: The Mechanistic Interplay Between Biofilm Metabolism and Morphogenesis	47.074	MCB-1553023			0	150,770
					\$0	\$150,770
Endocrine, genetic and epigenetic mechanisms of coping with environmental change in tropical birds	47.074	IOS-1656098			0	153,853
					\$0	\$153,853
Adaptations for mate choice: perceptual mechanisms in species with highly divergent communication signals	47.074	IOS-1656825			0	213,951
					\$0	\$213,951
Collaborative Research: Nucleation of Calcium phosphate biomaterials	47.074	DMR-1608554			0	428
					\$0	\$428
Collaborative: The Digital Fruit Fly Brain	47.074	DBI-1544383			0	-5,201
					\$0	\$-5,201
BRAIN EAGER: A Nanophotonic Platform for Multisite Optical Activation in the Brain	47.074	IOS-1611090			9,899	9,899
					\$9,899	\$9,899
NeuroNex Theory Team: Columbia University Theoretical Neuroscience Center	47.074	DBI-1707398			0	1,413,529
NeuroNex Theory Team: Columbia University Theoretical Neuroscience Center	47.074	DBI-1707398			0	63,389
					\$0	\$1,476,918
Midbrain electrosensory processing in mormyrid fish: multimodal integration, recurrent feedback, and cerebellar influence	47.074	IOS 1656354			0	153,482
					\$0	\$153,482

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Why do eukaryotes have two Rad51/RecA family recombinases?	47.074	MCB 1817315			0	204,742
					\$0	\$204,742
Towards development of the structural determinants of the Glutamate receptor gating regulation by auxiliary membrane anchored proteins	47.074	MCB 1818086			0	88,129
					\$0	\$88,129
Molecular Mechanisms in Adhesion Protein Mediated Neuron-Neuron Recognition	47.074	MCB 1914542			0	227,066
					\$0	\$227,066
NeuroNex Technology Hub: Live Imaging of the C.elegans Connectome	47.074	DBI-1707401			228,473	407,094
					\$228,473	\$407,094
A NEIGHBORHOOD APPROACH TO THE BIOGEOGRAPHY OF PUERTO RICAN TREES	47.074	DEB-1753810			0	168,251
					\$0	\$168,251
Collaborative Research: Tradeoffs Between Specialist and Generalist Strategies for Host Immune Evasion in a Vector-Borne Bacterium	47.074	IOS-1755370			16,400	225,419
					\$16,400	\$225,419
CNH2-L: Eco-social Interactions Influencing Human Exposure to Ticks and the Lyme Disease Agent in Anthropogenic Landscapes	47.074	DEB-1924061			36,416	188,554
					\$36,416	\$188,554
Structural Characterization of Protein and Protein Assemblies by Solid State NMR	47.074	MCB-1913885			0	286,457
					\$0	\$286,457
COVID-19 - RAPID: Comparative functional characterization of strain-specific CoV E-proteins and involvement in host-specific virulence	47.074	COVID-19			0	10,384
					\$0	\$10,384
Collaborative Research: URoL: Epigenetics 2: Phase separated genome compartments as drivers of epigenetic phenotypes	47.074	NSF 1921500			0	487,494
					\$0	\$487,494
RAPID: Transmission and Immunology of COVID-19 in the Pandemic and Post-Pandemic Phase: Real-time Assessment of Social Distancing & Protective Immunity	47.074	DEB 2029421			0	22,798

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					<u>\$0</u>	<u>\$22,798</u>
					<u>\$312,292</u>	<u>\$5,137,563</u>
Social, Behavioral, and Economic Sciences						
Collaborative Research: Models and Analyses of Industrial Laboratories: Returns, Risks, and Structural Efficiency, with Implications for Sustainability and Science Policy	47.075	SMA-01360189			0	1,749
					<u>\$0</u>	<u>\$1,749</u>
CRCNS Research Proposal: US German Collaboration: Roles of Place and Grid Cells and Phase Precession in Human Spatial and Episodic Memory	47.075	BCS-1724243			118,303	239,672
					<u>\$118,303</u>	<u>\$239,672</u>
Collaborative Research: Testing the Orbital Theory of Ice Ages using glacial deposits in southern South America and numerical modeling	47.075	BCS-1263474			0	-1
					<u>\$0</u>	<u>\$-1</u>
Collaborative Research Reassessing the settlement history of the Faroe Islands using lipid biomarkers and environmental genomics	47.075	BCS-1623595			0	16,362
					<u>\$0</u>	<u>\$16,362</u>
The Effects of Federal Indirect Cost Recovery Policy on Academic Institutions	47.075	NSF 1735413			22,067	25,013
					<u>\$22,067</u>	<u>\$25,013</u>
Visual Perception as Retrospective Bayesian Decoding from High- to Low-level Features in Working Memory	47.075	BCS 1754211			0	131,672
					<u>\$0</u>	<u>\$131,672</u>
Topics in Analysis of Big Data and Complex Models	47.075	SES-1558623			0	10,056
					<u>\$0</u>	<u>\$10,056</u>
Structural Changes in High Dimensional Factor Models	47.075	SES-1658770			0	3,200
					<u>\$0</u>	<u>\$3,200</u>
Doctoral Dissertation: Dispossession and Agrarian Politics	47.075	BCS-1658469			0	1,934
					<u>\$0</u>	<u>\$1,934</u>
Collaborative Research: Market Based Emissions Policies	47.075	SES-1658929			0	113,238

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$113,238
Doctoral Dissertation Research: Race, Achievement and Trust in Student-Teacher Relationships	47.075	SES-1702651			0	2,570
					\$0	\$2,570
Standard Grant: The Role of Craft Skill in Scientific Practice	47.075	SES-1734596			0	158,811
					0	6,424
					\$0	\$165,235
CRED Renewal: Center for Research on Environmental Decisions - Understanding and Improving Environmental Decisions	47.075	SES-1463122			0	200,660
					\$0	\$200,660
RIDIR: Collaborative Research: Computational and Historical Resources on Nations and Organizations for the Social Sciences (CHRONOS)	47.075	SMA-1637159			0	66,379
					\$0	\$66,379
CAREER: Interdealer Networks and the Distribution of Credit Risk	47.075	SES-1555155			0	80,282
					\$0	\$80,282
Educating Young Researchers in Environment Ethics	47.075	SES-1635656			0	41,929
					0	4,750
					\$0	\$46,679
Standard Research Grant: ToxicDocs Research Infrastructure Project	47.075	NSF 1827951			0	127,980
					\$0	\$127,980
Unemployment Insurance Schemes in Developing Countries	47.075	SES-1757105			0	24,282
					\$0	\$24,282
Collaborative Research: Pennsylvania Solitary Confinement Study	47.075	SES-1823846			0	69,813
					\$0	\$69,813

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Doctoral Dissertation Research: Comparing Multi-Scalar Claims for Redress and Reparation	47.075	BCS-1823901			0	25,175
					\$0	\$25,175
Doctoral Dissertation Research: Forest Engineers, Bureaucrats, and the Constitution of Information	47.075	BCS-1823929			0	4,739
					\$0	\$4,739
Dynamic Pricing and Matching with Asymmetric Information	47.075	SES-1824328			0	71,736
					\$0	\$71,736
Using Metacognitive Biases to Induce Curiosity and Improve Learning	47.075	BCS-1824193			0	61,414
					\$0	\$61,414
Doctoral Dissertation Research: An Historical Study of Medical, Scientific, and Cultural Perspective	47.075	SES-1849620			0	15,745
					\$0	\$15,745
CAREER: How Memory Contributes to Goal-Directed Attention	47.075	BCS-1844241			0	161,905
					\$0	\$161,905
Studies on the Data-Driven Economy and School Choice	47.075	SES-1851821			0	96,818
					\$0	\$96,818
RIDIR: Collaborative Research: Bayesian Analytical Tools to Improve Survey Estimates for Subpopulations and Small Areas	47.075	SES-1926578			0	254,009
					\$0	\$254,009
Doctoral Dissertation Research in Economics: Behavioral Responses to Taxation of Foreign Personal Income	47.075	SES-1919322			0	6,687
					\$0	\$6,687
Collaborative Research: Transparency and the Rule of Law	47.075	SES-1921271			0	19,280
					\$0	\$19,280
Doctoral Dissertation Research in Economics: Benefit Disclosure in Financial Choices Online and Field Experiments	47.075	SES-1919483			0	28,350

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$28,350
Doctoral Dissertation Research in Economics: Do Identity Concerns Affect Labor Supply?	47.075	SES-1919139			0	22,960
					\$0	\$22,960
Doctoral Dissertation Research: Identity Theft Remediation and the Production of Economic Insecurity	47.075	SES-1921260			0	14,651
					\$0	\$14,651
Doctoral Dissertation Research: Labor Dynamics, Migration, and Intergenerational Community Networks	47.075	BCS-1918147			0	7,535
					\$0	\$7,535
Doctoral Dissertation Research: Recovering the Polyvalent Genealogies of Machine Learning, 1948 - 2017	47.075	SMA-1829357			0	4,539
					\$0	\$4,539
Minor Charges with Major Impacts: Understanding the Use of Select Misdemeanor Charges among Persons with Social Disadvantage and Serious Mental Illnesses	47.075	SES 1920902			33,999	75,484
					\$33,999	\$75,484
Collaborative Research: Informal Risk-sharing and Private Initiative to Mitigate Local Environmental Risks	47.075	SES-1853289			32,469	114,477
					\$32,469	\$114,477
CAREER: Trust, Cooperation, and Collective Action in Diverse Communities	47.075	SES-1845177			0	84,765
					\$0	\$84,765
CAREER: Characterizing mechanisms of navigation and memory using direct human brain recording and stimulation	47.075	BCS 1848465			0	6,583
					\$0	\$6,583
Doctoral Dissertation Research: On Terror and Trauma: Governance, Law and Post Traumatic Stress Syndrome	47.075	SES-1921273			0	13,330
					\$0	\$13,330
Collaborative Research: NCS-FR: Shedding light on brain circuits mediating navigation of the odor plume in a natural environment	47.075	BCS-1926747			0	138,959
					\$0	\$138,959

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						<u>Total Expenditures (Includes Subrecipients)</u>
Imprecise Inference from Sequentially Presented Evidence	47.075	SES-1949418			0	42,787
					\$0	\$42,787
Doctoral Dissertation Research in Economics: What s in a Name? The Effect of Changing Definitions of Employer on Worker Outcomes	47.075	SES-1949415			0	5,068
					\$0	\$5,068
COVID-19 - RAPID: New York Covid-19 Chronicle and Oral History Archive	47.075	COVID-19			0	67,178
					\$0	\$67,178
					\$206,838	\$2,670,949

Education and Human Resources

NSF Graduate Research Fellow Program	47.076	DGE-1644869			0	5,463,568
					\$0	\$5,463,568
Collaborative Research: Developing a Visualization Framework for Chemical Reactions	47.076	DUE-1525475			0	3,189
					\$0	\$3,189
Collaborative Research: DRK-12: High School Students Climate Literacy Through Epistemology of Scientific Modeling	47.076	DRL-1719872			0	125,684
					\$0	\$125,684
Exploring STEM Impact and Engagement in Student-Led and Purpose-Driven Projects	47.076	DRL-1759299			0	58,754
					\$0	\$58,754
Exploring STEM Impact and Engagement in Student-Led and Purpose-Driven Projects	47.076	DRL-1759299			0	43,738
					\$0	\$43,738
Exploring STEM Impact and Engagement in Student-Led and Purpose-Driven Projects	47.076	DRL-1759299			0	31,446
					\$0	\$31,446
Exploring STEM Impact and Engagement in Student-Led and Purpose-Driven Projects	47.076	DRL-1759299			0	22,687
					\$0	\$22,687
					\$0	\$156,625
NCS FO: Developing dyadic fMRI methodology to quantify and model human brain-to-brain interactions	47.076	DGE 1926789			0	180,512
					\$0	\$180,512

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					<u>\$0</u>	<u>\$180,512</u>
					<u>\$0</u>	<u>\$5,929,578</u>
Polar Programs						
Geophysical constraints on the crust and upper-mantle structure of Greenland	47.078	OPP-1304346			0	58,376
					<u>\$0</u>	<u>\$58,376</u>
Supporting Antarctic Research with Ongoing Operations and Development of the USAP-DC Project Catalog and Data Repository	47.078	OPP-1936530			0	66,475
					<u>\$0</u>	<u>\$66,475</u>
Understanding Firm Rheology Through Laboratory Compaction Experiments and Radar Data	47.078	OPP-1935438			0	23,428
					<u>\$0</u>	<u>\$23,428</u>
					<u>\$0</u>	<u>\$148,279</u>
Integrative Activities						
GCR: Collaborative Research: Disentangling Environmental Change and Social Factors as Drivers of Migration	47.083	OIA-1934978			0	24,665
					0	16,979
					0	13,127
					0	4,002
					0	1,273
					<u>\$0</u>	<u>\$60,046</u>
Convergence Accelerator Phase 1 (RAISE): Fostering a Diverse Artificial Intelligence (AI) Workforce	47.083	OIA 1937888			81,969	101,829
					<u>\$81,969</u>	<u>\$101,829</u>
GCR: Emotionally Responsive Computation and Communication	47.083	OIA 1934968			0	54,819

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						R&D Cluster
<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
GCR: Emotionally Responsive Computation and Communication	47.083	OIA 1934968			0	46,329
GCR: Emotionally Responsive Computation and Communication	47.083	OIA 1934968			0	21,361
					\$0	\$122,509
COVID-19 - RAPID: COVID Information Commons (CIC)	47.083	COVID-19			0	10,188
					\$0	\$10,188
					\$81,969	\$294,572
Total Direct Award Programs					\$8,186,100	\$80,738,394

Pass-through Awards

Engineering

NSF Engineering Research Center for Integrated Access Networks (CIAN)	47.041	UA Y503160	EEC-0812072	UNIVERSITY OF ARIZONA	0	29,905
					\$0	\$29,905
Mid-Infrared Topological Plasmon-Polaritons with 2D Materials	47.041	UMINN A006382202	EFMA-1741660	UNIVERSITY OF MINNESOTA	0	76,595
Mid-Infrared Topological Plasmon-Polaritons with 2D Materials	47.041	UMINN A006382202	EFMA-1741660	UNIVERSITY OF MINNESOTA	0	65,273
					\$0	\$141,868
Nanosystems Engineering Research Center for Directed Multiscale Assembly of Cellular Metamaterials with Nanoscale Precision:CELL-MET	47.041	BU 4500003222	EEC-1647837	BOSTON UNIVERSITY	0	49,455
Nanosystems Engineering Research Center for Directed Multiscale Assembly of Cellular Metamaterials with Nanoscale Precision:CELL-MET	47.041	BU 4500003222	EEC-1647837	BOSTON UNIVERSITY	0	-8,428
					\$0	\$41,027
SRN: Integrated Urban Infrastructure Solutions for Environmentally Sustainable, Healthy and Livable Cities	47.041	UMINN A0005261801	CBET-1444745	UNIVERSITY OF MINNESOTA	0	72,113
					\$0	\$72,113
EFRI NewLAW: New frontiers for topologically-protected propagation of light, sound, elastic and mechanical waves	47.041	UTA16-000936	EFMA-1641069	UNIVERSITY OF TEXAS AT AUSTIN	0	141,649
					\$0	\$141,649

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Mechanopotential of Cytotoxic T Cell Function	47.041	MSKCC BD521839	PD-14-7479	MEMORIAL SLOAN-KETTERING CANCER CENTER	0	42,920
					\$0	\$42,920
INSPIRE-Intentional Defaults for More Sustainable Infrastructure: Studying Interventions to Alleviate Biases in Upstream, Multi-Stakeholder Decisions	47.041	UV GA11247 155597	CBET-1744246	UNIVERSITY OF VIRGINIA	0	105,561
					\$0	\$105,561
Planning Grant: Engineering Research Center for Translating and Evolving Nanoscale Assembly for Society (TENAS)	47.041	PSU 5916-CU-NSF-0489	EEC-1840489	PENNSYLVANIA STATE UNIVERSITY	0	4,999
					\$0	\$4,999
I-Corps Node (Track 2): New York City Regional Innovation Node (NYCRIN)	47.041	RFCUNY CM00000546-00	IIP-1740622	RESEARCH FOUNDATION OF CITY UNIVERSITY OF NEW YORK	0	71,520
					\$0	\$71,520
Natural Hazards Engineering Research Infrastructure: Computational Modeling and Simulation Center	47.041	UCB 00010048	CMMI-1612843	UNIVERSITY OF CALIFORNIA, BERKELEY	0	8,192
					\$0	\$8,192
STTR Phase I: Smartphone-based blood pressure monitoring via the oscillometric finger pressing method	47.041	DHL CU19-2585	NSF 1843514	DIGITOUCH HEALTH LLC	0	8,523
					\$0	\$8,523
A Personal Radiation Dosimeter Using Solid State Tissue Equivalent Detector (SSTED) Technology	47.041	RDSN CU18-4147	IIP-1914013	RADIATION DETECTION SOLUTIONS	0	94,444
					\$0	\$94,444
SRN: Integrated Urban Infrastructure Solutions for Environmentally Sustainable, Healthy, and Liveable Cities	47.041	PU SUB0000355	CBET-1952884	PRINCETON UNIVERSITY	0	588,657
					\$0	\$588,657
DMREF: Collaborative Research: Design of surface functionality through surface composition and structure	47.041	CMU 1122746-425274	CBET-1921946	CARNEGIE MELLON UNIVERSITY	0	53,700
					\$0	\$53,700
					\$0	\$1,405,078
Mathematical and Physical Sciences						
ATLAS Phase - I Upgrades	47.049	SUNYSB 68790	1345157	STATE UNIV. OF NEW YORK STONY BROOK	0	19,660
					\$0	\$19,660

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						<u>Total Expenditures (Includes Subrecipients)</u>
US ATLAS Operations: Discovery and Measurement at the Energy Frontier	47.049	RFSUNY 76749/1136652/2 R&D	PHY-1624739	STATE UNIV. OF NEW YORK STONY BROOK	0	417,377
US ATLAS Operations: Discovery and Measurement at the Energy Frontier	47.049	RFSUNY 76749/1136652/2 R&D	PHY-1624739	STATE UNIV. OF NEW YORK STONY BROOK	0	304,255
US ATLAS Operations: Discovery and Measurement at the Energy Frontier	47.049	RFSUNY 76749/1136652/2 R&D	PHY-1624739	STATE UNIV. OF NEW YORK STONY BROOK	0	173,894
US ATLAS Operations: Discovery and Measurement at the Energy Frontier	47.049	RFSUNY 76749/1136652/2 R&D	PHY-1624739	STATE UNIV. OF NEW YORK STONY BROOK	0	70,500
					\$0	\$966,026
U.S. ATLAS Operations: Discovery and Measurement at the Energy Frontier	47.049	RFSUNY 76749/1136652/2M&O	PHY-1624739	STATE UNIV. OF NEW YORK STONY BROOK	0	173,607
U.S. ATLAS Operations: Discovery and Measurement at the Energy Frontier	47.049	RFSUNY 76749/1136652/2M&O	PHY-1624739	STATE UNIV. OF NEW YORK STONY BROOK	0	85,453
					\$0	\$259,060
TeV Astrophysics with the VERITAS Gamma Ray Observatory	47.049	BARNARD CU-1806554	PHY-1806554	BARNARD COLLEGE	0	76,179
					\$0	\$76,179
NRAO Student Observing Support Award for Julia Gross	47.049	NRAO CU18-3133	AST-1519126	NATIONAL RADIO ASTRONOMY OBSERVATORY	0	800
					\$0	\$800
MRI Consortium: Development of a Wide Field-of-View Camera for the Schwarzschild-Couder Gamma Ray Telescope	47.049	BARNARD CU-1828168	PHY-1828168	BARNARD COLLEGE	0	6,877
					\$0	\$6,877
NRAO Student Observing Support Award to Aliya Babul	47.049	NRAO CU18-3936	AST-1519126	NATIONAL RADIO ASTRONOMY OBSERVATORY	0	20,163
					\$0	\$20,163
MRI Consortium: Development of Magneto-Ellipsometer for the MET Beamline of the National Synchrotron Light Source (NSLS-II), Brookhaven National Laboratory	47.049	NJIT 996996	DMR-1828061	NEW JERSEY INSTITUTE OF TECHNOLOGY	0	1,611
					\$0	\$1,611
					\$0	\$1,350,376

Geosciences

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						<u>Total Expenditures (Includes Subrecipients)</u>
The impact of the ozone hole on the climate of the Southern Hemisphere	47.050	MIT 5710003465	OCE-1338814	MASSACHUSETTS INSTITUTE OF TECHNOLOGY	0	23,883
					\$0	\$23,883
Operation of the LDEO Ocean-bottom Seismometer Institutional Instrument Center: Task #25 - 2017 Base	47.050	IRIS 57-OMO	OCE-1112722	Incorporated Research Institutions for Seismology	0	56,018
					\$0	\$56,018
FESD Type I: VOICE: Volcano, Ocean, Ice, and Carbon Experiments	47.050	HARVARD 130783-5069512	AGS-1338832	HARVARD UNIVERSITY	0	14,056
FESD Type I: VOICE: Volcano, Ocean, Ice, and Carbon Experiments	47.050	HARVARD 130783-5069512	AGS-1338832	HARVARD UNIVERSITY	0	-390
					\$0	\$13,666
Collaborative Research: Global Ocean Repeat Hydrography Carbon & Tracer Measurements, 2015-2020	47.050	UWASH UWSC8202	OCE-1433922	UNIVERSITY OF WASHINGTONSEATTLE WASHINGTON	0	10,537
					\$0	\$10,537
Collaborative Research: Global Ocean Repeat Hydrography, Carbon, and Tracer Measurements, 2015-2020	47.050	UCSD 59692302	OCE-1437015	UNIVERSITY OF CALIFORNIA, SAN DIEGO	0	73,497
					\$0	\$73,497
Supporting the Multibeam Sonar Systems of the U.S. Academic Research Fleet: Coordinating Operations to Optimize data Quality	47.050	UNH 15-040	OCE-1524585	UNIVERSITY OF NEW HAMPSHIRE	0	1,126
					\$0	\$1,126
EarthCube Building Blocks: Collaborative Proposal: EarthCube Data Discovery Hub	47.050	UCSD 80863331 (S9001535)	ICER-1639764	UNIVERSITY OF CALIFORNIA, SAN DIEGO	2,203	36,885
					\$2,203	\$36,885
Ocean Sciences for Rural Communities via Informal Science Education: Pop-Up/Drill Down Science	47.050	COL SA16-35	DRL-1515856	Consortium for Ocean Leadership	0	13,880
					\$0	\$13,880
Paleoenvironmental Perspectives on Prehistoric Human Settlement of Arctic Norway: Implications for Climate, Age Sea-level, and Land-use changes during the Iron-Age	47.050	WM 714711-712687	PLR-1504270	WILLIAM & MARY	0	959
					\$0	\$959
Collaborative Research: Modeling Ice-ocean Interaction for the Rapidly Evolving Ice Shelf Cavities of Pine Island and Thwaites Glaciers, Antarctica	47.050	UWASH UWSC9918	OCE-1643285	UNIVERSITY OF WASHINGTONSEATTLE WASHINGTON	0	43,038
					\$0	\$43,038

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						<u>Total Expenditures (Includes Subrecipients)</u>
Coupled Model Biases in the Sea Surface Temperature (SST) Distribution of the Global Tropics and Their Influence on Climate Change Projections	47.050	UMAINE UMS1113	AGS-1650037	UNIVERSITY OF MAINE	0	36,896
					\$0	\$36,896
Alaska Amphibious Community Seismic Experiment	47.050	CU 80572-10908	OCE-1654568	CORNELL UNIVERSITY	0	42,891
Alaska Amphibious Community Seismic Experiment	47.050	CU 80572-10908	OCE-1654568	CORNELL UNIVERSITY	0	26,576
					\$0	\$69,467
Collaborative Research: Management and Implementation of the US GEOTRACES Pacific Meridonal Transect	47.050	SU 61573649-125839	OCE-1657944	STANFORD UNIVERSITY	0	2,855
					\$0	\$2,855
NSFPLR-NERC: Processes, Drivers, Predictions: Modeling the Response of Thwaites Glacier Over the Next Century using Ice/Ocean Coupled Models (PROPHET)	47.050	UCI 2018-3563	OPP-1739031	UNIVERSITY OF CALIFORNIA, IRVINE	0	43,860
					\$0	\$43,860
NSFPLR-NERC: Ground Geophysics Survey of Thwaites Glacier	47.050	PSU 5861-CU-NSF-8934	OPP-1738934	PENNSYLVANIA STATE UNIVERSITY	0	3,264
					\$0	\$3,264
NSFPLR-NERC The Future of the Thwaites Glacier and its Contribution to Sea-Level Rise Science	47.050	UCOL 1556529	OPP-1738913	UNIVERSITY OF COLORADO	0	42,859
					\$0	\$42,859
NSF-NERC: Stability and Instability of Records of External Drivers and Resulting Past Behavior of Thwaites Glacier	47.050	HOUSTN R-18-0061	OPP-1738942	UNIVERSITY OF HOUSTON	0	50,221
					\$0	\$50,221
CNH-L: Volcanism, Hydrology and Social Conflict: Lessons from Hellenistic and Roman-Era Egypt and Mesopotamia	47.050	YU GR104087(CON-80001396)	ICER-1824770	YALE UNIVERSITY	0	104,615
					\$0	\$104,615
LDEO Operation of Continuous GNSS Stations in Russia	47.050	IRIS SU-19-1001-01-LDEO	EAR-1724509	Incorporated Research Institutions for Seismology	0	16,925
LDEO Operation of Continuous GNSS Stations in Russia	47.050	IRIS SU-19-1001-01-LDEO	EAR-1724509	Incorporated Research Institutions for Seismology	0	9,421
					\$0	\$26,346

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						Total Expenditures (Includes Subrecipients)
Collaborative Research EaSM-3: Local and Remote Regional Climate Responses to Regional Forcings from Short-lived Climate Forcers	47.050	UCAR SUBAWD001104	AGS-1419571	UNIVERSITY CORPORATION FOR ATMOSPHERIC RESEARCH	0	200,454
					\$0	\$200,454
Testing the Fidelity of Nd Isotopes as a Paleo-circulation Tracer in the Southeast Indian-Southern Ocean	47.050	CSUB GRA3575	OCE-1811798	CALIFORNIA STATE UNIVERSITY, BAKERSFIELD	0	6,879
					\$0	\$6,879
Operation of the LDEO Oceanbottom Seismometer Institutional Instrument Center: Alaska Recovery Cruise	47.050	WHOI A101434	OCE-1806608	WOODS HOLE OCEANOGRAPHIC INSTITUTION	0	450,587
					\$0	\$450,587
Ocean Observatories Initiative Facility Board (OOIFB) Administrative Support Office	47.050	URI 0007414/091002019	OCE-1833654	UNIVERSITY OF RHODE ISLAND	0	36,306
					\$0	\$36,306
Collaborative Research: Ecology and Evolution of Microbial Interactions in a Changing Ocean	47.050	UALASKA UAF 20-0084	OCE-1937715	UNIVERSITY OF ALASKA FAIRBANKS	0	1,850
					\$0	\$1,850
EEAGER: Exploring a Community Driven Data-model Framework for Testing the Stability of the Greenland Ice Sheet	47.050	SUNYBF R1153150	OPP-1837544	STATE UNIVERSITY OF NEW YORK AT BUFFALO	0	17,127
					\$0	\$17,127
Creating Better Forecasting and Predictive Capabilities for Coastal Flooding Due to Storms	47.050	UCAR SUBAWD001572	AGS-0856145	UNIVERSITY CORPORATION FOR ATMOSPHERIC RESEARCH	0	78,452
					\$0	\$78,452
					\$2,203	\$1,445,527
Computer and Information Science and Engineering						
NRI: Deep Learning UAVS for High-Throughput Agricultural Disease Phenotyping	47.070	CU 74852-10552	IIS-1527232	CORNELL UNIVERSITY	0	2,369
					\$0	\$2,369
NeTS: Large: Collaborative Research: Programmable Inter-Domain Observation and Control	47.070	USC 101503073	CNS-1413978	UNIVERSITY OF SOUTHERN CALIFORNIA	0	101,708
					\$0	\$101,708
PAWR Platform Full Proposal-COSMOS: Cloud-Enhanced Open Software-Defined Mobile-Wireless Testbed for City-Scale Deployment	47.070	RUTGER 0425	CNS-1827923	RUTGERS, THE STATE UNIVERSITY OF NEW JERSEY DEPARTMENT OF	332,133	344,837

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PAWR Platform Full Proposal-COSMOS: Cloud-Enhanced Open Software-Defined Mobile-Wireless Testbed for City-Scale Deployment	47.070	RUTGER 0425	CNS-1827923	RUTGERS, THE STATE UNIVERSITY OF NEW JERDEPARTMENT OF	21,393	292,440
PAWR Platform Full Proposal-COSMOS: Cloud-Enhanced Open Software-Defined Mobile-Wireless Testbed for City-Scale Deployment	47.070	RUTGER 0425	CNS-1827923	RUTGERS, THE STATE UNIVERSITY OF NEW JERDEPARTMENT OF	7,485	117,474
PAWR Platform Full Proposal-COSMOS: Cloud-Enhanced Open Software-Defined Mobile-Wireless Testbed for City-Scale Deployment	47.070	RUTGER 0425	CNS-1827923	RUTGERS, THE STATE UNIVERSITY OF NEW JERDEPARTMENT OF	0	-186
					\$361,011	\$754,565
SPX: Integrating Persistent Memory in the Cloud	47.070	UV GA11375.PO#2236709	CCF-1822965	UNIVERSITY OF VIRGINIA	0	134,360
					\$0	\$134,360
Collaborative Research: Predictive Risk Investigation System (PRISM) for Multi-layer Dynamic Interconnection Analysis	47.070	CU 90549-11302	OAC-1940276	CORNELL UNIVERSITY	0	90,510
					\$0	\$90,510
CPS: Security and Privacy: Medium : Detecting and Controlling Unwanted Data Flows in the Internet of Things	47.070	UCHICA AWD100678 (SUB00000205)	CNS-1953740	UNIVERSITY OF CHICAGO	0	81,404
					\$0	\$81,404
BD Hubs: Collaborative Proposal: WEST: A Big Data Innovation Hub for the Western United States	47.070	UCB 00010214	OAC-1550312	UNIVERSITY OF CALIFORNIA, BERKELEY	0	66,024
					\$0	\$66,024
MolSSI Seed Software Fellows	47.070	VPTISU 479590-19020	ACI-15647580	VIRGINIA POLYTECHNIC INSTITUTE AND STATEUNIVERSITY	0	35,867
					\$0	\$35,867
A Framework for Data Intensive Discovery in Multimessenger Astrophysics	47.070	UWIS 203405434	OAC-1934752	UNIVERSITY OF WISCONSIN	0	5,893
					\$0	\$5,893
					\$361,011	\$1,272,700
Biological Sciences						
LTER5B Understanding Environmental Change in Northwest Puerto Rico	47.074	UPRRP 2016-004	DEB-1546686	UNIVERSITY OF PUERTO RICO	0	12,463
					\$0	\$12,463

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IOS EDGE: Taking Electric Fish Research to the EDGE with GeneManipulation Technologies	47.074	MSU RC107432A	IOS 1644965	MICHIGAN STATE UNIVERSITY	0	2,011
					\$0	\$2,011
Collaborative Research: Replicated evolution of leaf form in a neo-tropical radiation of Viburnum (Adoxaceae)	47.074	YU GR101994(CON-80001132)	DEB-1557059	YALE UNIVERSITY	0	80,419
					\$0	\$80,419
CRCNS Research Project: Solving the Neural Code of Hydra	47.074	UWASH UWSC10704	EF-1822550	UNIVERSITY OF WASHINGTONSEATTLE WASHINGTON	0	197,001
					\$0	\$197,001
LTER: Luquillo LTER VI: Understanding Ecosystem Change in Northeastern Puerto Rico	47.074	UPR 2019-007	DEB-1831952	UNIVERSITY OF PUERTO RICO	0	69,362
					\$0	\$69,362
					\$0	\$361,256

Social, Behavioral, and Economic Sciences

Collaborative Research: INFEWS/T1: Understanding Multi-Scale Resilience Options for Climate-Vulnerable Africa	47.075	JHU 2003204180	BCS-1639214	JOHNS HOPKINS UNIVERSITY	0	36,097
					\$0	\$36,097
Benchmarking Spatial Patterns of Glacier Change	47.075	SUNYBF R1182085	BCS-1853705	STATE UNIVERSITY OF NEW YORK AT BUFFALO	0	56,638
					\$0	\$56,638
Credibility in Persuasion	47.075	UCHICA AWD066246-01-PR (SUB000)	SES-1730168	UNIVERSITY OF CHICAGO	0	51,921
					\$0	\$51,921
A Geospatial Analysis of Glacier Volume Change	47.075	UUTAH 10051082-COL	BCS-1853881	UNIVERSITY OF UTAH	0	6,527
					\$0	\$6,527
					\$0	\$151,183

Education and Human Resources

Urban Climate Education Partnership	47.076	FRANKLIN CU12-1201	DUE-1239782	Franklin Institute	0	534
					\$0	\$534

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Curriculum and Community Enterprise for Restoration of Keystone Species in New York Harbor	47.076	PACEU CD0005703	DRL-1759006	PACE UNIVERSITY	0	2,461
					\$0	\$2,461
Reducing Attrition in STEM Doctoral Education: A Longitudinal Investigation Using Momentary Assessment and Social Psychological Intervention	47.076	PSU 5663-CU-NSF-1214	HRD-1661214	PENNSYLVANIA STATE UNIVERSITY	0	128,205
					\$0	\$128,205
The Reproduction of Racial Segregation in U.S. Schools	47.076	AERA CU19-2174	DRL-1749275	AMERICAN EDUCATIONAL RESEARCH ASSOCIATION	0	25,000
					\$0	\$25,000
					\$0	\$156,200
Polar Programs						
Mapping Antarctic Subglacial Water in Three Dimensions with Novel Electromagnetic Techniques	47.078	UCSD 96644852	OPP-1643917	UNIVERSITY OF CALIFORNIA, SAN DIEGO	0	101,989
					\$0	\$101,989
LTER Palmer, Antarctica (PAL): Land-Shelf-Ocean Connectivity, Ecosystem Resilience and Transformation in a Sea-Ice Influenced Pelagic Ecosystem	47.078	RUTGER 1352	OPP-2023425	RUTGERS, THE STATE UNIVERSITY OF NEW JERSEY DEPARTMENT OF	0	81,685
					\$0	\$81,685
					\$0	\$183,674
Office of International Science and Engineering						
PIRE: Climate Research Education in the Americas using Tree-Ring and Cave Sediment Examples (PIRE-CREATE)	47.079	SUNYA 18-28-79761	OISE-1743738	STATE UNIVERSITY OF NEW YORK AT ALBANY	0	253,305
					\$0	\$343,938
PIRE: Climate Research Education in the Americas using Tree-Ring and Cave Sediment Examples (PIRE-CREATE)	47.079	SUNYA 18-28-79761	OISE-1743738	STATE UNIVERSITY OF NEW YORK AT ALBANY	0	90,633
					\$0	\$343,938
Integrative Activities						
PIRE: Dust Simulated Drawdown of Atmospheric CO2 as a Trigger for Northern Hemisphere Glaciation	47.083	ROCHSTR 416748	OISE-1545859	UNIVERSITY OF ROCHESTER	0	139,265
					\$0	\$139,265
					\$0	\$139,265

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Total Pass-through Programs					\$363,214	\$6,809,197
Total	National Science Foundation				\$8,549,314	\$87,547,591

National Aeronautics & Space Administration

Direct Awards

NASA - GODDARD SPACE FLIGHT CENTER

Socioeconomic Data and Applications Distributed Active Archive Center (DAAC) for the EOS Data and Information Systems (EOSDIS)	43	80GSFC18C0111			0	4,612,398
Socioeconomic Data and Applications Distributed Active Archive Center (DAAC) for the EOS Data and Information Systems (EOSDIS)	43	80GSFC18C0111			0	8,224
					\$0	\$4,620,622

National Aeronautics & Space Administration

NASA Johnson Space Center-Intergovernmental Personnel Agreement (IPA)	43	NASA NNJ19OB06P			0	161,534
NASA Johnson Space Center- Intergovernmental Personnel Agreement (IPA)	43	IPA-AH-19-060			0	60,767
					\$0	\$60,767
					\$0	\$4,842,923

Science

An Examination of Midlatitude Frontal Systems in NASA Models and Observations	43.001	80NSSC17K0195			0	74,981
Biomass burning in the NASA GISS ModelE: uncertainty and interactions between emissions, transport and chemistry	43.001	80NSSC18K0166			0	139,842
Mechanisms of Change in Global Ocean Heat Uptake	43.001	NNX14AK96H			0	2,273
					\$0	\$74,981
					\$0	\$139,842

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$2,273
4-D AEROSOLS: occurrence, type and evolution study using the GISS-E2 model and space/ground based observation	43.001	NNX15AE36G			0	3,517
					\$0	\$3,517
Atmospheric Tomography Experiment (ATom)	43.001	NNX15AG58A			0	69,802
					\$0	\$2,179
Atmospheric Tomography Experiment (ATom)	43.001	NNX15AG58A			0	2,179
					\$0	\$71,981
Synergistic ice cloud observations from eMAS and RSP	43.001	NNX15AD44G			0	-1
					\$0	\$-1
Glacier Changes in High Mountain Asia since 1970 - Combining Declassified Spy Satellite Imagery with Energy and Mass Balance Models	43.001	NNX16AO59H			0	13,000
					\$0	\$13,000
Self-Consistent Models for Primordial Star-Formation and Reionization	43.001	NNX15AB19G			0	34,809
					\$0	\$34,809
Multi-source Imaging of Infrastructure and Urban Growth using Landsat, Sentinel and SRTM	43.001	NNX15AT65G			0	14,192
					\$0	\$14,192
High Resolution Gravity and Measurements for Operation IceBridge Antarctica Campaigns 2016-2019	43.001	NNX16AJ65G			0	221,391
					\$0	\$79,893
High Resolution Gravity and Measurements for Operation IceBridge Antarctica Campaigns 2016-2019	43.001	NNX16AJ65G			0	79,893
					\$0	\$301,284
Desertification or Re-greening:? Adaptation lessons learned in coping with late 20th century drought in West Africa	43.001	NNX16AN29G			0	61,035
					\$0	\$1,301
Desertification or Re-greening:? Adaptation lessons learned in coping with late 20th century drought in West Africa	43.001	NNX16AN29G			0	1,301
					\$0	\$62,336

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Rocky Planet Habitability: Insights from Solar System Climate Dynamics Through Time	43.001	NNX15AK95G			0	87,084
					\$0	\$87,084
Accretion Disk Outflows from Compact Object Mergers	43.001	NNX16AB30G			0	5,988
					\$0	\$5,988
Measuring and Modeling the Response of the Solid Earth to Changes in the Cryosphere and the Earthquake Cycle in Southern Alaska	43.001	NNX16AK86G			0	45,990
					\$0	\$45,990
The GAPS Experiment: A Search for Dark Matter Using Low Energy Antiprotons and Antideuterons	43.001	NNX17AB44G			0	549,257
The GAPS Experiment: A Search for Dark Matter Using Low Energy Antiprotons and Antideuterons	43.001	NNX17AB44G			0	83,410
					\$0	\$632,667
The Neutron Star Interior Composition Explorer (NICER)	43.001	NNX17AC28G			0	34,128
					\$0	\$34,128
Fireball-2: Trailblazing Observations of the Space UV Circumgalactic Medium	43.001	NNX17AC54G			0	130,975
Fireball-2: Trailblazing Observations of the Space UV Circumgalactic Medium	43.001	NNX17AC54G			0	76,508
					\$0	\$207,483
Tropical Deciduous Forests of South Asia: Monitoring Degradation and Assessing Impacts of Urbanization	43.001	NNX17AI24G			0	12,597
					\$0	\$12,597
Activity of Strongly Magnetized Neutron Stars	43.001	NNX17AK37G			0	156,998
					\$0	\$156,998
Dynamics and Rates of Tidal Disruption Events	43.001	NNX17AK43G			0	15,893
					\$0	\$15,893

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						<u>Total Expenditures (Includes Subrecipients)</u>
Uncovering the population of compact supermassive black hole binaries	43.001	NNX17AL82G			0	87,788
					\$0	\$87,788
Animals on the move: Remotely based determination of key drivers influencing movements and habitat selection of highly mobile fauna throughout the ABoVE study domain	43.001	NNX15AV92A			12,313	83,843
					\$12,313	\$83,843
Subpolar N. Atlantic air-sea fluxes associated with mid-latitude cyclones and their effect on AMOC	43.001	NNX16AC93G			0	82,038
Subpolar N. Atlantic air-sea fluxes associated with mid-latitude cyclones and their effect on AMOC	43.001	NNX16AC93G			31,461	31,461
					\$31,461	\$113,499
Analysis of GPM observations to improve our understanding of midlatitude precipitation: A process-oriented study of extratropical cyclones	43.001	NNX16AD82G			15,275	32,648
					\$15,275	\$32,648
Applying NASA Satellite Precipitation Products to Global Fire Prediction: Assimilating GPCP, TRMM and GPM into the Global Fire Weather Database	43.001	NNX16AE37G			0	49,985
					\$0	\$49,985
Source Attribution using Satellite Products and Models to Inform Air Quality Planning and Health Accountability	43.001	NNX16AQ20G			7,794	108,554
Source Attribution using Satellite Products and Models to Inform Air Quality Planning and Health Accountability	43.001	NNX16AQ20G			15,784	56,760
					\$23,578	\$165,314
Maintenance and Refinement of the NASA SWE Product through AMSR-E Historical Observations	43.001	NNX16AO75G			0	39,581
					\$0	\$39,581
Advancing Total Tomography for Study of Earth s Interior	43.001	NNX17AD97G			0	107,193
					\$0	\$107,193
Variability and Trends in Tropospheric Oxidation: Interactions with Regional Air Quality, Global Atmospheric Composition, and Climate	43.001	NNX17AG40G			72,013	137,214
					\$72,013	\$137,214

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Combining Altimetry with Electromagnetic and Regional-climate Models for Improved Estimation of Greenland Ice Sheet Mass Balance	43.001	NNX17AH04G			76,184	165,491
					\$76,184	\$165,491
Start up Funds for Early Career Researcher	43.001	NNX17AH08G			0	31,477
					\$0	\$31,477
Decision and Information System for the Coastal Waters of Oman (DISCO) - an Integrative tool for Managing Coastal Resources under Changing Climate	43.001	NNX17AG66G			137,920	205,754
					\$137,920	\$205,754
Tropical Cyclones in the GISS model at High Resolution	43.001	80NSSC17K0196			0	164,809
					\$0	\$164,809
Quantifying Process-based Variability and Uncertainties in Ocean, Land, and Atmosphere Forcing of Extra-tropical Droughts and Heat Waves in GISS Model E and Observations	43.001	80NSSC17K0265			0	46,320
Quantifying Process-based Variability and Uncertainties in Ocean, Land, and Atmosphere Forcing of Extra-tropical Droughts and Heat Waves in GISS Model E and Observations	43.001	80NSSC17K0265			0	36,069
					\$0	\$82,389
Attributing the Causes of a Century of Wetting in the Eastern United States Using Observations, Models, and Tree Rings	43.001	80NSSC17K0402			0	42,909
					\$0	\$42,909
Workshop: Bridging Multi-platform Observations and Multi-scale Modeling to Constrain Ozone Dry Deposition Impacts on Atmospheric Composition, Vegetation, and Climate	43.001	80NSSC17K0193			0	6,362
					\$0	\$6,362
Response of the Indian Ocean to Indonesian Throughflow Variability	43.001	80NSSC17K0438			0	45,938
					\$0	\$45,938
Interdisciplinary Research on Earth System Modeling and the Impacts of Climate Change	43.001	80NSSC17M0057			0	1,161,105
Interdisciplinary Research on Earth System Modeling and the Impacts of Climate Change	43.001	80NSSC17M0057			0	636,220
Interdisciplinary Research on Earth System Modeling and the Impacts of Climate Change	43.001	80NSSC17M0057			0	208,417

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Interdisciplinary Research on Earth System Modeling and the Impacts of Climate Change	43.001	80NSSC17M0057			0	158,076
Interdisciplinary Research on Earth System Modeling and the Impacts of Climate Change	43.001	80NSSC17M0057			0	115,255
Interdisciplinary Research on Earth System Modeling and the Impacts of Climate Change	43.001	80NSSC17M0057			0	114,231
Interdisciplinary Research on Earth System Modeling and the Impacts of Climate Change	43.001	80NSSC17M0057			0	80,257
Interdisciplinary Research on Earth System Modeling and the Impacts of Climate Change	43.001	80NSSC17M0057			0	70,000
Interdisciplinary Research on Earth System Modeling and the Impacts of Climate Change	43.001	80NSSC17M0057			0	68,418
Interdisciplinary Research on Earth System Modeling and the Impacts of Climate Change	43.001	80NSSC17M0057			0	61,160
Interdisciplinary Research on Earth System Modeling and the Impacts of Climate Change	43.001	80NSSC17M0057			0	32,251
Interdisciplinary Research on Earth System Modeling and the Impacts of Climate Change	43.001	80NSSC17M0057			0	28,125
Interdisciplinary Research on Earth System Modeling and the Impacts of Climate Change	43.001	80NSSC17M0057			0	20,354
Interdisciplinary Research on Earth System Modeling and the Impacts of Climate Change	43.001	80NSSC17M0057			0	10,233
Interdisciplinary Research on Earth System Modeling and the Impacts of Climate Change	43.001	80NSSC17M0057			0	212
					\$0	\$2,764,314
Research Scanning Polarimeter (RSP) Team Support for CAMP2Ex	43.001	80NSSC18K0150			0	250,000
					\$0	\$250,000
Understanding and Quantifying the Links between Ice Sheet and Glacial Albedo, Surface Mass Balance and Atmospheric Fluxes through Improved NASA GISS-E2 Simulations	43.001	80NSSC17K0351			0	3,442
					\$0	\$3,442

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Population and Infrastructure on Our Human Planet: Supporting Sustainable Development through Improved Spatial Data and Models for Human Settlements, Infrastructure and Population Distribution Based o	43.001	80NSSC18K0328			52,781	145,887
Population and Infrastructure on Our Human Planet: Supporting Sustainable Development through Improved Spatial Data and Models for Human Settlements, Infrastructure and Population Distribution Based o	43.001	80NSSC18K0328			0	41,086
					\$52,781	\$186,973
Towards A Global Flood & Flash Flood Early Warning Early Action System Driven by NASA Earth Observations and Hydrologic Models	43.001	80NSSC18K0342			66,193	83,791
					\$66,193	\$83,791
MoonDB Phase 2: Restoration of Lunar Geochronological and Lunar Meteorite Data	43.001	80NSSC18K0514			103,350	204,362
					\$103,350	\$204,362
A Framework for the Validation of Global Nighttime Environmental Products	43.001	80NSSC18K0795			0	13,013
					\$0	\$13,013
16-NUSTAR16-0020, The Transformative Young Pulsar J1846-0258 in SNR Kes 75	43.001	80NSSC17K0636			0	-3
					\$0	\$-3
Unsolicited, Possible Magnetic Field Break-out in the Neutron Star CCO 1E 1207.4-5209	43.001	80NSSC18K0452			0	63,195
					\$0	\$63,195
The Impact of Solar Wind Ions on the Surface and Exosphere of Mercury	43.001	80NSSC18K0521			0	180,196
The Impact of Solar Wind Ions on the Surface and Exosphere of Mercury	43.001	80NSSC18K0521			18,572	98,035
The Impact of Solar Wind Ions on the Surface and Exosphere of Mercury	43.001	80NSSC18K0521			0	27,709
					\$18,572	\$305,940
Why We Should Keep Poking the Beehive: Simultaneous K2 and Spectroscopic Observations of Praesepe	43.001	80NSSC18K0448			0	14,963
					\$0	\$14,963
Connecting Earth Observations to Decision Makers for Preparedness ActionS	43.001	80NSSC18K1693			0	13,813

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$13,813
NuSTAR Observation of Polars - Probing the X-ray Point Source Population in the Galactic Ridge	43.001	80NSSC18K1647			0	1,588
					\$0	\$1,588
Science and Calibration Support for the Reflection Grating Spectrometer on the XMM-Newton Observatory	43.001	80NSSC18K1438			0	1,934
					\$0	\$1,934
Particle Acceleration at Radiative Shocks in Gamma-Ray Novae	43.001	80NSSC18K1708			0	7,730
					\$0	\$7,730
Testing the Origin of Periodic Variability for the Binary Candidate Quasar PG1302-102	43.001	80NSSC19K0149			0	23,422
					\$0	\$23,422
A Decade On, Which Bees are Still Buzzing? Monitoring Starspot Evolution in Praesepe from PTF to K2	43.001	80NSSC19K0114			0	16,123
					\$0	\$16,123
Birth and Infancy of a Fast Radio Burst	43.001	80NSSC18K1104			0	41,547
					\$0	\$41,547
Searching for Infant Exoplanets in Young Moving Groups	43.001	80NSSC19K0636			0	48,779
					\$0	\$48,779
No Longer on the Margins: Completing the Rotational Census of Low-Mass Hyads with TESS	43.001	80NSSC19K0383			0	24,245
					\$0	\$24,245
The First Glitch in a CCO Pulsar	43.001	80NSSC19K0866			0	56,173
					\$0	\$56,173
Development and Operation of the Astromaterials Data System	43.001	80NSSC19K1102			0	572,490
					\$0	\$572,490

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						<u>Total Expenditures (Includes Subrecipients)</u>
NICER Timing of the Transitional Pulsar PSR JI023+0038: A Unique Testbed for Low-Level Accretion Physics	43.001	80NSSC19K1449			0	22,708
					\$0	\$22,708
From Intergalactic Filaments to Quantum Lattices: Advancement of UV Technologies to Study Cosmic Structure Student: Barbara Cruvinel Santiago	43.001	80NSSC19K1419			0	42,159
					\$0	\$42,159
An ATCA Survey for Transitional Millisecond Pulsars in Unassociated Fermi LAT Sources	43.001	80NSSC19K1707			0	5,475
					\$0	\$5,475
Enhancements to the Global Wildfire Fire Information System: Fire Danger Rating and Applications in Indonesia	43.001	80NSSC18K0410			0	25,882
					\$0	\$25,882
80028, Confirming 3FGL J1544.6-1125 as an Accreting Millisecond Pulsar	43.001	80NSSC18K0378			0	54,715
					\$0	\$54,715
Remote Sensing Estimate of Evapotranspiration Partitioning to Transpiration	43.001	80NSSC18K0998			0	87,467
					\$0	\$87,467
Realizing the Full Potential of Weak Lensing Cosmology	43.001	80NSSC18K1093			0	111,832
					\$0	\$111,832
A Multi-Satellite Observational Analysis and CMIP6 Climate Model Evaluation of the Evolution of Clouds, Moisture and Precipitation on Sub-Daily to Intraseasonal Timescales	43.001	80NSSC18K1030			0	47,187
					\$0	\$47,187
Using Multi-Satellite Observations to Analyze Ground-Level Ozone Sensitivity to NOx and VOC Precursor Emissions, from Urban to Global Scales	43.001	80NSSC18K1399			0	44,748
					\$0	\$44,748
Variability in the Tropical Upper Troposphere/Lower Stratosphere from Sub-Seasonal to Inter-Annual Timescales - Student: Zane Martin	43.001	80NSSC18K1347			0	45,326
					\$0	\$45,326
Earth System Modeling, Comparative Planetary Climatologies and Remote Sensing	43.001	80NSSC18M0133			0	406,827

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Earth System Modeling, Comparative Planetary Climatologies and Remote Sensing	43.001	80NSSC18M0133			0	403,936
Earth System Modeling, Comparative Planetary Climatologies and Remote Sensing	43.001	80NSSC18M0133			0	137,215
Earth System Modeling, Comparative Planetary Climatologies and Remote Sensing	43.001	80NSSC18M0133			0	137,153
Earth System Modeling, Comparative Planetary Climatologies and Remote Sensing	43.001	80NSSC18M0133			0	126,429
Earth System Modeling, Comparative Planetary Climatologies and Remote Sensing	43.001	80NSSC18M0133			0	57,717
Earth System Modeling, Comparative Planetary Climatologies and Remote Sensing	43.001	80NSSC18M0133			0	55,729
Earth System Modeling, Comparative Planetary Climatologies and Remote Sensing	43.001	80NSSC18M0133			0	27,512
					\$0	\$1,352,518
Calibration of the DSCOVER EPIC Visible and NIR Channels Using Multiple Satellite Data	43.001	80NSSC19K0761			0	142,490
					\$0	\$142,490
A Comprehensive Study of Fe L-Shell Absorption in the Interstellar Medium	43.001	80NSSC19K0571			0	116,488
					\$0	\$116,488
Continuity of the AMSR Earth Science Data Records	43.001	80NSSC19K0663			0	5,211
					\$0	\$5,211
Quantifying Socioecological Consequences of Changing Snow and Icescapes: A Data-model Fusion Approach	43.001	80NSSC19M0109			55,882	71,502
					\$55,882	\$71,502
High Wavenumber Ocean Gravity-Capillary Wave Measurements Using Polarimetry for Doppler Scatterometer Measurement Physics	43.001	80NSSC19K1397			0	128,747
					\$0	\$128,747
Hierarchical Scaling of Carbon Fluxes from Terrestrial-aquatic Interfaces in the Arctic (Student: Sarah Ludwig)	43.001	80NSSC19K1301			0	40,000

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$40,000
Integration of Satellite and In-Situ Observations to Investigate the Evolution of High Salinity Shelf Water in the Terra Nova Bay polynya, Antarctica	43.001	80NSSC19K1348			0	40,774
					\$0	\$40,774
Modeling Fecal Indicator Bacteria Persistence in Turbid Rivers Using Satellite Data	43.001	80NSSC19K1370			0	42,084
					\$0	\$42,084
Bio-Optical Monitoring and Evaluation System (BIOMES) for Improving Satellite Estimates of Ocean Net Primary Production for Carbon Cycling and Climate Change Studies	43.001	80NSSC20K0014			0	112,437
					\$0	\$112,437
Laboratory Study of Frictional Stability and Tidal Triggering in Ice Mixtures	43.001	80NSSC20K0459			0	4,442
					\$0	\$4,442
Laboratory Studies of Dissociation Recombination with Cold Molecular Ions for Diffuse Cloud Studies by NASA Astrophysics Missions	43.001	80NSSC19K0696			0	37,433
					\$0	\$37,433
A CloudSat-CALIPSO examination of the occluded quadrant of mid-latitude cyclones: sensitivity of clouds and precipitation to large scale environments	43.001	80NSSC20K0085			0	64,409
					\$0	\$64,409
Is the Brightest Gamma-Ray Source Above 100 TEV Powered by Bow Shock Pulsar Wind Nebula or Hadronic Interaction?	43.001	80NSSC20K0042			0	50,321
					\$0	\$50,321
Observational Constraints on the Origin and Acceleration of Solar Wind from Coronal Holes	43.001	80NSSC20K0183			0	453
					\$0	\$453
Neutron Star Interior Composition Explorer Legacy Science	43.001	80NSSC20K0275			0	9,173
					\$0	\$9,173
Searching for X-Ray and UV/O Counterparts of Gravitational Wave and High-Energy Neutrino Coincident Signals with Swift	43.001	80NSSC20K0471			0	12,300
					\$0	\$12,300

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Science and Calibration Support for the Reflection Grating Spectrometer on the XMN-Newton Observatory	43.001	80NSSC20K0765			0	16,952
					\$0	\$16,952
Observing the Next X-Ray Binary - Radio Millisecond Pulsar Transition with NICER	43.001	80NSSC19K1450			0	6,745
					\$0	\$6,745
					\$665,522	\$10,919,048
Exploration						
Physical and Biological Modulators of Space Radiation Carcinogenesis: Mechanistically-Based Model D	43.003	NNX16AR81A			0	184,922
					\$0	\$184,922
A Determination of Bioactive Proteins Secreted by the Human Vasculature in Response to Low Dose Space Radiation	43.003	80NSSC18K1492			0	65,109
					\$0	\$95,709
A Determination of Bioactive Proteins Secreted by the Human Vasculature in Response to Low Dose Space Radiation	43.003	80NSSC18K1492			0	30,600
					\$0	\$280,631
Space Operations						
Circulating miRNAs Provides Systemic Host Response to Microgravity: Utilizing GeneLab datasets to identify molecular targets for spaceflight studies	43.007	80NSSC19K1658			0	4,957
					\$0	\$4,957
					\$0	\$4,957
Space Technology						
Ultra-Low Power CMOS-comparable Integrated Photonic Platform for Terabit-Scale Communications	43.012	NNX16AD16G			0	52,178
					\$0	\$7,842
Ultra-Low Power CMOS-comparable Integrated Photonic Platform for Terabit-Scale Communications	43.012	NNX16AD16G			0	7,842
					\$0	\$60,020
Versatile Manipulation for Assistive Free-Flyers	43.012	NNX16AD13G			0	18,184

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					Subrecipients	Total Expenditures (Includes Subrecipients)
					\$0	\$18,184
Dual Desalination/Concentrator Microfluidic Device for Amino Acid Sample Preparation for Search-For-Life Missions	43.012	80NSSC19K1180			0	59,000
					\$0	\$59,000
					\$0	\$137,204
Total Direct Award Programs					\$665,522	\$16,184,763

Pass-through Awards

National Aeronautics & Space Administration

Columbia University Participation in The Nuclear Spectroscopic Telescope Array (NuSTAR): Bringing the High Energy Universe Into Focus (Bridge Phase)	43	CALTECH S376760	NNG08FD60C	CALIFORNIA INSTITUTE OF TECHNOLOGY	0	191,563
Columbia University Participation in The Nuclear Spectroscopic Telescope Array (NuSTAR): Bringing the High Energy Universe Into Focus (Bridge Phase)	43	CALTECH S376760	NNG08FD60C	CALIFORNIA INSTITUTE OF TECHNOLOGY	0	35,526
					\$0	\$227,089
Operation, Densification, and Upgrade of Continuous GNSS Stations in Russia in the Framework of MOU between LDEO & JPL	43	JPLCIT 1452786	NAS7-03001	JET PROPULSION LAB, CALIFORNIA INSTITUTE OF TECHNOLOGY	84,612	95,220
Operation, Densification, and Upgrade of Continuous GNSS Stations in Russia in the Framework of MOU between LDEO & JPL	43	JPLCIT 1452786	NAS7-03001	JET PROPULSION LAB, CALIFORNIA INSTITUTE OF TECHNOLOGY	0	9,996
					\$84,612	\$105,216
Understanding New Structures Ejected from Recurrent Nova T Pyx	43	HST-GO-13796.003-A	NAS5-26555	Space Telescope Science Institute	0	43,805
					\$0	\$43,805
Einstein Postdoctoral Fellowship for Dr. Daniel Siegel: The Transient Electromagnetic Sky from Bina	43	SAO PF6-170159	NAS8-03060	Smithsonian Astrophysical Observatory	0	-2,790
					\$0	\$-2,790
WFIRST Infrared Nearby Galaxy Survey	43	UWASH UWSC9083	NNG16PJ28C	UNIVERSITY OF WASHINGTON SEATTLE WASHINGTON	0	36,659
					\$0	\$36,659
Coordinated X-Ray and Radio Observations of the Repeating Fast Radio Burst FRB 121102	43	SAO GO7-18059A	NAS8-03060	Smithsonian Astrophysical Observatory	0	22,509
					\$0	\$22,509

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Understanding the Angular Momentum Content of Galaxies in Concert with Their Circumgalactic Medium	43	HST-AR-14565.005-A	NAS5-26555	Space Telescope Science Institute	0	16,127
					\$0	\$16,127
Ultraviolet Spectroscopy of the Black Hole Transient MAXI J1820+070	43	HST-GO-15454.002-A	NAS5-26555	Space Telescope Science Institute	0	11,393
					\$0	\$11,393
Einstein Postdoctoral Fellowship for Dr. Jennifer Barnes:	43	SAO PF7-180162	NAS8-03060	Smithsonian Astrophysical Observatory	0	89,954
Einstein Postdoctoral Fellowship for Dr. Jennifer Barnes:	43	SAO PF7-180162	NAS8-03060	Smithsonian Astrophysical Observatory	0	12,269
					\$0	\$102,223
The origin of circumgalactic medium: tracing the baryon cycle via synthetic absorption line mapping	43	HST-HF2-51388.001-A	NAS5-26555	Space Telescope Science Institute	0	14,743
The origin of circumgalactic medium: tracing the baryon cycle via synthetic absorption line mapping	43	HST-HF2-51388.001-A	NAS5-26555	Space Telescope Science Institute	0	12,545
					\$0	\$27,288
Sensitive Long-Term Timing of CCO Pulsars	43	SAO GO7-18063X	NAS8-03060	Smithsonian Astrophysical Observatory	0	59,389
					\$0	\$59,389
Non-Thermal X-ray Emission from Tidal Disruption Flares	43	SAO GO7-18108A	NAS8-03060	Smithsonian Astrophysical Observatory	0	10,283
					\$0	\$10,283
Characterising The Global Accretion Inflow Variability for PSR J1023+0038	43	HST-GO-14934.002-A	NAS5-26555	Space Telescope Science Institute	0	26,240
					\$0	\$26,240
Validating the Presence of a Moon Orbiting Kepler-1625b	43	HST-GO-15149.002-A	NAS5-26555	Space Telescope Science Institute	0	15,412
					\$0	\$15,412
The Role of Shocks in the Appearance and Aftermath of Stellar Mergers and Type IIa Supernovae	43	HST-AR-15041.001-A	NAS5-26555	Space Telescope Science Institute	0	28,681
					\$0	\$28,681

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						<u>Total Expenditures (Includes Subrecipients)</u>
Clusters with K2: Systematics from membership and binarity	43	JPLCIT 1592704	NASA CU18-0487	JET PROPULSION LAB, CALIFORNIA INSTITUTE OF TECHNOLOGY	0	697
					\$0	\$697
Where Have All the Central Compact Objects Gone?	43	SAO G08-19046X	NAS8-03060	Smithsonian Astrophysical Observatory	0	34,878
					\$0	\$34,878
Understanding Galaxy Shapes Across Cosmic Time Using The IllustrisTNG Simulation	43	HST-AR-15022.002-A	NAS5-26555	Space Telescope Science Institute	0	25,313
					\$0	\$25,313
Gamma-ray Quiet Novae: What Sets the Gamma-Ray Luminosity of Novae?	43	HST-GO-15438.001-A	NAS5-26555	Space Telescope Science Institute	0	-2,219
					\$0	-\$2,219
Mapping Gas Flows from the Disk to the Circumgalactic Medium	43	HST-GO-15156.002-A	NAS5-26555	Space Telescope Science Institute	0	17,382
					\$0	\$17,382
A UV Spectroscopic Snapshot Survey of Low-mass Stars in the Hyades	43	HST-GO-15091.001-A	NAS5-26555	Space Telescope Science Institute	0	121,801
					\$0	\$121,801
QuaStar: The First Unobscured View of the Milky Way's Circumgalactic Medium	43	HST-GO-15656.002-A	NAS5-26555	Space Telescope Science Institute	0	20,007
					\$0	\$20,007
A UV Spectroscopic Survey of Periodic M Dwarfs in the Hyades	43	HST-GO-15090.001-A	NAS5-26555	Space Telescope Science Institute	0	61,972
					\$0	\$61,972
CYGNSS Estimates of Surface Heat Fluxes in Low-Latitude Extratropical Cyclones	43	JPLCIT 1616842	NASA CU18-2642	JET PROPULSION LAB, CALIFORNIA INSTITUTE OF TECHNOLOGY	0	15,906
					\$0	\$15,906
A Peculiar Galactic Binary?	43	SAO G00-21034X	NAS8-03060	Smithsonian Astrophysical Observatory	0	5,884
					\$0	\$5,884
					\$84,612	\$1,031,145

Science

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						<u>Total Expenditures (Includes Subrecipients)</u>
Computational Technologies: An Assessment of Hybrid Quantum Annealing Through Mission Related Approaches for Inferring and Assimilating Satellite Surface Flux Data into Global Land Surface Models	43.001	UMARY 0000020109	80NSSC17K0285	UNIVERSITY OF MARYLAND	0	80,116
					\$0	\$80,116
Collaborative Research: Earth Venture Suborbital -2 Oceans Melting Greenland (OMG)	43.001	JPL 1525063	NNN12AA01C	JET PROPULSION LAB, CALIFORNIA INSTITUTE OF TECHNOLOGY	0	166,959
					\$0	\$166,959
Fluxes of Heat, Carbon, and Oxygen at SWOT Scales	43.001	NYU F7831-01	NNX16AJ35G	NEW YORK UNIVERSITY	0	49,806
					\$0	\$49,806
LiDAR, Passive Spectral, and Ecophysiological Approaches to link Forest Tundra Ecotone Structure and Function	43.001	UOFIA NS0926-SB1-651954	NNX15AT86A	UNIVERSITY OF IDAHO	0	123,051
					\$0	\$123,051
Joint Radar and Model Investigations of Greenland Basal Water Conditions	43.001	SU 61372951-124103	NNX16AJ95G	STANFORD UNIVERSITY	0	12,761
Joint Radar and Model Investigations of Greenland Basal Water Conditions	43.001	SU 61372951-124103	NNX16AJ95G	STANFORD UNIVERSITY	0	2,872
					\$0	\$15,633
Subcontract: A Peek at the Past of Greenland Ice Sheet using Radar Layers and Modeling	43.001	JPLCIT 1569119	NNH15ZDA001N-CRYO	JET PROPULSION LAB, CALIFORNIA INSTITUTE OF TECHNOLOGY	0	19,359
					\$0	\$19,359
Improving the Accuracy of Geodetic System Ties at Core Sites through Estimation on Strategies that Exploit Atmospheric Structure	43.001	MIT 24825	NNX17AG98G	MASSACHUSETTS INSTITUTE OF TECHNOLOGY	0	132
					\$0	\$132
Developing a Mechanistic Understanding of Variability in the Atmospheric CO2 Growth Rate owing to Interannual Climate Oscillations	43.001	UMICHG 3004565769	NNX17AK19G	UNIVERSITY OF MICHIGAN	0	63,937
					\$0	\$63,937
Understanding and Forecasting Changes in High Mountain Asia Snow Hydrology via a Novel Bayesian Reanalysis and Modeling Approach	43.001	UCLA 0135 G VA160	NNX16AQ63G	UNIVERSITY OF CALIFORNIA, LOS ANGELES	0	8,074
					\$0	\$8,074
Ecological and Sociodemographic Determinants and Impacts of Urbanization and Restoration on Intertwined Urban-Wetland-Estuarine Systems	43.001	CCONY CM00001790-01	80NSSC17K0258	City College of New York	0	41,440

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						<u>Total Expenditures (Includes Subrecipients)</u>
Ecological and Sociodemographic Determinants and Impacts of Urbanization and Restoration on Intertwined Urban-Wetland-Estuarine Systems	43.001	CCONY CM00001790-01	80NSSC17K0258	City College of New York	0	3,900
					\$0	\$45,340
SLICE: Spectral Signs of Life in Ice	43.001	MONTANA G104-19-W7250	80NSSC18K0814	MONTANA STATE UNIVERSITY	0	13,619
					\$0	\$13,619
A Multi-Frequency Campaign to Probe Uranus Dynamics and Deep Atmospheric Structure	43.001	UCB 00009673	NNX16AK14G	UNIVERSITY OF CALIFORNIA, BERKELEY	0	8,347
					\$0	\$8,347
Blazar emission modeling: going beyond the spherical cows	43.001	PURDUNIV 12000194-004	NNX17AG21G	PURDUE UNIVERSITY	0	173,371
					\$0	\$173,371
TREX: Toolbox for Research and Exploration	43.001	PSINST 1523 Columbia Universit	80ARC017M00005	PLANETARY SCIENCE INSTITUTE	0	35,344
					\$0	\$35,344
Participation in the Effects of Density Fluctuations on Alfvén Wave Turbulence in a Coronal Hole Program	43.001	SAO SV9-89006	80NSSC18K1207	Smithsonian Astrophysical Observatory	0	44,954
					\$0	\$44,954
Monitoring Pulsars to Enable Gravitational Wave Searches	43.001	HC 01	80NSSC19K1444	HAVERFORD COLLEGE	0	15,368
					\$0	\$15,368
Europa STI - Exploring Communication Techniques and Strategies for Sending Signals Through the ICE (STI) for an Ice-Ocean Probe	43.001	JH 155891	80NSSC19K0613	JOHNS HOPKINS UNIVERSITY	0	162,872
					\$0	\$162,872
Ag Out An Enhanced IMERG-based Agricultural Outlook System to Support Food Security and Agriculture in the Developing World	43.001	UCSB KK1981	80NSSC19K0686	UNIVERSITY OF CALIFORNIA, SANTA BARBARA	0	11,330
					\$0	\$11,330
Open Critical Infrastructure Exposure for Disaster Forecasting, Mitigation, and Response	43.001	IMAGE 19-94-03:03	80NSSC19K1112	ImageCat, Inc.	0	17,335
					\$0	\$17,335
Connecting West Africa users to cutting edge resources: Integrating satellite observations and sub-seasonal climate forecasts to enhance agricultural and pastoral water-management decision-making usi	43.001	UCSB KK2038	80NSSC20K0163	UNIVERSITY OF CALIFORNIA, SANTA BARBARA	0	12,328

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					Subrecipients	Total Expenditures (Includes Subrecipients)
					\$0	\$12,328
Laboratory Analysis of Returned Samples	43.001	UCSD 126684487	80NSSC19K1210	UNIVERSITY OF CALIFORNIA, SAN DIEGO	0	47,154
					\$0	\$47,154
					\$0	\$1,114,429
Exploration						
Space radiation and gastrointestinal cancer: A comprehensive strategy for risk assessment and model development	43.003	GU 410967 GR410946-CU-Project	NNX15AI21G	GEORGETOWN UNIVERSITY	0	71,667
					\$0	\$71,667
Organs on a Chip Platform for Assessing Cosmic Radiation Damage/FIP0014	43.003	BCMH 7000000893	NNX16A069A	BAYLOR COLLEGE OF MEDICINE-- HOUSTON	0	255,558
Organs on a Chip Platform for Assessing Cosmic Radiation Damage/FIP0014	43.003	BCMH 7000000893	NNX16A069A	BAYLOR COLLEGE OF MEDICINE-- HOUSTON	0	118,234
Organs on a Chip Platform for Assessing Cosmic Radiation Damage/FIP0014	43.003	BCMH 7000000893	NNX16A069A	BAYLOR COLLEGE OF MEDICINE-- HOUSTON	0	17,835
					\$0	\$391,627
miRNA Signature Detection and Countermeasures Against HZE Radiation Exposure for Tissue Degeneration	43.003	BCMH 7000000822	NNX16A069A	BAYLOR COLLEGE OF MEDICINE-- HOUSTON	0	86,568
					\$0	\$86,568
					\$0	\$549,862
Office of Stem Engagement (OSTEM)						
NASA / NEW YORK SPACE GRANT CONSORTIUM: NATIONAL SPACE GRANT COLLEGE AND FELLOWSHIP PROGRAM 2015-18	43.008	CU 76156-10486	NNX15AK07H	CORNELL UNIVERSITY	0	34,881
					\$0	\$34,881
					\$0	\$34,881
Total Pass-through Programs					\$84,612	\$2,730,317
Total National Aeronautics & Space Administration					\$750,134	\$18,915,080

Department of Energy

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R&D Cluster						
Direct Awards						
Brookhaven National Laboratory						
MOU/BNL for Oleg Gang	81	BNL CU16-2135			0	231,558
MOU/BNL for Oleg Gang	81	BNL CU16-2135			0	88,354
					\$0	\$319,912
Graduate Student Support for Xiong Yan DNA nanostructures to program orientations of organic and inorganic components for tunable synthetic systems	81	BNL 362609			0	74,423
					\$0	\$74,423
					\$0	\$394,335
Office of Science Financial Assistance Program						
STELLARATORY THEORY DESIGN	81.049	DE-FG02-95ER54333			0	128,322
STELLARATORY THEORY DESIGN	81.049	DE-FG02-95ER54333			0	634
					\$0	\$128,956
Investigating the Emergence of Collective Phenomena in Hadronic Collisions	81.049	DE-FG02-86ER40281			0	489,675
Investigating the Emergence of Collective Phenomena in Hadronic Collisions	81.049	DE-FG02-86ER40281			0	229,638
Investigating the Emergence of Collective Phenomena in Hadronic Collisions	81.049	DE-FG02-86ER40281			0	15,724
					\$0	\$735,037
HIGH BETA TOKAMAK RESEARCH	81.049	DE-FG02-86ER53222			0	860,220
HIGH BETA TOKAMAK RESEARCH	81.049	DE-FG02-86ER53222			0	136,158
HIGH BETA TOKAMAK RESEARCH	81.049	DE-FG02-86ER53222			0	90,853

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
HIGH BETA TOKAMAK RESEARCH	81.049	DE-FG02-86ER53222			0	71,894
					\$0	\$1,159,125
Non-Axisymmetric Magnetic Fields in Tokamaks	81.049	DE-FG02-03ER54696			0	4,770
					\$0	\$4,770
Nonlinear Dynamics of Strong Interchange Instabilities in a Rotating Dipole-Confined Plasma	81.049	DE-FG02-00ER54585			0	182,399
					\$0	\$182,399
MAGNETOHYDRODYNAMICS MODE CONTROL RESEARCH IN DIII-D	81.049	DE-FG02-04ER54761			0	536,957
					\$0	\$536,957
Structure-property relationship in metal carbides and bimetallic alloys	81.049	DE-SC0009476			0	173,043
Structure-property relationship in metal carbides and bimetallic alloys	81.049	DE-SC0009476			0	-5,343
					\$0	\$167,700
Dedicated Beamline Facilities for Catalytic Research: Synchrotron Catalysis Consortium (SCC)	81.049	DE-SC0012653			44,458	382,985
					\$44,458	\$382,985
Fundamentals of Scalable NP Assembly in Engineering Polymers	81.049	DE-SC0018111			0	307,751
					\$0	\$307,751
Transient Superconductivity at Nano-and Meso-Scales	81.049	DE-SC0018218			336,692	336,692
Transient Superconductivity at Nano-and Meso-Scales	81.049	DE-SC0018218			0	255,793
Transient Superconductivity at Nano-and Meso-Scales	81.049	DE-SC0018218			0	226,842
Transient Superconductivity at Nano-and Meso-Scales	81.049	DE-SC0018218			0	88,191
					\$336,692	\$907,518

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						R&D Cluster
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Tokamak Disruption Simulation	81.049	DE-SC0018424			0	87,155
					\$0	\$87,155
Electronic and Photonic Phenomena in Graphene-Based Heterostructures	81.049	DE-SC0018426			0	110,762
					\$0	\$110,762
DNA Grafting Building Blocks Designed to Self-Assemble into Desired Nanostructures	81.049	DE-SC0008772			0	288,893
DNA Grafting Building Blocks Designed to Self-Assemble into Desired Nanostructures	81.049	DE-SC0008772			59,014	59,014
DNA Grafting Building Blocks Designed to Self-Assemble into Desired Nanostructures	81.049	DE-SC0008772			0	-3,868
					\$59,014	\$344,039
Charge carrier dynamics in hybrid organic-inorganic semiconductors	81.049	DE-SC0010692			0	215,510
					\$0	\$215,510
Building a Toolbox of Singlet Fission Molecules for Solar Energy Conversion	81.049	DE-SC0014563			0	147,927
Building a Toolbox of Singlet Fission Molecules for Solar Energy Conversion	81.049	DE-SC0014563			0	16,008
					\$0	\$163,935
Theoretical High Energy Physics	81.049	DE-SC0011941			0	705,164
Theoretical High Energy Physics	81.049	DE-SC0011941			0	8,945
Theoretical High Energy Physics	81.049	DE-SC0011941			0	5,850
Theoretical High Energy Physics	81.049	DE-SC0011941			0	5,432
Theoretical High Energy Physics	81.049	DE-SC0011941			0	5,048

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Theoretical High Energy Physics	81.049	DE-SC0011941			0	4,515
Theoretical High Energy Physics	81.049	DE-SC0011941			0	2,792
					\$0	\$737,746
Cross-Scal Land-Atmosphere Experiment (CSLAEX)	81.049	DE-SC0014203			0	86,073
					\$0	\$86,073
Synthesis of Observed and Simulated Rain Microphysics to Inform a new Bayesian Statistical Framework for Microphysical Parameterization in Climate Models	81.049	DE-SC0016579			140,710	187,288
					\$140,710	\$187,288
Collaborative Research: Explosive Reconnection in Relativistic Magnetically-Dominated Plasmas	81.049	DE-SC0016542			0	2,921
					\$0	\$2,921
Understanding Recent Global Hydroclimate Change using Multivariate Detection and Attribution Techniques and GCM Experiments	81.049	DE-SC0014423			0	39,626
					\$0	\$39,626
Characterization of oceanic post-cold frontal clouds and their model representation	81.049	DE-SC0016344			150,330	211,894
					\$150,330	\$211,894
A new approach to the interacting phonon problem	81.049	DE-SC0016507			0	12,983
					\$0	\$12,983
Simulation Center for Runaway Electron Avoidance and Mitigation	81.049	DE-SC0016347			0	557
					\$0	\$557
Disruption Prediction and Avoidance in High Beta long pulse KSTAR Plasmas	81.049	DE-SC0016614			0	484,655
					\$0	\$484,655
Fundamental Studies in Basic Plasma Science: Investigations of Alfvén Wave Damping Processes Relevant to the Solar Corona	81.049	DE-SC0016602			0	185,479
					\$0	\$185,479

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Quantum transport in 2D semiconductors	81.049	DE-SC0016703			0	277,471
Quantum transport in 2D semiconductors	81.049	DE-SC0016703			0	68,225
					\$0	\$345,696
Nanoscale Environments for Catalysis	81.049	DE-SC0019440			0	94,851
					\$0	\$94,851
Stability Research for Disruption Prediction and Avoidance in MAST-U Spherical Tokamak Plasmas	81.049	DE-SC0018623			0	397,357
					\$0	\$397,357
Programmable Quantum Materials (Pro-QM)	81.049	DE-SC0019443			1,209,380	1,209,380
Programmable Quantum Materials (Pro-QM)	81.049	DE-SC0019443			0	593,627
Programmable Quantum Materials (Pro-QM)	81.049	DE-SC0019443			0	182,458
Programmable Quantum Materials (Pro-QM)	81.049	DE-SC0019443			0	171,581
Programmable Quantum Materials (Pro-QM)	81.049	DE-SC0019443			0	161,855
Programmable Quantum Materials (Pro-QM)	81.049	DE-SC0019443			0	144,128
Programmable Quantum Materials (Pro-QM)	81.049	DE-SC0019443			0	119,601
Programmable Quantum Materials (Pro-QM)	81.049	DE-SC0019443			0	83,452
Programmable Quantum Materials (Pro-QM)	81.049	DE-SC0019443			0	73,694
Programmable Quantum Materials (Pro-QM)	81.049	DE-SC0019443			0	66,975

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<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	R&D Cluster <u>Total Expenditures</u> <u>(Includes Subrecipients)</u>
Programmable Quantum Materials (Pro-QM)	81.049	DE-SC0019443			0	65,810
Programmable Quantum Materials (Pro-QM)	81.049	DE-SC0019443			0	61,532
Programmable Quantum Materials (Pro-QM)	81.049	DE-SC0019443			0	38,841
Programmable Quantum Materials (Pro-QM)	81.049	DE-SC0019443			0	27,326
Programmable Quantum Materials (Pro-QM)	81.049	DE-SC0019443			0	20,380
Programmable Quantum Materials (Pro-QM)	81.049	DE-SC0019443			0	16,848
Programmable Quantum Materials (Pro-QM)	81.049	DE-SC0019443			0	16,799
Programmable Quantum Materials (Pro-QM)	81.049	DE-SC0019443			0	6,318
					\$1,209,380	\$3,060,605
Metal Catalyzed Transformations Involving C X Bonds for the Conversions of Carbon Dioxide and Organic Chemicals	81.049	DE-SC0019204			0	237,343
					\$0	\$237,343
Chemical Kinetic Data of Benchmark Accuracy through Multi-Scale Informatics Strategies	81.049	DE-SC0019487			0	160,920
					\$0	\$160,920
Simulation Center for Runaway Electron Avoidance and Mitigation	81.049	DE-SC0019479			0	286,039
					\$0	\$286,039
Ab Initio Geochemistry of Hydrous Phases	81.049	DE-SC0019759			0	242,395
Ab Initio Geochemistry of Hydrous Phases	81.049	DE-SC0019759			0	199,345
					\$0	\$441,740

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

The Trustees of Columbia University in the City of New York
Schedule of Expenditures of Federal Awards
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						R&D Cluster
<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Advancing Understanding of Deep Convective Anvil Clouds	81.049	DE-SC0020192			0	83,586
					\$0	\$83,586
Disruption Prediction and Avoidance in High Beta Long Pulse KSTAR Plasmas Real Time Expansion	81.049	DE-SC0020415			0	253,630
					\$0	\$253,630
					\$1,940,584	\$12,745,588
Conservation Research and Development						
Reducing plug-load electricity footprint of residential buildings through low-cost, non-intrusive sub-metering and personalized feedback technology	81.086	DE-EE0007684			0	138,570
					0	90,363
Reducing plug-load electricity footprint of residential buildings through low-cost, non-intrusive sub-metering and personalized feedback technology	81.086	DE-EE0007684			0	80,184
					0	10,610
Reducing plug-load electricity footprint of residential buildings through low-cost, non-intrusive sub-metering and personalized feedback technology	81.086	DE-EE0007684			0	9,016
					\$0	\$328,743
Environmentally Robust Quantum Dot Downconverters for Highly Efficiency Solid State Lighting	81.086	DE-EE0008716			128,000	329,485
					\$128,000	\$329,485
					\$128,000	\$658,228
Renewable Energy Research and Development						
GIS-based Graphical User Interface Tool for Analysis of Solar Thermal Desalination Systems and High Potential Implementation Regions	81.087	DE-EE0008401			0	265,391
					0	60,283
					\$0	\$325,674

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The Trustees of Columbia University in the City of New York
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<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
R&D Cluster						
Comparative Life-Cycle Analysis of Scalable Single-Junction and Tandem Perovskite Solar Cells (PSC) Systems	81.087	DE-EE0008543			0	146,413
					<u>\$0</u>	<u>\$146,413</u>
					<u>\$0</u>	<u>\$472,087</u>
Nuclear Energy Research, Development and Demonstration						
An integrated multiscale experimental-numerical analysis on re-consolidation of scale-clay mixture for disposal of heat-generating waste	81.121	DE-NE0008534			0	170,179
					<u>\$0</u>	<u>\$170,179</u>
					<u>\$0</u>	<u>\$170,179</u>
Advanced Research Projects Agency - Energy						
Vertical GaN transistors using controlled spalling for substrate heterogeneity	81.135	DE-AR0000452			95,006	160,926
					<u>\$95,006</u>	<u>\$160,926</u>
PINE: Photonic Integrated Network Energy Efficient Datacenters	81.135	DE-AR0000843			604,066	604,066
PINE: Photonic Integrated Network Energy Efficient Datacenters	81.135	DE-AR0000843			0	99,417
PINE: Photonic Integrated Network Energy Efficient Datacenters	81.135	DE-AR0000843			0	65,298
PINE: Photonic Integrated Network Energy Efficient Datacenters	81.135	DE-AR0000843			0	45,754
PINE: Photonic Integrated Network Energy Efficient Datacenters	81.135	DE-AR0000843			0	490
PINE: Photonic Integrated Network Energy Efficient Datacenters	81.135	DE-AR0000843			0	-5,675
					<u>\$604,066</u>	<u>\$809,350</u>
					<u>\$699,072</u>	<u>\$970,276</u>
Total Direct Award Programs					<u>\$2,767,656</u>	<u>\$15,410,693</u>

Pass-through Awards

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<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	R&D Cluster
						<u>Total Expenditures (Includes Subrecipients)</u>
Department of Energy						
The Nanostructure Problem in Strongly Correlated Electron and Related Materials	81	BNL CU08-9027	DE-AC02-98CH10886	Brookhaven National Laboratory	0	130,572
The Nanostructure Problem in Strongly Correlated Electron and Related Materials	81	BNL CU08-9027	DE-AC02-98CH10886	Brookhaven National Laboratory	0	36,560
					\$0	\$167,132
Design of Carbide and Bimetallic Catalysts and Electrocatalysts	81	BNL NO.233521	DE-AC02-98CH10886	Brookhaven National Laboratory	0	101,865
					\$0	\$101,865
Joint Appointment agreement between BSA/BNL and Columbia for Jingguang Chen s Salary	81	BNL CU13-1454	DE-AC02-98CH10886	Brookhaven National Laboratory	0	98,927
					\$0	\$98,927
Grid Science - Power System Control Under Uncertainty	81	LANL 252599	DE-AC52-06NAA25396	Los Alamos National Laboratory	0	-11,906
					\$0	\$-11,906
Photonic Interconnect for Exascale	81	HEWLET CW458432	DE-AC52-07NA27344	HEWLETT-PACKARD	0	100,141
					\$0	\$100,141
Scalable Forecasting for Improving Grid Efficiency and Resiliency	81	NREL XHA-8-70349-01	DE-AC36-08GO28308	National Renewable Energy Laboratory	0	42,434
					\$0	\$42,434
GO ORNL PROGRAM for Nikhil Rampal	81	ORNL 4000160263	DE-AC05-00OR22725	OAK RIDGE NATIONAL LABORATORY	0	74,343
					\$0	\$74,343
Dynamical Mean Field Theory for Realistic Models of Correlated Materials	81	ARGNTL 7F-30011	DE-AC02-06CH11357	ARGONNE NATIONAL LABORATORY	0	19,424
					\$0	\$19,424
Deputy Project manager for the US-ATLAS HL-LHC Upgrade Project	81	BNL 332054	DE-SC0012704	Brookhaven National Laboratory	0	67,650
					\$0	\$67,650
Advanced Machine Learning for Synvthrophasor Technology	81	LANL 398437	DE-AC52-06NA25396	Los Alamos National Laboratory	0	39,597

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<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	R&D Cluster	
					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$39,597
NOMAD as a high throughput instrument for materials genomics studies	81	ORNL 4000156508	DE-AC05-00OR22725	OAK RIDGE NATIONAL LABORATORY	0	70,167
					\$0	\$70,167
Integration of Horizontal Unstructured Mesh Generation Code (JIGSAW) into MPAS-O and MPAS-SI	81	LANL 486629	DE-AC52-06NA25396	Los Alamos National Laboratory	0	84,534
					\$0	\$84,534
Integration of AgMIP Results for the Development of Agricultural Response Functions for PNNL Models - Phase 3	81	PNNL 433471	DE-AC05-76RL01830	Pacific Northwest National Laboratory	0	12,512
					\$0	\$12,512
Project Controls Support, U.S. ATLAS HL-LHC Upgrade	81	BNL 334322	DE-SC0012704	Brookhaven National Laboratory	0	418,465
					\$0	\$418,465
Exascale Lattice Gauge Theory Opportunities/Requirements for Nuclear & High Energy Physics	81	BNL 333581	DE-SC0012704	Brookhaven National Laboratory	0	121,739
					\$0	\$121,739
sPHENIX EMCAL Detector Upgrade at RHIC	81	BNL 346171	DE-SC0012704	Brookhaven National Laboratory	0	751
					\$0	\$751
Infrared Nano-Imaging of Metastable States	81	LBNL 7431739	DE-AC02-05CH11231	LAWRENCE BERKELEY NATIONAL LABORATORY	0	68,808
					\$0	\$68,808
sPHENIX EMCAL Detector Upgrade at RHIC	81	BNL 356535	DOE CU19-0001	Brookhaven National Laboratory	0	99,843
					\$0	\$99,843
Surface Nano-Patterning Methods Based on Polymers to Immobilize DNA-, Biomolecular, and Nanoparticle Based Constructs for Structural and Bio-Sensing Studies	81	BNL 366391	DOE CU19-1524	Brookhaven National Laboratory	0	13,644
					\$0	\$13,644
sPHENIX Calorimeter Local Level 1 Trigger at RHIC in FY19/20	81	BNL 369117	DOE CU19-2962	Brookhaven National Laboratory	0	159,326
					\$0	\$159,326

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<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Support to BNL for Nuclear Energy Enabling Technology and Nuclear Science User Facility Activities	81	BNL 346960	DE-SC0012704	Brookhaven National Laboratory	0	16,958
					\$0	\$16,958
Photonic Memory Controller Module (P-MCM)	81	FPHOTO MCM-P2B	DOE CU18-0610	FREEDOM PHOTONICS	0	83,161
Photonic Memory Controller Module (P-MCM)	81	FPHOTO MCM-P2B	DOE CU18-0610	FREEDOM PHOTONICS	0	12,478
					\$0	\$95,639
A Rigorous Analysis of the Total Residual Stress State of Additively-Manufactured Samples	81	ORNL 4000164362	DE-AC05-00OR22725	OAK RIDGE NATIONAL LABORATORY	0	5,847
					\$0	\$5,847
Postdoctoral Support for Guolong Zhu Novel approaches for self assembly of bio-nanomaterials and enabling their new functions	81	BNL 349458	DE-SC0012704	Brookhaven National Laboratory	0	84,637
					\$0	\$84,637
Photonic-Storage Subsystem Input/Output	81	NP CU17-3721	DOE CU17-3721	NANO PRECISION	0	8,585
					\$0	\$8,585
Center for Thermal Energy Transport under Irradiation	81	INL 208385	DE-AC07-05ID14517	IDAHO NATIONAL LABORATORY	0	245,612
					\$0	\$245,612
Joint Researcher Supported by Columbia University and BNL/CFN	81	BNL 360766	DE-SC0012704	Brookhaven National Laboratory	0	61,132
					\$0	\$61,132
Development of Nanoscale System with Regulated Enzymatic Activity and Local Motion Using DNA Structures	81	BNL 366392	DOE CU19-1525	Brookhaven National Laboratory	0	6,814
					\$0	\$6,814
Establishing Approaches for Creating 3D Ordered Hierarchical Materials Through a Combination of DNA-Programmable Assembly at Nanoscale and Atomic Templating for Sub-NM Scale	81	BNL 366419	DOE CU18-2347	Brookhaven National Laboratory	0	74,220
					\$0	\$74,220
Photonic-Storage Subsystem Input/Output (P-SSIO) Interface	81	FPHOTO S7146-01	DOE CU19-0376	FREEDOM PHOTONICS	0	503,428
					\$0	\$503,428

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<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Development of a Full-Field X-ray Fluorescence Imagine System for Near Real-Time Trace Element Microanalysis of Complex Biological Systems	81	BNL 362910	DE-SC0012704	Brookhaven National Laboratory	0	95,625
					\$0	\$95,625
Graduate Student Support for Brian minevich-Self-Assemble of Nanoparticle Super-Lattices	81	BNL 367063	DE-SC0012704	Brookhaven National Laboratory	0	6,163
					\$0	\$6,163
Analysis of 2018 X-band Radar Data from the ARM Southern Great Plains Observatory	81	PNNL 463719	DE-AC05-76RL01830	Pacific Northwest National Laboratory	0	17,008
					\$0	\$17,008
Integrated Coastal Modeling (ICoM)	81	PNNL 504286	DE-AC05-76RL01830	Pacific Northwest National Laboratory	0	42,062
					\$0	\$42,062
Using DeepBase for Deep Learning Interpretation	81	BNL 369302	DE-SC0012704	Brookhaven National Laboratory	0	17,400
					\$0	\$17,400
Emissions-MIP - An Emissions Sensitivity Evaluation	81	PNNL 479284	DE-AC05-76RL01830	Pacific Northwest National Laboratory	0	46,080
					\$0	\$46,080
Exascale Privacy-Preserving AI	81	BNL 381536	DE-SC0012704	Brookhaven National Laboratory	0	4,460
					\$0	\$4,460
Hybrid Quantum/Classical Algorithms for Photochemistry and Nonadiabatic Dynamics	81	SNAL No. 200586	DE-AC02-76SF00515	SLAC NATIONAL ACCELERATOR LABORATORY	0	110,201
					\$0	\$110,201
Dynamical Mean Field Theory for Realistic Models of Correlated Materials	81	ARGNTL 0F-60080	DE-AC02-06CH11357	ARGONNE NATIONAL LABORATORY	0	78,890
					\$0	\$78,890
Deep Underground Neutrino Experiment (DUNE)	81	FERMI 665837	DE-AC02-07CH11359	Fermi National Accelerator Laboratory	0	9,525
					\$0	\$9,525
					\$0	\$3,279,682

Office of Science Financial Assistance Program

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

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<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	R&D Cluster
						<u>Total Expenditures (Includes Subrecipients)</u>
Rational Design of Innovative Catalytic Technologies for Biomass Derivative Utilization	81.049	UD 32826	DE-SC0001004	UNIVERSITY OF DELAWARE	0	130,051
					\$0	\$130,051
EFRC: Center for Mesoscale Conductivity	81.049	RFSUNY 68856	DE-SC0012673	RESEARCH FOUNDATION OF THE STATE UNIVERSITY OF NEW YORK	0	210,558
					\$0	\$210,558
Studies of Reactive Amorphous Compounds and Surfaces: Their Pathways to Crystallinity and Surface Functionality	81.049	TAMU 02-M1800290	DE-SC0017864	TEXAS A&M UNIVERSITY	0	85,765
					\$0	\$85,765
Bayesian Cloud Property Retrievals from ARM Active and Passive Measurements	81.049	UCLA 2095 G UA028	DE-SC0016118	UNIVERSITY OF CALIFORNIA, LOS ANGELES	0	42,302
					\$0	\$42,302
Center for Bio-Inspired Energy Science (CBES)	81.049	SP0027267-PROJ0011442	DE-SC0000989	NORTHWESTERN UNIVERSITY	0	215,841
					\$0	\$215,841
Improving Parameterization of Ice Microphysical Processes in Arctic Clouds using a Synergistic Modeling and Observational Approach	81.049	PSU 5933-CU-USDOE-8933	DE-SC0018933	PENNSYLVANIA STATE UNIVERSITY	0	45,220
					\$0	\$45,220
Ultrafast Creation of Emergent Phenomena and Metastable Phases in Complex	81.049	PSU 5710-CU-DOE-2375	DE-SC0012375	PENNSYLVANIA STATE UNIVERSITY	0	166,252
Ultrafast Creation of Emergent Phenomena and Metastable Phases in Complex	81.049	PSU 5710-CU-DOE-2375	DE-SC0012375	PENNSYLVANIA STATE UNIVERSITY	0	63,377
					\$0	\$229,629
Breakthrough Electrolytes for Energy Storage (BEES)	81.049	CWRU RES513723	DE-SC0019409	CASE WESTERN RESERVE UNIVERSITY	0	153,472
					\$0	\$153,472
Planar Systems for Quantum Information	81.049	CU 86856-11154	DE-SC0019481	CORNELL UNIVERSITY	0	138,963
Planar Systems for Quantum Information	81.049	CU 86856-11154	DE-SC0019481	CORNELL UNIVERSITY	0	112,644
					\$0	\$251,607

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						R&D Cluster
<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
GENESIS: A Next Generation Synthesis Center	81.049	SUNYSB 82192/1148574/2	DE-SC0019212	STATE UNIV. OF NEW YORK STONY BROOK	0	261,606
					<u>\$0</u>	<u>\$261,606</u>
					\$0	\$1,626,051
Renewable Energy Research and Development						
Improved Performance and Reliability of Cu(InGa)(SeS) ₂ PV Modules using the Reaction of Metal Precursors	81.087	UDELAWARE 48779	DE-EE0007542	UNIVERSITY OF DELAWARE	0	41,810
					<u>\$0</u>	<u>\$41,810</u>
Development of Composite Photocatalyst Materials that are Highly Selective for Solar Hydrogen Production and their Evaluation in Z-Scheme Reactor Designs	81.087	UCI 2020-1298	DE-EE0008838	UNIVERSITY OF CALIFORNIA, IRVINE	0	24,259
					<u>\$0</u>	<u>\$24,259</u>
					\$0	\$66,069
Fossil Energy Research and Development						
Deepwater Methane Hydrate Characterization in the Gulf of Mexico: Scientific Assessment and Production Potential	81.089	UTA14-001159	DE-FE0023919	UNIVERSITY OF TEXAS AT AUSTIN	0	29,306
Deepwater Methane Hydrate Characterization in the Gulf of Mexico: Scientific Assessment and Production Potential	81.089	UTA14-001159	DE-FE0023919	UNIVERSITY OF TEXAS AT AUSTIN	0	22,678
					<u>\$0</u>	<u>\$51,984</u>
Collaborative Development Projects - Photonic Memory Controller Module (P-MCM)	81.089	PLCC CU18-0520	DOE CU18-0520	PLC CONNECTIONS	0	91,108
Collaborative Development Projects - Photonic Memory Controller Module (P-MCM)	81.089	PLCC CU18-0520	DOE CU18-0520	PLC CONNECTIONS	0	12,478
					<u>\$0</u>	<u>\$103,586</u>
					\$0	\$155,570
Defense Nuclear Nonproliferation Research						
Consortium for Verification Technology	81.113	UMICHG 3003222364	DE-NA002534	UNIVERSITY OF MICHIGAN	0	56,164
					<u>\$0</u>	<u>\$56,164</u>
Consortium for Monitoring, Technology, and Verification (MTV)	81.113	UMICH SUBK00009795	DE-NA003920	UNIVERSITY OF MICHIGAN	0	185,589

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					Subrecipients	Total Expenditures (Includes Subrecipients)
					\$0	\$185,589
					\$0	\$241,753
Advanced Research Projects Agency - Energy						
Minimally Orchestrated Storage Technology for Duration Addition to Electricity Storage	81.135	PRIMUS CU18-3145	DE-AR0000990	PRIMUS POWER	0	435,259
					\$0	\$435,259
An Iterative Approach for Solving the SCOPF Problem Applying LP, SOCP and NLP Subproblems	81.135	NWU 60052596 CU	DE-AR0001077	NORTHWESTERN UNIVERSITY	0	61,240
					\$0	\$61,240
					\$0	\$496,499
Total Pass-through Programs					\$0	\$5,865,624
Total Department of Energy					\$2,767,656	\$21,276,317

Department of Defense

Direct Awards

Defense Advanced Research Projects Agency

Deciphering the Cortex: Circuit inference from large-scale brain activity data	12	N66001-15-C-4032			0	-376
					\$0	\$-376
Hardware-Up Security: Anti-fragility and Automation	12	HR001118C0017			362	376
					\$362	\$376
BISC: Bioelectronic Interfacing to Sensory Cortex with massive, fully implanted, flexible wireless CMOS surface recording and stimulating arrays	12	N66001-17-C-4002			2,254,302	3,198,601
BISC: Bioelectronic Interfacing to Sensory Cortex with massive, fully implanted, flexible wireless CMOS surface recording and stimulating arrays	12	N66001-17-C-4002			0	227,602
BISC: Bioelectronic Interfacing to Sensory Cortex with massive, fully implanted, flexible wireless CMOS surface recording and stimulating arrays	12	N66001-17-C-4002			0	183,219

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						R&D Cluster
<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
BISC: Bioelectronic Interfacing to Sensory Cortex with massive, fully implanted, flexible wireless CMOS surface recording and stimulating arrays	12	N66001-17-C-4002			0	42,260
					\$2,254,302	\$3,651,682
Robust Learning in Brain Circuits of Synthetic Miniature Insects	12	HR00111990035			0	277,314
Robust Learning in Brain Circuits of Synthetic Miniature Insects	12	HR00111990035			0	109,008
					\$0	\$386,322
Learning Visually Grounded Language Models from Video	12	HR00111990058			71,615	261,894
Learning Visually Grounded Language Models from Video	12	HR00111990058			0	121,226
					\$71,615	\$383,120
Department of the Air Force, Air Force Research Laboratory						
Interpretable and Robust Artificial Intelligence Software	12	FA8750-18-C-0130			0	260,092
					\$0	\$260,092
Intelligence Advanced Research ProjectsActivity						
System for CRoss-Language Information Processing, Translation, and Summarization (SCRIPTS)	12	FA8650-17-C-9117			1,743,753	2,521,405
System for CRoss-Language Information Processing, Translation, and Summarization (SCRIPTS)	12	FA8650-17-C-9117			0	329,317
					\$1,743,753	\$2,850,722
					\$4,070,032	\$7,531,938
Basic and Applied Scientific Research						
Next-Generation Variational Methods: Active Inference, Streaming Inference, and Assessing Model Fitness	12.300	N00014-15-1-2209			0	325,431
					\$0	\$325,431
The YOLO Approach to Resilient Cyber Physical Systems	12.300	N00014-15-1-2173			0	295,095

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$295,095
Fundamental Limits and Efficient Algorithms for Tensor Inverse Problems	12.300	N00014-17-1-2827			0	105,741
					\$0	\$105,741
Dynamics and Prediction of the Boreal Summer Intraseasonal Oscillation in the Maritime Continent	12.300	N00014-16-1-3073			0	93,252
Dynamics and Prediction of the Boreal Summer Intraseasonal Oscillation in the Maritime Continent	12.300	N00014-16-1-3073			0	11,029
					\$0	\$104,281
Precision Photodissociation: a New Tool for Ultracold Chemistry and Physics, and a Source of Novel	12.300	N00014-17-1-2246			0	166,997
					\$0	\$166,997
Strategic Dynamic of Cyber Conflict	12.300	N00014-17-1-2423			0	403,212
					\$0	\$403,212
Next-Generation Massively Parallel Cellular Biosurveillance and Recording Devices	12.300	N00014-17-1-2353			0	222,707
					\$0	\$222,707
New frontiers of nano-photonics: multi-THz imaging and spectroscopy of graphene based nanostructure	12.300	N00014-15-1-2671			0	-491
					\$0	\$-491
Adapting Static and Dynamic Program Analysis to Effectively Harden Debloated Software	12.300	N00014-16-1-2263			0	145,789
					\$0	\$145,789
Graphene-Silicon Photonics for Extreme Sensitivity, Cryogenic-Room Temperature Dense WDM Interconnects	12.300	N00014-16-1-2219			0	4,062
					\$0	\$4,062
Phase-Change Correlated Perovskites as a New Platform for Photonics	12.300	N00014-16-1-2442			0	341
					\$0	\$341
Practical algorithms for polynomial optimization	12.300	N00014-16-1-2889			0	3,794

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$3,794
BUDDY: TCB Hardening for Cyber Physical Systems	12.300	N00014-17-1-2010			0	556,258
BUDDY: TCB Hardening for Cyber Physical Systems	12.300	N00014-17-1-2010			0	107,802
BUDDY: TCB Hardening for Cyber Physical Systems	12.300	N00014-17-1-2010			0	78,172
					\$0	\$742,232
Computational Certification Under Limited Experimental Data	12.300	N00014-17-1-2038			0	57,877
					\$0	\$57,877
Multiscale Mesh-Based Meshless Method M4	12.300	N00014-17-1-2085			0	128,875
					\$0	\$128,875
Causal inference using hierarchical and nonparametric Bayesian interaction models	12.300	N00014-17-1-2141			33,425	184,172
					\$33,425	\$184,172
High Performance Organic Solar Cells from Conjugated Ribbons	12.300	N00014-17-1-2205			0	141,826
High Performance Organic Solar Cells from Conjugated Ribbons	12.300	N00014-17-1-2205			0	134,864
					\$0	\$276,690
Bay of Bengal Intraseasonal Oscillations and the Upper Ocean Mesoscale	12.300	N00014-17-1-2394			0	112,936
					\$0	\$112,936
Scanned Probe and Electrical Characterization of One and Two Dimensional Materials	12.300	N00014-17-1-2967			0	143,073
					\$0	\$143,073
Multimodal matrix and tensor factorization methods exploiting strong structural and side information	12.300	N00014-17-1-2843			0	99,383
					\$0	\$99,383

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						R&D Cluster
<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Designer 2D bandstructures by superlattice patterning of layered materials	12.300	N00014-17-1-2832			0	129,072
					\$0	\$129,072
Acquisition of an Amplified Laser System for Transient Nano-Spectroscopy and Nano-Imaging of Functional Materials	12.300	N00014-18-1-2737			0	415,980
					\$0	\$415,980
New Frontiers of Nano-photonics: Multi-THz Imaging and Spectroscopy of Graphene	12.300	N000014-18-1-2722			28,320	183,664
					\$28,320	\$183,664
Informative Priors for Bayesian Inference, Regularization, and Computation	12.300	N00014-19-1-2204			0	140,705
					\$0	\$140,705
Empirical Analysis for Meeting Great Power Challenges	12.300	N00014-19-1-2466			79,987	288,011
					\$79,987	\$288,011
Perfect Semiconductors from Imperfect Materials: Dynamic Screening as a Design Principle	12.300	N00014-18-1-2080			0	421,562
					\$0	\$421,562
Learning by Doing: Realized Low-level Manipulation Skills as the Foundation for High-level Human-robot Collaboration	12.300	N00014-19-1-2062			0	157,911
					\$0	\$157,911
Functional Bio-Nano Composites for Energy Conversion and Actuation	12.300	N00014-19-1-2200			0	178,829
					\$0	\$178,829
Measuring, Tracking and Modulating Human Decision-Making Neural Circuits In the Wild	12.300	N00014-20-1-2027			0	311,988
					\$0	\$311,988
Linear extended formulations: packing, covering, and restricted SoS	12.300	N00014-20-1-2091			0	15,346
					\$0	\$15,346
New Forms of Quantum Matter Created with Ultra-Fast Nano-Light	12.300	N00014-19-1-2630			0	5,498

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					<u>\$0</u>	<u>\$5,498</u>
					<u>\$141,732</u>	<u>\$5,770,763</u>
Scientific Research - Combating Weapons of Mass Destruction						
Power Grid Vulnerability and Resilience to Geographically Correlated Failures	12.351	HDTRA1-13-1-0021			34,024	185,168
Power Grid Vulnerability and Resilience to Geographically Correlated Failures	12.351	HDTRA1-13-1-0021			0	58,756
					<u>\$34,024</u>	<u>\$243,924</u>
Development of Inhibitors of the Aging Process of Organophosphate Adducts of AChE	12.351	HDTRA1-16-1-0053			30,140	242,551
Development of Inhibitors of the Aging Process of Organophosphate Adducts of AChE	12.351	HDTRA1-16-1-0053			0	74,637
					<u>\$30,140</u>	<u>\$317,188</u>
					<u>\$64,164</u>	<u>\$561,112</u>
Military Medical Research and Development						
Therapeutic Targeting of Notch in Ovarian Cancer	12.420	W81XWH-09-1-0408			0	801
					<u>\$0</u>	<u>\$801</u>
GREAT-SF (Grief REsilience Activities and Training For Surviving Families): an Online Selective Intervention for Bereved Military Families	12.420	W81XWH-15-2-0043			0	226,273
					<u>\$0</u>	<u>\$226,273</u>
Electric Field Stimulation Enhances Healing of Post-Traumatic Osteoarthritic Cartilage	12.420	W81XWH-14-1-0591			0	-155
					<u>\$0</u>	<u>\$-155</u>
Role of Tumor infiltrating B cells in breast cancer metastasis.	12.420	W81XWH-17-1-0055			0	172,483
					<u>\$0</u>	<u>\$172,483</u>
Role of Tumor-Infiltrating B Cells in Breast Cancer Metastasis	12.420	W81XWH-17-1-0056			0	123,370
					<u>\$0</u>	<u>\$123,370</u>

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Impaired mTOR-Macrophagy and Neurocognitive Deficits in Tuberous Sclerosis Complex	12.420	W81XWH-16-1-0263			0	181,848
					\$0	\$181,848
Targeting MEK5 Enhances Radiosensitivity of Human Prostate Cancer and Impairs Tumor Associated Angiogenesis	12.420	W81XWH-15-1-0296			0	13,774
					\$0	\$13,774
DEFINING THE ROLE OF THE 5-HT4 RECEPTOR IN THE BRAIN, BEHAVIOR AND GUT ABNORMALITIES RESULTING FROM IN UTERO SSRI EXPOSURE	12.420	W81XWH-17-1-0167			0	143,714
					\$0	\$143,714
Developmental Pathways and Autism Spectrum Disorders	12.420	W81XWH-17-1-0566			28,196	124,557
					\$28,196	\$124,557
Identifying New Chemical Entities that Treat and Prevent Relapsing vivax and Drug-Resistant falciparum Malaria in U.S. Military Personnel	12.420	W81XWH-15-2-0033			0	60,323
					\$0	\$60,323
Physical Telerehabilitation in Patients with Multiple Sclerosis with Significant Mobility Impairment	12.420	W81XWH-16-1-0704			431,135	455,456
					\$431,135	\$455,456
Integrative Device for Treating Rotator Cuff Tendon Injuries	12.420	W81XWH-15-1-0685			0	343,192
					\$0	\$343,192
Programmable Probiotics as Primary and Metastatic Breast Cancer Therapeutics	12.420	W81XWH-17-1-0356			0	750,384
Programmable Probiotics as Primary and Metastatic Breast Cancer Therapeutics	12.420	W81XWH-17-1-0356			0	1,481
					\$0	\$751,865
Programmable probiotics for early detection of lung cancer	12.420	W81XWH-17-1-0395			7,782	16,787
					\$7,782	\$16,787
Actin fence therapy for Acute Lung Injury	12.420	W81XWH-16-1-0368			0	159,043
					\$0	\$159,043

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Multispecies, Integrative GWAS for Focal Segmental Glomerulosclerosis	12.420	W81XWH-16-1-0450			0	52,218
					\$0	\$52,218
Multispecies, Integrative GWAS for Focal Segmental Glomerulosclerosis	12.420	W81XWH-16-1-0451			0	401,994
					\$0	\$401,994
Investigation of a Putative Prostate Stem Cell Niche	12.420	W81XWH-16-1-0345			0	12,832
					\$0	\$12,832
Cardiomyocyte Chirality Defects in Congenital Heart Disease	12.420	W81XWH-17-1-0112			0	18,738
					\$0	\$18,738
Identification of Effector and Suppressive T-Cell Clones in Graft-vs-Host Disease	12.420	W81XWH1810328			0	201,697
					\$0	\$201,697
Immune privilege of the hematopoietic stem cell niche in the bone marrow shields metastatic prostate cancer from immunity	12.420	W81XWH-18-10191			0	277,780
					\$0	\$277,780
Prebiotic Inulin to Limit Antimicrobial Resistant Infections During Critical Illness: A Phase II Clinical Trial	12.420	W81XWH-19-1-0287			0	406,283
					\$0	\$406,283
Genetic variation underlying traumatic brain injury (TBI) and late Onset Alzheimer s Disease (LOAD)	12.420	W81XWH-16-1-0588			0	168,283
					\$0	\$168,283
Defining the Role of the 5-HT4 Receptor in the Brain, Behavior, and Gut Abnormalities Resulting from in Utero SSRI Exposure	12.420	W81XWH-17-1-0166			20,659	420,010
					\$20,659	\$420,010
Targeting Immune Microenvironment Interactions in Lung Cancer Metastasis	12.420	W81XWH-17-1-0441			0	79,214
					\$0	\$79,214
Apathy and Negative Symptoms in Alzheimer s Disease: Investigation of the Proline*COMT Interaction for Symptom Targeting to Positively Impact Quality of Life	12.420	W81XWH-18-1-0285			0	204,869

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$204,869
Receptors in Endosomes Mediate Chronic Pain Associated with Trauma and Stress: Non-Opioid Targets for Pain	12.420	W81XWH-18-1-0431			9,597	70,462
					\$9,597	\$70,462
Neural Crest Origin of TSC Tumors	12.420	W81XWH-18-1-0077			0	214,966
					\$0	\$214,966
Genetic Causes and Therapeutic Interventions in Vascular Malformations	12.420	W81XWH1910267			0	191,008
					\$0	\$191,008
Addressing treatment resistance in models of lethal prostate cancer by identifying novel targets for drug discovery	12.420	W81XWH19-1-0337			0	104,662
					\$0	\$104,662
Genetic and Environmental Influences on the Pathogenesis of Parkinson s Disease: Young Adult Brain and Behavioral Risk Indicators	12.420	W81XWH1910641			0	268,373
					\$0	\$268,373
Metabolomics in Gulf War Illness: a systems biology approach to dissecting mechanisms of disease	12.420	W81XWH1910398			0	83,181
					\$0	\$83,181
Study of Spinal Muscular Atrophy in a Human Neuromuscular Junction Three-Dimensional Optogenetic Model	12.420	W81XWH1810095			0	131,091
					\$0	\$131,091
Adaptively Conforming Osteochondral Allografts for Joint Replacements	12.420	W81XWH1810361			116,217	490,902
					\$116,217	\$490,902
The role of activation induced cytidine deaminase in pesticide-related lymphomagenesis	12.420	W81XWH-18-1-0394			0	169,276
					\$0	\$169,276
Topical Application of Tranexamic Acid to Reduce Blood Loss During Spine Surgery	12.420	W81XWH-14-2-0177			0	166,011
					\$0	\$166,011

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Targeting Mitochondrial Metabolism as a Key Vulnerability in Artemisinin-Resistant Plasmodium falciparum Malaria	12.420	W81XWH-19-1-0086			0	179,013
					\$0	\$179,013
Genetic Causes and Therapeutic Interventions in Vascular Malformations	12.420	W81XWH1910266			4,048	257,471
					\$4,048	\$257,471
Biodegradable cationic nanoparticles as a push chemo-drug carrier and a pull cfDNA scavenger against breast cancer metastasis.	12.420	W81XWH-19-1-0464			0	167,949
					\$0	\$167,949
Optogenetic regulation of phosphoinositide metabolism in susceptibility, resistance and resiliency to Alzheimer s disease associated deficits and pathology	12.420	W81XWH1910817			0	138,921
					\$0	\$138,921
Identification of master transcriptional regulators of neuroendocrine differentiation in prostate cancer	12.420	W81XWH-18-1-0424			0	156,232
					\$0	\$156,232
Targeted approach to lung repair and regeneration in alveolar type II cell disease	12.420	W81XWH-19-1-0097			0	138,040
					\$0	\$138,040
Biodegradable cationic nanoparticles as a push chemo-drug carrier and a pull cfDNA scavenger against breast cancer metastasis	12.420	W81XWH1910463			0	138,461
					\$0	\$138,461
Glucagon-Like-Peptide 2 (GLP-2) Analogues as a Novel Strategy for Prevention and Treatment of Graft-Versus-Host Disease	12.420	W81XWH-19-1-0578			0	158,106
					\$0	\$158,106
Fluorenone Drug for Treatment of Combat-Related Traumatic Optic Neuropathy	12.420	W81XWH-19-1-0851			0	155,663
					\$0	\$155,663
Single Cell Immune Profiling of Alloreactive T cells Locally and Systemically in Patients Receiving Intestinal Transplantation	12.420	W81XWH2010159			0	10,655
					\$0	\$10,655
					\$617,634	\$8,407,692

Basic Scientific Research

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Phase Transitions and Elusive Electronic States In Correlated Oxides	12.431	W911NF-17-1-0543			0	288,845
					\$0	\$288,845
Imaging how a neuron computes	12.431	W911NF-12-1-0594			87,978	190,218
Imaging how a neuron computes	12.431	W911NF-12-1-0594			0	56,783
Imaging how a neuron computes	12.431	W911NF-12-1-0594			0	9,948
Imaging how a neuron computes	12.431	W911NF-12-1-0594			0	2,398
Imaging how a neuron computes	12.431	W911NF-12-1-0594			0	2,365
					\$87,978	\$261,712
Distributed High Performance Algorithms for Mobile Ad Hoc Networks	12.431	W911NF-16-1-0259			35,619	35,619
					\$35,619	\$35,619
Intent Switching and Co-Adaption of Man and Machine in a Closed-Loop Brain Computer Interface (8.4 Neurophysiology and Cognitive Neuroscience)	12.431	W911NF-16-1-0507			0	10,258
					\$0	\$10,258
Development of Chip-Based Optical Parametric Oscillators for Coherent Computing and Quantum Random Number Generation	12.431	W911NF-17-1-0016			0	103,273
Development of Chip-Based Optical Parametric Oscillators for Coherent Computing and Quantum Random Number Generation	12.431	W911NF-17-1-0016			0	99,204
					\$0	\$202,477
Developing accelerated learning models in GIFT for medical military and civilian training	12.431	W911NF1820097			0	27,597
					\$0	\$27,597
A Symbiotic Agent-Based Network Platform Linking Expert Knowledge and Machine Learning for Systemic Risk Mitigation	12.431	W911NF1910013			468,069	696,063
					\$468,069	\$696,063

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Conference Support: Dendritic Computation	12.431	W911NF1810131			0	-8,506
					\$0	-\$8,506
Can Hypnosis Enhance the Ability to Regulate Behavioral and Brain Markers of Emotion Regulation?	12.431	W911NF1910411			0	143,958
					\$0	\$143,958
Descriptive, Injunctive, and Sacred Norms	12.431	W911NF-18-1-0091			0	258,500
					\$0	\$258,500
Building Efficient Fuzzers using Automata Learning	12.431	W911NF1810326			0	83,099
					\$0	\$83,099
Characterizing and Enhancing Biological Corrosion of Metals	12.431	W911NF1810239			0	160,516
					\$0	\$160,516
Phase field modeling of ice-segregation induced fracture and thawing plasticity in frozen geomaterials with unfrozen water.	12.431	W911NF1820306			0	67,712
Phase field modeling of ice-segregation induced fracture and thawing plasticity in frozen geomaterials with unfrozen water.	12.431	W911NF1820306			0	5,625
					\$0	\$73,337
Cryogenic platform for the study of correlated 2D materials with tunable degrees of freedom	12.431	W911NF1910271			0	335,000
					\$0	\$335,000
Modulation of Enzymatic Reaction Trajectories via Applied Mechanical Forces	12.431	W911NF1910325			0	5,442
					\$0	\$5,442
Multiscale Light-written Assembly of Nanoscale Materials	12.431	W911NF1910395			0	220,158
Multiscale Light-written Assembly of Nanoscale Materials	12.431	W911NF1910395			0	117,327
					\$0	\$337,485

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						R&D Cluster
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Distributed Data Processing and Machine Learning Algorithms for Wireless Battlefield Networks (topic area: c.iii.1: Communications and Networks)	12.431	W911NF1910379			2,008	119,600
					\$2,008	\$119,600
Sustaining System-on-Chip Innovation by Enabling Open-Source Hardware	12.431	W911NF1910476			0	54,167
					\$0	\$54,167
Fully-Stabilized Optical Frequency Comb System on a Chip	12.431	W911NF2010125			0	10,884
					\$0	\$10,884
					\$593,674	\$3,096,053
Basic, Applied, and Advanced Research in Science and Engineering						
A Physiologically-Informed Artificial Intelligence (PI-AI) Framework for Human-Agent Teaming	12.630	W911NF1920139			0	125,162
					\$0	\$125,162
					\$0	\$125,162
Air Force Defense Research Sciences Program						
Artificial Atoms, Molecules, and Solids: Multiple Functions and Emergent Properties	12.800	FA9550-18-1-0020			0	392,912
					\$0	\$554,758
Artificial Atoms, Molecules, and Solids: Multiple Functions and Emergent Properties	12.800	FA9550-18-1-0020			0	93,299
					\$0	\$554,758
Artificial Atoms, Molecules, and Solids: Multiple Functions and Emergent Properties	12.800	FA9550-18-1-0020			0	68,547
					\$0	\$554,758
Spoken Indicators of Trust Across Cultures	12.800	FA9550-18-1-0039			0	243,653
					\$0	\$243,653
Characterizing Neural Code From a Minimum-Description-Length Perspective	12.800	FA9550-15-1-0439			99,933	126,627
					\$99,933	\$126,627
Polaritonic Metamaterials Based on Van Der WAALS Heteostructures	12.800	FA9550-15-1-0478			0	238,429

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$238,429
Fundamental Studies of Microresonator-Based Parametric Frequency Combs	12.800	FA9550-15-1-0303			0	39,269
Fundamental Studies of Microresonator-Based Parametric Frequency Combs	12.800	FA9550-15-1-0303			0	30,695
Fundamental Studies of Microresonator-Based Parametric Frequency Combs	12.800	FA9550-15-1-0303			0	21,132
Fundamental Studies of Microresonator-Based Parametric Frequency Combs	12.800	FA9550-15-1-0303			0	-5,175
					\$0	\$85,921
New Functionally in van der Waals Heterostructures	12.800	FA9550-16-1-0601			0	149,706
					\$0	\$149,706
Foundations of Neuroinformation Processing Phase and Spike Processing Machines	12.800	FA9550-16-1-0410			0	256,574
					\$0	\$256,574
(YIP) Modeling the High-Rate Responses of Wetted Granular Materials Across Scales and the Third-Party Replicable Validation Exercises Utilizing 3D Printers	12.800	FA9550-17-1-0169			0	42,917
					\$0	\$42,917
Apparatus for Laser Cooling, Trapping, and Discussion of BaH molecules	12.800	FA9550-17-1-0441			0	7,843
					\$0	\$7,843
Exciton interactions in semiconductor nanostructures	12.800	FA9550-19-1-0405			0	83,661
					\$0	\$83,661
Rational Design of Composite Solid Electrolyte for Structural Energy Storage	12.800	FA9550-18-1-0410			0	95,763
					\$0	\$95,763
Thermoelectric Phenomena in Quasi-One-Dimensional Metals	12.800	FA9550-19-1-0156			107,552	129,807
					\$107,552	\$129,807

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Intelligence-Driven Learning	12.800	FA9550-19-1-0124			58,731	179,198
					\$58,731	\$179,198
					\$266,216	\$2,194,857
Research and Technology Development						
The Virome of Manhattan: A Testbed for Radically Advancing Understanding and Forecast of Viral Respiratory Infections	12.910	W911NF-16-2-0035			0	801,380
					\$0	\$801,380
The Virome of Manhattan: A Testbed for Radically Advancing Understanding and Forecast of Viral Respiratory Infections	12.910	W911NF-16-2-0035			207,959	674,510
					\$207,959	\$1,475,890
Resistant and scalable storage using semi-synthetic DNA	12.910	D17AP00027			0	73
					\$0	\$73
Densely Packed 2D Photonic Phased Array	12.910	FA8650-18-1-7815			0	124,415
					\$0	\$124,415
Auto-generative Neural Networks for Lifelong Learning	12.910	HR0011-18-2-0020			0	291,753
					\$0	\$291,753
THUNDER: Tolerant Hosts Using Novel Drug-Enhanced Resilience	12.910	HR0011-17-2-0009			5,197	191,942
					\$5,197	\$191,942
Scalable Millimeter-wave Arrays based on Dual-Use 3D Heterogeneous Architectures	12.910	DARPA-FA86501617644			0	102
					\$0	\$102
SEEM: Inferring Sentiment bElief pErerspective and eMothin for Low Resource Languages	12.910	HR0011-15-2-0041			49,413	145,748
					\$49,413	\$145,748
SEEM: Inferring Sentiment bElief pErerspective and eMothin for Low Resource Languages	12.910	HR0011-15-2-0041			0	116,355
					\$0	\$116,355
					\$49,413	\$262,103

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PULSE: Phased-array Ultrasound for Electroceuticals	12.910	HR0011-15-2-0054			0	140,368
PULSE: Phased-array Ultrasound for Electroceuticals	12.910	HR0011-15-2-0054			0	68,817
PULSE: Phased-array Ultrasound for Electroceuticals	12.910	HR0011-15-2-0054			0	18,277
					\$0	\$227,462
Development and Application of Silicon-Chip-Based Mid-Infrared Frequency Combs	12.910	W31P4Q-16-1-0002			0	-844
					\$0	\$-844
High-Performance Parametric RF Integrated Non-Reciprocal Circulators (HIPERION)	12.910	HR0011-17-2-0007			113,547	374,850
High-Performance Parametric RF Integrated Non-Reciprocal Circulators (HIPERION)	12.910	HR0011-17-2-0007			0	83,064
					\$113,547	\$457,914
Superbroadband Achromatic Metasurface Lenses	12.910	HR0011-17-2-0017			0	-1
					\$0	\$-1
SOAS: Interactive design compiler based on simultaneous optimization and simulation	12.910	HR0011-17-2-0014			0	197,254
					\$0	\$197,254
Multifunctional Glass for Augmented Reality	12.910	HR00111720034			0	24,022
Multifunctional Glass for Augmented Reality	12.910	HR00111720034			0	16,274
Multifunctional Glass for Augmented Reality	12.910	HR00111720034			0	1,112
Multifunctional Glass for Augmented Reality	12.910	HR00111720034			0	-1,031
Multifunctional Glass for Augmented Reality	12.910	HR00111720034			0	-3,593
					\$0	\$36,784

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A Multimodal Oral Non-viral CRISPR-Cas Medical Countermeasure to Enhance Ionizing Radiation Resilience and Survival	12.910	HR0011-19-2-0009			0	731,778
A Multimodal Oral Non-viral CRISPR-Cas Medical Countermeasure to Enhance Ionizing Radiation Resilience and Survival	12.910	HR0011-19-2-0009			0	447,566
A Multimodal Oral Non-viral CRISPR-Cas Medical Countermeasure to Enhance Ionizing Radiation Resilience and Survival	12.910	HR0011-19-2-0009			0	377,972
A Multimodal Oral Non-viral CRISPR-Cas Medical Countermeasure to Enhance Ionizing Radiation Resilience and Survival	12.910	HR0011-19-2-0009			0	321,164
					\$0	\$1,878,480
Real-Time Control of Network Physical Structures to Bypass Complexity: Optimization, Stochastics and Structure Recognition	12.910	N660011824028			31,401	164,310
					\$31,401	\$164,310
Multifunctional Arrays based on Scalable Single-wire-interfaces, Antenna-cointegration and Linearization (MASSALa)	12.910	FA8650-19-1-7998			125,643	229,374
					\$125,643	\$229,374
Embedded Photonics ultra-bandwidth dense optical interconnect(EmPho)	12.910	HR0011-19-2-0014			0	417,548
Embedded Photonics ultra-bandwidth dense optical interconnect(EmPho)	12.910	HR0011-19-2-0014			0	376,971
Embedded Photonics ultra-bandwidth dense optical interconnect(EmPho)	12.910	HR0011-19-2-0014			0	247,506
Embedded Photonics ultra-bandwidth dense optical interconnect(EmPho)	12.910	HR0011-19-2-0014			132,958	163,958
					\$132,958	\$1,205,983
TRAUMAS: Treatment and recovery augmented with electrical and ultrasound-mediated actuation and sensing	12.910	D20AC00004			0	277,565
TRAUMAS: Treatment and recovery augmented with electrical and ultrasound-mediated actuation and sensing	12.910	D20AC00004			90,180	90,180
TRAUMAS: Treatment and recovery augmented with electrical and ultrasound-mediated actuation and sensing	12.910	D20AC00004			0	61,701
TRAUMAS: Treatment and recovery augmented with electrical and ultrasound-mediated actuation and sensing	12.910	D20AC00004			0	38,941

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Federal Grantor / Pass-through Grantor	CFDA	Project No	Pass-through Contract Number	Passthrough Name	Subrecipients	R&D Cluster
						Total Expenditures (Includes Subrecipients)
TRAUMAS: Treatment and recovery augmented with electrical and ultrasound-mediated actuation and sensing	12.910	D20AC00004			0	37,743
TRAUMAS: Treatment and recovery augmented with electrical and ultrasound-mediated actuation and sensing	12.910	D20AC00004			0	5,442
					\$90,180	\$511,572
					\$756,298	\$7,254,566
Total Direct Award Programs					\$6,509,750	\$34,942,143
Pass-through Awards						
Defense Advanced Research Projects Agency						
IBIS: Implantable bioluminescence interface for an all-optical neuroprosthesis to the visual cortex	12	JBPL 295-B Phase III	N66001-17-C-4012	JOHN B. PIERCE LABORATORY	0	127,766
IBIS: Implantable bioluminescence interface for an all-optical neuroprosthesis to the visual cortex	12	JBPL 295-B Phase III	N66001-17-C-4012	JOHN B. PIERCE LABORATORY	0	80,997
					\$0	\$208,763
Machine-Intelligence for Advance Notification of Threats and Energy-Grid Survivable Situational Awareness (MANTESSA)	12	ACS PO-0008887	FA8750-16-C-0054	Applied Communication Sciences	0	83,984
Machine-Intelligence for Advance Notification of Threats and Energy-Grid Survivable Situational Awareness (MANTESSA)	12	ACS PO-0008887	FA8750-16-C-0054	Applied Communication Sciences	0	54,907
					\$0	\$138,891
Fast Electric Grid Communication Network Isolation and Restoration (PHOENIX)	12	BAE 941140	DARPA CU16-0568	Bae Systems National Security SolutionsInc	0	22,399
					\$0	\$22,399
Engineered Living Materials	12	ECODES CU16-2615	DARPA-BAA-16-50	ECOVATIVE DESIGN	0	380,454
Engineered Living Materials	12	ECODES CU16-2615	DARPA-BAA-16-50	ECOVATIVE DESIGN	0	273,473
					\$0	\$653,927
Building blocks and Search Improvements for Automated Machine Learning Model Selection	12	KEYW 50001964	W911NF-16-C-0005	KEYW	0	1,659
					\$0	\$1,659

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						<u>Total Expenditures (Includes Subrecipients)</u>
EPOCHS: Efficient Programmability of Cognitive Heterogeneous Systems	12	IBM CW2912424	HR0011-18-C-0122	IBM THOMAS J WATSON RES. CTR.	0	538,631
EPOCHS: Efficient Programmability of Cognitive Heterogeneous Systems	12	IBM CW2912424	HR0011-18-C-0122	IBM THOMAS J WATSON RES. CTR.	0	302,546
					\$0	\$841,177
Magnetic Optical and Acoustic Neural Access (MOANA) System	12	RICEUNIV R1A262	N6600119C4020	RICE UNIVERSITY	0	339,484
Magnetic Optical and Acoustic Neural Access (MOANA) System	12	RICEUNIV R1A262	N6600119C4020	RICE UNIVERSITY	0	211,825
Magnetic Optical and Acoustic Neural Access (MOANA) System	12	RICEUNIV R1A262	N6600119C4020	RICE UNIVERSITY	0	42,410
					\$0	\$593,719
Diagnostic Epigenetics of Infectious agents and Chemical Toxicity (DEPICT)	12	ASU ASUB00000355	W911NF19C00039	ARIZONA STATE UNIVERSITY	0	88,616
					\$0	\$88,616
Secure Handling of Isolated Executables without Leaking Data (SHIELD)	12	PERSPECTA PO-0018620	HR0011-19-S0017	PERSPECTA LABS	0	42,092
					\$0	\$42,092
OPTICS	12	PERSPECTA PO-0020017	HR001119S0082	PERSPECTA LABS	0	33,160
OPTICS	12	PERSPECTA PO-0020017	HR001119S0082	PERSPECTA LABS	0	17,038
					\$0	\$50,198
Defense Threat Reduction Agency						
Determination and Understanding of Quantitative Infectious Dose for Ebola Virus	12	UTMB 17-031	HDTRA1-17-C-0009	UNIVERSITY OF TEXAS MEDICAL AT GALVESTON	0	543,750
					\$0	\$543,750
Department of Defense						
Long Term Potentiation Deficits after Repetitive Primary Blast	12	SURVICE S17-095006	DOTC-17-01-INIT0086/OTA 2014-3	SURVICE ENGINEERING	0	126,021
					\$0	\$126,021

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						<u>Total Expenditures (Includes Subrecipients)</u>
Multicenter Randomized Trial of Everolimus in Pediatric Heart Transplantation	12	CHMCB CU17-3614	W81XWH-17-1-0532	CHILDREN'S HOSPITAL BOSTON	0	46,517
					\$0	\$46,517
Columbia Entrepreneurship, Innovation, and Design Support for MD5 Staff	12	CMI2 1904-01-012-01	47QTCA18D00DK	CIVIL-MILITARY INNOVATION INSTITUTE	0	15,385
					\$0	\$15,385
Anticipatory Analytics for Environmental Stressors Phase 2	12	ISCI W912HZ19C0005-SC-01	W912HZ19C0005	ISCIENCES LLC	0	223,440
					\$0	\$223,440
Department of the Air Force						
A Brain Computer Interface for a New Approach to Hearing Aid Design	12	MIT 7000410874	DAF CU17-3727	MASSACHUSETTS INSTITUTE OF TECHNOLOGY	0	129,597
					\$0	\$129,597
Progressive Damage Model Benchmarking for Ceramic Matrix Composite Components in Turbine Engine Applications	12	UTCD 195208-19-05-C1	FA8650-19-C-5208	UNIVERSAL TECHNOLOGY CORPORATION	0	67,497
					\$0	\$67,497
Adaptable Tactical Communications Phase I	12	ACGI A19C-005-0020	W911NF20P0033	ASPEN CONSULTING GROUP INC.	0	49,890
					\$0	\$49,890
Department of the Air Force, Air Force Research Laboratory						
Alteration Detection & Provenance Tracking (In Visual Imagery, Scenes, Media) (ADAPT (IVISM))	12	KITWARE K001892-00-S03	FA8750-16-C-0166	Kitware, Inc.	0	75,406
					\$0	\$75,406
STTR Phase I Traditional Contract AFX20A-TCSO1-0148	12	OWL CU20-2159	DAFAFRL CU20-2159	PROJECT OWL LLC	0	20,000
					\$0	\$20,000
Department of the Army, Army Research Office						
Abelian Bridge to Non-Abelian Anyons in Ultra-Cold Atoms and Graphene	12	UCSB KK1813	W911NF-17-1-0323	UNIVERSITY OF CALIFORNIA, SANTA BARBARA	0	98,389
					\$0	\$98,389

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						R&D Cluster
<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Fundamentally New Methods of Fabrication (SuperVan)	12	BBN PO4201804852/SLIN 0003	W911NF-18-C-0044	BBN TECHNOLOGIES CORP.	0	113,663
					\$0	\$113,663
DEPARTMENT OF THE NAVY						
Columbia University Participation in Low-Power Broadband Superconducting Digitizer for Frequency-Multiplexed Imaging Array	12	HYPRES CU17-2838	NAVY CU17-2838	HYPRES INC	0	1,670
Columbia University Participation in Low-Power Broadband Superconducting Digitizer for Frequency-Multiplexed Imaging Array	12	HYPRES CU17-2838	NAVY CU17-2838	HYPRES INC	0	136
					\$0	\$1,806
Energy Efficient, Non-Silicon Digital Signal Processing (DSP)	12	HYPRES HYP-N68335-18-C-0654	NAVY CU18-0788	HYPRES INC	0	91,965
					\$0	\$91,965
Intelligence Advanced Research ProjectsActivity						
Reverse Engineering Neocortical Intelligence	12	BCM PO7000000428	D16PC0000	BAYLOR COLLEGE OF MEDICINE-- HOUSTON	0	98,484
Reverse Engineering Neocortical Intelligence	12	BCM PO7000000428	D16PC0000	BAYLOR COLLEGE OF MEDICINE-- HOUSTON	0	31,324
					\$0	\$129,808
Janus Program Transition Research on Optimized Algorithms	12	UMARY Z3893-Z9335202	IARPA 2019-022600002	UNIVERSITY OF MARYLAND	0	173,908
					\$0	\$173,908
Deep Intermodal Video Analytics	12	UMARY 75672-Z9321204	D17PC00345	UNIVERSITY OF MARYLAND	0	365,502
					\$0	\$365,502
Verona: A Platform for Developing and Deploying Secure Computation for Data Scientists	12	GALOIS No. 2019-027	IARPA CU18-0108	GALOIS INC	0	253,013
Verona: A Platform for Developing and Deploying Secure Computation for Data Scientists	12	GALOIS No. 2019-027	IARPA CU18-0108	GALOIS INC	0	153,750
					\$0	\$406,763

National Security Agency

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						<u>Total Expenditures (Includes Subrecipients)</u>
Contribution to ACS Modeling, Simulation & Emulation Project	12	BAHI S900741BAH	FA8075 14 D 0002	BOOZ ALLEN HAMILTON INC	0	74,820
Contribution to ACS Modeling, Simulation & Emulation Project	12	BAHI S900741BAH	FA8075 14 D 0002	BOOZ ALLEN HAMILTON INC	0	42,337
Contribution to ACS Modeling, Simulation & Emulation Project	12	BAHI S900741BAH	FA8075 14 D 0002	BOOZ ALLEN HAMILTON INC	0	25,525
Contribution to ACS Modeling, Simulation & Emulation Project	12	BAHI S900741BAH	FA8075 14 D 0002	BOOZ ALLEN HAMILTON INC	0	11,199
Contribution to ACS Modeling, Simulation & Emulation Project	12	BAHI S900741BAH	FA8075 14 D 0002	BOOZ ALLEN HAMILTON INC	0	1,671
					\$0	\$155,552
Office of Naval Research						
Enhancements to YOLO Cyber-Resilience Techniques	12	CMU 17-00491-SUB-00	FA8702-15-D-0002	CARNEGIE MELLON UNIVERSITY	0	64,780
					\$0	\$64,780
Fast and Flexible Differential Equation Model Fitting with Application to Pharmacometrics	12	METRUM CU16-2364	N00014-16-P-2039	METRUM RESEARCH GROUP	0	121,345
					\$0	\$121,345
ARION: A Real-time HPC Platform with In-memory Non-Von-Neumann Processing and Optical Networking	12	GIT AWD-000785-S1	N6600120C4002	GEORGIA INSTITUTE OF TECHNOLOGY	0	53,767
ARION: A Real-time HPC Platform with In-memory Non-Von-Neumann Processing and Optical Networking	12	GIT AWD-000785-S1	N6600120C4002	GEORGIA INSTITUTE OF TECHNOLOGY	0	24,601
ARION: A Real-time HPC Platform with In-memory Non-Von-Neumann Processing and Optical Networking	12	GIT AWD-000785-S1	N6600120C4002	GEORGIA INSTITUTE OF TECHNOLOGY	0	5,442
					\$0	\$83,810
					\$0	\$5,746,235
Basic and Applied Scientific Research						
ABIDES: Adaptive Binary DEbloating and Security	12.300	SIT 2102747-02	N00014-17-1-2788	STEVENS INSTITUTE OF TECHNOLOGY	0	109,467
					\$0	\$109,467

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Next Generation Time-of-Flight Imaging	12.300	UWIMAD 696K662	N00014-16-1-2995	UNIVERSITY OF WISCONSIN MADISON	0	-4,778
					\$0	-\$4,778
Carbon-based Hierarchically Integrated Synthetic Electronics (CHISEL)	12.300	UCB 00009293	N00014-16-1-2921	UNIVERSITY OF CALIFORNIA, BERKELEY	0	259,021
					\$0	\$259,021
Reasoning about Event Schemas for Induction of Knowledge (RESIN)	12.300	RPI A20-0047-S001	FA8750-19-2-1004	RENSSELAER POLYTECHNIC INSTITUTE	0	304,567
Reasoning about Event Schemas for Induction of Knowledge (RESIN)	12.300	RPI A20-0047-S001	FA8750-19-2-1004	RENSSELAER POLYTECHNIC INSTITUTE	0	166,585
					\$0	\$471,152
Elements of Causal Learning: Basic Concepts, Theory, Methods, Algorithms and Applications	12.300	TEMPLE 264443-TCU	N00014-19-1-2468	TEMPLE UNIVERSITY	0	79,208
					\$0	\$79,208
					\$0	\$914,070
Scientific Research - Combating Weapons of Mass Destruction						
Exogenous regulation of acute lung injury	12.351	CM00004481-00	HDTRA11810049	City College of New York	0	50,239
					\$0	\$50,239
					\$0	\$50,239
Pest Management and Vector Control Research						
Novel Evaluation of Control and Prevention Strategies for Ticks and Tick-Borne Disease	12.355	CU 89560-11268	W911QY1910006	CORNELL UNIVERSITY	0	9,988
					\$0	\$9,988
					\$0	\$9,988
Military Medical Research and Development						
LAM Pilot study with Imatinib Mesylate (LAMP-1)	12.420	MUSC14-051	W81XWH-14-1-0132	MEDICAL UNIVERSITY OF SOUTH CAROLINA	0	-5,501
					\$0	-\$5,501

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						Total Expenditures (Includes Subrecipients)
Effects of Traumatic Brain Injury and Post-Traumatic Stress Disorder on Alzheimer's Disease (AD) in Veterans with Mild Cognitive Impairment (MC) using the Alzheimer's disease neuroimaging initiative (12.420	USC 78227300	W81XWH-13-1-0259	UNIVERSITY OF SOUTHERN CALIFORNIA	0	208
					\$0	\$208
Novel targeted therapies for inflammatory breast cancer	12.420	ISMMS 0258-0901-4609	W81XWH-16-1-0461	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	0	15,903
					\$0	\$15,903
RAGE/Diaph1, Diabetes, and Kidney Disease: Mechanisms and Novel Therapeutic Strategies	12.420	NYUMC 17-AO-00-007334-01	W81XWH-17-1-0201	NEW YORK UNIVERSITY MEDICAL CENTER	0	31,686
RAGE/Diaph1, Diabetes, and Kidney Disease: Mechanisms and Novel Therapeutic Strategies	12.420	NYUMC 17-AO-00-007334-01	W81XWH-17-1-0201	NEW YORK UNIVERSITY MEDICAL CENTER	0	15,860
RAGE/Diaph1, Diabetes, and Kidney Disease: Mechanisms and Novel Therapeutic Strategies	12.420	NYUMC 17-AO-00-007334-01	W81XWH-17-1-0201	NEW YORK UNIVERSITY MEDICAL CENTER	0	-1,374
					\$0	\$46,172
Direct 3D Printing of Integrated Electro Mechanical Systems	12.420	IMOD P.O.#444/0729085	DOD CU15-3453	ISRAELI MINISTRY OF DEFENSE	0	173,906
Direct 3D Printing of Integrated Electro Mechanical Systems	12.420	IMOD P.O.#444/0729085	DOD CU15-3453	ISRAELI MINISTRY OF DEFENSE	0	9,165
					\$0	\$183,071
Beta-Blockers for the Prevention of Acute Exacerbations of COPD	12.420	CUMC 15040499	W81XWH-15-1 -0705	WEILL (JOAN AND SANFORD I.) MEDICAL COLLEGE OF CORNELL UNIVERSITY	0	11,424
Beta-Blockers for the Prevention of Acute Exacerbations of COPD	12.420	CUMC 15040499	W81XWH-15-1 -0705	WEILL (JOAN AND SANFORD I.) MEDICAL COLLEGE OF CORNELL UNIVERSITY	0	-1,526
					\$0	\$9,898
RAGE/Diaph1, Diabetes, and Kidney Disease: Mechanisms and Novel Therapeutic Strategies	12.420	NYUMC 17-AO-00-007334-01	W81XWH-17-1-0201	NEW YORK UNIVERSITY MEDICAL CENTER	0	2,701
RAGE/Diaph1, Diabetes, and Kidney Disease: Mechanisms and Novel Therapeutic Strategies	12.420	NYUMC 17-AO-00-007334-01	W81XWH-17-1-0201	NEW YORK UNIVERSITY MEDICAL CENTER	0	2,551
					\$0	\$5,252
Translating a stem cell-based therapy for epidermolysis bullosa into the clinic	12.420	UCOL CU19-2578	W81XWH1810706	UNIVERSITY OF COLORADO	0	62,324
Translating a stem cell-based therapy for epidermolysis bullosa into the clinic	12.420	UCOL CU19-2578	W81XWH1810706	UNIVERSITY OF COLORADO	0	25,235

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$87,559
Investigation of the NMDA Antagonist Ketamine as a Treatment for Tinnitus	12.420	RFMH 26965	W81XWH1810221	RESEARCH FOUNDATION FOR MENTAL HYGIENEINC	0	115,768
					\$0	\$115,768
Prostate Cancer Clinical Consortium Clinical Research Site: TargetedTherapies	12.420	CUMC 180737	W81XWH1820032	CORNELL UNIVERSITY	0	25,465
					\$0	\$25,465
GREAT-SF ((Grief-focused REsilience Activities and Training for Surviving Families): An Online Selective Intervention for Bereaved Military Families	12.420	HJFAMM 4832/963938	W81XWH-15-2-0042	Jackson (Henry M.) Foundation for the Advancement of Military Medicine	0	154,962
					\$0	\$154,962
					\$0	\$638,757
Basic Scientific Research						
Bio-inspired Design of Adaptive Catalysis Center	12.431	UUTAH10034220-S4	W911NF-14-1-0263	UNIVERSITY OF UTAH	0	189,567
					\$0	\$189,567
Fractional PDEs for Conservation Laws and Beyond: Theory, Numerics and Applications	12.431	BROWN 00000825	W911NF1510562	BROWN UNIVERSITY	0	102,160
					\$0	\$102,160
Towards a Multi-Scale Theory on Coupled Human Mobility and Environmental Change	12.431	UFLRDA UFDSP00012221	W911NF1810267	UNIVERSITY OF FLORIDA	0	105,966
					\$0	\$195,947
Towards a Multi-Scale Theory on Coupled Human Mobility and Environmental Change	12.431	UFLRDA UFDSP00012221	W911NF1810267	UNIVERSITY OF FLORIDA	0	89,981
					\$0	\$177,156
Multiscale Integration of Neural, Social, and Network Theory to Understand and Predict Transitions from Illness to Wellness: A Proof of Concept with Mindfulness, Hypnosis and Alcohol Use Disorders	12.431	UPENN 574211	W911NF1810244	UNIVERSITY OF PENNSYLVANIA	0	177,156
					\$0	\$66,407
Physical behavior of layered superatomic crystals	12.431	CMU 1130214-394149	W911NF-17-1-0397	CARNEGIE MELLON UNIVERSITY	0	66,407
					\$0	\$66,407
Scalable Coherent Photonic Array on a Silicon Platform	12.431	TREX S20104	FA8650-19-C-1002	TREX ENTERPRISES CORP	0	118,290

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						R&D Cluster
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Scalable Coherent Photonic Array on a Silicon Platform	12.431	TREX S20104	FA8650-19-C-1002	TREX ENTERPRISES CORP	0	96,057
					\$0	\$214,347
Algorithms and Distribution-Free Models for Social and Information Networks	12.431	UCSCRUZ A19-0477-S001	W911NF1910294	UNIVERSITY OF CALIFORNIA SANTA CRUZ	0	51,921
					\$0	\$51,921
					\$0	\$997,505
Basic, Applied, and Advanced Research in Science and Engineering						
Constructing Mutually-derived Situational Awareness via EEG-informed Graph Based Transductive Inference	12.630	APX02-N004	W911-NF-10-2-0022	COGNITION AND NEUROERGONOMICS CONSORTIUM	0	229,360
					\$0	\$229,360
Climate-informed Estimation of Hydrologic Extremes for Robust Adaptation to Non-s	12.630	16-009040 A 00	W912HQ-15-C-0052	UNIVERSITY OF MASSACHUSETTS AMHERST	0	64,189
					\$0	\$64,189
					\$0	\$293,549
Air Force Defense Research Sciences Program						
Active Metasurfaces for Advanced Wavefront Engineering and Waveguiding	12.800	HARVARD-123885-5079402	FA9550-14-1-0389	HARVARD UNIVERSITY	0	41,676
					\$0	\$41,676
MURI Center for Material Failure Prediction through peridynamics	12.800	UOARIZONA-PO225829	FA9550-14-1-0073	UNIVERSITY OF ARIZONA	0	151,048
					\$0	\$161,049
MURI Center for Material Failure Prediction through peridynamics	12.800	UOARIZONA-PO225829	FA9550-14-1-0073	UNIVERSITY OF ARIZONA	0	10,001
					\$0	\$210,995
Functional Testing Development for Automated Scaled Manufacturing	12.800	RFSUNY CU15-1693	FA8650-15-2-5220	RESEARCH FOUNDATION OF THE STATE UNIVERSITY OF NEW YORK	0	210,995
					\$0	\$210,995
Very High Speed Digital Data and Communication Links	12.800	RFSUNY CU16-1030	AFOSR CU16-1030	RESEARCH FOUNDATION OF THE STATE UNIVERSITY OF NEW YORK	0	117,000
					\$0	\$117,000

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						<u>Total Expenditures (Includes Subrecipients)</u>
Harnessing Strong-Field Mid-Infrared (IR) Lasers: Designer Beams of Relativistic Particles and THz-to-X-ray Light	12.800	UCB 1553896	FA9550-16-1-0121	UNIVERSITY OF COLORADO	0	246,829
					\$0	\$246,829
Magnet-Free Non-Reciprocal Metamaterials Based on Spatio-Temporal Modulation	12.800	RFCUNY CM00001529-00	FA9550-18-1-0379	RESEARCH FOUNDATION OF CITY UNIVERSITY OF NEW YORK	0	182,349
Magnet-Free Non-Reciprocal Metamaterials Based on Spatio-Temporal Modulation	12.800	RFCUNY CM00001529-00	FA9550-18-1-0379	RESEARCH FOUNDATION OF CITY UNIVERSITY OF NEW YORK	0	166,443
					\$0	\$348,792
(MURI) Theory, Implementations, and Applications of Mean Field Games: The Second Generation	12.800	PU SUB0000339	FA9550-19-1-0291	PRINCETON UNIVERSITY	0	49,999
					\$0	\$49,999
(MURI) Integrating Multiscale Modeling and Experiments to Develop a Meso-Informed Predictive Capability for Explosives Safety and Performance	12.800	UMISS C00064537-6	FA9550-19-1-0318	UNIVERSITY OF MISSOURI	0	144,008
					\$0	\$144,008
					\$0	\$1,320,348

Research and Technology Development

Continual Learning Across Synapses, Circuits, and Brain Areas	12.910	BRI 700000603	HR0011-18-2-0025	Baylor Research Institute	0	140,538
					\$0	\$140,538
Automated System for Knowledge-based Continuous Organic Synthesis (ASKCOS)	12.910	MIT 57100004124	W911NF-16-2-0023	MASSACHUSETTS INSTITUTE OF TECHNOLOGY	0	62,485
					\$0	\$62,485
ZeD: Zero-Knowledge Discovery Using Data Smashing	12.910	UCHICA FP064753-A	FA8750-17-2-0124	UNIVERSITY OF CHICAGO	0	12,435
					\$0	\$12,435
Non-Equilibrium Order Parameter Optoelectronics for Quantum Information Processing	12.910	UCSD 122059822	D18AC00014	UNIVERSITY OF CALIFORNIA, SAN DIEGO	0	123,815
					\$0	\$123,815
Chip-Scale Optical Planar LADAR Architecture (COPLA)	12.910	JASR 703-02	FA8650-19-C-7916	JASR SYSTEMS	0	568,050

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Chip-Scale Optical Planar LADAR Architecture (COPLA)	12.910	JASR 703-02	FA8650-19-C-7916	JASR SYSTEMS	0	223,052
					\$0	\$791,102
Generating Alternatives for Interpretation and Analysis (GAIA)	12.910	USC 98328001	FA8750-18-2-0014	UNIVERSITY OF SOUTHERN CALIFORNIA	0	241,434
Generating Alternatives for Interpretation and Analysis (GAIA)	12.910	USC 98328001	FA8750-18-2-0014	UNIVERSITY OF SOUTHERN CALIFORNIA	0	168,395
					\$0	\$409,829
DECADES: Deeply-Customized Accelerator-Oriented Data Supply Systems Synthesis	12.910	PU SUB0000254	FA8650-18-2-7862	PRINCETON UNIVERSITY	0	394,303
					\$0	\$394,303
Discovering Common Sense from Video, Images, Text and Knowledge Bases	12.910	USC 123870980	N660011924032	UNIVERSITY OF SOUTHERN CALIFORNIA	0	176,226
Discovering Common Sense from Video, Images, Text and Knowledge Bases	12.910	USC 123870980	N660011924032	UNIVERSITY OF SOUTHERN CALIFORNIA	0	74,669
					\$0	\$250,895
CORAL: Combined Representations for Adept Learning	12.910	USC 124130701	FA8750-19-1-1000	UNIVERSITY OF SOUTHERN CALIFORNIA	0	195,058
					\$0	\$195,058
Synthesizing and Quantifying Novel Videos for Classifying, Detecting, and Tracking Activities	12.910	UMARY 85946-Z9448201	W911NF2020009	UNIVERSITY OF MARYLAND	0	30,258
					\$0	\$30,258
Total Pass-through Programs					\$0	\$2,410,718
Total Department of Defense					\$6,509,750	\$47,323,552

Department of Commerce

Direct Awards

Climate and Atmospheric Research

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Biosphere-atmosphere regulations of droughts assessed using microwave and solar-induced fluorescence observations and improved plant water stress representation	11.431	NA17OAR4310127			9,254	123,460	
					\$9,254	\$123,460	
IRAP: Integrating Climate Information and Decision Processes for regional Climate Resilience	11.431	NA13OAR4310184			250,210	250,210	
IRAP: Integrating Climate Information and Decision Processes for regional Climate Resilience	11.431	NA13OAR4310184			0	-7,861	
					\$250,210	\$242,349	
Diagnostics, Trends and Climate Model Projections of U.S. Summer Heat Waves	11.431	NA14OAR4310204			0	7,987	
					\$0	\$7,987	
Evaluating How Dry Deposition Influences Eastern U.S. Ozone, Aerosols, and Precursors: Mean Contributions, Uncertainties, and Spatio-Temporal Variability From Weather, Regional Climate, and Land Use	11.431	NA14OAR4310133			0	1,530	
					\$0	\$1,530	
Process Oriented Diagnostics of Tropical Cyclones in Climate Models	11.431	NA15OAR4310095			0	8,300	
					\$0	\$8,300	
The Relationship of Tropical Cyclones to MJO and ENSO in theS2S Database	11.431	NA16OAR4310079			0	85,020	
					\$0	\$85,020	
Supporting Regional Implementation of Integrated Climate Resilience: Consortium for Climate Risk in the Urban Northeast Phase II	11.431	NA15OAR4310147			437,484	568,083	
Supporting Regional Implementation of Integrated Climate Resilience: Consortium for Climate Risk in the Urban Northeast Phase II	11.431	NA15OAR4310147			0	173,497	
Supporting Regional Implementation of Integrated Climate Resilience: Consortium for Climate Risk in the Urban Northeast Phase II	11.431	NA15OAR4310147			0	20,840	
Supporting Regional Implementation of Integrated Climate Resilience: Consortium for Climate Risk in the Urban Northeast Phase II	11.431	NA15OAR4310147			0	8,895	
					\$437,484	\$771,315	
Madden Julian Oscillation - the Maritime Continent barrier and seamless verification	11.431	NA16OAR4310076			0	75,536	

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Madden Julian Oscillation - the Maritime Continent barrier and seamless verification	11.431	NA16OAR4310076			0	26,289
					\$0	\$101,825
Developing a Real-Time Multi-Model Sub-seasonal Predictive Capability	11.431	NA16OAR4310145			0	26,178
					\$0	\$26,178
Interpolation of Subsurface Ocean Properties and Indices of Climate Variability	11.431	NA17OAR4310156			0	113,817
					\$0	\$113,817
Drought Onset and Termination across North America: Mechanisms and Predictability	11.431	NA17OAR4310126			0	148,025
					\$0	\$148,025
Testing, Refinement and Demonstration of Probabilistic Multi-Model, Calibrated Subseasonal Global Forecast Products	11.431	NA18OAR4310295			0	62,590
Testing, Refinement and Demonstration of Probabilistic Multi-Model, Calibrated Subseasonal Global Forecast Products	11.431	NA18OAR4310295			0	31,859
					\$0	\$94,449
Weather-Type Based Cross-Timescale Diagnostics of CMIP6-Era Models	11.431	NA18OAR4310275			0	124,389
					\$0	\$124,389
Process-Oriented Diagnosis of Tropical Cyclone Genesis and Intensification in High-Resolution Global Models	11.431	NA18OAR4310277			0	41,710
					\$0	\$41,710
The Development of Climate-Informed Decision-Support Tools for the Prevention and Control of Aedes-Borne Diseases in the US and Transboundary Regions	11.431	NA18OAR4310339			15,729	238,545
					\$15,729	\$238,545
Enabling Urban Residents to Adapt to Coastal Flooding: Evidence from New York City Neighborhoods	11.431	NA19OAR4310311			9,936	62,977
					\$9,936	\$62,977
Integrating Models, Paleoclimate, and Recent Observations to Develop Process-Level Understanding of Projected Changes in US Drought	11.431	NA19OAR4310278			0	9,076
					\$0	\$9,076

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$722,613	\$2,200,952
Weather and Air Quality Research						
Assessment and Calibration of Extreme Precipitation Probabilities in S2S Forecast Models	11.459	NA19OAR4590159			0	38,838
Assessment and Calibration of Extreme Precipitation Probabilities in S2S Forecast Models	11.459	NA19OAR4590159			0	15,796
					<u>\$0</u>	<u>\$54,634</u>
Maintenance and Development of the Subseasonal Prediction Project (S2S) Database and Tools in IRI Data Library	11.459	NA19OAR4590225			0	33,188
					<u>\$0</u>	<u>\$33,188</u>
					<u>\$0</u>	<u>\$87,822</u>
Applied Meteorological Research						
Weather regime diagnostic tools for sub-monthly ensemble forecasts	11.468	NA16NWS4680014			0	29,647
					<u>\$0</u>	<u>\$29,647</u>
Development and Evaluation of New Statistical Calibration Methods for Multi-Model Ensemble Week 3-4 Probabilistic Forecasts	11.468	NA18NWS4680067			0	97,237
Development and Evaluation of New Statistical Calibration Methods for Multi-Model Ensemble Week 3-4 Probabilistic Forecasts	11.468	NA18NWS4680067			0	1,036
					<u>\$0</u>	<u>\$98,273</u>
					<u>\$0</u>	<u>\$127,920</u>
Center for Sponsored Coastal Ocean Research Coastal Ocean Program						
Resolving the Effects of Resource Availability, Predation and Competition on Brown Tide Dynamics using Metatranscriptomics	11.478	NA15NOS4780199			0	78,796
					<u>\$0</u>	<u>\$78,796</u>
					<u>\$0</u>	<u>\$78,796</u>
Measurement and Engineering Research and Standards						
Experimentally-driven mapping of QoS-to-QoE for Mission-Critical Voice	11.609	70NANB19H003			69,314	231,761

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Experimentally-driven mapping of QoS-to-QoE for Mission-Critical Voice	11.609	70NANB19H003			0	227,397
					<u>\$69,314</u>	<u>\$459,158</u>
					\$69,314	\$459,158
Total Direct Award Programs					<u>\$791,927</u>	<u>\$2,954,648</u>
Pass-through Awards						
National Oceanic & Atmospheric Administration/Department of Commerce						
High-resolution Shipboard Measurements of Phytoplankton Functional Types, Size Classes and Photosynthetic Competency in Support of SUOMI-VIIRS Ocean Color Observations	11	GSTI SA18-CUNY01	ST-1330-17-CQ-0050	GLOBAL SCIENCE & TECHNOLOGY INC	0	74,998
					<u>\$0</u>	<u>\$74,998</u>
					\$0	\$74,998
Ocean Exploration						
Data Services for E/V Nautilus	11.011	OET 60110-2	NA17OAR0110336	OCEAN EXPLORATION TRUST	0	85,338
					<u>\$0</u>	<u>\$85,338</u>
					\$0	\$85,338
Climate and Atmospheric Research						
From Precipitation Thresholds Identification to Planning Helping Communities Plan and Adapt to Future Extreme Events	11.431	UCONN 126959	NA16OAR4310124	UNIVERSITY OF CONNECTICUT	0	24,923
					<u>\$0</u>	<u>\$24,923</u>
Monitoring the Indonesian Throughflow in Makassar Strait	11.431	UCAR SUBAWD000430	NA16OAR4310253	UNIVERSITY CORPORATION FOR ATMOSPHERIC RESEARCH	0	16,484
					<u>\$0</u>	<u>\$16,484</u>
Integrating Seasonal and Sub-Seasonal Climate Information into Public Health Contexts: Co-Producing Decision Support Applications in Puerto Rico and Dominica	11.431	UA 470206	NA18OAR4310338	UNIVERSITY OF ARIZONA	0	27,322
					<u>\$0</u>	<u>\$27,322</u>
Weddell Sea Moorings	11.431	UCAR SUBAWD001040	NA18OAR4310253B	UNIVERSITY CORPORATION FOR ATMOSPHERIC RESEARCH	0	85,401
					<u>\$0</u>	<u>\$85,401</u>

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$154,130
National Oceanic and Atmospheric Administration (NOAA) Cooperative Institutes						
Surface Water pCO2 measurements from Ships	11.432	UMIAMI OS00000053	NA15OAR4320064	UNIVERSITY OF MIAMI	0	77,519
					\$0	\$77,519
Sub X Continuation	11.432	UMIAMI SPC-000884	NA15OAR4320064	UNIVERSITY OF MIAMI	0	6,530
					\$0	\$6,530
Continuation of the North American Multi-Model Ensemble (NMME)	11.432	UMIAMI SPC-000885	NA15OAR4320064	UNIVERSITY OF MIAMI	0	26,684
					\$0	\$26,684
Total Pass-through Programs					\$0	\$110,733
Total Department of Commerce					\$791,927	\$3,379,847

Department of Education

Direct Awards

National Resource Centers Program for Foreign Language and Area Studies or Foreign Language and International Studies Program and Foreign Language and Area Studies Fellowship Program

National Resource Centers	84.015	P015A140115-17			3,689	3,689
					\$3,689	\$3,689
CU-NYU Latin American & Caribbean Studies Consortium Project	84.015	P015A180149 - 20			53,942	134,549
CU-NYU Latin American & Caribbean Studies Consortium Project	84.015	P015A180149 - 20			0	12,355
CU-NYU Latin American & Caribbean Studies Consortium Project	84.015	P015A180149 - 20			0	9,789
					\$53,942	\$156,693

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Columbia South Asia Institute: National Resource Centers	84.015	P015A180034 - 20			0	104,342
Columbia South Asia Institute: National Resource Centers	84.015	P015A180034 - 20			0	23,019
Columbia South Asia Institute: National Resource Centers	84.015	P015A180034 - 20			0	20,770
Columbia South Asia Institute: National Resource Centers	84.015	P015A180034 - 20			0	11,794
Columbia South Asia Institute: National Resource Centers	84.015	P015A180034 - 20			0	3,868
					<u>\$0</u>	<u>\$163,793</u>
					\$57,631	\$324,175
Overseas Programs - Doctoral Dissertation Research Abroad						
FY2018 Fulbright-Hays Doctoral Dissertation Research Abroad	84.022	P022A180045			0	32,058
					<u>\$0</u>	<u>\$32,058</u>
					\$0	\$32,058
Education Research, Development and Dissemination						
Learning from Errors	84.305	R305A150467-17			0	132,203
					<u>\$0</u>	<u>\$132,203</u>
Efficient and Flexible Tools for Complex Multilevel and Latent Variable Modeling in Education Research	84.305	R305D190048 - 20			67,865	211,361
					<u>\$67,865</u>	<u>\$211,361</u>
					\$67,865	\$343,564
Total Direct Award Programs					<u>\$125,496</u>	<u>\$699,797</u>
Total Department of Education					<u>\$125,496</u>	<u>\$699,797</u>

Department of Agriculture

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R&D Cluster						
Direct Awards						
International Forestry Programs						
Puerto Rico Forest Disturbance and Regrowth Data Collection	10.684	USFS 19-DG-11132762-045			0	21,053
					<u>\$0</u>	<u>\$21,053</u>
					\$0	\$21,053
Total Direct Award Programs					<u>\$0</u>	<u>\$21,053</u>
Pass-through Awards						
1890 Institution Capacity Building Grants						
A Modeling Approach in Climate Change and Natural Resource Education	10.216	SUAMC OSP-02-8300-2016-0016	USDA 2017-38821-26444	SOUTHERN UNIVERSITY AND A&M COLLEGE	0	14,315
					<u>\$0</u>	<u>\$14,315</u>
					\$0	\$14,315
Consumer Data and Nutrition Research						
Understanding Food Insecurity in the PSID	10.253	UKRF 3200000900-20-231	USDA 58-4000-6-0059-R	UNIVERSITY OF KENTUCKY RESEARCH FOUNDATION	0	12,702
					<u>\$0</u>	<u>\$12,702</u>
					\$0	\$12,702
Total Pass-through Programs					<u>\$0</u>	<u>\$27,017</u>
Total Department of Agriculture					<u>\$0</u>	<u>\$48,070</u>
Department of Homeland Security						
Direct Awards						
State and Local Homeland Security National Training Program						
Economic Recovery from Disasters Training Program	97.005	EMW-2016-CA-00123-S01			0	397,585
					<u>\$0</u>	<u>\$397,585</u>

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<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Addressing Gaps in Housing Disaster Recovery: A Training Program for the Whole Community	97.005	EMW-2017-CA-00043-S01			0	262,567
					<u>\$0</u>	<u>\$262,567</u>
					<u>\$0</u>	<u>\$660,152</u>
Total Direct Award Programs					\$0	\$660,152
Total Department of Homeland Security					\$0	\$660,152
 Department of Interior						
Direct Awards						
U.S. GEOLOGICAL SURVEY/DEPARTMENT OF THE INTERIOR						
Measurement of Tritium, Helium, Neon, 3He/4He and Noble Gases in Ground Water Samples	15	USGS G15PC00070			0	44,977
					<u>\$0</u>	<u>\$44,977</u>
					<u>\$0</u>	<u>\$44,977</u>
 Water Desalination Research and Development						
Zero Liquid Discharge Treatment of Inland Reverse Osmosis Concentrates by Solvent Extraction Desalination and Induced Precipitation	15.506	DIBR R19AC00111			0	7,706
					<u>\$0</u>	<u>\$7,706</u>
					<u>\$0</u>	<u>\$7,706</u>
 Earthquake Hazards Program Assistance						
Operation of the Lamont Cooperative Seismographic Network and the Northeastern United States Earthquake Data Center	15.807	USGS G15AC00045			0	221,636
					<u>\$0</u>	<u>\$222,710</u>
Operation of the Lamont Cooperative Seismographic Network and the Northeastern United States Earthquake Data Center	15.807	USGS G15AC00045			0	1,074
					<u>\$0</u>	<u>\$75,338</u>
Earthquake Simulators and Next Generation Hazard Models (UCERF4): Collaborative Research with Columbia University and USGS Golden	15.807	G19AP00081			0	75,338
					<u>\$0</u>	<u>\$75,338</u>
Precision Seismic Monitoring in Northern California: Updating and Improving the Real-time Double-difference (RTDD) System	15.807	G20AP00025			0	18,977

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

The Trustees of Columbia University in the City of New York
Schedule of Expenditures of Federal Awards
For year ended June 30, 2020

Federal Grantor / Pass-through Grantor	CFDA	Project No	Pass-through Contract Number	Passthrough Name	R&D Cluster	
					Subrecipients	Total Expenditures (Includes Subrecipients)
					\$0	\$18,977
Using a Correlation Detector to Reduce the Magnitude Threshold of a Foreshock and Aftershock Catalog of the 2004 Parkfield Earthquake to Test Models of Foreshock and Aftershock Occurrence	15.807	G20AP00050			0	37,050
					\$0	\$37,050
					\$0	\$354,075
U.S. Geological Survey Research and Data Collection						
Characterizing Global Variability in Groundwater Arsenic	15.808	G19AC00063			0	58,050
Characterizing Global Variability in Groundwater Arsenic	15.808	G19AC00063			0	15,415
					\$0	\$73,465
					\$0	\$73,465
Total Direct Award Programs					\$0	\$480,223
Pass-through Awards						
Earthquake Hazards Program Assistance						
SCEC5 USGS Year 3 Research Collaboration at the Columbia University	15.807	USC 118062194	G17AC00047	UNIVERSITY OF SOUTHERN CALIFORNIA	0	29,993
					\$0	\$29,993
					\$0	\$29,993
National and Regional Climate Adaptation Science Centers						
A Proposal to the Department of the Interior to Establish the Northeast Climate Science Center	15.820	UMASS 12-007036 D 15	G12AC00001	UNIVERSITY OF MASSACHUSETTS AMHERST	0	51,020
					\$0	\$51,020
Examining the Mechanisms of Species Responses to Climate Change: Are there Biological Thresholds?	15.820	UMASS 17-009638 B 02	G16AC00256	UNIVERSITY OF MASSACHUSETTS AMHERST	0	1,014
					\$0	\$1,014
					\$0	\$52,034
Cooperative Research and Training Programs – Resources of the National Park System						

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

The Trustees of Columbia University in the City of New York
Schedule of Expenditures of Federal Awards
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						R&D Cluster
<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Metrics for general circulation model biases in extratropical cyclone clouds and precipitation: evaluating their skill and identifying processes to be improved	15.945	RFCUNY 49300A	NA15OAR4310094	RESEARCH FOUNDATION OF CITY UNIVERSITY OF NEW YORK	0	61
					<u>\$0</u>	<u>\$61</u>
Total Pass-through Programs					<u>\$0</u>	<u>\$61</u>
Total	Department of Interior				<u>\$0</u>	<u>\$82,088</u>
					<u>\$0</u>	<u>\$562,311</u>
Department of Justice						
Pass-through Awards						
National Institute of Justice Research, Evaluation, and Development Project Grants						
Preventing firearm violence: an evaluation of urban blight removal in high risk	16.560	UCD A18-1255-S003	2017-IJ-CX-0021	UNIVERSITY OF CALIFORNIA, DAVIS	0	7,930
					<u>\$0</u>	<u>\$7,930</u>
Total Pass-through Programs					<u>\$0</u>	<u>\$7,930</u>
Total	Department of Justice				<u>\$0</u>	<u>\$7,930</u>
Department of State						
Direct Awards						
Department of State						
Determination of Body Wave Magnitudes of the North Korean Underground Nuclear Tests	19	19AQMM19P1913			0	68,444
					<u>\$0</u>	<u>\$68,444</u>
Total Direct Award Programs					<u>\$0</u>	<u>\$68,444</u>
Pass-through Awards						
International Programs to Support Democracy, Human Rights and Labor						
CASEDATA Initiative: Coordinating Approaches to Systematize & Expand Digital Rights Datasets And Taxonomies to Enhance Advocacy	19.345	SMEX DRL176-18-102	DS S-LMAQM-18-GR-2092	SOCIAL MEDIA EXCHANGE	0	36,406

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

The Trustees of Columbia University in the City of New York
Schedule of Expenditures of Federal Awards
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						R&D Cluster
<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					<u>\$0</u>	<u>\$36,406</u>
					\$0	\$36,406
Total Pass-through Programs					<u>\$0</u>	<u>\$36,406</u>
Total	Department of State				<u>\$0</u>	<u>\$104,850</u>

Department of Transportation

Pass-through Awards

Highway Research and Development Program

Inspection and Evaluation of Suspension Bridge Cables	20.200	MM CU18-2437	DTFH61-13-H-00024	MODJESKI AND MASTERS INC.	0	49,030
					<u>\$0</u>	<u>\$49,030</u>
					\$0	\$49,030

University Transportation Centers Program

Center for Advanced Infrastructure and Transportation (CAIT) Regional UTC Consortium	20.701	RUTGER PO 966112/PID#824227	DOT 69A3551847102	RUTGERS, THE STATE UNIVERSITY OF NEW JERDEPARTMENT OF	0	97,944
Center for Advanced Infrastructure and Transportation (CAIT) Regional UTC Consortium	20.701	RUTGER PO 966112/PID#824227	DOT 69A3551847102	RUTGERS, THE STATE UNIVERSITY OF NEW JERDEPARTMENT OF	0	72,530
					<u>\$0</u>	<u>\$170,474</u>
					\$0	\$170,474
Total Pass-through Programs					<u>\$0</u>	<u>\$219,504</u>
Total	Department of Transportation				<u>\$0</u>	<u>\$219,504</u>

Department of Veterans Affairs

Direct Awards

Department of Veterans Affairs

Neuronal Subtype Specific Epigenetic Regulation in Schizophrenia	64	DVAMC CU16-3298			0	14,583
Neuronal Subtype Specific Epigenetic Regulation in Schizophrenia	64	DVAMC CU16-3298			0	12,974

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

The Trustees of Columbia University in the City of New York
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For year ended June 30, 2020

						R&D Cluster
<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					<u>\$0</u>	<u>\$27,557</u>
JAMES J PETERS VA MEDICAL CENTER						
Neuroinflammatory and Epigenetic Mechanisms of Blood-Brain Barrier Compromise in Suicide	64	JJPVA 36C24E18D0058			0	7,746
					<u>\$0</u>	<u>\$7,746</u>
Total Direct Award Programs					<u>\$0</u>	<u>\$35,303</u>
Total	Department of Veterans Affairs				<u>\$0</u>	<u>\$35,303</u>
Dept. of HousingUrban Development						
Direct Awards						
Healthy Homes Technical Studies Grants						
Fungal Exposure in N.Y.C. Low-Income Housing Pre-and Post- Intervention	14.906	NYHHU0030-15			4,697	26,862
					<u>\$4,697</u>	<u>\$26,862</u>
Smoke-Free Living: Evaluating Compliance and Refining Enforcement of Smoke-free Housing Policy in Low-Income Multiple Unit Housing	14.906	NYHHU0034-16			4,675	119,413
					<u>\$4,675</u>	<u>\$119,413</u>
Urban fungal exposure, sensitization and asthma among a low-income population	14.906	NYHHU0042-18			52,314	321,688
					<u>\$52,314</u>	<u>\$321,688</u>
Total Direct Award Programs					<u>\$61,686</u>	<u>\$467,963</u>
Total	Dept. of HousingUrban Development				<u>\$61,686</u>	<u>\$467,963</u>
Environmental Protection Agency						
Direct Awards						
Science To Achieve Results (STAR) Research Program						

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

The Trustees of Columbia University in the City of New York
Schedule of Expenditures of Federal Awards
For year ended June 30, 2020

<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	R&D Cluster	
					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Quantifying Risks From Changing U.S. PM2.5 Distributions Due to Climate Variability and Warming with Large Multi-Model Ensembles and High-Resolution Downscaling	66.509	EPA RD-83587801-5			56,171	116,829
					\$56,171	\$116,829
The Columbia Center for Children's Environmental Health	66.509	EPA 83615401			185,514	185,514
The Columbia Center for Children's Environmental Health	66.509	EPA 83615401			0	129,632
The Columbia Center for Children's Environmental Health	66.509	EPA 83615401			0	95,478
The Columbia Center for Children's Environmental Health	66.509	EPA 83615401			0	84,984
The Columbia Center for Children's Environmental Health	66.509	EPA 83615401			20,310	77,433
The Columbia Center for Children's Environmental Health	66.509	EPA 83615401			0	19,645
					\$205,824	\$592,686
					\$261,995	\$709,515
Total Direct Award Programs					\$261,995	\$709,515
Pass-through Awards						
Science To Achieve Results (STAR) Research Program						
The Multi-Ethnic Study of Atherosclerosis and Air Pollution (MESA Air): Next Stage	66.509	UWSC10109	838300001-0	UNIVERSITY OF WASHINGTON SEATTLE WASHINGTON	0	39,086
					\$0	\$39,086
					\$0	\$39,086
Office of Research and Development Consolidated Research/Training/Fellowships						
Assessing Adverse Health Effects of Long-Term Exposure to Low Levels of Ambient Air Pollution	66.511	HARVARD 114500-5104310	EPA 83467701	HARVARD UNIVERSITY	0	30,375
					\$0	\$30,375
					\$0	\$30,375
Total Pass-through Programs					\$0	\$69,461

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

The Trustees of Columbia University in the City of New York
Schedule of Expenditures of Federal Awards
For year ended June 30, 2020

						R&D Cluster
<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Total Environmental Protection Agency					\$261,995	\$778,976
Japan US Friendship Commission						
Direct Awards						
Japan-U.S. Friendship Commission Grants						
2018-2019 Japan-US Friendship Commission Prize for the Translation of Japanese Literature	90.300	JAPUS 18-23			0	2,865
					\$0	\$2,865
2019-2020 Japan-U.S. Friendship Commission Prize for the Translation of Japanese Literature	90.300	JAPUS 19-23			0	6,000
					0	3,559
					\$0	\$9,559
2020-2021 Japan-U.S. Friendship Commission Prize for the Translation of Japanese Literature	90.300	JAPUS 20-07			0	-141
					\$0	-\$141
					\$0	\$12,283
Total Direct Award Programs					\$0	\$12,283
Total Japan US Friendship Commission					\$0	\$12,283
Nat. Endowment for the ArtsHumanities						
Direct Awards						
Promotion of the Humanities Fellowships and Stipends						
Music and Mind in the Renaissance - NEH	45.160	NEH FEL-263043			0	60,000
					\$0	\$60,000
The Unknowing of American History: Past, Present, and the Historical Novel in the U.S.	45.160	FEL-262726-19			0	60,002
					\$0	\$60,002
					\$0	\$120,002

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

The Trustees of Columbia University in the City of New York
Schedule of Expenditures of Federal Awards
For year ended June 30, 2020

<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
R&D Cluster						
Promotion of the Humanities Research						
Craft Techniques and Knowledge Systems in a 16th-Century Artist s Manuscript: An Open-Access Critical Edition and Translation	45.161	NEH RQ-249842-16			0	63,064
					<u>\$0</u>	<u>\$63,064</u>
					<u>\$0</u>	<u>\$63,064</u>
Total Direct Award Programs					<u>\$0</u>	<u>\$183,066</u>
Pass-through Awards						
Promotion of the Humanities Office of Digital Humanities						
Humanities CORE	45.169	MLA CU16-0295	HD-250665	MODERN LANGUAGE ASSOCIATION OF AMERICA	0	4,445
					<u>\$0</u>	<u>\$4,445</u>
Analyzing Large-Scale Data for Patterns in Jazz	45.169	UIL 087569-16852	HJ-253587-17	UNIVERSITY OF ILLINOIS, BOARD OF TRUSTEES	0	19,941
					<u>\$0</u>	<u>\$19,941</u>
					<u>\$0</u>	<u>\$24,386</u>
Total Pass-through Programs					<u>\$0</u>	<u>\$24,386</u>
Total Nat. Endowment for the Arts					<u>\$0</u>	<u>\$207,452</u>
National Archives and Records Administration						
Direct Awards						
National Historical Publications and Records Grants						
The Selected Papers of John Jay, Year 15 (2018-2019)	89.003	NHPRC PE-100308-18			0	30,793
					<u>\$0</u>	<u>\$30,793</u>
The Selected Papers of John Jay, Year 16 (2019-2020)	89.003	NHPRC PE-102772-19			0	89,481
					<u>\$0</u>	<u>\$89,481</u>
					<u>\$0</u>	<u>\$120,274</u>
Total Direct Award Programs					<u>\$0</u>	<u>\$120,274</u>

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

The Trustees of Columbia University in the City of New York
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						R&D Cluster
<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Total National Archives and Records Administration					\$0	\$120,274
Other Agencies / Gov't						
Direct Awards						
KANSAS STATE UNIVERSITY						
Immunogens of high impact livestock pathogens	99	KSU-1048			0	24,261
					\$0	\$24,261
New York City Economic Development Corporation						
Cyber NYC Investors to Founders	99	NYCEDC 71020007			0	335,024
Cyber NYC Investors to Founders	99	NYCEDC 71020007			0	246,678
					\$0	\$581,702
					\$0	\$605,963
Total Direct Award Programs					\$0	\$605,963
Pass-through Awards						
Small Business Development Centers						
SBDC-RFSUNY FY2018	59.037	RFSUNY 82763	SBA1142365	RESEARCH FOUNDATION OF THE STATE UNIVERSITY OF NEW YORK	0	-2,647
					\$0	-\$2,647
SBDC-RFSUNY FY2020-2021	59.037	SUNYRF 86197	SBA 1157128	RESEARCH FOUNDATION OF THE STATE UNIVERSITY OF NEW YORK	0	204,682
					\$0	\$204,682
					\$0	\$202,035
Total Pass-through Programs					\$0	\$202,035
Total Other Agencies / Gov't					\$0	\$807,998

Social Security Administration

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

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						R&D Cluster
<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Pass-through Awards						
Social Security Administration/DHHS						
Early Intervention Mental Health Demonstration Study	96	WESTAT 6464-S02	SS001660014	WESTAT	0	82,313
					<u>\$0</u>	<u>\$82,313</u>
					<u>\$0</u>	<u>\$82,313</u>
Total Pass-through Programs					\$0	\$82,313
Total Social Security Administration					\$0	\$82,313
United States Agency for International Dvlpt.						
Direct Awards						
National Institute of Neurological Disorders and Stroke/NIH/DHHS						
Neuronal Mechanisms of Visually-Driven Aggressive Behavior	93.853	1R34NS116734-01			0	32,725
					<u>\$0</u>	<u>\$32,725</u>
					<u>\$0</u>	<u>\$32,725</u>
Total Direct Award Programs					\$0	\$32,725
Pass-through Awards						
U.S. Agency for International Development						
West Africa Biodiversity and Climate Change	98	TETRAARD 1861-CIESIN-000-001	AID-OAA-I-13-0058	TETRA TECH ARD	0	83,768
					<u>\$0</u>	<u>\$83,768</u>
SERVIR for USAID West Africa	98	TETRARD 1865-Columbia-001	AID-OAA-I-13-00058	TETRA TECH ARD	0	10,369
					<u>\$0</u>	<u>\$10,369</u>
Improving Climate Services for Resilient Development (CSR) in Colombia	98	CIAT C-136-16	USAID CU16-3371	International Center for Tropical Agriculture	0	2,712
					<u>\$0</u>	<u>\$2,712</u>

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

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						R&D Cluster
<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
USAID Municipal Waste Recycling Program Proposed SOW for CSUD Earth Institute	98	DIG CU16-1664	USAID CU16-1664	DEVELOPMENT INNOVATIONS GROUP	0	-8,329
					\$0	-\$8,329
Climate Data and Information for Resilient Development	98	CIAT C-048-18	AID CU18-2896	International Center for Tropical Agriculture	0	36
					\$0	\$36
SERVIR Amazonia	98	CIAT C-018-19	AID CU18-2597	International Center for Tropical Agriculture	0	24,180
					\$0	\$24,180
Proposed Malaria MVA-VLP Study	98	Leidos PO10181586	U.S. AGENCY FOR INTERNATIONAL	LEIDOS BIOMEDICAL RESEARCH INC	0	1,158
					\$0	\$1,158
Total Pass-through Programs					\$0	\$113,894
Total United States Agency for International Dvlpt.					\$0	\$146,619
Total: Research & Development Cluster					\$105,139,935	\$765,620,745

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

The Trustees of Columbia University in the City of New York
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Student Financial Aid Cluster

<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
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Student Financial Assistance Cluster

Department of Health & Human Services

Direct Awards

Health Professions Student Loans, Including Primary Care Loans/Loans for Disadvantaged Students

Health Professionals	93.342				0	8,683,927
					\$0	\$8,683,927
					\$0	\$8,683,927

Nursing Student Loans

Nursing Students	93.364				0	920,645
					\$0	\$920,645
NSL- Graduate Nursing - GRANT TYPE	93.364	4 E4DHP17942-03-01			0	149,741
					\$0	\$149,741
					\$0	\$1,070,386
Total Direct Award Programs					\$0	\$9,754,313
Total: Department of Health & Human Services (Excluding NIH)					\$0	\$9,754,313

Department of Education

Direct Awards

Federal Supplemental Educational Opportunity Grants

Federal Supplemental Education Opportunity Grant 2019-2020	84.007	P007A192737			0	1,126,666
					\$0	\$1,126,666
					\$0	\$1,126,666

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

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Student Financial Aid Cluster

<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Federal Work-Study Program						
Federal Work Study 2020-2021	84.033	P033A202737			0	7,367,766
					\$0	\$7,367,766
					\$0	\$7,367,766
Federal Perkins Loan Program						
Federal Perkins Loans	84.038				0	41,390,445
					\$0	\$41,390,445
					\$0	\$41,390,445
Federal Pell Grant Program						
Federal Pell Grant Program 2019-2020	84.063	P063P191840			0	9,872,064
					\$0	\$9,872,064
					\$0	\$9,872,064
Federal Direct Student Loans						
Federal Direct Loan Program 2020/2021	84.268	P268K211840			0	275,226,876
					\$0	\$275,226,876
					\$0	\$275,226,876
Total Direct Award Programs					\$0	\$334,983,817
Total: Department of Education					\$0	\$334,983,817
Total: Student Financial Assistance Cluster					\$0	\$344,738,130

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

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<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Global Aids						
Department of Health & Human Services						
Direct Awards						
Global AIDS						
UTAP 2: HQ - New York PMTCT	93.067	5U2GPS001537-05			0	-9,987
					\$0	-\$9,987
MZ Technical Assistance 0424 (NY)	93.067	6NU2GGH000424-05-06			0	-5,427
					0	-9,454
MZ Technical Assistance 0424 (NY)	93.067	6NU2GGH000424-05-06			0	-16,801
					0	-182,553
MZ Technical Assistance 0424 (NY)	93.067	6NU2GGH000424-05-06			0	-273,414
					\$0	-\$487,649
Building Mozambican Capacity - NY	93.067	5U2GPS002756-05			0	-55,493
					\$0	-\$55,493
Ethiopia Technical Assistance 1036 (NY)	93.067	6NU2GGH001036-05-05			0	-46,056
					\$0	-\$46,056
Strengthening Strategic Information Activities in the Kingdom of Lesotho under PEPFAR (NY)	93.067	6NU2GGH001128-05-06			0	3,432,695
					0	46,053
Strengthening Strategic Information Activities in the Kingdom of Lesotho under PEPFAR (NY)	93.067	6NU2GGH001128-05-06			0	46,053
					\$0	\$3,478,748

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

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<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Technical Assistance Program Area #2 1194 (NY)	93.067	6NU2GGH001194-05-06			0	210,623
Technical Assistance Program Area #2 1194 (NY)	93.067	6NU2GGH001194-05-06			13,990	104,313
Technical Assistance Program Area #2 1194 (NY)	93.067	6NU2GGH001194-05-06			0	37,669
Technical Assistance Program Area #2 1194 (NY)	93.067	6NU2GGH001194-05-06			0	29,698
Technical Assistance Program Area #2 1194 (NY)	93.067	6NU2GGH001194-05-06			0	24,279
Technical Assistance Program Area #2 1194 (NY)	93.067	6NU2GGH001194-05-06			0	8,746
Technical Assistance Program Area #2 1194 (NY)	93.067	6NU2GGH001194-05-06			0	-225
					\$13,990	\$415,103
Population-based Impact Assessments in Resource-Constrained Settings under the Presidents Emergency Plan for AIDS Relief (PEPFAR) - NY	93.067	6NU2GGH001226-05-10			2,526,018	11,214,995
Population-based Impact Assessments in Resource-Constrained Settings under the Presidents Emergency Plan for AIDS Relief (PEPFAR) - NY	93.067	6NU2GGH001226-05-10			849,825	3,805,184
Population-based Impact Assessments in Resource-Constrained Settings under the Presidents Emergency Plan for AIDS Relief (PEPFAR) - NY	93.067	6NU2GGH001226-05-10			0	593,460
Population-based Impact Assessments in Resource-Constrained Settings under the Presidents Emergency Plan for AIDS Relief (PEPFAR) - NY	93.067	6NU2GGH001226-05-10			0	573,688
Population-based Impact Assessments in Resource-Constrained Settings under the Presidents Emergency Plan for AIDS Relief (PEPFAR) - NY	93.067	6NU2GGH001226-05-10			0	396,096
Population-based Impact Assessments in Resource-Constrained Settings under the Presidents Emergency Plan for AIDS Relief (PEPFAR) - NY	93.067	6NU2GGH001226-05-10			0	119,678
Population-based Impact Assessments in Resource-Constrained Settings under the Presidents Emergency Plan for AIDS Relief (PEPFAR) - NY	93.067	6NU2GGH001226-05-10			0	109,513
Population-based Impact Assessments in Resource-Constrained Settings under the Presidents Emergency Plan for AIDS Relief (PEPFAR) - NY	93.067	6NU2GGH001226-05-10			0	93,921

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Population-based Impact Assessments in Resource-Constrained Settings under the Presidents Emergency Plan for AIDS Relief (PEPFAR) - NY	93.067	6NU2GGH001226-05-10			0	60,262
Population-based Impact Assessments in Resource-Constrained Settings under the Presidents Emergency Plan for AIDS Relief (PEPFAR) - NY	93.067	6NU2GGH001226-05-10			0	58,083
Population-based Impact Assessments in Resource-Constrained Settings under the Presidents Emergency Plan for AIDS Relief (PEPFAR) - NY	93.067	6NU2GGH001226-05-10			0	30,470
Population-based Impact Assessments in Resource-Constrained Settings under the Presidents Emergency Plan for AIDS Relief (PEPFAR) - NY	93.067	6NU2GGH001226-05-10			0	26,872
Population-based Impact Assessments in Resource-Constrained Settings under the Presidents Emergency Plan for AIDS Relief (PEPFAR) - NY	93.067	6NU2GGH001226-05-10			0	23,738
Population-based Impact Assessments in Resource-Constrained Settings under the Presidents Emergency Plan for AIDS Relief (PEPFAR) - NY	93.067	6NU2GGH001226-05-10			0	14,344
Population-based Impact Assessments in Resource-Constrained Settings under the Presidents Emergency Plan for AIDS Relief (PEPFAR) - NY	93.067	6NU2GGH001226-05-10			0	14,004
Population-based Impact Assessments in Resource-Constrained Settings under the Presidents Emergency Plan for AIDS Relief (PEPFAR) - NY	93.067	6NU2GGH001226-05-10			0	5,615
Population-based Impact Assessments in Resource-Constrained Settings under the Presidents Emergency Plan for AIDS Relief (PEPFAR) - NY	93.067	6NU2GGH001226-05-10			0	372
Population-based Impact Assessments in Resource-Constrained Settings under the Presidents Emergency Plan for AIDS Relief (PEPFAR) - NY	93.067	6NU2GGH001226-05-10			0	-120
Population-based Impact Assessments in Resource-Constrained Settings under the Presidents Emergency Plan for AIDS Relief (PEPFAR) - NY	93.067	6NU2GGH001226-05-10			0	-1,033
Population-based Impact Assessments in Resource-Constrained Settings under the Presidents Emergency Plan for AIDS Relief (PEPFAR) - NY	93.067	6NU2GGH001226-05-10			0	-6,437
Population-based Impact Assessments in Resource-Constrained Settings under the Presidents Emergency Plan for AIDS Relief (PEPFAR) - NY	93.067	6NU2GGH001226-05-10			0	-10,410
Population-based Impact Assessments in Resource-Constrained Settings under the Presidents Emergency Plan for AIDS Relief (PEPFAR) - NY	93.067	6NU2GGH001226-05-10			0	-19,529
Population-based Impact Assessments in Resource-Constrained Settings under the Presidents Emergency Plan for AIDS Relief (PEPFAR) - NY	93.067	6NU2GGH001226-05-10			-26,001	-26,001
Population-based Impact Assessments in Resource-Constrained Settings under the Presidents Emergency Plan for AIDS Relief (PEPFAR) - NY	93.067	6NU2GGH001226-05-10			-43,281	-43,281

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					Subrecipients	Total Expenditures (Includes Subrecipients)
Population-based Impact Assessments in Resource-Constrained Settings under the Presidents Emergency Plan for AIDS Relief (PEPFAR) - NY	93.067	6NU2GGH001226-05-10			0	-43,388
Population-based Impact Assessments in Resource-Constrained Settings under the Presidents Emergency Plan for AIDS Relief (PEPFAR) - NY	93.067	6NU2GGH001226-05-10			0	-74,058
Population-based Impact Assessments in Resource-Constrained Settings under the Presidents Emergency Plan for AIDS Relief (PEPFAR) - NY	93.067	6NU2GGH001226-05-10			0	-152,180
Population-based Impact Assessments in Resource-Constrained Settings under the Presidents Emergency Plan for AIDS Relief (PEPFAR) - NY	93.067	6NU2GGH001226-05-10			0	-340,132
Population-based Impact Assessments in Resource-Constrained Settings under the Presidents Emergency Plan for AIDS Relief (PEPFAR) - NY	93.067	6NU2GGH001226-05-10			-342,386	-342,386
					\$2,964,175	\$16,081,340
Strengthening National Epidemiology and Research Capacity to Improve Health Outcomes in the Kingdom of Swaziland under the President s Emergency Plan for AIDS Relief (PEPFAR) - NY	93.067	6NU2GGH001271-05-04			0	1,208,639
Strengthening National Epidemiology and Research Capacity to Improve Health Outcomes in the Kingdom of Swaziland under the President s Emergency Plan for AIDS Relief (PEPFAR) - NY	93.067	6NU2GGH001271-05-04			0	1,058,250
Strengthening National Epidemiology and Research Capacity to Improve Health Outcomes in the Kingdom of Swaziland under the President s Emergency Plan for AIDS Relief (PEPFAR) - NY	93.067	6NU2GGH001271-05-04			0	235,072
Strengthening National Epidemiology and Research Capacity to Improve Health Outcomes in the Kingdom of Swaziland under the President s Emergency Plan for AIDS Relief (PEPFAR) - NY	93.067	6NU2GGH001271-05-04			0	41,714
					\$0	\$2,543,675
Swaziland HIV/TB Lab (NY)	93.067	6NU2GGH001307-05-05			0	1,353,888
Swaziland HIV/TB Lab (NY)	93.067	6NU2GGH001307-05-05			0	447,359
Swaziland HIV/TB Lab (NY)	93.067	6NU2GGH001307-05-05			0	164,664
Swaziland HIV/TB Lab (NY)	93.067	6NU2GGH001307-05-05			0	45,829
					\$0	\$2,011,740
South Sudan Scale-Up (NY)	93.067	6NU2GGH001335-05-06			0	2,895,747

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						Global Aids
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South Sudan Scale-Up (NY)	93.067	6NU2GGH001335-05-06			0	972,064
South Sudan Scale-Up (NY)	93.067	6NU2GGH001335-05-06			0	201,978
South Sudan Scale-Up (NY)	93.067	6NU2GGH001335-05-06			0	41,049
					\$0	\$4,110,838
Swaziland - Quality-Assured (NY)	93.067	5NU2GGH001433-05-04			226,641	3,864,084
Swaziland - Quality-Assured (NY)	93.067	5NU2GGH001433-05-04			207,248	1,228,006
Swaziland - Quality-Assured (NY)	93.067	5NU2GGH001433-05-04			0	633,565
Swaziland - Quality-Assured (NY)	93.067	5NU2GGH001433-05-04			0	231,987
Swaziland - Quality-Assured (NY)	93.067	5NU2GGH001433-05-04			0	197,826
Swaziland - Quality-Assured (NY)	93.067	5NU2GGH001433-05-04			0	188,141
					\$433,889	\$6,343,609
Expand Coverage and Improve the Quality of Facility and Community-Based Prevention of Mother to Child Transmission of HIV (PMTCT) Support for Rollout of Option B+ Services in the Littoral and Center R	93.067	5 NU2GGH001352-03-00			0	-1,971
Expand Coverage and Improve the Quality of Facility and Community-Based Prevention of Mother to Child Transmission of HIV (PMTCT) Support for Rollout of Option B+ Services in the Littoral and Center R	93.067	5 NU2GGH001352-03-00			0	-1,995
Expand Coverage and Improve the Quality of Facility and Community-Based Prevention of Mother to Child Transmission of HIV (PMTCT) Support for Rollout of Option B+ Services in the Littoral and Center R	93.067	5 NU2GGH001352-03-00			0	-2,999
Expand Coverage and Improve the Quality of Facility and Community-Based Prevention of Mother to Child Transmission of HIV (PMTCT) Support for Rollout of Option B+ Services in the Littoral and Center R	93.067	5 NU2GGH001352-03-00			0	-62,764
					\$0	\$-69,729
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	726,426

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						<u>Total Expenditures (Includes Subrecipients)</u>
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	190,920
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	186,341
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	184,443
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	170,816
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	162,170
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	146,984
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	137,696
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	131,958
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	130,504
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	123,952
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	114,374
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	95,737
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	87,823
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	84,211
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	80,425
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	78,309

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						<u>Total Expenditures (Includes Subrecipients)</u>
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	65,739
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	55,530
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	34,624
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	33,684
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	32,823
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	28,089
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	27,353
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	25,027
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	21,912
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	20,250
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	16,155
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	15,838
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	15,388
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	15,093
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	14,849
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	14,833

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						<u>Total Expenditures (Includes Subrecipients)</u>
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	14,657
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	13,312
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			13,270	13,270
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	9,229
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	6,993
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	6,782
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	5,702
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	4,430
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	3,798
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	3,780
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	2,659
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	1,890
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	1,340
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	215
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	156
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	-8,738

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GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	-11,655
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	-18,695
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	-19,554
GH13-1368 Global Technical Assistance - NY	93.067	6NU2GGH000994-05-18			0	-131,711
					\$13,270	\$3,168,136
Increase Access to Comprehensive HIV/AIDS Prevention, Care and Treatment Services in the Democratic Republic of Congo under the President s Emergency Plan for AIDS Relief (PEPFAR)	93.067	6NU2GGH001351-05-04			871,503	6,006,861
Increase Access to Comprehensive HIV/AIDS Prevention, Care and Treatment Services in the Democratic Republic of Congo under the President s Emergency Plan for AIDS Relief (PEPFAR)	93.067	6NU2GGH001351-05-04			366,377	2,177,357
Increase Access to Comprehensive HIV/AIDS Prevention, Care and Treatment Services in the Democratic Republic of Congo under the President s Emergency Plan for AIDS Relief (PEPFAR)	93.067	6NU2GGH001351-05-04			0	391,769
Increase Access to Comprehensive HIV/AIDS Prevention, Care and Treatment Services in the Democratic Republic of Congo under the President s Emergency Plan for AIDS Relief (PEPFAR)	93.067	6NU2GGH001351-05-04			0	103,608
					\$1,237,880	\$8,679,595
Community-Based HIV Services for Key Populations and Adolescent Girls and Young Women	93.067	6NU2GGH001941-04-02			0	-13,754
					\$0	\$-13,754
Strengthening Epidemiology and Strategic Information in the Republic of Zimbabwe under the President s Emergency Plan for AIDS Relief (PEPFAR)	93.067	6NU2GGH001939-04-02			0	2,779,982
Strengthening Epidemiology and Strategic Information in the Republic of Zimbabwe under the President s Emergency Plan for AIDS Relief (PEPFAR)	93.067	6NU2GGH001939-04-02			0	722,290
COVID-19 - Strengthening Epidemiology and Strategic Information in the Republic of Zimbabwe under the President s Emergency Plan for AIDS Relief (PEPFAR)	93.067	COVID-19			0	89,103
Strengthening Epidemiology and Strategic Information in the Republic of Zimbabwe under the President s Emergency Plan for AIDS Relief (PEPFAR)	93.067	6NU2GGH001939-04-02			0	79,345
Strengthening Epidemiology and Strategic Information in the Republic of Zimbabwe under the President s Emergency Plan for AIDS Relief (PEPFAR)	93.067	6NU2GGH001939-04-02			0	72,470

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						Global Aids
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Strengthening Epidemiology and Strategic Information in the Republic of Zimbabwe under the President s Emergency Plan for AIDS Relief (PEPFAR)	93.067	6NU2GGH001939-04-02			0	22,198
					\$0	\$3,765,388
Supporting Sustainable Implementation of HIV and TB Services for Epidemic Control in the Republic of Mozambique under PEPFAR	93.067	5NU2GGH001944-05-00			0	13,699,993
Supporting Sustainable Implementation of HIV and TB Services for Epidemic Control in the Republic of Mozambique under PEPFAR	93.067	5NU2GGH001944-05-00			0	5,355,312
Supporting Sustainable Implementation of HIV and TB Services for Epidemic Control in the Republic of Mozambique under PEPFAR	93.067	5NU2GGH001944-05-00			0	586,418
Supporting Sustainable Implementation of HIV and TB Services for Epidemic Control in the Republic of Mozambique under PEPFAR	93.067	5NU2GGH001944-05-00			0	157,914
Supporting Sustainable Implementation of HIV and TB Services for Epidemic Control in the Republic of Mozambique under PEPFAR	93.067	5NU2GGH001944-05-00			0	130,505
Supporting Sustainable Implementation of HIV and TB Services for Epidemic Control in the Republic of Mozambique under PEPFAR	93.067	5NU2GGH001944-05-00			0	-124,910
Supporting Sustainable Implementation of HIV and TB Services for Epidemic Control in the Republic of Mozambique under PEPFAR	93.067	5NU2GGH001944-05-00			0	-462,779
					\$0	\$19,342,453
Lesotho, Provide Miner-friendly SErviceS for Integrated TB/HIV Care (PROMISE)	93.067	5U01GH002115-04-00			0	79,638
Lesotho, Provide Miner-friendly SErviceS for Integrated TB/HIV Care (PROMISE)	93.067	5U01GH002115-04-00			0	74,945
Lesotho, Provide Miner-friendly SErviceS for Integrated TB/HIV Care (PROMISE)	93.067	5U01GH002115-04-00			9,171	37,818
Lesotho, Provide Miner-friendly SErviceS for Integrated TB/HIV Care (PROMISE)	93.067	5U01GH002115-04-00			0	36,908
					\$9,171	\$229,309
Implementation of Programs for the Prevention, Care and Treatment of HIV/AIDS in the Republic of Cote d Ivoire under the President s Emergency Plan for AIDS Relief (PEPFAR)	93.067	6NU2GGH002015-03-03			54,290	1,834,627
Implementation of Programs for the Prevention, Care and Treatment of HIV/AIDS in the Republic of Cote d Ivoire under the President s Emergency Plan for AIDS Relief (PEPFAR)	93.067	6NU2GGH002015-03-03			332,865	625,168

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Implementation of Programs for the Prevention, Care and Treatment of HIV/AIDS in the Republic of Cote d'Ivoire under the President's Emergency Plan for AIDS Relief (PEPFAR)	93.067	6NU2GGH002015-03-03			0	96,663
Implementation of Programs for the Prevention, Care and Treatment of HIV/AIDS in the Republic of Cote d'Ivoire under the President's Emergency Plan for AIDS Relief (PEPFAR)	93.067	6NU2GGH002015-03-03			0	4,808
					\$387,155	\$2,561,266
Community-Based HIV Services for Key Populations and Adolescent Girls and Young Women	93.067	6 NU2GGH001941-04-09			50,198	14,871,070
Community-Based HIV Services for Key Populations and Adolescent Girls and Young Women	93.067	6 NU2GGH001941-04-09			272,432	5,314,651
Community-Based HIV Services for Key Populations and Adolescent Girls and Young Women	93.067	6 NU2GGH001941-04-09			0	262,043
Community-Based HIV Services for Key Populations and Adolescent Girls and Young Women	93.067	6 NU2GGH001941-04-09			0	105,401
Community-Based HIV Services for Key Populations and Adolescent Girls and Young Women	93.067	6 NU2GGH001941-04-09			0	-20,762
					\$322,630	\$20,532,403
Supporting the Provision of High Quality, Comprehensive, and Sustainable HIV Services in National Teaching and Referral Hospitals in the Republic of Kenya under PEPFAR	93.067	6NU2GGH001952-04-04			496,628	969,766
Supporting the Provision of High Quality, Comprehensive, and Sustainable HIV Services in National Teaching and Referral Hospitals in the Republic of Kenya under PEPFAR	93.067	6NU2GGH001952-04-04			0	484,409
Supporting the Provision of High Quality, Comprehensive, and Sustainable HIV Services in National Teaching and Referral Hospitals in the Republic of Kenya under PEPFAR	93.067	6NU2GGH001952-04-04			245,193	355,619
Supporting the Provision of High Quality, Comprehensive, and Sustainable HIV Services in National Teaching and Referral Hospitals in the Republic of Kenya under PEPFAR	93.067	6NU2GGH001952-04-04			0	48,509
					\$741,821	\$1,858,303
Technical Assistance to Ethiopia's Federal Ministry of Health and Regional Health Bureaus in Comprehensive HIV/AIDS Programming and Direct Site-Level Support in the Four Emerging Regions under PEPFAR	93.067	6NU2GGH002156-03-00			42,653	5,310,531
Technical Assistance to Ethiopia's Federal Ministry of Health and Regional Health Bureaus in Comprehensive HIV/AIDS Programming and Direct Site-Level Support in the Four Emerging Regions under PEPFAR	93.067	6NU2GGH002156-03-00			184,503	3,682,777
Technical Assistance to Ethiopia's Federal Ministry of Health and Regional Health Bureaus in Comprehensive HIV/AIDS Programming and Direct Site-Level Support in the Four Emerging Regions under PEPFAR	93.067	6NU2GGH002156-03-00			0	437,505

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

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						Global Aids
<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Technical Assistance to Ethiopia s Federal Ministry of Health and Regional Health Bureaus in Comprehensive HIV/AIDS Programming and Direct Site-Level Support in the Four Emerging Regions under PEPFAR	93.067	6NU2GGH002156-03-00			0	157,253
					\$227,156	\$9,588,066
HIV-Focused Population Surveys in Countries Supported Under the President s Emergency Plan for AIDS Relief	93.067	6NU2GGH002173-02-02			4,075,392	11,429,975
HIV-Focused Population Surveys in Countries Supported Under the President s Emergency Plan for AIDS Relief	93.067	6NU2GGH002173-02-02			0	10,601,996
HIV-Focused Population Surveys in Countries Supported Under the President s Emergency Plan for AIDS Relief	93.067	6NU2GGH002173-02-02			0	8,139,427
HIV-Focused Population Surveys in Countries Supported Under the President s Emergency Plan for AIDS Relief	93.067	6NU2GGH002173-02-02			1,667,506	7,650,581
HIV-Focused Population Surveys in Countries Supported Under the President s Emergency Plan for AIDS Relief	93.067	6NU2GGH002173-02-02			0	6,193,796
HIV-Focused Population Surveys in Countries Supported Under the President s Emergency Plan for AIDS Relief	93.067	6NU2GGH002173-02-02			105,767	4,936,535
HIV-Focused Population Surveys in Countries Supported Under the President s Emergency Plan for AIDS Relief	93.067	6NU2GGH002173-02-02			94,089	4,555,344
HIV-Focused Population Surveys in Countries Supported Under the President s Emergency Plan for AIDS Relief	93.067	6NU2GGH002173-02-02			0	3,026,362
HIV-Focused Population Surveys in Countries Supported Under the President s Emergency Plan for AIDS Relief	93.067	6NU2GGH002173-02-02			0	2,387,815
HIV-Focused Population Surveys in Countries Supported Under the President s Emergency Plan for AIDS Relief	93.067	6NU2GGH002173-02-02			0	1,028,486
HIV-Focused Population Surveys in Countries Supported Under the President s Emergency Plan for AIDS Relief	93.067	6NU2GGH002173-02-02			0	929,672
HIV-Focused Population Surveys in Countries Supported Under the President s Emergency Plan for AIDS Relief	93.067	6NU2GGH002173-02-02			0	870,762
HIV-Focused Population Surveys in Countries Supported Under the President s Emergency Plan for AIDS Relief	93.067	6NU2GGH002173-02-02			0	621,123
HIV-Focused Population Surveys in Countries Supported Under the President s Emergency Plan for AIDS Relief	93.067	6NU2GGH002173-02-02			0	476,826

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						Global Aids
<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
HIV-Focused Population Surveys in Countries Supported Under the President's Emergency Plan for AIDS Relief	93.067	6NU2GGH002173-02-02			0	262,686
HIV-Focused Population Surveys in Countries Supported Under the President's Emergency Plan for AIDS Relief	93.067	6NU2GGH002173-02-02			0	20,087
					\$5,942,754	\$63,131,473
Support of Strategic Information Activities in the Kingdom of Lesotho under PEPFAR	93.067	5NU2GGH002219-02-00			22,970	357,580
Support of Strategic Information Activities in the Kingdom of Lesotho under PEPFAR	93.067	5NU2GGH002219-02-00			0	25,416
					\$22,970	\$382,996
Strengthening the Health System Capacity to Implement HIV Prevention Care and Treatment Services in South Africa Under PEPFAR - USNY	93.067	6NU2GGH002196-01-04			0	1,070,857
Strengthening the Health System Capacity to Implement HIV Prevention Care and Treatment Services in South Africa Under PEPFAR - USNY	93.067	6NU2GGH002196-01-04			1,538	220,941
					\$1,538	\$1,291,798
COVID-19 - Public Health Surveillance of Recent HIV Infection and Response under the President's Emergency Plan for AIDS Relief (PEPFAR) - COVID 19	93.067	COVID-19			0	28,641
COVID-19 - Public Health Surveillance of Recent HIV Infection and Response under the President's Emergency Plan for AIDS Relief (PEPFAR) - COVID 19	93.067	COVID-19			0	24,086
COVID-19 - Public Health Surveillance of Recent HIV Infection and Response under the President's Emergency Plan for AIDS Relief (PEPFAR) - COVID 19	93.067	COVID-19			0	17,187
COVID-19 - Public Health Surveillance of Recent HIV Infection and Response under the President's Emergency Plan for AIDS Relief (PEPFAR) - COVID 19	93.067	COVID-19			0	12,130
COVID-19 - Public Health Surveillance of Recent HIV Infection and Response under the President's Emergency Plan for AIDS Relief (PEPFAR) - COVID 19	93.067	COVID-19			0	8,339
COVID-19 - Public Health Surveillance of Recent HIV Infection and Response under the President's Emergency Plan for AIDS Relief (PEPFAR) - COVID 19	93.067	COVID-19			0	3,628
COVID-19 - Public Health Surveillance of Recent HIV Infection and Response under the President's Emergency Plan for AIDS Relief (PEPFAR) - COVID 19	93.067	COVID-19			0	2,913
COVID-19 - Public Health Surveillance of Recent HIV Infection and Response under the President's Emergency Plan for AIDS Relief (PEPFAR) - COVID 19	93.067	COVID-19			0	1,216

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<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
COVID-19 - Public Health Surveillance of Recent HIV Infection and Response under the President s Emergency Plan for AIDS Relief (PEPFAR) - COVID 19	93.067	COVID-19			0	1,216
COVID-19 - Public Health Surveillance of Recent HIV Infection and Response under the President s Emergency Plan for AIDS Relief (PEPFAR) - COVID 19	93.067	COVID-19			0	1,201
COVID-19 - Public Health Surveillance of Recent HIV Infection and Response under the President s Emergency Plan for AIDS Relief (PEPFAR) - COVID 19	93.067	COVID-19			0	481
COVID-19 - Public Health Surveillance of Recent HIV Infection and Response under the President s Emergency Plan for AIDS Relief (PEPFAR) - COVID 19	93.067	COVID-19			0	481
COVID-19 - Public Health Surveillance of Recent HIV Infection and Response under the President s Emergency Plan for AIDS Relief (PEPFAR) - COVID 19	93.067	COVID-19			0	481
COVID-19 - Public Health Surveillance of Recent HIV Infection and Response under the President s Emergency Plan for AIDS Relief (PEPFAR) - COVID 19	93.067	COVID-19			0	481
COVID-19 - Public Health Surveillance of Recent HIV Infection and Response under the President s Emergency Plan for AIDS Relief (PEPFAR) - COVID 19	93.067	COVID-19			0	240
					\$0	\$102,721
Technical Assistance to National Health Information Systems and Health Workforce Development of the Federal Democratic Republic of Ethiopia under the President s Emergency Plan for AIDS Relief (PEPFA	93.067	6NU2GGH002090-03-05			-313	3,613,559
Technical Assistance to National Health Information Systems and Health Workforce Development of the Federal Democratic Republic of Ethiopia under the President s Emergency Plan for AIDS Relief (PEPFA	93.067	6NU2GGH002090-03-05			0	2,898,370
Technical Assistance to National Health Information Systems and Health Workforce Development of the Federal Democratic Republic of Ethiopia under the President s Emergency Plan for AIDS Relief (PEPFA	93.067	6NU2GGH002090-03-05			0	262,981
Technical Assistance to National Health Information Systems and Health Workforce Development of the Federal Democratic Republic of Ethiopia under the President s Emergency Plan for AIDS Relief (PEPFA	93.067	6NU2GGH002090-03-05			0	42,500
					-\$313	\$6,817,410
Supporting Sustainable Surveillance Systems Among Key Populations (KP) and Support the Government of Zambia to Improve HIV-related Services for KP under the President s Emergency Plan for AIDS Relief	93.067	5NU2GGH002056-03-00			0	269,645
Supporting Sustainable Surveillance Systems Among Key Populations (KP) and Support the Government of Zambia to Improve HIV-related Services for KP under the President s Emergency Plan for AIDS Relief	93.067	5NU2GGH002056-03-00			0	172,668
Supporting Sustainable Surveillance Systems Among Key Populations (KP) and Support the Government of Zambia to Improve HIV-related Services for KP under the President s Emergency Plan for AIDS Relief	93.067	5NU2GGH002056-03-00			0	77,114
Supporting Sustainable Surveillance Systems Among Key Populations (KP) and Support the Government of Zambia to Improve HIV-related Services for KP under the President s Emergency Plan for AIDS Relief	93.067	5NU2GGH002056-03-00			0	43,761

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$563,188
GH13-1368 HQ Global Technical Assistance	93.067	6NU2GGH000994-05-18			0	154,927
GH13-1368 HQ Global Technical Assistance	93.067	6NU2GGH000994-05-18			0	71,788
					\$0	\$226,715
GH13-1368 HQ Global Technical Assistance	93.067	6NU2GGH000994-05-11			0	181,403
GH13-1368 HQ Global Technical Assistance	93.067	6NU2GGH000994-05-11			0	3,235
GH13-1368 HQ Global Technical Assistance	93.067	6NU2GGH000994-05-11			0	3,235
GH13-1368 HQ Global Technical Assistance	93.067	6NU2GGH000994-05-11			0	2,225
					\$0	\$190,098
GH13-1368 HQ Global Technical Assistance	93.067	6NU2GGH000994-05-18			0	786,293
GH13-1368 HQ Global Technical Assistance	93.067	6NU2GGH000994-05-18			0	93,639
					\$0	\$879,932
GH13-1368 Global Technical Assistance - CAR COP - NY	93.067	6NU2GGH000994-05-18			0	508,603
GH13-1368 Global Technical Assistance - CAR COP - NY	93.067	6NU2GGH000994-05-18			0	335,180
GH13-1368 Global Technical Assistance - CAR COP - NY	93.067	6NU2GGH000994-05-18			0	220,824
GH13-1368 Global Technical Assistance - CAR COP - NY	93.067	6NU2GGH000994-05-18			0	101,728
					\$0	\$1,166,335
GH13-1368 HQ Global Technical Assistance	93.067	6NU2GGH000994-05-11			0	2,464
					\$0	\$2,464

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Public Health Surveillance of Recent HIV Infection and Response under the President s Emergency Plan for AIDS Relief (PEPFAR)	93.067	6NU2GGH002171-02-02			244,037	2,957,095
Public Health Surveillance of Recent HIV Infection and Response under the President s Emergency Plan for AIDS Relief (PEPFAR)	93.067	6NU2GGH002171-02-02			142,568	928,087
Public Health Surveillance of Recent HIV Infection and Response under the President s Emergency Plan for AIDS Relief (PEPFAR)	93.067	6NU2GGH002171-02-02			0	362,387
Public Health Surveillance of Recent HIV Infection and Response under the President s Emergency Plan for AIDS Relief (PEPFAR)	93.067	6NU2GGH002171-02-02			0	126,801
Public Health Surveillance of Recent HIV Infection and Response under the President s Emergency Plan for AIDS Relief (PEPFAR)	93.067	6NU2GGH002171-02-02			0	105,908
Public Health Surveillance of Recent HIV Infection and Response under the President s Emergency Plan for AIDS Relief (PEPFAR)	93.067	6NU2GGH002171-02-02			0	64,865
Public Health Surveillance of Recent HIV Infection and Response under the President s Emergency Plan for AIDS Relief (PEPFAR)	93.067	6NU2GGH002171-02-02			0	60,536
Public Health Surveillance of Recent HIV Infection and Response under the President s Emergency Plan for AIDS Relief (PEPFAR)	93.067	6NU2GGH002171-02-02			0	54,487
Public Health Surveillance of Recent HIV Infection and Response under the President s Emergency Plan for AIDS Relief (PEPFAR)	93.067	6NU2GGH002171-02-02			0	22,103
Public Health Surveillance of Recent HIV Infection and Response under the President s Emergency Plan for AIDS Relief (PEPFAR)	93.067	6NU2GGH002171-02-02			0	300
Public Health Surveillance of Recent HIV Infection and Response under the President s Emergency Plan for AIDS Relief (PEPFAR)	93.067	6NU2GGH002171-02-02			0	218
Public Health Surveillance of Recent HIV Infection and Response under the President s Emergency Plan for AIDS Relief (PEPFAR)	93.067	6NU2GGH002171-02-02			0	-46
					\$386,605	\$4,682,741
Technical Assistance to Central Asian National HIV Programs to Achieve and Sustain HIV Epidemic Control under the President s Emergency Plan for AIDS Relief (PEPFAR)	93.067	6NU2GGH002185-01-04			17,949	722,331
Technical Assistance to Central Asian National HIV Programs to Achieve and Sustain HIV Epidemic Control under the President s Emergency Plan for AIDS Relief (PEPFAR)	93.067	6NU2GGH002185-01-04			17,876	717,839
Technical Assistance to Central Asian National HIV Programs to Achieve and Sustain HIV Epidemic Control under the President s Emergency Plan for AIDS Relief (PEPFAR)	93.067	6NU2GGH002185-01-04			0	278,329

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						Global Aids
<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Technical Assistance to Central Asian National HIV Programs to Achieve and Sustain HIV Epidemic Control under the President s Emergency Plan for AIDS Relief (PEPFAR)	93.067	6NU2GGH002185-01-04			0	101,043
					\$35,825	\$1,819,542
Supporting the Provision of High Quality, Comprehensive, and Sustainable HIV Services in National Teaching and Referral Hospitals in the Republic of Kenya under PEPFAR	93.067	5NU2GGH001952-04-00			0	78,826
					\$0	\$78,826
Targeted Programmatic Support Across Countries under the Global Fund to Fight HIV/AIDS, Tuberculosis and Malaria and under the President s Emergency Plan for AIDS Relief (Zambia)	93.067	6NU2GGH002216-01-10			0	3,125,658
Targeted Programmatic Support Across Countries under the Global Fund to Fight HIV/AIDS, Tuberculosis and Malaria and under the President s Emergency Plan for AIDS Relief (Zambia)	93.067	6NU2GGH002216-01-10			0	166,440
					\$0	\$3,292,098
Targeted Programmatic Support Across Countries under the Global Fund to Fight HIV/AIDS, Tuberculosis and Malaria and under the President s Emergency Plan for AIDS Relief (Angola)	93.067	6NU2GGH002216-01-08			0	1,270,024
Targeted Programmatic Support Across Countries under the Global Fund to Fight HIV/AIDS, Tuberculosis and Malaria and under the President s Emergency Plan for AIDS Relief (Angola)	93.067	6NU2GGH002216-01-08			0	356,689
					\$0	\$1,626,713
Targeted Programmatic Support Across Countries under the Global Fund to Fight HIV/AIDS, Tuberculosis and Malaria and under the President s Emergency Plan for AIDS Relief (Burma)	93.067	6NU2GGH002216-01-08			86,706	1,267,459
Targeted Programmatic Support Across Countries under the Global Fund to Fight HIV/AIDS, Tuberculosis and Malaria and under the President s Emergency Plan for AIDS Relief (Burma)	93.067	6NU2GGH002216-01-08			0	163,142
Targeted Programmatic Support Across Countries under the Global Fund to Fight HIV/AIDS, Tuberculosis and Malaria and under the President s Emergency Plan for AIDS Relief (Burma)	93.067	6NU2GGH002216-01-08			0	20,288
					\$86,706	\$1,450,889
Targeted Programmatic Support Across Countries under the Global Fund to Fight HIV/AIDS, Tuberculosis and Malaria and under the President s Emergency Plan for AIDS Relief (Cameroon)	93.067	6NU2GGH002216-01-10			0	3,596,623
Targeted Programmatic Support Across Countries under the Global Fund to Fight HIV/AIDS, Tuberculosis and Malaria and under the President s Emergency Plan for AIDS Relief (Cameroon)	93.067	6NU2GGH002216-01-10			0	359,832
					\$0	\$3,956,455
Public Health Surveillance of Recent HIV Infection and Response under the President s Emergency Pla	93.067	6NU2GGH002171-02-02			0	145,884
					\$0	\$145,884

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						Global Aids
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Public Health Surveillance of Recent HIV Infection and Response under the President s Emergency Pla	93.067	6NU2GGH002171-02-02			0	114,220
					\$0	\$114,220
Public Health Surveillance of Recent HIV Infection and Response under the President s Emergency Pla	93.067	6NU2GGH002171-02-02			0	299,428
					\$0	\$299,428
Public Health Surveillance of Recent HIV Infection and Response under the President s Emergency Pla	93.067	6NU2GGH002171-02-02			0	177,820
					\$0	\$177,820
Public Health Surveillance of Recent HIV Infection and Response under the President s Emergency Pla	93.067	6NU2GGH002171-02-02			0	290,163
					\$0	\$290,163
Public Health Surveillance of Recent HIV Infection and Response under the President s Emergency Pla	93.067	6NU2GGH002171-02-02			23,082	712,295
					\$23,082	\$712,295
Targeted Programmatic Support Across Countries under the Global Fund to Fight HIV/AIDS, Tuberculosis and Malaria and under the President s Emergency Plan for AIDS Relief (PEPFAR)	93.067	6NU2GGH002216-01-10			0	139,390
Targeted Programmatic Support Across Countries under the Global Fund to Fight HIV/AIDS, Tuberculosis and Malaria and under the President s Emergency Plan for AIDS Relief (PEPFAR)	93.067	6NU2GGH002216-01-10			0	47,694
					\$0	\$187,084
COVID-19 - Supporting Sustainable Implementation of HIV and TB Services for Epidemic Control in the Republic of Mozambique under PEPFAR (COVID-19)	93.067	COVID-19			0	106,371
					\$0	\$106,371
COVID-19 - Increase Access to Comprehensive HIV/AIDS Prevention, Care and Treatment Services in the Democratic Republic of Congo under the President s Emergency Plan for AIDS Relief (PEPFAR)	93.067	COVID-19			0	252
					\$0	\$252
					\$12,850,304	\$197,723,215
Total Direct Award Programs					\$12,850,304	\$197,723,215

Pass-through Awards

Global AIDS

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						Global Aids
<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Comprehensive Approaches to Strengthening the Health System and HIV Response in the Republic of Mozambique under the President's Emergency Plan for AIDS Relief (PEPFAR)	93.067	JHPIEGO 16-SBA-016	U2GGH001309	JOHNS HOPKINS PROG FOR INTRNL EDUCA. INGYN/OB	0	-76,377
					\$0	\$-76,377
Enhance Population Access to Comprehensive HIV/AIDS Services in Order to Achieve HIV/AIDS Epidemic Control in the Democratic Republic of Congo (DRC), Specifically in Kinshasa under the President's Em	93.067	HPP CU 18-3069	NU2GGH002220	HUMANA PEOPLE TO PEOPLE	0	447,266
Enhance Population Access to Comprehensive HIV/AIDS Services in Order to Achieve HIV/AIDS Epidemic Control in the Democratic Republic of Congo (DRC), Specifically in Kinshasa under the President's Em	93.067	HPP CU 18-3069	NU2GGH002220	HUMANA PEOPLE TO PEOPLE	0	18,450
					\$0	\$465,716
Delivering Comprehensive Services to Achieve HIV Epidemic Control in Subnational Units in Nigeria under PEPFAR	93.067	CHIP CU18-3934	U2GGH002097-01	CENTRE FOR INTEGRATED HEALTH PROGRAMS	0	14,022
					\$0	\$14,022
Key Populations Investment Fund Project	93.067	IRDO-1NU2GGH001963-ICA P	1NU2GGH001963	IMPACT RESEARCH AND DEVELOPMENTORGANIZATION	0	31,574
					\$0	\$31,574
Total Pass-through Programs					\$0	\$434,935
Total Department of Health & Human Services (Excluding NIH)					\$12,850,304	\$198,158,150
Grand Total: Department of Health & Human Services					\$12,850,304	\$198,158,150
Total: Global Aids					\$12,850,304	\$198,158,150

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Head Start Cluster

<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
Head Start Cluster						
Department of Health & Human Services						
Direct Awards						
Early Head Start	93.600	02CH3042-06-01			0	153,243
Early Head Start	93.600	02CH3042-06-01			0	24,996
Early Head Start	93.600	02CH3042-06-01			0	4,411
Early Head Start	93.600	02CH3042-06-01			0	-4,410
Early Head Start	93.600	02CH3042-06-01			0	-11,614
					\$0	\$166,626
Total Direct Award Programs					\$0	\$166,626
Total Department of Health & Human Services (Excluding NIH)					\$0	\$166,626
Grand Total: Department of Health & Human Services					\$0	\$166,626
Total: Head Start Cluster						

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TRIO Cluster

<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
TRIO Cluster						
Department of Education						
Direct Awards						
TRIO Talent Search						
CCO DDC Talent Search	84.044	DE-P044A160893			0	437,095
					\$0	\$437,095
					\$0	\$437,095
TRIO Upward Bound						
TRIO Upward Bound Program	84.047	P047A170670-20			0	906,426
					\$0	\$906,426
					\$0	\$906,426
Total Direct Award Programs					\$0	\$1,343,521
Total	Department of Education				\$0	\$1,343,521
Total:	TRIO Cluster				\$0	\$1,343,521

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<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Other Programs</u> <u>Total Expenditures</u> <u>(Includes Subrecipients)</u>
Other Programs						
Department of Health & Human Services						
Direct Awards						
Centers for Disease Control and Prevention/DHHS						
TB Building and Strengthening Infection Control Strategies	93	CDC#14IPA1417004			0	163,633
					<u>\$0</u>	<u>\$163,633</u>
					\$0	\$163,633
Food and Drug Administration Research						
2019 OHDSI Symposium	93.103	1R13FD006706-01			0	95,000
					<u>\$0</u>	<u>\$95,000</u>
					\$0	\$95,000
Nurse Anesthetist Traineeship						
Nurse Anesthetist Traineeship (NAT) Program	93.124	1A22HP33098-01-00			0	32,288
					<u>\$0</u>	<u>\$32,288</u>
					\$0	\$32,288
Emergency Medical Services for Children						
EMSC NETWORK DEVELOPMENT DEMONSTRATION PROJECT (NDDP)	93.127	6U03MC00007 -18- 02			129,887	194,735
					<u>\$129,887</u>	<u>\$194,735</u>
					\$129,887	\$194,735
HIV-Related Training and Technical Assistance						
AIDS Education and Training Centers Program	93.145	5U10HA29291-04-00			759,149	922,969

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

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						<u>Total Expenditures (Includes Subrecipients)</u>
AIDS Education and Training Centers Program	93.145	5U10HA29291-04-00			0	-338
					\$759,149	\$922,631
Regional AIDS Education and Training Centers	93.145	5U10HA29291-06-00			1,089,959	2,784,381
					\$1,089,959	\$2,784,381
					\$1,849,108	\$3,707,012
Research on Healthcare Costs, Quality and Outcomes						
Developing ICD-11: Coding of Quality and Patient Safety Data to support health services and outcomes research in the US and internationally	93.226	1R13HS027288-01			0	4,039
					\$0	\$4,039
					\$0	\$4,039
Substance Abuse and Mental Health Services Projects of Regional and National Significance						
Training Medical and Dental Students in SBIRT	93.243	6H79TI025937-03M003			20,257	49,742
					\$20,257	\$49,742
					\$20,257	\$49,742
Health Systems Strengthening and HIV/AIDS Prevention, Care and Treatment under the President's Emergency Plan for AIDS Relief						
Global HIV/AIDS Nursing Initiative	93.266	6U92HA127772-08-26			0	-3,594
Global HIV/AIDS Nursing Initiative	93.266	6U92HA127772-08-26			0	-3,616
					\$0	\$-7,210
Quality Improvement Capacity for Impact Project - Ken COP16 - NY	93.266	6U1NHA28555-05-01			0	478,134
Quality Improvement Capacity for Impact Project - Ken COP16 - NY	93.266	6U1NHA28555-05-01			0	267,265
Quality Improvement Capacity for Impact Project - Ken COP16 - NY	93.266	6U1NHA28555-05-01			0	137,168

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						<u>Total Expenditures</u> <u>(Includes Subrecipients)</u>
Quality Improvement Capacity for Impact Project - Ken COP16 - NY	93.266	6U1NHA28555-05-01			0	131,530
Quality Improvement Capacity for Impact Project - Ken COP16 - NY	93.266	6U1NHA28555-05-01			0	93,711
Quality Improvement Capacity for Impact Project - Ken COP16 - NY	93.266	6U1NHA28555-05-01			0	43,714
Quality Improvement Capacity for Impact Project - Ken COP16 - NY	93.266	6U1NHA28555-05-01			0	34,438
Quality Improvement Capacity for Impact Project - Ken COP16 - NY	93.266	6U1NHA28555-05-01			0	32,035
Quality Improvement Capacity for Impact Project - Ken COP16 - NY	93.266	6U1NHA28555-05-01			0	30,237
Quality Improvement Capacity for Impact Project - Ken COP16 - NY	93.266	6U1NHA28555-05-01			0	24,652
Quality Improvement Capacity for Impact Project - Ken COP16 - NY	93.266	6U1NHA28555-05-01			0	23,369
Quality Improvement Capacity for Impact Project - Ken COP16 - NY	93.266	6U1NHA28555-05-01			0	4,208
Quality Improvement Capacity for Impact Project - Ken COP16 - NY	93.266	6U1NHA28555-05-01			0	3,790
Quality Improvement Capacity for Impact Project - Ken COP16 - NY	93.266	6U1NHA28555-05-01			0	2,746
Quality Improvement Capacity for Impact Project - Ken COP16 - NY	93.266	6U1NHA28555-05-01			0	552
Quality Improvement Capacity for Impact Project - Ken COP16 - NY	93.266	6U1NHA28555-05-01			0	-192
Quality Improvement Capacity for Impact Project - Ken COP16 - NY	93.266	6U1NHA28555-05-01			0	-361
Quality Improvement Capacity for Impact Project - Ken COP16 - NY	93.266	6U1NHA28555-05-01			0	-1,478
Quality Improvement Capacity for Impact Project - Ken COP16 - NY	93.266	6U1NHA28555-05-01			0	-5,278

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						<u>Total Expenditures (Includes Subrecipients)</u>
Quality Improvement Capacity for Impact Project - Ken COP16 - NY	93.266	6U1NHA28555-05-01			0	-13,604
Quality Improvement Capacity for Impact Project - Ken COP16 - NY	93.266	6U1NHA28555-05-01			0	-24,012
					\$0	\$1,262,624
Resilient and Responsive Health Systems Initiative	93.266	5UH6HA30739-04-00			96,181	834,341
Resilient and Responsive Health Systems Initiative	93.266	5UH6HA30739-04-00			0	424,211
Resilient and Responsive Health Systems Initiative	93.266	5UH6HA30739-04-00			0	98,449
Resilient and Responsive Health Systems Initiative	93.266	5UH6HA30739-04-00			0	82,786
Resilient and Responsive Health Systems Initiative	93.266	5UH6HA30739-04-00			-339	-339
Resilient and Responsive Health Systems Initiative	93.266	5UH6HA30739-04-00			0	-6,880
					\$95,842	\$1,432,568
Resilient and Responsive Health Systems Initiative (RRHS)	93.266	6UH6HA30740-04-01			52,470	1,110,452
Resilient and Responsive Health Systems Initiative (RRHS)	93.266	6UH6HA30740-04-01			0	814,478
Resilient and Responsive Health Systems Initiative (RRHS)	93.266	6UH6HA30740-04-01			0	167,325
Resilient and Responsive Health Systems Initiative (RRHS)	93.266	6UH6HA30740-04-01			0	93,943
					\$52,470	\$2,186,198
Optimizing Momentum - Toward Sustainable Epidemic Control	93.266	6UJ7HA31180-03-01			161,137	181,259
Optimizing Momentum - Toward Sustainable Epidemic Control	93.266	6UJ7HA31180-03-01			48,090	108,526

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						<u>Total Expenditures (Includes Subrecipients)</u>
Optimizing Momentum - Toward Sustainable Epidemic Control	93.266	6UJ7HA31180-03-01			0	82,619
Optimizing Momentum - Toward Sustainable Epidemic Control	93.266	6UJ7HA31180-03-01			0	64,541
Optimizing Momentum - Toward Sustainable Epidemic Control	93.266	6UJ7HA31180-03-01			18,514	26,841
Optimizing Momentum - Toward Sustainable Epidemic Control	93.266	6UJ7HA31180-03-01			0	7,574
Optimizing Momentum - Toward Sustainable Epidemic Control	93.266	6UJ7HA31180-03-01			0	7,162
Optimizing Momentum - Toward Sustainable Epidemic Control	93.266	6UJ7HA31180-03-01			0	6,010
Optimizing Momentum - Toward Sustainable Epidemic Control	93.266	6UJ7HA31180-03-01			0	280
Optimizing Momentum - Toward Sustainable Epidemic Control	93.266	6UJ7HA31180-03-01			0	-131
Optimizing Momentum - Toward Sustainable Epidemic Control	93.266	6UJ7HA31180-03-01			0	-1,879
					<u>\$227,741</u>	<u>\$482,802</u>
					<u>\$376,053</u>	<u>\$5,356,982</u>
Complex Humanitarian Emergency and War-Related Injury Public Health Activities						
Enumerating and monitoring vulnerable sub-populations	93.269	5U01GH001644-05-02			0	90,492
Enumerating and monitoring vulnerable sub-populations	93.269	5U01GH001644-05-02			0	78,344
					<u>\$0</u>	<u>\$168,836</u>
					<u>\$0</u>	<u>\$168,836</u>
Protecting and Improving Health Globally: Building and Strengthening Public Health Impact, Systems, Capacity and Security						
Ebola Emergency Response in Sierra Leone	93.318	6NU19GH001581-03-08			0	2,299,032

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						<u>Total Expenditures (Includes Subrecipients)</u>
Ebola Emergency Response in Sierra Leone	93.318	6NU19GH001581-03-08			0	179,358
Ebola Emergency Response in Sierra Leone	93.318	6NU19GH001581-03-08			0	109,001
Ebola Emergency Response in Sierra Leone	93.318	6NU19GH001581-03-08			0	50,817
Ebola Emergency Response in Sierra Leone	93.318	6NU19GH001581-03-08			0	-20,083
					<u>\$0</u>	<u>\$2,618,125</u>
					\$0	\$2,618,125
Nurse Education, Practice Quality and Retention Grants						
Nurse Education, Practice, Quality, and Retention InterprofessionalCollborative Practice	93.359	6 UD7HP26907-03-01			-192	-192
					<u>-\$192</u>	<u>-\$192</u>
					-\$192	-\$192
Public Health Training Centers Program						
Affordable Care Act (ACA) Public Health Training Centers	93.516	4UB6HP27878-04-06			0	21,966
					<u>\$0</u>	<u>\$21,966</u>
					\$0	\$21,966
Grants for Primary Care Training and Enhancement						
Primary Care Training and Enhancement	93.884	5T0BHP29302 -04 -00			0	254,318
					<u>\$0</u>	<u>\$254,318</u>
					\$0	\$254,318
Ryan White HIV/AIDS Dental Reimbursement and Community Based Dental Partnership Grants						
Ryan White HIV/AIDS Dental Reimbursement Program	93.924	6 T22HA33690 01 01			0	80,368
					<u>\$0</u>	<u>\$80,368</u>
					\$0	\$80,368

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Federal Grantor / Pass-through Grantor	CFDA	Project No	Pass-through Contract Number	Passthrough Name	Other Programs	
					Subrecipients	Total Expenditures (Includes Subrecipients)
					\$0	\$80,368
Total Direct Award Programs					\$2,375,113	\$12,746,852
Pass-through Awards						
Centers for Disease Control and Prevention/DHHS						
Human Resources for Health, Rwanda	93	MHRW CU14-1787	CDC CU14-1787	MINISTRY OF HEALTH IN RWANDA	0	-455
					\$0	\$-455
					\$0	\$-455
Health Careers Opportunity Program						
Health Careers Opportunity Program	93.822	ISMMS 0253-6645-4609	1D18HP29036-01-00	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	0	64,062
Health Careers Opportunity Program	93.822	ISMMS 0253-6645-4609	1D18HP29036-01-00	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	0	44,297
					\$0	\$108,359
					\$0	\$108,359
HIV Prevention Activities Non-Governmental Organization Based						
Comprehensive High-Impact HIV Prevention Projects for Community- Based Organizations	93.939	ASCNYC CU161123	U65PS004743	AIDS SERVICE CENTER OF LOWER MANHATTANINC	0	71,432
Comprehensive High-Impact HIV Prevention Projects for Community- Based Organizations	93.939	ASCNYC CU161123	U65PS004743	AIDS SERVICE CENTER OF LOWER MANHATTANINC	0	13,460
					\$0	\$84,892
					\$0	\$84,892
Maternal and Child Health Services Block Grant to the States						
(Rape Crisis) Enough is Enough	93.994	DOH01-C33377GG-3450000	HRSA CU18-3003	NEW YORK STATE DEPARTMENT OF HEALTH	0	101,684
(Rape Crisis) Enough is Enough	93.994	DOH01-C33377GG-3450000	HRSA CU18-3003	NEW YORK STATE DEPARTMENT OF HEALTH	0	15,277

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						<u>Total Expenditures (Includes Subrecipients)</u>
(Rape Crisis) Enough is Enough	93.994	DOH01-C33377GG-3450000	HRSA CU18-3003	NEW YORK STATE DEPARTMENT OF HEALTH	0	-5,958
					<u>\$0</u>	<u>\$111,003</u>
					\$0	\$111,003
Total Pass-through Programs					<u>\$0</u>	<u>\$303,799</u>
Total Department of Health & Human Services (Excluding NIH)					<u>\$2,375,113</u>	<u>\$13,050,651</u>
Grand Total: Department of Health & Human Services					<u>\$2,375,113</u>	<u>\$13,050,651</u>

National Aeronautics & Space Administration

Direct Awards

Science

Workshop on Air Pollution Extremes at Columbia University	43.001	80NSSC18K1592			0	3,172
					<u>\$0</u>	<u>\$3,172</u>
					\$0	\$3,172

Space Technology

Variable Stiffness Compliant Mechanisms for Deployable, Reconfigurable Structures	43.012	80NSSC20K0587			0	40,815
					<u>\$0</u>	<u>\$40,815</u>
					\$0	\$40,815
Total Direct Award Programs					<u>\$0</u>	<u>\$43,987</u>
Total National Aeronautics & Space Administration					<u>\$0</u>	<u>\$43,987</u>

Department of Defense

Direct Awards

Basic and Applied Scientific Research

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Hacking for Defense at Columbia University	12.300	N00014-19-1-2002			0	26,895
Hacking for Defense at Columbia University	12.300	N00014-19-1-2002			0	16,783
					<u>\$0</u>	<u>\$43,678</u>
					<u>\$0</u>	<u>\$43,678</u>
Basic Scientific Research						
Optogenetic Tools in Neuroscience	12.431	W911NF1910495			0	20,119
					<u>\$0</u>	<u>\$20,119</u>
					<u>\$0</u>	<u>\$20,119</u>
Total Direct Award Programs					<u>\$0</u>	<u>\$63,797</u>
Total Department of Defense					<u>\$0</u>	<u>\$63,797</u>

Department of Education

Direct Awards

National Resource Centers Program for Foreign Language and Area Studies or Foreign Language and International Studies Program and Foreign Language and Area Studies Fellowship Program

Title VI FLAS: Columbia Weatherhead East Asian Institute	84.015	P015B180086-20			0	220,653
					<u>\$0</u>	<u>\$220,653</u>
Middle East Institute, Columbia University, Title VI Proposal	84.015	P015A180080 - 20			0	136,204
Middle East Institute, Columbia University, Title VI Proposal	84.015	P015A180080 - 20			0	16,407
Middle East Institute, Columbia University, Title VI Proposal	84.015	P015A180080 - 20			0	9,791
					<u>\$0</u>	<u>\$162,402</u>
Title VI National Resource Center: Columbia Weatherhead East Asian Institute	84.015	P015A180086 - 20			0	103,606

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						<u>Total Expenditures (Includes Subrecipients)</u>
Title VI National Resource Center: Columbia Weatherhead East Asian Institute	84.015	P015A180086 - 20			0	51,400
Title VI National Resource Center: Columbia Weatherhead East Asian Institute	84.015	P015A180086 - 20			0	48,641
Title VI National Resource Center: Columbia Weatherhead East Asian Institute	84.015	P015A180086 - 20			0	20,981
Title VI National Resource Center: Columbia Weatherhead East Asian Institute	84.015	P015A180086 - 20			5,932	7,367
Title VI National Resource Center: Columbia Weatherhead East Asian Institute	84.015	P015A180086 - 20			0	7,097
Title VI National Resource Center: Columbia Weatherhead East Asian Institute	84.015	P015A180086 - 20			0	3,323
Title VI National Resource Center: Columbia Weatherhead East Asian Institute	84.015	P015A180086 - 20			0	2,130
Title VI National Resource Center: Columbia Weatherhead East Asian Institute	84.015	P015A180086 - 20			0	2,112
Title VI National Resource Center: Columbia Weatherhead East Asian Institute	84.015	P015A180086 - 20			0	1,080
					\$5,932	\$247,737
Columbia South Asia Institute: Foreign Language and Area Studies	84.015	P015B180034-20			0	235,740
Columbia South Asia Institute: Foreign Language and Area Studies	84.015	P015B180034-20			0	-2,000
					\$0	\$233,740
FLAS: Middle East Institute, Columbia University, Title VI Proposal	84.015	P015B180080-20			0	308,000
FLAS: Middle East Institute, Columbia University, Title VI Proposal	84.015	P015B180080-20			0	3,038
					\$0	\$311,038
					\$5,932	\$1,175,570
Total Direct Award Programs					\$5,932	\$1,175,570
Total Department of Education					\$5,932	\$1,175,570

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Department of Homeland Security						
Direct Awards						
State and Local Homeland Security National Training Program						
Training Solutions: Transitioning Disaster Survivors from Temporary to Permanent Housing	97.005	EMW-2018-CA-00068-S01			0	319,805
					\$0	\$319,805
Enhancing Financial Literacy of Individuals and Businesses for Post-Disaster Recovery	97.005	EMW-2018-CA-00069-S01			0	287,834
					\$0	\$287,834
Innovative Disaster Recovery Strategies for Interim and Permanent Housing Construction	97.005	EMW-2019-CA-00049-S01			0	59,557
					\$0	\$59,557
Total Direct Award Programs					\$0	\$667,196
Total Department of Homeland Security					\$0	\$667,196
Department of Interior						
Direct Awards						
U.S. GEOLOGICAL SURVEY/DEPARTMENT OF THE INTERIOR						
IPA: Transition of the Lamont-Doherty Cooperative Seismographic Network and Integration of Selected Stations into USGS - Gold	15	USGS CU20-2055			0	5,789
					\$0	\$5,789
Total Direct Award Programs					\$0	\$5,789
Total Department of Interior					\$0	\$5,789
Department of Justice						
Direct Awards						

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US DISTRICT COURT FOR THE DISTRICT OF NJ						
ReNew Court Pilot	16	USDCNJ CU19-2776			0	44,476
					<u>\$0</u>	<u>\$44,476</u>
Total Direct Award Programs					<u>\$0</u>	<u>\$44,476</u>
Total	Department of Justice				<u>\$0</u>	<u>\$44,476</u>
Department of State						
Direct Awards						
Professional and Cultural Exchange Programs - Special Professional and Cultural Programs						
The Ngwang Choephel Fellows Program	19.012	S-ECAGD-17-GR-1095			0	4,968
					<u>\$0</u>	<u>\$4,968</u>
FY-18 - Ngwang Choephel Fellowship Program: Tibet	19.012	S-ECAGD-18-GR-0004			0	24,140
					<u>\$0</u>	<u>\$24,140</u>
					<u>\$0</u>	<u>\$29,108</u>
Investing in People in The Middle East and North Africa						
Fostering Entrepreneurship in Tunisia	19.021	DS STS80017GR0087			0	7,520
					<u>\$0</u>	<u>\$7,520</u>
Fostering Entrepreneurship in Tunisian Higher Education	19.021	DS STS80018GR0029			0	85,004
					<u>\$0</u>	<u>\$24,196</u>
Fostering Entrepreneurship in Tunisian Higher Education	19.021	DS STS80018GR0029			0	24,196
					<u>\$0</u>	<u>\$109,200</u>
To Implement Renovation of Badinan Gate Project Which Restore Damaged Historic Aspects of the Gate to its Original State	19.021	SIZ-100-19-GR0031			0	60,118
					<u>\$0</u>	<u>\$60,118</u>

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					<u>Subrecipients</u>	<u>Total Expenditures (Includes Subrecipients)</u>
					\$0	\$176,838
Total Direct Award Programs					\$0	\$205,946
Total Department of State					\$0	\$205,946

Department of Veterans Affairs

Direct Awards

Department of Veterans Affairs

VISN 3 MIRECC	64	DVAMC CU16-2032			0	19,391
VISN 3 MIRECC	64	DVAMC CU16-2032			0	3,525
					\$0	\$22,916
VISN 5 MIRECC	64	VA245-17-C-0029			0	2,097
VISN 5 MIRECC	64	VA245-17-C-0029			0	720
					\$0	\$2,817
Post exertion malaise in GWI Brain autonomic and behavioral interactions	64	36C24E19D0034			0	87,619
					\$0	\$87,619

JAMES J PETERS VA MEDICAL CENTER

DNA Methylation and inflammatory signatures associated with suicide	64	JJPVA CU17-1648			0	15,441
					\$0	\$15,441
RCT of Group vs. Individual Suicide Safety Planning Approaches in High Risk Suicidal Veterans	64	JJPVA CU18-3740			0	7,693
					\$0	\$7,693
Group (Project Life Force) vs. Individual Suicide Safety Planning RC	64	JJPVA CU19-1582			0	42,230
					\$0	\$42,230

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Schedule of Expenditures of Federal Awards
For year ended June 30, 2020

<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	Other Programs
						<u>Total Expenditures (Includes Subrecipients)</u>
Neuroinflammatory and Epigenetic Mechanisms of Blood-Brain Barrier Comprise in Suicide	64	JJPVA CU19-2518			0	7,673
					\$0	\$7,673
Identifying Bio-signatures of Suicidal Subtypes in Veterans	64	JJPVA CU19-2101			0	18,267
					\$0	\$18,267
Total Direct Award Programs					\$0	\$204,656
Total Department of Veterans Affairs					\$0	\$204,656
Nat. Endowment for the ArtsHumanities						
Direct Awards						
Promotion of the Arts Grants to Organizations and Individuals						
To support artist fees for the composer portraits and pop-up concerts series at Miller Theatre	45.024	NEA 1856377-31-20			0	15,000
					\$0	\$15,000
					\$0	\$15,000
Promotion of the Humanities Teaching and Learning Resources and Curriculum Development						
Humanities Connections Curriculum for Medicine, Literature and Society	45.162	AK-255276-17			0	47,875
					\$0	\$47,875
					\$0	\$47,875
Total Direct Award Programs					\$0	\$62,875
Total Nat. Endowment for the ArtsHumanities					\$0	\$62,875

United States Agency for International Dvlpt.

Direct Awards

USAID Foreign Assistance for Programs Overseas

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

The Trustees of Columbia University in the City of New York
Schedule of Expenditures of Federal Awards
For year ended June 30, 2020

Federal Grantor / Pass-through Grantor	CFDA	Project No	Pass-through Contract Number	Passthrough Name	Subrecipients	Other Programs
						Total Expenditures (Includes Subrecipients)
Colored Bleach Mist Formula to Endure Proper Decontamination of Healthcare Workers	98.001	USAID AID-OAA-F-15-00026			0	119,273
					\$0	\$119,273
Malaria Diagnosis and Treatment Activity	98.001	72066318CA00005			112,005	2,589,060
Malaria Diagnosis and Treatment Activity	98.001	72066318CA00005			0	412,615
					\$112,005	\$3,001,675
					\$112,005	\$3,120,948
Total Direct Award Programs					\$112,005	\$3,120,948

Pass-through Awards

USAID Foreign Assistance for Programs Overseas

Predict 2	98.001	ECOHA PREDICT 2	AID CU15-0064	ECOHEALTH ALLIANCE	0	413,664
Predict 2	98.001	ECOHA PREDICT 2	AID CU15-0064	ECOHEALTH ALLIANCE	0	-72
					\$0	\$413,592
PREDICT-2 Davis	98.001	UCD 201403200-09	AID-OAA-A-14-00102	UNIVERSITY OF CALIFORNIA, DAVIS	0	340,594
					\$0	\$340,594
Malaria Lab Resistance Mutants (Columbia)	98.001	MMV CU09-1816	AID CU09-1816	Medicines for Malaria Venture	0	157,310
Malaria Lab Resistance Mutants (Columbia)	98.001	MMV CU09-1816	AID CU09-1816	Medicines for Malaria Venture	0	142,839
					\$0	\$300,149
Simplification of Linkage to and Delivery of Antiretroviral Therapy in USAID-PEPFAR Supported Programs	98.001	WHC D1509970	AID-OAA-A-15-0069	WITS HEALTH CONSORTIUM	0	213,000
Simplification of Linkage to and Delivery of Antiretroviral Therapy in USAID-PEPFAR Supported Programs	98.001	WHC D1509970	AID-OAA-A-15-0069	WITS HEALTH CONSORTIUM	0	188,865
Simplification of Linkage to and Delivery of Antiretroviral Therapy in USAID-PEPFAR Supported Programs	98.001	WHC D1509970	AID-OAA-A-15-0069	WITS HEALTH CONSORTIUM	0	83,412

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

The Trustees of Columbia University in the City of New York
Schedule of Expenditures of Federal Awards
For year ended June 30, 2020

<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	<u>Other Programs</u>
						<u>Total Expenditures (Includes Subrecipients)</u>
Simplification of Linkage to and Delivery of Antiretroviral Therapy in USAID-PEPFAR Supported Programs	98.001	WHC D1509970	AID-OAA-A-15-0069	WITS HEALTH CONSORTIUM	0	40,478
					\$0	\$525,755
Technical Support to PEPFAR Programs in the Southern Africa Region	98.001	TSP00ICAP16	AID-674-A-16-00003	BAYLOR COLLEGE OF MEDICINE CHILDRENS FOUNDATION MALAWI	0	9,633
					\$0	\$9,633
CHPS+FP: An innovative and scalable intervention for increasing contraceptive use in Ghana	98.001	FY16-CR06-6017	AID-641-A-14000002	UNIVERSITY RESEARCH, CO.	0	-458
					\$0	\$-458
Climate Services for Agriculture-Rwanda	98.001	CIAT C-165-15	USAID CU15-3757	International Center for Tropical Agriculture	0	115,552
					\$0	\$115,552
Climate Services for Resilient Development (CSR D) in South Asia and Bangladesh	98.001	CIMMYT CU17-2016	USAID CU17-2016	INTERNATIONAL MAIZE AND WHEATIMPROVEMENT CENTER (CIMMYT)	0	23,890
					\$0	\$23,890
Developing Acute Care and Emergency Referral Systems	98.001	CATHOLICRS CU 18-2493	7200AA18CA00051	CATHOLIC RELIEF SERVICES	88,913	476,078
					\$88,913	\$476,078
A Global Scoping and Documenting of Effective Practices to Address Menstrual Hygiene Laundry, Disposal and Waste Management among Displaced Populations	98.001	IRC CU 18-3862	720FDA18GR00049	International Rescue Committee	0	123,589
					\$0	\$123,589
Meeting Targets and Maintaining Epidemic Control	98.001	JHPIEGO 19-SBA-149	7200AA19CA00003	JOHNS HOPKINS PROG FOR INTRN'L EDUCA. INGYN/OB	0	770,638
Meeting Targets and Maintaining Epidemic Control	98.001	JHPIEGO 19-SBA-149	7200AA19CA00003	JOHNS HOPKINS PROG FOR INTRN'L EDUCA. INGYN/OB	0	546,070
Meeting Targets and Maintaining Epidemic Control	98.001	JHPIEGO 19-SBA-149	7200AA19CA00003	JOHNS HOPKINS PROG FOR INTRN'L EDUCA. INGYN/OB	0	453,312
Meeting Targets and Maintaining Epidemic Control	98.001	JHPIEGO 19-SBA-149	7200AA19CA00003	JOHNS HOPKINS PROG FOR INTRN'L EDUCA. INGYN/OB	0	283,668
					\$0	\$2,053,688
One Health Workforce - Next Generation (OHW-NG)	98.001	UCD A20-1412-S007	7200AA19CA00018	UNIVERSITY OF CALIFORNIA, DAVIS	0	238,778

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

The Trustees of Columbia University in the City of New York
Schedule of Expenditures of Federal Awards
For year ended June 30, 2020

<u>Federal Grantor / Pass-through Grantor</u>	<u>CFDA</u>	<u>Project No</u>	<u>Pass-through Contract Number</u>	<u>Passthrough Name</u>	<u>Subrecipients</u>	Other Programs
						<u>Total Expenditures (Includes Subrecipients)</u>
One Health Workforce - Next Generation (OHW-NG)	98.001	UCD A20-1412-S007	7200AA19CA00018	UNIVERSITY OF CALIFORNIA, DAVIS	0	5,462
One Health Workforce - Next Generation (OHW-NG)	98.001	UCD A20-1412-S007	7200AA19CA00018	UNIVERSITY OF CALIFORNIA, DAVIS	0	3,808
					\$0	\$248,048
Strengthening Education in Northeast Nigeria States (SENSE.	98.001	AUN 2019/01/72062019CA00002	AID 72062019CA00002	AMERICAN UNIVERSITY OF NIGERIA	0	304,641
					\$0	\$304,641
Total Pass-through Programs					\$88,913	\$4,934,751
Total United States Agency for International Dvlpt.					\$200,918	\$8,055,699
Total: Other Programs					\$2,581,963	\$23,580,642
Total Federal Award Expenditures:					\$120,572,202	\$1,333,607,814

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

The Trustees of Columbia University in the City of New York

Notes to Summary Schedule of Expenditures of Federal Awards

Year ended June 30, 2020

1. Basis of Presentation

The accompanying Schedule of Expenditures of Federal Awards (the "Schedule") has been prepared in accordance with OMB Uniform Guidance. The purpose of the Schedule is to present a summary of those activities of The Trustees of Columbia University in the City of New York (the "University") for the year ended June 30, 2020, which have been financed by the U.S. Government ("Federal awards"). For purposes of the Schedule, Federal awards include all Federal assistance entered into directly between the University and the Federal government and also between the University and other primary recipients of Federal government funds (pass-through), recorded on the accrual basis of accounting. Negative amounts listed on the Schedule represent adjustments, in the normal course of business, to amounts included on the prior year's Schedule. In addition, amounts indicated in the schedule with \$0 expenditures, are reflective of actual expenditures transacted at less than \$1, which are rounded down in the context of the report. The project number on the Schedule represents the number assigned by the direct or originating sponsor, and when not available an alpha-numeric number is assigned by the University to manage sponsored project spending. The passthrough contract number on the Schedule represents the number assigned by the pass-through entity to the applicable program. CFDA numbers and pass-through numbers are provided when available.

2. Facility and Administrative Costs

The University elects not to use the 10% de minimus rate allowed under the Uniform Guidance. The University and the Federal government currently operate under a provisional agreement that provides for F&A cost rates under federal grants and contracts as of July 1, 2018. This agreement will remain in place until such time a new agreement is reached. The following are F&A provisional cost rates established by the University:

All campuses, excluding Lamont-Doherty Earth Observatory

On-campus	62.0 %
Off-campus	26.0
Off-campus modified	29.4

Lamont-Doherty Earth Observatory

On-campus	54.0 %
Off-campus	26.0
Off-campus modified	29.4

Other sponsored activity

On-campus	31.0 %
Off-campus	26.0

3. Guaranteed Student Loan Programs

With respect to the Federal Direct Lending Program, the University is only responsible for the performance of certain administrative duties; therefore, the transactions and the balances of loans outstanding related to this program are not included in the University's consolidated financial statements. The schedule includes the amounts awarded to students during the year ended June 30, 2020. It is not practical to estimate the outstanding balance of loans under this program.

The Trustees of Columbia University in the City of New York
Notes to Summary Schedule of Expenditures of Federal Awards
Year ended June 30, 2020

4. Student Loan Programs

The University is responsible for the oversight and management of the U.S. Department of Education's Federal Title IV Programs, which includes Federal Perkins Loan Program (CFDA # 84.038), as well as Health Resources and Services Administration (HRSA) Title VII and Title VIII loan programs funded by the Department of Health and Human Services.

(amounts in thousands)

Federal Agency	Loan Program	Federal CFDA No.	Outstanding Principal Balance at June 30, 2020
Education	Perkins Loan	84.038	\$ 33,362
DHHS	Health Professionals	93.342	8,768
DHHS	Nursing Students	93.364	746
			<u>\$ 42,876</u>

The federally approved administrative cost allowed under the Title IV program for Federal Work study, Federal Perkins and Federal SEOG for the fiscal year ending June 30, 2020 was \$387 thousand. This expense was charged to the Federal Work Study Program. The administrative cost allowance is determined as a percentage of the total program expenditures. The formula permits administrative cost charges at 4.5% of the first \$5.5 million expended and 3% on expenditures over \$5.5 million.

5. CARES Act Provider Relief Funds

As per the addendum of the 2020 OMB 2 CFR 200 Part 200, Appendix XI Compliance Supplement to provide additional guidance for programs with expenditures of COVID-19 awards, the University did receive Provider Relief funds for fiscal year 2020. However, these funds were not included in the FY 20 SEFA, but instead will be incorporated into the FY 21 SEFA. Consequently, other COVID-19 incremental funding is included in the FY 20 SEFA. These programs are identified on a separate line in the report by CFDA number with "COVID-19" as a prefix added to the program name in the specific cluster where they reside.

The Trustees of Columbia University in the City of New York
Schedule of Financial Responsibility Data
For the Year Ended June 30, 2020
(in thousands of dollars, unless otherwise noted)

Location in financial statements or related notes	Financial element	GAAP financial statement line item or disclosure	Amount used as ratio input
Primary Reserve Ratio: Expendable Net Assets			
Statement of financial position	Net assets without donor restrictions	\$ 7,267,894	\$ 7,267,894
Statement of financial position	Net assets with donor restrictions	9,030,794	9,030,794
Note 23, Financial Responsibility Standards	Unsecured related party receivable	31,700	31,700
Note 23, Financial Responsibility Standards	Total property, plant, and equipment, net	5,838,738	
Note 23, Financial Responsibility Standards	Property, plant and equipment, net - pre-implementation		5,302,038
Note 23, Financial Responsibility Standards	Property, plant and equipment, net - post-implementation with outstanding debt for original purchase		10,099
Note 23, Financial Responsibility Standards	Property, plant and equipment, net - post-implementation without outstanding debt for original purchase		326,390
Note 23, Financial Responsibility Standards	Construction in progress		200,211
N/A	Total lease right-of-use assets	-	
N/A	Lease right-of-use assets, pre-implementation		-
N/A	Lease right-of-use assets, post-implementation		-
N/A	Intangible assets	-	-
Statement of financial position	Post-employment and pension liabilities (Accrued employee benefit liabilities)	433,703	433,703
Note 23, Financial Responsibility Standards	Total long-term debt	2,194,430	
Note 23, Financial Responsibility Standards	Long-term debt - for long-term purposes pre-implementation		2,034,263
Note 23, Financial Responsibility Standards	Long-term debt - for long-term purposes post-implementation		160,167
N/A	Line of Credit for Construction in progress		-
N/A	Total liability related to lease right-of-use assets	-	
N/A	Liability related to lease right-of-use assets - pre-implementation		-
N/A	Liability related to lease right-of-use assets - post-implementation		-
Note 23, Financial Responsibility Standards	Annuities and life income funds with donor restrictions	69,696	69,696
Note 23, Financial Responsibility Standards	Term endowments with donor restrictions	3,845,723	3,845,723
Note 23, Financial Responsibility Standards	Net assets with donor restrictions: restricted in perpetuity	4,185,051	4,185,051
Primary Reserve Ratio: Expenses and Losses			
Statement of activities	Total expenses and losses without donor restrictions	\$ 5,050,268	\$ 5,050,268
Equity Ratio: Modified Net Assets			
Statement of financial position	Net assets without donor restrictions	\$ 7,267,894	\$ 7,267,894
Statement of financial position	Net assets with donor restrictions	9,030,794	9,030,794
N/A	Intangible assets	-	-
Note 23, Financial Responsibility Standards	Unsecured related party receivable	31,700	31,700
Equity Ratio: Modified Assets			
Statement of financial position	Total assets	\$ 21,006,014	\$ 21,006,014
N/A	Lease right-of-use assets, pre-implementation		-
N/A	Intangible assets	-	-
Note 23, Financial Responsibility Standards	Unsecured related party receivable	31,700	31,700
Net Income Ratio			
Statement of activities	Change in net assets without donor restrictions	\$ (40,030)	\$ (40,030)
Note 23, Financial Responsibility Standards	Total revenues and gains without donor restrictions		5,049,132

See accompanying independent auditors' report.



**Report of Independent Auditors on Internal Control Over Financial Reporting and on Compliance
and Other Matters Based on an Audit of Financial Statements Performed in Accordance with
*Government Auditing Standards***

To The Trustees of Columbia University in the City of New York

We have audited, in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States, the consolidated financial statements of The Trustees of Columbia University in the City of New York and its subsidiaries (the "University"), which comprise the consolidated balance sheet as of June 30, 2020, and the related consolidated statements of activities and of cash flows for the year then ended, and the related notes to the financial statements, and have issued our report thereon dated October 6, 2020, except for footnote 23 with respect to the consolidated financial statements and the opinion on the schedule of financial responsibility data, as to which the date is May 13, 2021.

Internal Control Over Financial Reporting

In planning and performing our audit of the financial statements, we considered the University's internal control over financial reporting ("internal control") as a basis for designing the audit procedures that are appropriate in the circumstances for the purpose of expressing our opinion on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of the University's internal control. Accordingly, we do not express an opinion on the effectiveness of the University's internal control.

A *deficiency in internal control* exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, misstatements on a timely basis. A *material weakness* is a deficiency, or a combination of deficiencies, in internal control such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected on a timely basis. A *significant deficiency* is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of internal control was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies. Given these limitations, during our audit we did not identify any deficiencies in internal control that we consider to be material weaknesses. However, material weaknesses may exist that have not been identified.

Compliance and Other Matters

As part of obtaining reasonable assurance about whether the University's financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts and grant agreements, noncompliance with which could have a direct and material effect on the financial statements. However, providing an opinion on compliance with those provisions was not an objective of our audit and, accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards*.



Purpose of this Report

The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the entity's internal control or on compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the entity's internal control and compliance. Accordingly, this communication is not suitable for any other purpose.

PricewaterhouseCoopers LLP

New York, New York

October 6, 2020, except for footnote 23 with respect to the consolidated financial statements and the opinion on the schedule of financial responsibility data, as to which the date is May 13, 2021.



**Report of Independent Auditors on Compliance with Requirements
That Could Have a Direct and Material Effect on Each Major Program and on Internal
Control Over Compliance in Accordance with the Uniform Guidance**

To The Trustees of Columbia University in the City of New York

Report on Compliance for Each Major Federal Program

We have audited The Trustees of Columbia University in the City of New York and its subsidiaries' (the "University") compliance with the types of compliance requirements described in the *OMB Compliance Supplement* that could have a direct and material effect on each of the University's major federal programs for the year ended June 30, 2020. The University's major federal programs are identified in the summary of auditor's results section of the accompanying schedule of findings and questioned costs.

Management's Responsibility

Management is responsible for compliance with federal statutes, regulations and the terms and conditions of its federal awards applicable to its federal programs.

Auditors' Responsibility

Our responsibility is to express an opinion on compliance for each of the University's major federal programs based on our audit of the types of compliance requirements referred to above. We conducted our audit of compliance in accordance with auditing standards generally accepted in the United States of America; the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States; and the audit requirements of Title 2 U.S. *Code of Federal Regulations* Part 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* (Uniform Guidance). Those standards and the Uniform Guidance require that we plan and perform the audit to obtain reasonable assurance about whether noncompliance with the types of compliance requirements referred to above that could have a direct and material effect on a major federal program occurred. An audit includes examining, on a test basis, evidence about the University's compliance with those requirements and performing such other procedures as we considered necessary in the circumstances.

We believe that our audit provides a reasonable basis for our opinion on compliance for each major federal program. However, our audit does not provide a legal determination of the University's compliance.

Opinion on Each Major Federal Program

In our opinion, the University complied, in all material respects, with the types of compliance requirements referred to above that could have a direct and material effect on each of its major federal programs for the year ended June 30, 2020.



Report on Internal Control Over Compliance

Management of the University is responsible for establishing and maintaining effective internal control over compliance with the types of compliance requirements referred to above. In planning and performing our audit of compliance, we considered the University's internal control over compliance with the types of requirements that could have a direct and material effect on each major federal program to determine the auditing procedures that are appropriate in the circumstances for the purpose of expressing an opinion on compliance for each major federal program and to test and report on internal control over compliance in accordance with the Uniform Guidance, but not for the purpose of expressing an opinion on the effectiveness of internal control over compliance. Accordingly, we do not express an opinion on the effectiveness of the University's internal control over compliance.

A deficiency in internal control over compliance exists when the design or operation of a control over compliance does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, noncompliance with a type of compliance requirement of a federal program on a timely basis. *A material weakness in internal control over compliance* is a deficiency, or combination of deficiencies, in internal control over compliance, such that there is a reasonable possibility that material noncompliance with a type of compliance requirement of a federal program will not be prevented, or detected and corrected, on a timely basis. *A significant deficiency in internal control over compliance* is a deficiency, or a combination of deficiencies, in internal control over compliance with a type of compliance requirement of a federal program that is less severe than a material weakness in internal control over compliance, yet important enough to merit attention by those charged with governance.

Our consideration of internal control over compliance was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control over compliance that might be material weaknesses or significant deficiencies. We did not identify any deficiencies in internal control over compliance that we consider to be material weaknesses. However, material weaknesses may exist that have not been identified.

The purpose of this report on internal control over compliance is solely to describe the scope of our testing of internal control over compliance and the results of that testing based on the requirements of the Uniform Guidance. Accordingly, this report is not suitable for any other purpose.

PricewaterhouseCoopers LLP

New York, New York
May 13, 2021

The Trustees of Columbia University in the City of New York
Summary of Independent Auditors' Results
Year Ended June 30, 2020

Section I – Summary of Independent Auditors' Results

Financial Statements

Type of report of independent auditors issued: **Unmodified**

Internal control over financial reporting:
 Material weakness (es) identified? _____ Yes _____ **X** _____ No

Significant deficiencies(s) identified that are not considered to be material weaknesses? _____ Yes _____ **X** _____ None reported

Noncompliance material to financial statements noted? _____ Yes _____ **X** _____ No

Federal Awards

Internal Control over major programs:
 Material weakness (es) identified? _____ Yes _____ **X** _____ No

Significant deficiencies(s) identified that are not considered to be material weaknesses _____ Yes _____ **X** _____ None reported

Type of independent auditors' report issued on compliance for major programs: **Unmodified**

Any audit findings disclosed that are required to be reported in accordance with 2 CFR 200.516(a)? _____ Yes _____ **X** _____ No

Identification of major programs:

<u>CFDA Number(s)</u>	<u>Name of Federal Program or Cluster</u>
Various	Research & Development Cluster
93.067	Global AIDS
98.001	USAID Foreign Assistance for Programs Overseas
Various	TRIO Cluster

Dollar threshold used to distinguish between Type A and Type B programs: \$4,000,823

Auditee qualified as low-risk auditee? _____ **X** _____ Yes _____ No

The Trustees of Columbia University in the City of New York
Schedule of Findings and Questioned Costs
Year Ended June 30, 2020

Section II—Financial Statement Findings

None noted.

Section III—Federal Award Findings and Questioned Costs

None noted.

The Trustees of Columbia University in the City of New York
Summary Schedule of Prior Audit Findings
Year Ended June 30, 2020

2019-001: Procurement

Federal Agency: Department of Health and Human Services – National Institutes of Health
Program: Research and Development
CFDA #: 93.310
Award # 1OT2OD026556
Award Year: 3/24/2018 – 2/28/2023

Condition: Of the 25 procurement transactions selected for testing, it was noted that one transaction in the amount of \$14,875 did not include documentation of price quotations from qualified vendors and the basis of the vendor selection.

Status: Complete. While management believes this was an isolated instance, the observation allowed for the development of updated guidance and an enhancement of the purchase order process, which has been completed. Specifically, management expanded the types of purchases requiring purchase orders, thus increasing the centralized review of competitive pricing documentation. Management will continue to monitor adherence to the policy.

2019-002: Period of Performance

Federal Agency: Department of Health & Human Services- Centers for Disease Control and Prevention
Program: Global Aids
CFDA #: 93.067
Award # 6NU2GGH001036-05-05
Award Year: 9/30/2013 – 9/29/2018

Condition: Of the 11 period of performance transactions selected for testing for this award, it was noted that one transaction in the amount of \$10,075 was outside the award's period of performance. The award's period of performance end date was 9/29/2018, whereas the cost charged to the award related to insurance coverage for federally-sponsored equipment covering the period 10/1/2018-12/31/2018.

Status: Completed. The ICAP, Mailman School of Public Health, and Columbia University Irving Medical Center management offices have completed a review of expenditures incurred at the end of awards. The results support management's belief that the item identified during the fiscal year 2019 Uniform Guidance Audit was an isolated instance.