

# AccuRef Diagnostics

## Onco-Ref™ Single Mutation Reference Standard Series:

Genomic DNA • Frozen Cell Pellets • FFPE Cell Block • FFPE Cell Scrolls • FFPE Cell Slides

Applications: NGS • Sanger • PCR • In Situ Hybridization • Immunohistochemistry

### Overview:

Cell line-based reference standards represent ideal materials for molecular diagnostics assay development and routine quality control. AccuRef Diagnostics provides precision-edited, isogenically-paired, mutant and wild-type FFPE reference standards that can help streamline your assay development or quality control processes. We use **footprint-free** genome editing for cell line generation, thereby ensuring that you get the precise mutation that you need, without having to worry about the incorporation of genomic scars from the use of selection markers.

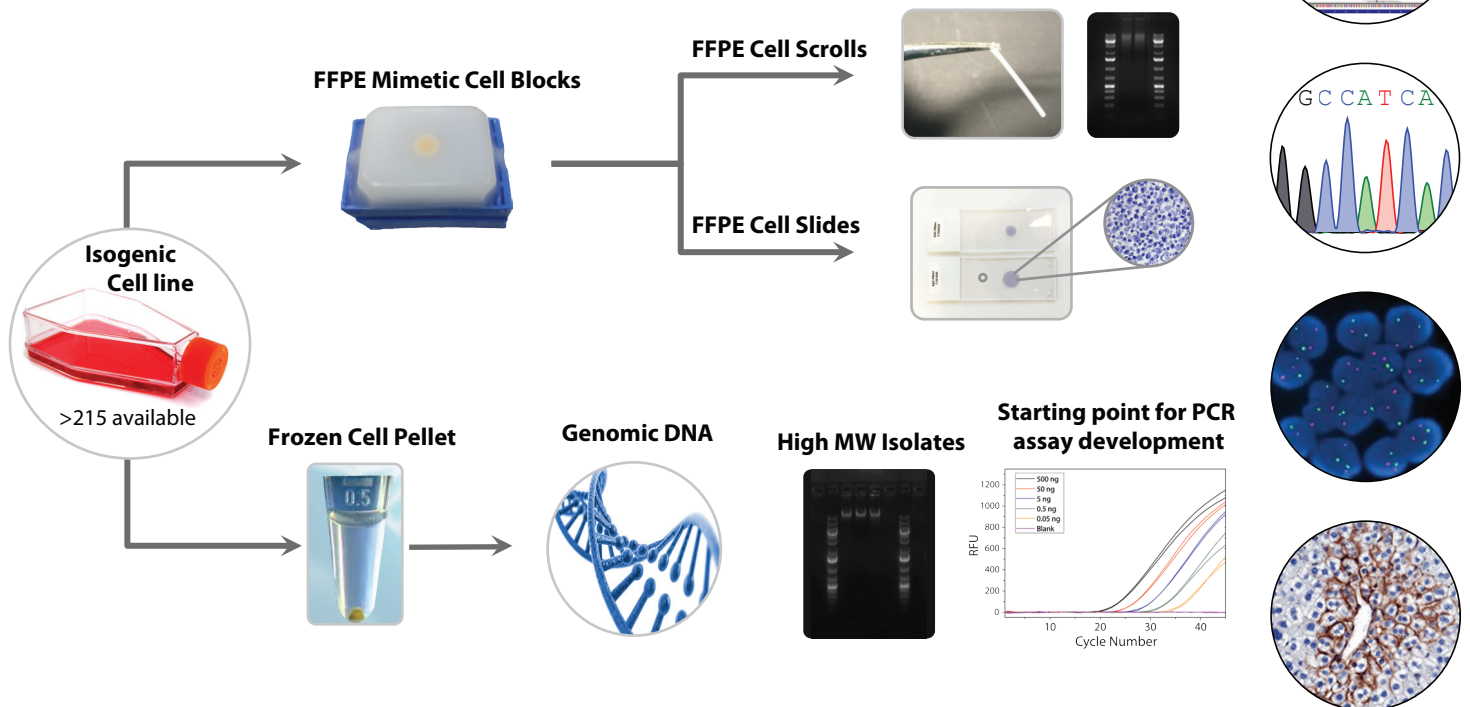
### Key Features:

- **Large mutation panel on the market:** 200+
- **Clinically actionable cancer genes:** 40+
- **Isogenically paired positive and negative controls**
- **Biorelevant samples**
- **Footprint-free genome editing using CRISPR/Cas9**
- **Homozygous knock-in of the desired mutation**

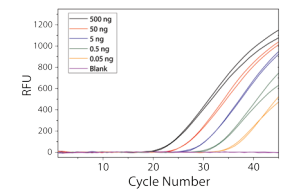
### Product Formats:

- **Genomic DNA**
- **Frozen Cell Pellets**
- **FFPE Cell Blocks and Cell Scrolls**
- **Engineered Cell Lines**

## Onco-Ref™ Product Series: Single gene mutation reference standards



Starting point for PCR assay development



# AccuRef Diagnostics

## Quan-Plex™ Quantitative Multigene Reference Series: Genomic DNA • Patient-Like ctDNA • Fine Needle Aspirate (FNA)

**Applications: Next Generation Sequencing • Digital PCR • In Situ Hybridization**

### Overview:

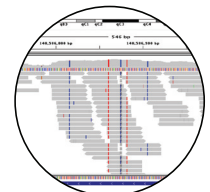
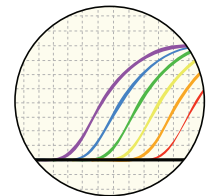
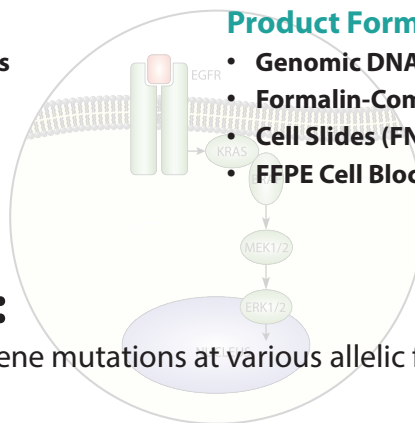
The Quan-Plex™ quantitative multiplex multigene reference standards represent ideal starting materials for molecular diagnostics assay development and/or routine quality control applications. This product series was specifically developed to meet the needs of new genetic analysis platforms such as next-generation sequencing which enables the quantitative detection of multiple gene mutations simultaneously and digital PCR platforms that have high sensitivity (i.e. low mutation allelic frequency detection). AccuRef Diagnostics develops precision-edited, mutation cell lines that are **footprint-free**, thereby ensuring that you get the precise mutation that you need, without having to worry about the incorporation of genomic scars from the use of selection markers.

### Key Features:

- Highly-characterized reference standards
- Clinically actionable mutations
- Digital PCR verified mutations
- Bio-relevant samples
- Footprint-free genome editing using CRISPR/Cas9

### Product Formats:

- Genomic DNA
- Formalin-Compromized Genomic DNA
- Cell Slides (FNA)
- FFPE Cell Blocks and FFPE Cell Scrolls



## Quan-Plex™ Products:

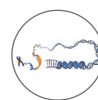
Quantitative Multiplex: Two or more gene mutations at various allelic frequency

### Example:

- WT (79%)
- T790M (10%)
- G13D (10%)
- V600K (1%)



Cell Line Mixture (100%)



Genomic DNA\*



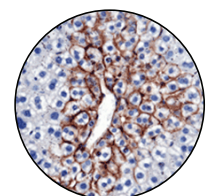
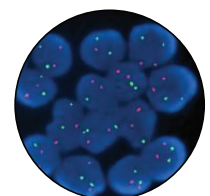
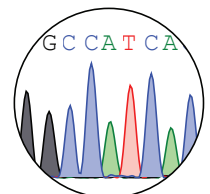
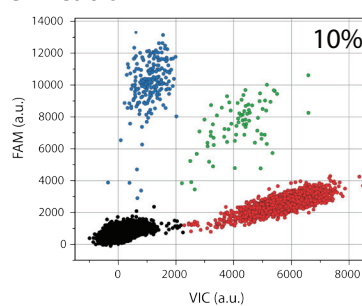
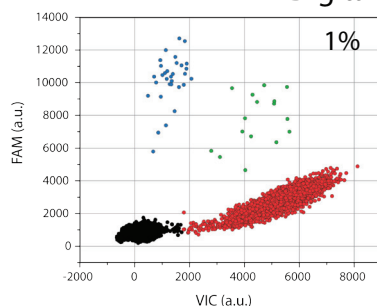
Slides



ctDNA\*

\* Mixture of Frozen Cell Pellets

### Digital PCR Verification

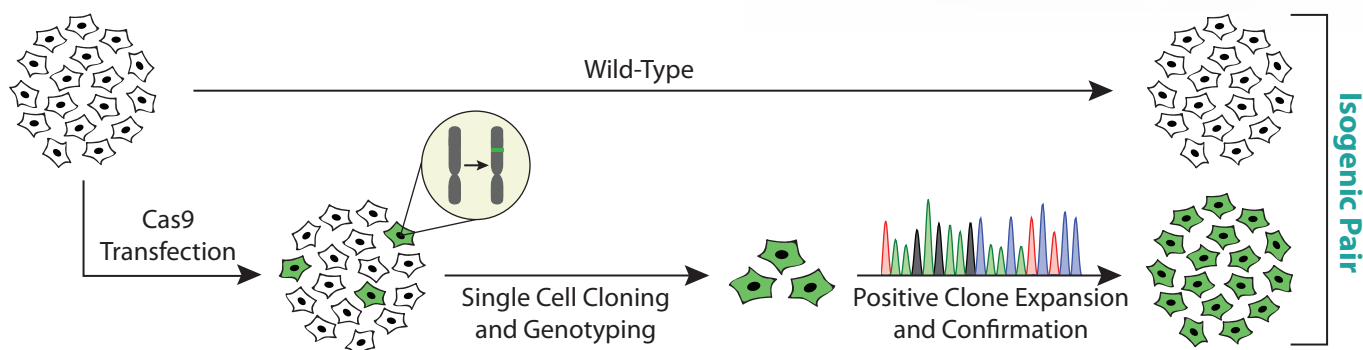


## Onco-Ref™ Custom Services

### Isogenic Cell Line Generation

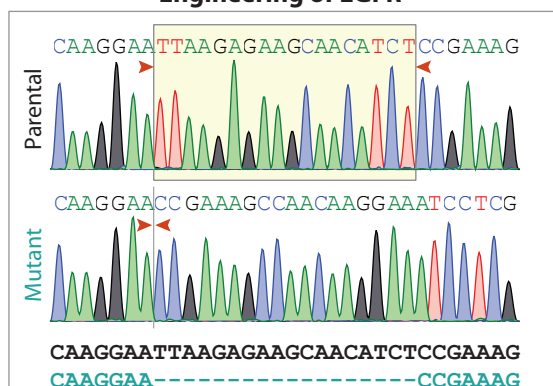
AccuRef can utilize CRISPR/Cas9 technology to engineer custom isogenic cell lines for your research needs.

- ✓ **Clonally Homogeneous**
- ✓ **Genetically Validated**
- ✓ **Homozygous Modification**



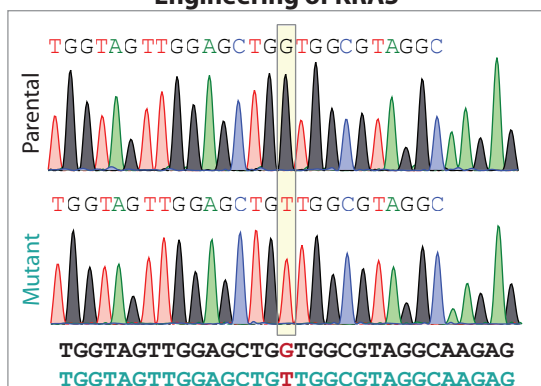
### Examples:

#### Engineering of EGFR



An 18 bp deletion in exon 19 of EGFR, corresponding to COSMIC mutation 6255 (c.2239\_2256del18), was engineered into the RKO cell line. The homozygous positive clone, above, was identified, expanded, and confirmed by Sanger sequencing.

#### Engineering of KRAS



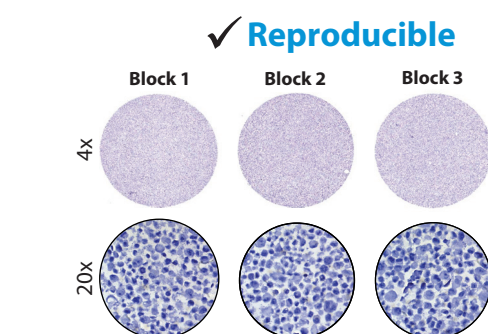
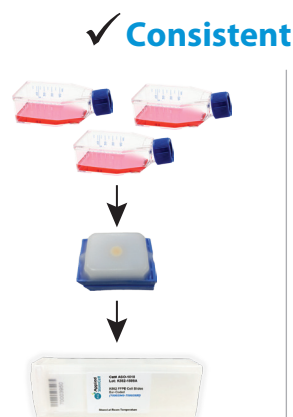
A G>T mutation at codon 12 of KRAS exon 2 (c.35G>T), corresponding to COSMIC mutation 520, was engineered into the RKO cell line. The homozygous positive clone, above, was identified, expanded, and confirmed by Sanger sequencing.

## The Custom FFPE Experts™

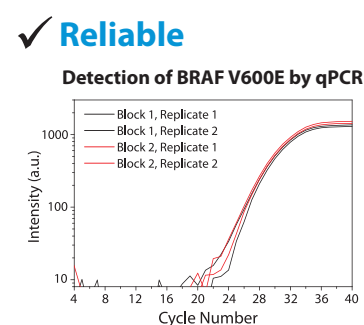


### Overview:

AccuRef can generate custom FFPE cell blocks, FFPE cell slides, or FFPE Cell scrolls. For slide generation, both single-spotting and multi-spotting services are available. From a fully expanded cell line we can typically turnaround a FFPE Cell Block in seven business days. Simply ship us your cell line or use one of our Onco-Ref™ mutation cell line.



**Figure 1.** Three separate batches of FFPE blocks were generated using the KRAS G12V mutant cell line. Blocks were sectioned at 5 um thickness, mounted on microscopy slides, stained with haematoxylin, and imaged by optical microscopy. All blocks showed very high uniformity in both cross-sectional coverage and cell packing density.



**Figure 2.** Two separate batches of FFPE blocks were sectioned and used for qPCR to detect BRAF V600E. The two separate batches showed very high reproducibility.

### Benefits:

- Generate reference materials for the mutations that are of highest importance to your research
- Develop reference materials for pairing drug discovery with companion diagnostic development
- Multiplex samples on a single slide using our FFPE multi-spotting capabilities
- Control every aspect of your assay workflow using homogeneous and consistent FFPE cell blocks

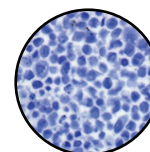
### Formats:

- **FFPE Cell Slides:** Custom FFPE slides are the perfect solution to your IHC and ISH application needs. We offer both single-spotting and custom multi-spotting services.
- **FFPE Cell Scrolls:** Custom FFPE scrolls can be used as reference materials for assay development, quality control, or routine monitoring of laboratory proficiency.
- **FFPE Cell Blocks:** Full FFPE blocks provide you with bulk material for the generation of your own FFPE cell slides and scrolls.

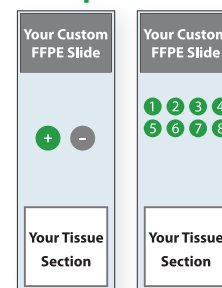
### Applications:

FFPE cell blocks can be used as a consistent source of controls for immunohistochemistry (IHC), *in situ* hybridization (ISH), PCR, sequencing, and other molecular diagnostics applications. Our FFPE cell pellets are prepared using a patent-pending process that generates highly homogenous FFPE cell blocks with any cell density (up to 90% area coverage).

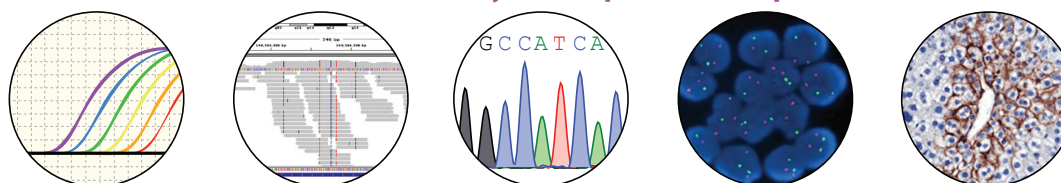
### Consistent and Uniform Cell Blocks



### Multipotting Capabilities



### Perfect Materials for Assay Development and Optimization

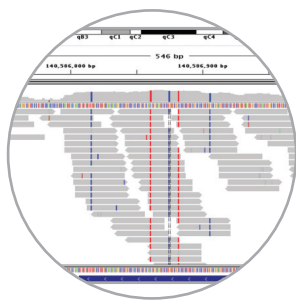


## Quan-Plex™ NGS Reference Standard

The Quan-Plex™ NGS Reference Standard is a highly-characterized, quantitative multiplex NGS control that allows researchers to accurately assess their oncology-based next-generation sequencing (NGS) workflow. The reference standard panel spans a broad range of actionable mutations at dPCR-validated allelic frequencies ranging from 1% to 34%. In addition, the Quan-Plex™ NGS Reference Standards contains > 1,500 COSMIC variants that are endogenous to the isogenic parental cell lines. Digital PCR-validated variants include 11 actionable somatic mutations across seven oncogenes (BRAF, KIT, EGFR, NRAS, HRAS, KRAS and PIK3CA).

### Applications:

- Workflow and assay optimization
- Routine assessment of sample-to-sample or batch-to-batch variability
- Evaluation and refinement of bioinformatics pipelines
- Monitoring of inter-operator variability
- Evaluate reproducibility of your NGS workflow or bioinformatics pipeline



### Key Features & Benefits:

- Genomic DNA (ARF-1001G-1) and formalin-compromised gDNA formats (ARF-1001FC-1)
- 11 actionable somatic mutations at dPCR-validated allelic frequencies
- > 1,500 COSMIC variants in total
- Highly-characterized, biologically-relevant quality control material

### Verified Mutations:

Gene	Chromosome	Nucleotide Change	Amino Acid Change	Cosmic ID	Variant Type	Mutation Allele Frequency, %
BRAF	7q34	c.1799T>A	p. V600E	476	Substitution	34.0%
KIT	4q11-q12	c. 2557 A>T	p. D816V	1314	Substitution	10.0%
EGFR	7p12	c.2236_2250del15	p. E746_A750 delELREA	6225	Deletion	5.0%
EGFR	7p12	c. 2573T>G	p. L858R	6224	Substitution	10.0%
EGFR	7p12	c.2369C>T	p. T790M	6240	Substitution	1.0%
EGFR	7p12	2155G>A	p. G719S	6252	Substitution	5.0%
KRAS	12p12.1	35G>A	p. G12D	521	Substitution	2.0%
HRAS	11p15.5	c.181C>A	p. Q61R	496	Substitution	4.0%
NRAS	1p13.2	c.181C>A	p. Q61K	580	Substitution	5.0%
PIK3CA	3q26.3	c.3140A>T	p. H1047L	776	Substitution	12.5%
PIK3CA	3q26.3	c.1633G>A	p. E545K	776	Substitution	7.0%

The Quan-Plex™ NGS Reference Standards is an ideal solution for researchers who do not have the resources or time to develop their own in-house reference material. It can be easily integrated into the daily workflow for platform assessment, especially if poor or inconsistent NGS data quality is observed, or to assist in assay validation of a targeted gene panel in a translational genomics laboratory workflow.

## Variants Confirmed in Parental Cell Line:

Chromosome	Gene	Amino Acid Change	Expected Allele Frequency, %
4	KIT	p.G13D	33.0%
12	KRAS	p.G13D	33.0%
3	PIK3CA	p.I391M	17.0%
3	PIK3CA	p.H1047R	50.0%
5	APC	p.V1822D	50.0%
5	APC	p.K1454E	17.0%
17	TP53	p.P72R	50.0%
4	KDR	p.Q472H	33.0%
5	IDH1	p.S261L	33.0%
3	CTNNB1	p.S45del	33.0%
1	ABL2	p.P950fs	17.0%

### Platform Compatibility:

The Quan-Plex™ NGS Reference Standards can be used with any next-generation sequencing platform (e.g. Illumina's MiSeq, ThermoFisher's PGM) or with any DNA sequencing application such as targeted amplicon (Ion AmpliSeq™ or TruSeq Amplicon™), exome or whole genome. The product is available in two formats: genomic DNA or 10% formalin-compromised genomic DNA, which can be used to generate challenging data sets for bioinformatic analysis pipeline optimization.

### Technical Information:

Genes Covered	BRAF, KIT, EGFR, KRAS, NRAS, PIK3CA
COSMIC	1,500+ (background cell lines)
Verified Mutations	11 (dPCR)
Allelic Frequency Range	1% - 34%

### General:

Storage	4°C
Cell Line Background	RKO/ HCT116
Buffer	(10mM Tris-HCl, 1mM EDTA), pH 8.1

### Ordering:

Quan-Plex™ NGS Reference Standard Genomic DNA	Catalog # ARF- 1001G-1
Quan-Plex™ NGS Reference Standard Genomic DNA (10% formalin-compromised)	Catalog # ARF- 1001FC-1

### Quality Control:

Genotype	Sanger sequencing of locus specific PCR
Quality	Mycoplasma contamination, Agarose gel electrophoresis, Quantitative PCR of GAPDH locus
Quantification	Quantus™ Fluorometer (Promega reagents: cat# E2670), and Digital PCR for mutation allele frequency (% MAF)

### Format:

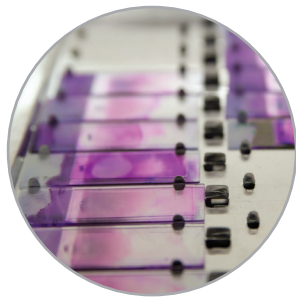
Unit Size	1 Vial
Quantity	1µg gDNA (50 ng/µl)
Intended Use	For routine NGS performance monitoring (Research Use Only)

Manufacturing ISO 9001:2015 and ISO 13485:2016

*For research use only. Not for diagnostic procedures.*

## Quan-Plex™ Molecular CytoPath Reference Slides

In collaboration with multinational clinical research laboratories, AccuRef Diagnostics has developed the Quan-Plex™ Molecular CytoPath Reference Slide Panel – a validated, multigene cytopathology panel, that is the first and only reference standard panel to mimic fine needle aspirates (FNAs). The panel consists of four mutations in the MAPK pathway at dPCR-validated allelic frequencies of 0% (wild-type), 1%, 5%, 10%. These slides are ideal for proficiency testing or clinical laboratory workflow training, thus saving precious clinical specimens for final validation.



### Key Feature & Benefits:

- Quantitative multigene cytopathology molecular reference slides
- Designed for proficiency testing (PT) or routine clinical laboratory workflow training
- Set of four slides containing four dPCR-validated mutations at 0% (wt), 1%, 5% or 10% MAF
- Approximately 200,000 cells/slide mimics low cell counts in clinical samples
- Proprietary Kwik-Diff™ compatible slides for low cell loss during staining and DNA extraction
- Biologically-relevant, and reproducible quality controls for NGS, dPCR and MALDI-TOF analysis

Slide	Gene	Nucleotide Change	Amino Acid Change	Cosmic ID	Mutation Allele Frequency Target	Mutation Allele Frequency Observed
10%	EGFR	c.2236_2250del15	p. E746-A750del	6225	10%	11.52%
	EGFR	c.2369C>T	p. T790M	6240	10%	12.36%
	KRAS	c. 38 G>A	p. G13D	532	10%	11.89%
	BRAF	c.1798_1799GT>AA	p. V600K	473	10%	10.49%
5%	EGFR	c.2236_2250del15	p. E746-A750del	6225	5%	6.57%
	EGFR	c.2369C>T	p. T790M	6240	5%	5.59%
	KRAS	c. 38 G>A	p. G13D	532	5%	5.65%
	BRAF	c.1798_1799GT>AA	p. V600K	473	5%	5.61%
1%	EGFR	c.2236_2250del15	p. E746-A750del	6225	1%	1.17%
	EGFR	c.2369C>T	p. T790M	6240	1%	1.38%
	KRAS	c. 38 G>A	p. G13D	532	1%	1.33%
	BRAF	c.1798_1799GT>AA	p. V600K	M473	1%	1.22%

### Fine-Needle Aspirates for Molecular Characterization

Most lung cancer patients are currently diagnosed using fresh cytological smears, rather than formalin-fixed, paraffin-embedded (FFPE) cell blocks.<sup>1</sup> In such a case, a fine needle aspirate (FNA) specimen is smeared directly onto a glass slide for analysis, or deposited onto a slide using a Cytospin™ centrifuge. If residual cellular material remains, it is processed into an FFPE cell block. Due to the low quantity of cytological specimen obtained from an aspirate, and in the absence of a cell block preparation, direct smears are the only source of tumorigenic material for molecular characterization in lung cancer.<sup>1</sup>

### A New Paradigm in FNA Proficiency Testing Reference Materials

Performing proficiency testing (PT) with cytological smears is particularly challenging, since clinical FNA samples are not reproducible or replaceable. Our Onco-Ref™ engineered cell lines allow us to generate a consistent and renewable source of FNA mimetic slides, thereby enabling the development of the first FNA reference standard product on the market.

## Technical Information:

Genes Covered	EGFR, KRAS, BRAF
Verified Mutations	4 mutations per slide (concurrent)
Allelic Frequency	0% slide (wild-type), 1% slide, 5% slide, 10% slide

## Ordering:

Quan-Plex™ Molecular CytoPath Reference Slides	Catalog# ARF-1002F
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## Format:

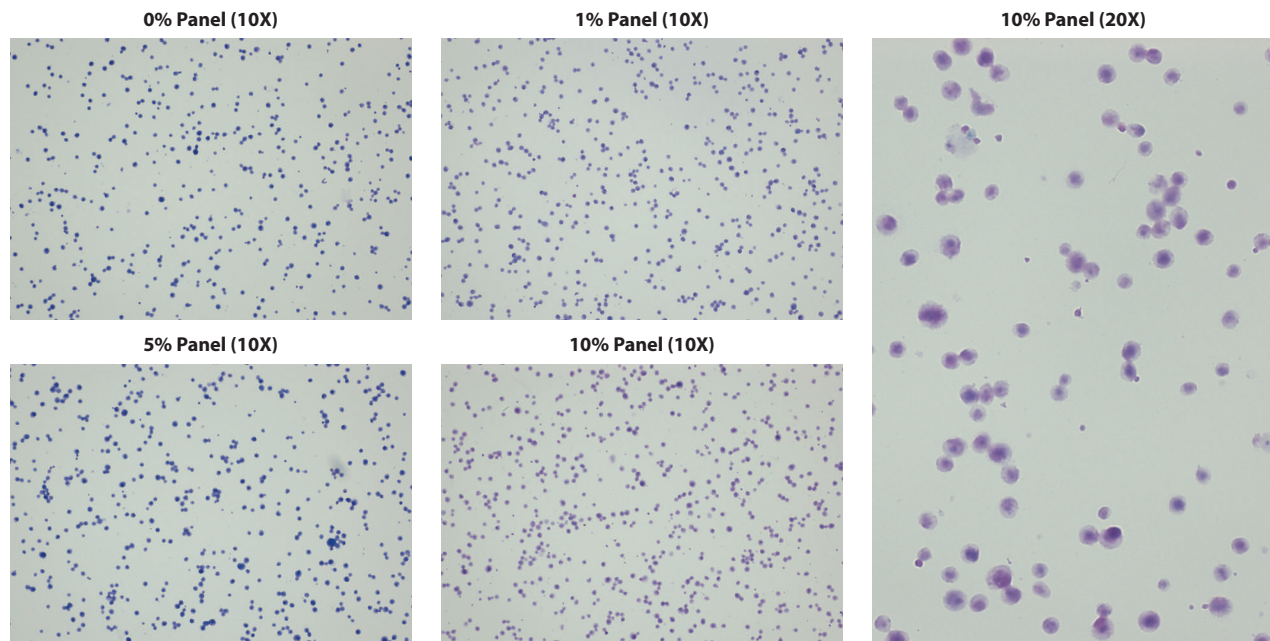
Unit Size	1 panel (4 cytology slides)
Quantity	200,000 cells per slide (typically, >50ng/ slide gDNA post-extraction)
Intended Use	Fine needle Aspirate (FNA) molecular cytopathology proficiency testing (Research Use Only)

## General:

Storage	-20°C
Cell Line Background	RKO

## Quality Control:

Genotype	Sanger sequencing of locus specific PCR (mutation cell line)
Quantity	Mycoplasma contamination, Quantitative PCR of GAPDH locus (mutation cell line) and Kwik-Diff™ stain (slides)
Quantification	Cell counter (cells) and digital PCR (mutation allele frequency)
Manufacturing	ISO 9001:2015 and ISO 123485:2016



Kwik-Diff™ stained images of Quan-Plex™ Molecular CytoPath Reference Slides at 10x and 20x magnification.

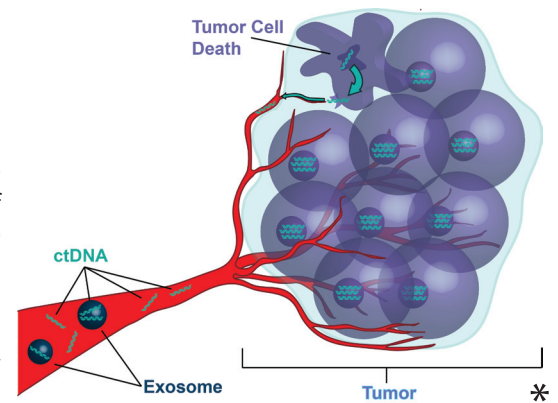
References: 1. Bellevicine C, Vita GD, Malapelle U, Troncone G. Applications and limitations of oncogene mutation testing in clinical cytopathology. *Semin Diagn Pathol.* 2013;30:284-297.

*For research use only. Not for diagnostic procedures.*

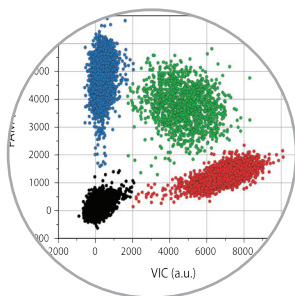


## Quan-Plex™ Patient-Like ctDNA Reference Standard

Recent advances in Next-Generation Sequencing (NGS) and digital PCR (dPCR) have enabled the development of quantitative assays that can detect low amounts of mutant DNA. The high sensitivity of these new technologies, often down to 1 in 1000 mutant alleles (i.e. 0.1%) or lower, has enabled non-invasive cancer profiling through what have become known as “liquid biopsies”, or the detection of cancer-associated somatic variants from circulating tumor DNA (ctDNA) in blood specimens. Examples of applications where ctDNA testing has shown promise are: blood screening for early cancer detection, therapy selection, routine monitoring of cancer to assess minimal residual disease, and resistance monitoring during therapy.

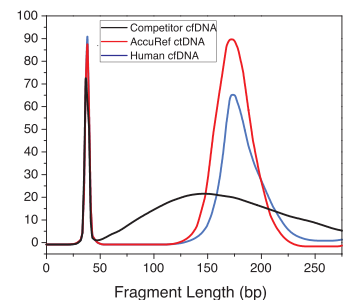


The Quan-Plex™ ctDNA Reference Standard is a highly-characterized, quantitative multiplex quality control that allows researchers to develop their own assays, and assess limits of detection (LODs) for eight cancer-associated solid tumor mutations. This panel can also be used to monitor the quality of their NGS or dPCR oncology-based workflow for routine quality assessment. The standards have been engineered to mimic the fragmentation profile of nucleosomal, ctDNA in patient (~166 bp) samples.



### Key Feature & Benefits:

- Highly-characterized ctDNA mimetic reference standard
- 166 bp average length mimics true ctDNA samples
- 8 cancer-associated mutations in EGFR, PIK3CA, NRAS and KRAS
- Available at 0%, 0.1%, 1.0% and 5.0% mutant allele frequencies
- Cancer cell lines provides a true biologically-relevant control
- Pre-validated by digital PCR



### Verified Mutations:

Gene	Nucleotide Change	Amino Acid Change	Cosmic ID	Variant Type
EGFR	c. 2155G>A	p. G719S	6252	Substitution
EGFR	c. 2573T>G	p. L858R	6224	Substitution
EGFR	c. 2369C>T	p. T790M	6240	Substitution
PIK3CA	c.1633G>A	p. E545K	763	Substitution
NRAS	c.181C>A	p. Q61K	580	Substitution
EGFR	c. 2307_2308insGCCAGCGTG	p. V769_D770insASV	12376	Insertion
KRAS	c. 35G>A	p. G12D	521	Substitution
EGFR	c. 2235_2249del15	p. E746_A750del	6223	Deletion

### Technical Information:

Genes Covered	EGFR, KRAS, NRAS, PIK3CA
Verified Mutations	8
Allelic Frequency Range	0%, 0.1%, 1%, 5%
Fragment Size	145-166 bp

## Ordering:

Quan-Plex™ Patient-like ctDNA Panel	Catalog # ARF-1003CT
Quan-Plex™ Patient-like ctDNA Panel - in Synthetic Plasma	Catalog # ARF-1003CTP

## Format:

Unit Size	1 Panel
Quantity	4 vials of 7.5µl ctDNA mimetic (300ng/vial for ARF-1003CT), or 8 vials of 250µl each of ctDNA mimetic in synthetic plasma (100ng/vial for ARF-1003CTP)
Concentration	40 ng/µl (ARF-1003CT); 4 ng/µl (ARF-1003CTP)
Intended Use	For routine NGS performance monitoring and assess limit of detection of ct DNA NGS or dPCR assay (Research Use Only)

## General:

Storage	-20°C
Cell Line Background	RKO/ HCT116HCT116
Buffer	Tris-EDTA (10mM Tris-HCl, 1mM EDTA), pH 8.0

## Quality Control:

Genotype	Sanger sequencing of locus specific PCR (cell line) Mycoplasma contamination, Agarose gel
Quality	electrophoresis, and BioAnalyzer™ 1000 Chip
Quantification	Quantus™ Fluorometer (Promega reagents: cat# E2670), and Digital PCR for mutation allele frequency
Manufacturing	ISO 9001:2015 and ISO 13485:2016 certified

\* Image credit: Lovly, C., M. Berger, C. Vnencak-Jones. 2016. Circulating Tumor DNA. *My Cancer Genome* <https://www.mycancergenome.org/content/molecular-medicine/circulating-tumor-dna/> (Updated February 8).

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## Quan-Plex™ Multigene Mutation Panels

Product	Gene	Nucleotide Change	Amino Acid Change	COSMIC ID	MAF	Size/Format	Catalog #	List Price	Availability
Quan-Plex™ NGS Reference Standard Genomic DNA	BRAF	c.1799T>A	p. V600E	476	34%	1µg/ 1 vial	ARF-1001G-1	\$200.00	In stock
	EGFR	c.2236_2250del15	p. E746_A750 delELREA	6225	5%				
	EGFR	c. 2573T>G	p. L858R	6224	10%				
	EGFR	c.2369C>T	p. T790M	6240	1%				
	EGFR	2155G>A	p. G719S	6252	5%				
	HRAS	c.181C>A	p. Q61R	496	4%				
	KIT	c. 2557 A>T	p. D816V	1314	10%				
	KRAS	35G>A	p. G12D	521	2%				
	NRAS	c.181C>A	p. Q61K	580	5%				
	PIK3CA	c.3140A>T	p. H1047L	776	13%				
	PIK3CA	c.1633G>A	p. E545K	763	7%				
Quan-Plex™ NGS Reference Standard Genomic DNA (10% formalin-compromised)	BRAF	c.1799T>A	p. V600E	476	34%	1µg/1 vial	ARF-1001FC-1	\$100.00	In stock
	EGFR	c.2236_2250del15	p. E746_A750 delELREA	6225	5%				
	EGFR	c. 2573T>G	p. L858R	6224	10%				
	EGFR	c.2369C>T	p. T790M	6240	1%				
	EGFR	c. 2155G>A	p. G719S	6252	5%				
	HRAS	c.181C>A	p. Q61R	496	4%				
	KIT	c. 2557 A>T	p. D816V	1314	10%				
	KRAS	c. 35G>A	p. G12D	521	2%				
	NRAS	c.181C>A	p. Q61K	580	5%				
	PIK3CA	c.3140A>T	p. H1047L	776	13%				
	PIK3CA	c.1633G>A	p. E545K	763	7%				
Quan-Plex™ Molecular CytoPath Reference Slide Panel	EGFR	c.2236_2250del15	p. E746-A750del	6225	10%	1 panel/ 4 slides (10%, 5%, 1% and 0%)	ARF-1002F	\$475.00	In stock
	EGFR	c.2369C>T	p. T790M	6240					
	KRAS	c. 38 G>A	p. G13D	532					
	BRAF	c.1798_1799GT>AA	p. V600K	473					
	EGFR	c.2236_2250del15	p. E746-A750del	6225	5%				
	EGFR	c.2369C>T	p. T790M	6240					
	KRAS	c. 38 G>A	p. G13D	532					
	BRAF	c.1798_1799GT>AA	p. V600K	473					
	EGFR	c.2236_2250del15	p. E746-A750del	6225	1%				
	EGFR	c.2369C>T	p. T790M	6240					
	KRAS	c. 38 G>A	p. G13D	532					
	BRAF	c.1798_1799GT>AA	p. V600K	473					
	EGFR	c.2236_2250del15	p. E746-A750del	6225	0%				
	EGFR	c.2369C>T	p. T790M	6240					
	KRAS	c. 38 G>A	p. G13D	532					
	BRAF	c.1798_1799GT>AA	p. V600K	473					
Quan-Plex™ NGS Reference Standard Genomic DNA	EGFR	c. 2155G>A	p. G719S	6252	5.0%	1µg/ 1 vial	ARF-1001G-1	\$200.00	In stock
	EGFR	c. 2573T>G	p. L858R	6224					
	EGFR	c. 2369C>T	p. T790M	6240					
	PIK3CA	c.1633G>A	p. E545K	763					
	NRAS	c.181C>A	p. Q61K	580					
	EGFR	c. 2307_2308insGCCAGCGTG	p. V769_D770insASV	12376					
	KRAS	c. 35G>A	p. G12D	521					
	EGFR	c. 2235_2249del15	p. E746_A750del	6223					
	EGFR	c. 2155G>A	p. G719S	6252					

## Quan-Plex™ Multigene Mutation Panels

Product	Gene	Nucleotide Change	Amino Acid Change	COSMIC ID	MAF	Size/Format	Catalog #	List Price	Availability					
Quan-Plex™ Patient-like ctDNA Panel	EGFR	c. 2573T>G	p. L858R	6224	1.0%	1 panel/ 4 vials of 7.5µl (300 ng/vial) ctDNA mimetic	ARF-1003CT	\$450.00	Inquire					
	EGFR	c. 2369C>T	p. T790M	6240										
	PIK3CA	c.1633G>A	p. E545K	763										
	NRAS	c.181C>A	p. Q61K	580										
	EGFR	c. 2307_2308insGCCAGCGTG	p. V769_D770insASV	12376										
	KRAS	c. 35G>A	p. G12D	521										
	EGFR	c. 2235_2249del15	p. E746_A750del	6223	0.1%									
	EGFR	c. 2155G>A	p. G719S	6252										
	EGFR	c. 2573T>G	p. L858R	6224										
	EGFR	c. 2369C>T	p. T790M	6240										
	PIK3CA	c.1633G>A	p. E545K	763										
	NRAS	c.181C>A	p. Q61K	580										
	EGFR	c. 2307_2308insGCCAGCGTG	p. V769_D770insASV	12376	0.0% (wt cell line)									
	KRAS	c. 35G>A	p. G12D	521										
	EGFR	c. 2235_2249del15	p. E746_A750del	6223										
	EGFR	c. 2155G>A	p. G719S	6252										
	EGFR	c. 2573T>G	p. L858R	6224										
	EGFR	c. 2369C>T	p. T790M	6240										
	Quan-Plex™ Patient-like ctDNA Panel in Synthetic Plasma	EGFR	c. 2155G>A	p. G719S	6252					5.0%	1 panel/ 8 vials of 250 µl (100 ng/vial) each of ctDNA mimetic in synthetic plasma	ARF-1003CTP	\$980.00	Inquire
		EGFR	c. 2573T>G	p. L858R	6224									
EGFR		c. 2369C>T	p. T790M	6240										
PIK3CA		c.1633G>A	p. E545K	763										
NRAS		c.181C>A	p. Q61K	580										
EGFR		c. 2307_2308insGCCAGCGTG	p. V769_D770insASV	12376										
KRAS		c. 35G>A	p. G12D	521	1.0%									
EGFR		c. 2235_2249del15	p. E746_A750del	6223										
EGFR		c. 2155G>A	p. G719S	6252										
EGFR		c. 2573T>G	p. L858R	6224										
EGFR		c. 2369C>T	p. T790M	6240										
PIK3CA		c.1633G>A	p. E545K	763										
NRAS		c.181C>A	p. Q61K	580	0.1%									
EGFR		c. 2307_2308insGCCAGCGTG	p. V769_D770insASV	12376										
KRAS		c. 35G>A	p. G12D	521										
EGFR		c. 2235_2249del15	p. E746_A750del	6223										
EGFR		c. 2155G>A	p. G719S	6252										
EGFR		c. 2573T>G	p. L858R	6224										

## Quan-Plex™ Multigene Mutation Panels

Product	Gene	Nucleotide Change	Amino Acid Change	COSMIC ID	MAF	Size/Format	Catalog #	List Price	Availability
	EGFR	c. 2155G>A	p. G719S	6252					
	EGFR	c. 2573T>G	p. L858R	6224					
	EGFR	c. 2369C>T	p. T790M	6240					
	PIK3CA	c.1633G>A	p. E545K	763	0.0% (wt cell line)				
	NRAS	c.181C>A	p. Q61K	580					
	EGFR	c. 2307_2308insGCCAGCGTG	p. V769_D770insASV	12376					
	KRAS	c. 35G>A	p. G12D	521					
	EGFR	c. 2235_2249del15	p. E746_A750del	6223					

## Onco-Ref™ Genomic DNA

Gene	Nucleotide Change	Amino Acid Change	ID	Mutation AF	Size/Format	Catalog #	List Price
APC	c.3921_3925delAAAAG	p.E1309fs*4	COSM18764	100% (Homozygous)	1 µg/ 1 vial	ASE-6146G-1	\$ 120.00
APC	c.637C>T	p.R213*	COSM13134	100% (Homozygous)	1 µg/ 1 vial	ASE-6150G-1	\$ 120.00
BRAF	c.1799T>A	p.V600E	COSM476	100% (Homozygous)	1 µg/ 1 vial	ASO-6047-1	\$ 120.00
BRAF	c.1798_1799GT>AA	p.V600K	COSM473	100% (Homozygous)	1 µg/ 1 vial	ASO-6044-1	\$ 120.00
BRAF	c.1798_1799GT>AG	p.V600R	COSM474	100% (Homozygous)	1 µg/ 1 vial	ASO-6045-1	\$ 120.00
BRAF	c.1798G>A	p.V600M	COSM1130	100% (Homozygous)	1 µg/ 1 vial	ASO-6049-1	\$ 120.00
BRAF	c.1799_1800TG>AA	p.V600E	COSM475	100% (Homozygous)	1 µg/ 1 vial	ASO-6046-1	\$ 120.00
BRAF	c.1799_1800TG>AT	p.V600D	COSM477	100% (Homozygous)	1 µg/ 1 vial	ASO-6048-1	\$ 120.00
BRAF	c.1799T>G	p.V600G	COSM6137	100% (Homozygous)	1 µg/ 1 vial	ASO-6050-1	\$ 120.00
BRCA1	c.5263_5264insC(5382insC)	p.Q1756fs*74	COSM35891	100% (Homozygous)	1 µg/ 1 vial	ASE-6108G-1	\$ 120.00
BRCA1	c.68_69delAG(185delAG)	p.E23fs*17	COSM3190163	100% (Homozygous)	1 µg/ 1 vial	ASE-6107G-1	\$ 120.00
BRCA1	c.3481_3491del11	p.E1161Fs	OMIM: 113705.0025	100% (Homozygous)	1 µg/ 1 vial	ASE-6112G-1	\$ 120.00
CTNNB1	c.133_135delTCT	p.S45del	COSM6128	100% (Homozygous)	1 µg/ 1 vial	ASE-6143G-1	\$ 120.00
CTNNB1	c.3140A>T	p.H1047L	COSM776	100% (Homozygous)	1 µg/ 1 vial	ASE-6052G-1	\$ 120.00
CTNNB1	c.98C>A	p.S33Y	COSM5673	100% (Homozygous)	1 µg/ 1 vial	ASE-6140G-1	\$ 120.00
CTNNB1	c.98C>G	p.S33C	COSM5677	100% (Homozygous)	1 µg/ 1 vial	ASE-6139G-1	\$ 120.00
EGFR	c.2237_2255>T	p.E746_S752>V	COSM12384	100% (Homozygous)	1 µg/ 1 vial	ASO-6008-1	\$ 120.00
EGFR	c.2239_2256del18	p.L747_S752del	COSM6255	100% (Homozygous)	1 µg/ 1 vial	ASO-6003-1	\$ 120.00
EGFR	c.2369C>T	p.T790M	COSM6240	100% (Homozygous)	1 µg/ 1 vial	ASO-6029-1	\$ 120.00
EGFR	c.2155G>A	p.G719S	COSM6252	100% (Homozygous)	1 µg/ 1 vial	ASO-6000-1	\$ 120.00
EGFR	c.2155G>T	p.G719C	COSM6253	100% (Homozygous)	1 µg/ 1 vial	ASO-6001-1	\$ 120.00
EGFR	c.2156G>C	p.G719A	COSM6239	100% (Homozygous)	1 µg/ 1 vial	ASO-6002-1	\$ 120.00
EGFR	c.2233_2247del15	p.K745_E749del	COSM26038	100% (Homozygous)	1 µg/ 1 vial	ASO-6015-1	\$ 120.00
EGFR	c.2235_2248>AATTC	p.E746_A750>IP	COSM13550	100% (Homozygous)	1 µg/ 1 vial	ASO-6024-1	\$ 120.00
EGFR	c.2235_2249del15	p.E746_A750del	COSM6223	100% (Homozygous)	1 µg/ 1 vial	ASO-6016-1	\$ 120.00
EGFR	c.2235_2252>AAT	p.E746_T751>I	COSM13551	100% (Homozygous)	1 µg/ 1 vial	ASO-6014-1	\$ 120.00
EGFR	c.2236_2250del15	p.E746_A750del	COSM6225	100% (Homozygous)	1 µg/ 1 vial	ASO-6017-1	\$ 120.00
EGFR	c.2236_2253del18	p.E746_T751del	COSM12728	100% (Homozygous)	1 µg/ 1 vial	ASO-6009-1	\$ 120.00
EGFR	c.2237_2251del15	p.E746_T751>A	COSM12678	100% (Homozygous)	1 µg/ 1 vial	ASO-6010-1	\$ 120.00
EGFR	c.2237_2252>T	p.E746_T751>V	COSM12386	100% (Homozygous)	1 µg/ 1 vial	ASO-6013-1	\$ 120.00
EGFR	c.2237_2254del18	p.E746_S752>A	COSM12367	100% (Homozygous)	1 µg/ 1 vial	ASO-6007-1	\$ 120.00
EGFR	c.2238_2248>GC	p.L747_A750>P	COSM12422	100% (Homozygous)	1 µg/ 1 vial	ASO-6022-1	\$ 120.00
EGFR	c.2238_2252>GCA	p.L747_T751>Q	COSM12419	100% (Homozygous)	1 µg/ 1 vial	ASO-6020-1	\$ 120.00
EGFR	c.2238_2255del18	p.E746_S752>D	COSM6220	100% (Homozygous)	1 µg/ 1 vial	ASO-6005-1	\$ 120.00
EGFR	c.2239_2247del9	p.L747_E749del	COSM6218	100% (Homozygous)	1 µg/ 1 vial	ASO-6023-1	\$ 120.00
EGFR	c.2239_2248TTAAGAGAAG>C	p.L747_A750>P	COSM12382	100% (Homozygous)	1 µg/ 1 vial	ASO-6021-1	\$ 120.00
EGFR	c.2239_2251>C	p.L747_T751>P	COSM12383	100% (Homozygous)	1 µg/ 1 vial	ASO-6018-1	\$ 120.00
EGFR	c.2239_2253del15	p.L747_T751del	COSM6254	100% (Homozygous)	1 µg/ 1 vial	ASO-6011-1	\$ 120.00
EGFR	c.2239_2258>CA	p.L747_P753>Q	COSM12387	100% (Homozygous)	1 µg/ 1 vial	ASO-6006-1	\$ 120.00
EGFR	c.2240_2251del12	p.L747_T751>S	COSM6210	100% (Homozygous)	1 µg/ 1 vial	ASO-6019-1	\$ 120.00
EGFR	c.2240_2254del15	p.L747_T751del	COSM12369	100% (Homozygous)	1 µg/ 1 vial	ASO-6012-1	\$ 120.00
EGFR	c.2240_2257del18	p.L747_P753>S	COSM12370	100% (Homozygous)	1 µg/ 1 vial	ASO-6004-1	\$ 120.00
EGFR	c.2303G>T	p.S768I	COSM6241	100% (Homozygous)	1 µg/ 1 vial	ASO-6025-1	\$ 120.00
EGFR	c.2307_2308insGCCAGCGTG	p.V769_D770insASV	COSM12376	100% (Homozygous)	1 µg/ 1 vial	ASO-6026-1	\$ 120.00
EGFR	c.2310_2311insGGT	p.D770_N771insG	COSM12378	100% (Homozygous)	1 µg/ 1 vial	ASO-6027-1	\$ 120.00
EGFR	c.2319_2320insCAC	p.H773_V774insH	COSM12377	100% (Homozygous)	1 µg/ 1 vial	ASO-6028-1	\$ 120.00
EGFR	c.2573T>G	p.L858R	COSM6224	100% (Homozygous)	1 µg/ 1 vial	ASO-6030-1	\$ 120.00

## Onco-Ref™ Genomic DNA

Gene	Nucleotide Change	Amino Acid Change	ID	Mutation AF	Size/Format	Catalog #	List Price
EGFR	c.2582T>A	p.L861Q	COSM6213	100% (Homozygous)	1 µg/ 1 vial	ASO-6031-1	\$ 120.00
EGFR	c.2360A>G	p.Q787R	COSM18422	100% (Homozygous)	1 µg/ 1 vial	ASE-6182G-1	\$ 120.00
EGFR	c.2389T>A	p.C797S/T790M	COSM14018	100% (Homozygous)	1 µg/ 1 vial	ASE-6177G-1	\$ 120.00
EGFR	c.2527G>A	p.V843I	COSM85894	100% (Homozygous)	1 µg/ 1 vial	ASE-6185G-1	\$ 120.00
EGFR	c.2390G>C	p.C797S/T790M	COSM5945664	100% (Homozygous)	1 µg/ 1 vial	ASE-6176G-1	\$ 120.00
ESR1	c.1609T>A	p.Y537N	COSM1074635	100% (Homozygous)	1 µg/ 1 vial	ASE-6171G-1	\$ 120.00
ESR1	c.1610A>C	p.Y537S	COSM1074639	100% (Homozygous)	1 µg/ 1 vial	ASE-6170G-1	\$ 120.00
ESR1	c.1610A>G	p.Y537C	COSM1074637	100% (Homozygous)	1 µg/ 1 vial	ASE-6172G-1	\$ 120.00
ESR1	c.1613A>G	p.D538G	COSM94250	100% (Homozygous)	1 µg/ 1 vial	ASE-6169G-1	\$ 120.00
FLT3	c.2503G>C	p.D835H	COSM785	100% (Homozygous)	1 µg/ 1 vial	ASE-6154G-1	\$ 120.00
FLT3	c.2508_2510delCAT	p.I836delI	COSM19836	100% (Homozygous)	1 µg/ 1 vial	ASE-6157G-1	\$ 120.00
HCT116 WT	n/a	n/a	n/a	n/a	5 µg	ASO-6052-1	\$ 120.00
HRAS	c.181C>A	p.Q61K	COSM496	100% (Homozygous)	1 µg/ 1 vial	ASE-6079G-1	\$ 120.00
HRAS	c.37G>C	p.G13R	COSM486	100% (Homozygous)	1 µg/ 1 vial	ASE-6078G-1	\$ 120.00
HRAS	c.182A>G	p.Q61R	COSM487	100% (Homozygous)	1 µg/ 1 vial	ASE-6080G-1	\$ 120.00
IDH2	c.418C>T	p.R140W	COSM41877	100% (Homozygous)	1 µg/ 1 vial	ASE-6226G-1	\$ 120.00
IDH2	c.419G>A	p.R140Q	COSM41590	100% (Homozygous)	1 µg/ 1 vial	ASE-6225G-1	\$ 120.00
IDH2	c.419G>T	p.R140L	COSM41875	100% (Homozygous)	1 µg/ 1 vial	ASE-6227G-1	\$ 120.00
IDH2	c.514A>G	p.R172G	COSM33731	100% (Homozygous)	1 µg/ 1 vial	ASE-6232G-1	\$ 120.00
IDH2	c.514A>T	p.R172W	COSM34039	100% (Homozygous)	1 µg/ 1 vial	ASE-6231G-1	\$ 120.00
IDH2	c.515G>A	p.R172K	COSM33733	100% (Homozygous)	1 µg/ 1 vial	ASE-6228G-1	\$ 120.00
IDH2	c.515G>T	p.R172M	COSM33732	100% (Homozygous)	1 µg/ 1 vial	ASE-6229G-1	\$ 120.00
IDH2	c.516G>T	p.R172S	COSM34090	100% (Homozygous)	1 µg/ 1 vial	ASE-6230G-1	\$ 120.00
KRAS	c.37G>T	p.G13C	COSM527	100% (Homozygous)	1 µg/ 1 vial	ASO-6038-1	\$ 120.00
KRAS	c.183A>C	p.Q61H	COSM554	100% (Homozygous)	1 µg/ 1 vial	ASE-6062G-1	\$ 120.00
KRAS	c.34G>A	p.G12S	COSM517	100% (Homozygous)	1 µg/ 1 vial	ASO-6033-1	\$ 120.00
KRAS	c.34G>C	p.G12R	COSM518	100% (Homozygous)	1 µg/ 1 vial	ASO-6034-1	\$ 120.00
KRAS	c.34G>T	p.G12C	COSM516	100% (Homozygous)	1 µg/ 1 vial	ASO-6032-1	\$ 120.00
KRAS	c.35G>A	p.G12D	COSM521	100% (Homozygous)	1 µg/ 1 vial	ASO-6036-1	\$ 120.00
KRAS	c.35G>C	p.G12A	COSM522	100% (Homozygous)	1 µg/ 1 vial	ASO-6037-1	\$ 120.00
KRAS	c.35G>T	p.G12V	COSM520	100% (Homozygous)	1 µg/ 1 vial	ASO-6035-1	\$ 120.00
KRAS	c.37G>A	p.G13S	COSM528	100% (Homozygous)	1 µg/ 1 vial	ASO-6039-1	\$ 120.00
KRAS	c.37G>C	p.G13R	COSM529	100% (Homozygous)	1 µg/ 1 vial	ASO-6040-1	\$ 120.00
KRAS	c.38G>A	p.G13D	COSM532	100% (Homozygous)	1 µg/ 1 vial	ASO-6041-1	\$ 120.00
KRAS	c.38G>C	p.G13A	COSM533	100% (Homozygous)	1 µg/ 1 vial	ASO-6042-1	\$ 120.00
KRAS	c.38G>T	p.G13V	COSM534	100% (Homozygous)	1 µg/ 1 vial	ASO-6043-1	\$ 120.00
NRAS	c.181C>A	p.Q61K	COSM580	100% (Homozygous)	1 µg/ 1 vial	ASE-6072G-1	\$ 120.00
NRAS	c.182A>G	p.Q61R	COSM584	100% (Homozygous)	1 µg/ 1 vial	ASE-6071G-1	\$ 120.00
NRAS	c.182A>T	p.Q61R	COSM583	100% (Homozygous)	1 µg/ 1 vial	ASE-6073G-1	\$ 120.00
NRAS	c.183_183delA	p.E62fs*6	COSM5044298	100% (Homozygous)	1 µg/ 1 vial	ASE-6200G-1	\$ 120.00
NRAS	c.34G>A	p.G12S	COSM563	100% (Homozygous)	1 µg/ 1 vial	ASE-6066G-1	\$ 120.00
NRAS	c.34G>T	p.G12C	COSM562	100% (Homozygous)	1 µg/ 1 vial	ASE-6067G-1	\$ 120.00
NRAS	c.35G>A	p.G12D	COSM564	100% (Homozygous)	1 µg/ 1 vial	ASE-6065G-1	\$ 120.00
NRAS	c.37G>C	p.G13R	COSM569	100% (Homozygous)	1 µg/ 1 vial	ASE-6069G-1	\$ 120.00
PIK3CA	c.1634A>C	p.E545A	COSM12458	100% (Homozygous)	1 µg/ 1 vial	ASE-6056G-1	\$ 120.00
PIK3CA	c.1258T>C	p.C420R	COSM757	100% (Homozygous)	1 µg/ 1 vial	ASE-6060G-1	\$ 120.00
PIK3CA	c.1624G>A	p.E542K	COSM760	100% (Homozygous)	1 µg/ 1 vial	ASE-6053G-1	\$ 120.00

## Onco-Ref™ Genomic DNA

Gene	Nucleotide Change	Amino Acid Change	ID	Mutation AF	Size/Format	Catalog #	List Price
PIK3CA	c.1633G>A	p.E545K	COSM763	100% (Homozygous)	1 µg/ 1 vial	ASE-6054G-1	\$ 120.00
PIK3CA	c.1634A>G	p.E545G	COSM764	100% (Homozygous)	1 µg/ 1 vial	ASE-6055G-1	\$ 120.00
PIK3CA	c.1636C>A	p.Q546K	COSM766	100% (Homozygous)	1 µg/ 1 vial	ASE-6057G-1	\$ 120.00
PIK3CA	c.3140A>G	p.H1047R	COSM775	100% (Homozygous)	1 µg/ 1 vial	ASE-6051G-1	\$ 120.00
PIK3CA	c.38G>T	p.G13V	COSM574	100% (Homozygous)	1 µg/ 1 vial	ASE-6070G-1	\$ 120.00
PTEN	c.388C>G	p.R130G	COSM5219	100% (Homozygous)	1 µg/ 1 vial	ASE-6127G-1	\$ 120.00
PTEN	c.389G>A	p.R130Q	COSM5033	100% (Homozygous)	1 µg/ 1 vial	ASE-6128G-1	\$ 120.00
PTEN	c.697C>T	p.R233*	COSM5154	100% (Homozygous)	1 µg/ 1 vial	ASE-6133G-1	\$ 120.00
RKO WT	n/a	n/a	n/a	n/a	5 µg/ 1 vial	ASO-6051-1	\$ 120.00
TP53	c.743G>A	p.R248Q	COSM10662	100% (Homozygous)	1 µg/ 1 vial	ASE-6091G-1	\$ 120.00
TP53	c.472C>G	p.R158G	COSM11087	100% (Homozygous)	1 µg/ 1 vial	ASE-6194G-1	\$ 120.00
TP53	c.472C>T	p.R158C	COSM43848	100% (Homozygous)	1 µg/ 1 vial	ASE-6193G-1	\$ 120.00
TP53	c.725G>A	p.C242Y	COSM10646	100% (Homozygous)	1 µg/ 1 vial	ASE-6086G-1	\$ 120.00
TP53	c.733G>A	p.G245S	COSM6932	100% (Homozygous)	1 µg/ 1 vial	ASE-6087G-1	\$ 120.00
TP53	c.733G>T	p.G245C	COSM11081	100% (Homozygous)	1 µg/ 1 vial	ASE-6090G-1	\$ 120.00
TP53	c.734G>A	p.G245D	COSM43606	100% (Homozygous)	1 µg/ 1 vial	ASE-6088G-1	\$ 120.00
TP53	c.734G>T	p.G245V	COSM11196	100% (Homozygous)	1 µg/ 1 vial	ASE-6089G-1	\$ 120.00
TP53	c.742C>T	p.R248W	COSM10656	100% (Homozygous)	1 µg/ 1 vial	ASE-6092G-1	\$ 120.00
TP53	c.743G>T	p.R248L	COSM6549	100% (Homozygous)	1 µg/ 1 vial	ASE-6093G-1	\$ 120.00
TP53	c.817C>T	p.R273C	COSM10659	100% (Homozygous)	1 µg/ 1 vial	ASE-6099G-1	\$ 120.00
TP53	c.818G>A	p.R273H	COSM10660	100% (Homozygous)	1 µg/ 1 vial	ASE-6098G-1	\$ 120.00
TP53	c.842A>G	p.D281G	COSM11232	100% (Homozygous)	1 µg/ 1 vial	ASE-6101G-1	\$ 120.00
TP53	c.844C>G	p.R282G	COSM10992	100% (Homozygous)	1 µg/ 1 vial	ASE-6103G-1	\$ 120.00
TP53	c.845G>A	p.R282Q	COSM44338	100% (Homozygous)	1 µg/ 1 vial	ASE-6104G-1	\$ 120.00
PIK3CA	c.263G>A	p.R88Q	COSM746	100% (Homozygous)	1 µg/ 1 vial	ASE-6058G-1	\$ 120.00
AKT1	c.49G>A	p.E17K	COSM33765	100% (Homozygous)	1 µg/ 1 vial	ASE-6061G-1	\$ 120.00
NRAS	c.38G>A	p.G13D	COSM573	100% (Homozygous)	1 µg/ 1 vial	ASE-6068G-1	\$ 120.00
HRAS	c.35G>T	p.G12V	COSM483	100% (Homozygous)	1 µg/ 1 vial	ASE-6076G-1	\$ 120.00
HRAS	c.35G>A	p.G12D	COSM484	100% (Homozygous)	1 µg/ 1 vial	ASE-6077G-1	\$ 120.00
TP53	c.524G>A	p.R175H	COSM10648	100% (Homozygous)	1 µg/ 1 vial	ASE-6082G-1	\$ 120.00
TP53	c.523C>G	p.R175G	COSM10870	100% (Homozygous)	1 µg/ 1 vial	ASE-6083G-1	\$ 120.00
TP53	c.524G>T	p.R175L	COSM10718	100% (Homozygous)	1 µg/ 1 vial	ASE-6084G-1	\$ 120.00
TP53	c.747G>T	p.R249S	COSM10817	100% (Homozygous)	1 µg/ 1 vial	ASE-6094G-1	\$ 120.00
TP53	c.745A>T	p.R249W	COSM43629	100% (Homozygous)	1 µg/ 1 vial	ASE-6095G-1	\$ 120.00
TP53	c.746G>T	p.R249M	COSM43871	100% (Homozygous)	1 µg/ 1 vial	ASE-6096G-1	\$ 120.00
TP53	c.745A>G	p.R249G	COSM10668	100% (Homozygous)	1 µg/ 1 vial	ASE-6097G-1	\$ 120.00
BRCA1	c.5503C>T	p.R1835*	COSM78883	100% (Homozygous)	1 µg/ 1 vial	ASE-6106G-1	\$ 120.00
BRCA1	c.5137GdelG	p.V1713*	rs80357997	100% (Homozygous)	1 µg/ 1 vial	ASE-6113G-1	\$ 120.00
BRCA2	c.7934delG	p.R2645fs*3	COSM1738242	100% (Homozygous)	1 µg/ 1 vial	ASE-6119G-1	\$ 120.00
JAK2	c.1849G>T	p.V617F	COSM12600	100% (Homozygous)	1 µg/ 1 vial	ASE-6120G-1	\$ 120.00
JAK2	c.1843G>T	p.V615L	COSM4391514	100% (Homozygous)	1 µg/ 1 vial	ASE-6121G-1	\$ 120.00
JAK2	c.1849G>A	p.V617I	COSM29117	100% (Homozygous)	1 µg/ 1 vial	ASE-6122G-1	\$ 120.00
RB1	c.1735C>T	p.R579*	COSM892	100% (Homozygous)	1 µg/ 1 vial	ASE-6123G-1	\$ 120.00
RB1	c.751C>T	p.R251*	COSM878	100% (Homozygous)	1 µg/ 1 vial	ASE-6125G-1	\$ 120.00
PTEN	c.388C>T	p.R130*	COSM5152	100% (Homozygous)	1 µg/ 1 vial	ASE-6129G-1	\$ 120.00
PTEN	c.389G>T	p.R130L	COSM5216	100% (Homozygous)	1 µg/ 1 vial	ASE-6130G-1	\$ 120.00
PTEN	c.517C>T	p.R173C	COSM5089	100% (Homozygous)	1 µg/ 1 vial	ASE-6131G-1	\$ 120.00



## Onco-Ref™ Genomic DNA

Gene	Nucleotide Change	Amino Acid Change	ID	Mutation AF	Size/Format	Catalog #	List Price
PTEN	c.518G>A	p.R173H	COSM5039	100% (Homozygous)	1 µg/ 1 vial	ASE-6132G-1	\$ 120.00
APC	c.4393_4394delAG	p.S1465fs*3	COSM13864	100% (Homozygous)	1 µg/ 1 vial	ASE-6148G-1	\$ 120.00
KIT	c.1670_1675delGGAAGG	p.W557_V559>F	COSM1226	100% (Homozygous)	1 µg/ 1 vial	ASE-6160G-1	\$ 120.00
KIT	c.2447A>T	p.D816V	COSM1314	100% (Homozygous)	1 µg/ 1 vial	ASE-6162G-1	\$ 120.00
KIT	c.2446G>T	p.D816Y	COSM1310	100% (Homozygous)	1 µg/ 1 vial	ASE-6163G-1	\$ 120.00
KIT	c.2446G>C	p.D816H	COSM1311	100% (Homozygous)	1 µg/ 1 vial	ASE-6164G-1	\$ 120.00
KIT	c.1676T>C	p.V559A	COSM1255	100% (Homozygous)	1 µg/ 1 vial	ASE-6166G-1	\$ 120.00
KIT	c.1679T>A	p.V560D	COSM1257	100% (Homozygous)	1 µg/ 1 vial	ASE-6167G-1	\$ 120.00
ERBB2	c.2326_2327insTGT	p.G776>VC	COSM12553	100% (Homozygous)	1 µg/ 1 vial	ASE-6175G-1	\$ 120.00
TP53	c.473G>A	p.R158H	COSM10690	100% (Homozygous)	1 µg/ 1 vial	ASE-6191G-1	\$ 120.00
TP53	c.473G>T	p.R158L	COSM10714	100% (Homozygous)	1 µg/ 1 vial	ASE-6192G-1	\$ 120.00
TP53	c.469G>T	p.V157F	COSM10670	100% (Homozygous)	1 µg/ 1 vial	ASE-6195G-1	\$ 120.00
TP53	c.470T>G	p.V157G	COSM43903	100% (Homozygous)	1 µg/ 1 vial	ASE-6196G-1	\$ 120.00
TP53	c.536A>G	p.H179R	COSM10889	100% (Homozygous)	1 µg/ 1 vial	ASE-6198G-1	\$ 120.00
MAP2K1	c.370C>T	p.P124S	COSM235614	100% (Homozygous)	1 µg/ 1 vial	ASE-6201G-1	\$ 120.00
MAP2K1	c.607G>A	p.E203K	COSM232755	100% (Homozygous)	1 µg/ 1 vial	ASE-6204G-1	\$ 120.00
FGFR3	c.742C>T	p.R248C	COSM714	100% (Homozygous)	1 µg/ 1 vial	ASE-6208G-1	\$ 120.00
FGFR3	c.1118A>G	p.Y373C	COSM718	100% (Homozygous)	1 µg/ 1 vial	ASE-6209G-1	\$ 120.00
IDH1	c.395G>A	p.R132H	COSM28746	100% (Homozygous)	1 µg/ 1 vial	ASE-6218G-1	\$ 120.00
PIK3R1	c.1718T>C	p.L573P	COSM1069619	100% (Homozygous)	1 µg/ 1 vial	ASE-6243G-1	\$ 120.00
PIK3R1	c.1721G>T	p.R574I	COSM85927	100% (Homozygous)	1 µg/ 1 vial	ASE-6244G-1	\$ 120.00
PIK3R1	c.1721_1722insA	p.T576fs*26	COSM1069623	100% (Homozygous)	1 µg/ 1 vial	ASE-6245G-1	\$ 120.00
PIK3R1	c.1727_1729delCGA	p.T576del	COSM35737	100% (Homozygous)	1 µg/ 1 vial	ASE-6246G-1	\$ 120.00
GNAQ	c.626A>C	p.Q209P	COSM28758	100% (Homozygous)	1 µg/ 1 vial	ASE-6279G-1	\$ 120.00
GNAQ	c.626A>G	p.Q209R	COSM28760	100% (Homozygous)	1 µg/ 1 vial	ASE-6281G-1	\$ 120.00

## Onco-Ref™ Genomic DNA

Gene	Nucleotide Change	Amino Acid Change	ID	Mutation AF	Size/Format	Catalog #	List Price
APC	c.3921_3925delAAAAG	p.E1309fs*4	COSM18764	100% (Homozygous)	500 ng/ 1 vial	ASE-6146G-05	\$ 70.00
APC	c.637C>T	p.R213*	COSM13134	100% (Homozygous)	500 ng/ 1 vial	ASE-6150G-05	\$ 70.00
BRAF	c.1799T>A	p.V600E	COSM476	100% (Homozygous)	500 ng/ 1 vial	ASO-6047-05	\$ 70.00
BRAF	c.1798_1799GT>AA	p.V600K	COSM473	100% (Homozygous)	500 ng/ 1 vial	ASO-6044-05	\$ 70.00
BRAF	c.1798_1799GT>AG	p.V600R	COSM474	100% (Homozygous)	500 ng/ 1 vial	ASO-6045-05	\$ 70.00
BRAF	c.1798G>A	p.V600M	COSM1130	100% (Homozygous)	500 ng/ 1 vial	ASO-6049-05	\$ 70.00
BRAF	c.1799_1800TG>AA	p.V600E	COSM475	100% (Homozygous)	500 ng/ 1 vial	ASO-6046-05	\$ 70.00
BRAF	c.1799_1800TG>AT	p.V600D	COSM477	100% (Homozygous)	500 ng/ 1 vial	ASO-6048-05	\$ 70.00
BRAF	c.1799T>G	p.V600G	COSM6137	100% (Homozygous)	500 ng/ 1 vial	ASO-6050-05	\$ 70.00
BRCA1	c.5263_5264insC(5382insC)	p.Q1756fs*74	COSM35891	100% (Homozygous)	500 ng/ 1 vial	ASE-6108G-05	\$ 70.00
BRCA1	c.68_69delAG(185delAG)	p.E23fs*17	COSM3190163	100% (Homozygous)	500 ng/ 1 vial	ASE-6107G-05	\$ 70.00
BRCA1	c.3481_3491del11	p.E1161Fs	OMIM: 113705.0025	100% (Homozygous)	500 ng/ 1 vial	ASE-6112G-05	\$ 70.00
CTNNB1	c.133_135delTCT	p.S45del	COSM6128	100% (Homozygous)	500 ng/ 1 vial	ASE-6143G-05	\$ 70.00
CTNNB1	c.3140A>T	p.H1047L	COSM776	100% (Homozygous)	500 ng/ 1 vial	ASE-6052G-05	\$ 70.00
CTNNB1	c.98C>A	p.S33Y	COSM5673	100% (Homozygous)	500 ng/ 1 vial	ASE-6140G-05	\$ 70.00
CTNNB1	c.98C>G	p.S33C	COSM5677	100% (Homozygous)	500 ng/ 1 vial	ASE-6139G-05	\$ 70.00
EGFR	c.2237_2255>T	p.E746_S752>V	COSM12384	100% (Homozygous)	500 ng/ 1 vial	ASO-6008-05	\$ 70.00
EGFR	c.2239_2256del18	p.L747_S752del	COSM6255	100% (Homozygous)	500 ng/ 1 vial	ASO-6003-05	\$ 70.00
EGFR	c.2369C>T	p.T790M	COSM6240	100% (Homozygous)	500 ng/ 1 vial	ASO-6029-05	\$ 70.00
EGFR	c.2155G>A	p.G719S	COSM6252	100% (Homozygous)	500 ng/ 1 vial	ASO-6000-05	\$ 70.00
EGFR	c.2155G>T	p.G719C	COSM6253	100% (Homozygous)	500 ng/ 1 vial	ASO-6001-05	\$ 70.00
EGFR	c.2156G>C	p.G719A	COSM6239	100% (Homozygous)	500 ng/ 1 vial	ASO-6002-05	\$ 70.00
EGFR	c.2233_2247del15	p.K745_E749del	COSM26038	100% (Homozygous)	500 ng/ 1 vial	ASO-6015-05	\$ 70.00
EGFR	c.2235_2248>AATTC	p.E746_A750>IP	COSM13550	100% (Homozygous)	500 ng/ 1 vial	ASO-6024-05	\$ 70.00
EGFR	c.2235_2249del15	p.E746_A750del	COSM6223	100% (Homozygous)	500 ng/ 1 vial	ASO-6016-05	\$ 70.00
EGFR	c.2235_2252>AAT	p.E746_T751>I	COSM13551	100% (Homozygous)	500 ng/ 1 vial	ASO-6014-05	\$ 70.00
EGFR	c.2236_2250del15	p.E746_A750del	COSM6225	100% (Homozygous)	500 ng/ 1 vial	ASO-6017-05	\$ 70.00
EGFR	c.2236_2253del18	p.E746_T751del	COSM12728	100% (Homozygous)	500 ng/ 1 vial	ASO-6009-05	\$ 70.00
EGFR	c.2237_2251del15	p.E746_T751>A	COSM12678	100% (Homozygous)	500 ng/ 1 vial	ASO-6010-05	\$ 70.00
EGFR	c.2237_2252>T	p.E746_T751>V	COSM12386	100% (Homozygous)	500 ng/ 1 vial	ASO-6013-05	\$ 70.00
EGFR	c.2237_2254del18	p.E746_S752>A	COSM12367	100% (Homozygous)	500 ng/ 1 vial	ASO-6007-05	\$ 70.00
EGFR	c.2238_2248>GC	p.L747_A750>P	COSM12422	100% (Homozygous)	500 ng/ 1 vial	ASO-6022-05	\$ 70.00
EGFR	c.2238_2252>GCA	p.L747_T751>Q	COSM12419	100% (Homozygous)	500 ng/ 1 vial	ASO-6020-05	\$ 70.00
EGFR	c.2238_2255del18	p.E746_S752>D	COSM6220	100% (Homozygous)	500 ng/ 1 vial	ASO-6005-05	\$ 70.00
EGFR	c.2239_2247del9	p.L747_E749del	COSM6218	100% (Homozygous)	500 ng/ 1 vial	ASO-6023-05	\$ 70.00
EGFR	c.2239_2248TTAAGAGAAG>C	p.L747_A750>P	COSM12382	100% (Homozygous)	500 ng/ 1 vial	ASO-6021-05	\$ 70.00
EGFR	c.2239_2251>C	p.L747_T751>P	COSM12383	100% (Homozygous)	500 ng/ 1 vial	ASO-6018-05	\$ 70.00
EGFR	c.2239_2253del15	p.L747_T751del	COSM6254	100% (Homozygous)	500 ng/ 1 vial	ASO-6011-05	\$ 70.00
EGFR	c.2239_2258>CA	p.L747_P753>Q	COSM12387	100% (Homozygous)	500 ng/ 1 vial	ASO-6006-05	\$ 70.00
EGFR	c.2240_2251del12	p.L747_T751>S	COSM6210	100% (Homozygous)	500 ng/ 1 vial	ASO-6019-05	\$ 70.00
EGFR	c.2240_2254del15	p.L747_T751del	COSM12369	100% (Homozygous)	500 ng/ 1 vial	ASO-6012-05	\$ 70.00
EGFR	c.2240_2257del18	p.L747_P753>S	COSM12370	100% (Homozygous)	500 ng/ 1 vial	ASO-6004-05	\$ 70.00
EGFR	c.2303G>T	p.S768I	COSM6241	100% (Homozygous)	500 ng/ 1 vial	ASO-6025-05	\$ 70.00
EGFR	c.2307_2308insGCCAGCGTG	p.V769_D770insASV	COSM12376	100% (Homozygous)	500 ng/ 1 vial	ASO-6026-05	\$ 70.00
EGFR	c.2310_2311insGGT	p.D770_N771insG	COSM12378	100% (Homozygous)	500 ng/ 1 vial	ASO-6027-05	\$ 70.00
EGFR	c.2319_2320insCAC	p.H773_V774insH	COSM12377	100% (Homozygous)	500 ng/ 1 vial	ASO-6028-05	\$ 70.00
EGFR	c.2573T>G	p.L858R	COSM6224	100% (Homozygous)	500 ng/ 1 vial	ASO-6030-05	\$ 70.00

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Gene	Nucleotide Change	Amino Acid Change	ID	Mutation AF	Size/Format	Catalog #	List Price
APC	c.3921_3925delAAAAG	p.E1309fs*4	COSM18764	100% (Homozygous)	500 ng/ 1 vial	ASE-6146G-05	\$ 70.00
APC	c.637C>T	p.R213*	COSM13134	100% (Homozygous)	500 ng/ 1 vial	ASE-6150G-05	\$ 70.00
BRAF	c.1799T>A	p.V600E	COSM476	100% (Homozygous)	500 ng/ 1 vial	ASO-6047-05	\$ 70.00
BRAF	c.1798_1799GT>AA	p.V600K	COSM473	100% (Homozygous)	500 ng/ 1 vial	ASO-6044-05	\$ 70.00
BRAF	c.1798_1799GT>AG	p.V600R	COSM474	100% (Homozygous)	500 ng/ 1 vial	ASO-6045-05	\$ 70.00
BRAF	c.1798G>A	p.V600M	COSM1130	100% (Homozygous)	500 ng/ 1 vial	ASO-6049-05	\$ 70.00
BRAF	c.1799_1800TG>AA	p.V600E	COSM475	100% (Homozygous)	500 ng/ 1 vial	ASO-6046-05	\$ 70.00
BRAF	c.1799_1800TG>AT	p.V600D	COSM477	100% (Homozygous)	500 ng/ 1 vial	ASO-6048-05	\$ 70.00
BRAF	c.1799T>G	p.V600G	COSM6137	100% (Homozygous)	500 ng/ 1 vial	ASO-6050-05	\$ 70.00
BRCA1	c.5263_5264insC(5382insC)	p.Q1756fs*74	COSM35891	100% (Homozygous)	500 ng/ 1 vial	ASE-6108G-05	\$ 70.00
BRCA1	c.68_69delAG(185delAG)	p.E23fs*17	COSM3190163	100% (Homozygous)	500 ng/ 1 vial	ASE-6107G-05	\$ 70.00
BRCA1	c.3481_3491del11	p.E1161Fs	OMIM: 113705.0025	100% (Homozygous)	500 ng/ 1 vial	ASE-6112G-05	\$ 70.00
CTNNB1	c.133_135delTCT	p.S45del	COSM6128	100% (Homozygous)	500 ng/ 1 vial	ASE-6143G-05	\$ 70.00
CTNNB1	c.3140A>T	p.H1047L	COSM776	100% (Homozygous)	500 ng/ 1 vial	ASE-6052G-05	\$ 70.00
CTNNB1	c.98C>A	p.S33Y	COSM5673	100% (Homozygous)	500 ng/ 1 vial	ASE-6140G-05	\$ 70.00
CTNNB1	c.98C>G	p.S33C	COSM5677	100% (Homozygous)	500 ng/ 1 vial	ASE-6139G-05	\$ 70.00
EGFR	c.2237_2255>T	p.E746_S752>V	COSM12384	100% (Homozygous)	500 ng/ 1 vial	ASO-6008-05	\$ 70.00
EGFR	c.2239_2256del18	p.L747_S752del	COSM6255	100% (Homozygous)	500 ng/ 1 vial	ASO-6003-05	\$ 70.00
EGFR	c.2369C>T	p.T790M	COSM6240	100% (Homozygous)	500 ng/ 1 vial	ASO-6029-05	\$ 70.00
EGFR	c.2155G>A	p.G719S	COSM6252	100% (Homozygous)	500 ng/ 1 vial	ASO-6000-05	\$ 70.00
EGFR	c.2155G>T	p.G719C	COSM6253	100% (Homozygous)	500 ng/ 1 vial	ASO-6001-05	\$ 70.00
EGFR	c.2156G>C	p.G719A	COSM6239	100% (Homozygous)	500 ng/ 1 vial	ASO-6002-05	\$ 70.00
EGFR	c.2233_2247del15	p.K745_E749del	COSM26038	100% (Homozygous)	500 ng/ 1 vial	ASO-6015-05	\$ 70.00
EGFR	c.2235_2248>AATTC	p.E746_A750>IP	COSM13550	100% (Homozygous)	500 ng/ 1 vial	ASO-6024-05	\$ 70.00
EGFR	c.2235_2249del15	p.E746_A750del	COSM6223	100% (Homozygous)	500 ng/ 1 vial	ASO-6016-05	\$ 70.00
EGFR	c.2235_2252>AAT	p.E746_T751>I	COSM13551	100% (Homozygous)	500 ng/ 1 vial	ASO-6014-05	\$ 70.00
EGFR	c.2236_2250del15	p.E746_A750del	COSM6225	100% (Homozygous)	500 ng/ 1 vial	ASO-6017-05	\$ 70.00
EGFR	c.2236_2253del18	p.E746_T751del	COSM12728	100% (Homozygous)	500 ng/ 1 vial	ASO-6009-05	\$ 70.00
EGFR	c.2237_2251del15	p.E746_T751>A	COSM12678	100% (Homozygous)	500 ng/ 1 vial	ASO-6010-05	\$ 70.00
EGFR	c.2237_2252>T	p.E746_T751>V	COSM12386	100% (Homozygous)	500 ng/ 1 vial	ASO-6013-05	\$ 70.00
EGFR	c.2237_2254del18	p.E746_S752>A	COSM12367	100% (Homozygous)	500 ng/ 1 vial	ASO-6007-05	\$ 70.00
EGFR	c.2238_2248>GC	p.L747_A750>P	COSM12422	100% (Homozygous)	500 ng/ 1 vial	ASO-6022-05	\$ 70.00
EGFR	c.2238_2252>GCA	p.L747_T751>Q	COSM12419	100% (Homozygous)	500 ng/ 1 vial	ASO-6020-05	\$ 70.00
EGFR	c.2238_2255del18	p.E746_S752>D	COSM6220	100% (Homozygous)	500 ng/ 1 vial	ASO-6005-05	\$ 70.00
EGFR	c.2239_2247del9	p.L747_E749del	COSM6218	100% (Homozygous)	500 ng/ 1 vial	ASO-6023-05	\$ 70.00
EGFR	c.2239_2248TTAAGAGAAG>C	p.L747_A750>P	COSM12382	100% (Homozygous)	500 ng/ 1 vial	ASO-6021-05	\$ 70.00
EGFR	c.2239_2251>C	p.L747_T751>P	COSM12383	100% (Homozygous)	500 ng/ 1 vial	ASO-6018-05	\$ 70.00
EGFR	c.2239_2253del15	p.L747_T751del	COSM6254	100% (Homozygous)	500 ng/ 1 vial	ASO-6011-05	\$ 70.00
EGFR	c.2239_2258>CA	p.L747_P753>Q	COSM12387	100% (Homozygous)	500 ng/ 1 vial	ASO-6006-05	\$ 70.00
EGFR	c.2240_2251del12	p.L747_T751>S	COSM6210	100% (Homozygous)	500 ng/ 1 vial	ASO-6019-05	\$ 70.00
EGFR	c.2240_2254del15	p.L747_T751del	COSM12369	100% (Homozygous)	500 ng/ 1 vial	ASO-6012-05	\$ 70.00
EGFR	c.2240_2257del18	p.L747_P753>S	COSM12370	100% (Homozygous)	500 ng/ 1 vial	ASO-6004-05	\$ 70.00
EGFR	c.2303G>T	p.S768I	COSM6241	100% (Homozygous)	500 ng/ 1 vial	ASO-6025-05	\$ 70.00
EGFR	c.2307_2308insGCCAGCGTG	p.V769_D770insASV	COSM12376	100% (Homozygous)	500 ng/ 1 vial	ASO-6026-05	\$ 70.00
EGFR	c.2310_2311insGGT	p.D770_N771insG	COSM12378	100% (Homozygous)	500 ng/ 1 vial	ASO-6027-05	\$ 70.00
EGFR	c.2319_2320insCAC	p.H773_V774insH	COSM12377	100% (Homozygous)	500 ng/ 1 vial	ASO-6028-05	\$ 70.00
EGFR	c.2573T>G	p.L858R	COSM6224	100% (Homozygous)	500 ng/ 1 vial	ASO-6030-05	\$ 70.00

## Onco-Ref™ Genomic DNA

Gene	Nucleotide Change	Amino Acid Change	ID	Mutation AF	Size/Format	Catalog #	List Price
EGFR	c.2582T>A	p.L861Q	COSM6213	100% (Homozygous)	500 ng/ 1 vial	ASO-6031-05	\$ 70.00
EGFR	c.2360A>G	p.Q787R	COSM18422	100% (Homozygous)	500 ng/ 1 vial	ASE-6182G-05	\$ 70.00
EGFR	c.2389T>A	p.C797S/T790M	COSM14018	100% (Homozygous)	500 ng/ 1 vial	ASE-6177G-05	\$ 70.00
EGFR	c.2527G>A	p.V843I	COSM85894	100% (Homozygous)	500 ng/ 1 vial	ASE-6185G-05	\$ 70.00
EGFR	c.2390G>C	p.C797S/T790M	COSM5945664	100% (Homozygous)	500 ng/ 1 vial	ASE-6176G-05	\$ 70.00
ESR1	c.1609T>A	p.Y537N	COSM1074635	100% (Homozygous)	500 ng/ 1 vial	ASE-6171G-05	\$ 70.00
ESR1	c.1610A>C	p.Y537S	COSM1074639	100% (Homozygous)	500 ng/ 1 vial	ASE-6170G-05	\$ 70.00
ESR1	c.1610A>G	p.Y537C	COSM1074637	100% (Homozygous)	500 ng/ 1 vial	ASE-6172G-05	\$ 70.00
ESR1	c.1613A>G	p.D538G	COSM94250	100% (Homozygous)	500 ng/ 1 vial	ASE-6169G-05	\$ 70.00
FLT3	c.2503G>C	p.D835H	COSM785	100% (Homozygous)	500 ng/ 1 vial	ASE-6154G-05	\$ 70.00
FLT3	c.2508_2510delCAT	p.I836delI	COSM19836	100% (Homozygous)	500 ng/ 1 vial	ASE-6157G-05	\$ 70.00
HCT116 WT	n/a	n/a	n/a	n/a	2.5 µg/ 1 vial	ASO-6052-05	\$ 70.00
HRAS	c.181C>A	p.Q61K	COSM496	100% (Homozygous)	500 ng/ 1 vial	ASE-6079G-05	\$ 70.00
HRAS	c.37G>C	p.G13R	COSM486	100% (Homozygous)	500 ng/ 1 vial	ASE-6078G-05	\$ 70.00
HRAS	c.182A>G	p.Q61R	COSM487	100% (Homozygous)	500 ng/ 1 vial	ASE-6080G-05	\$ 70.00
IDH2	c.418C>T	p.R140W	COSM41877	100% (Homozygous)	500 ng/ 1 vial	ASE-6226G-05	\$ 70.00
IDH2	c.419G>A	p.R140Q	COSM41590	100% (Homozygous)	500 ng/ 1 vial	ASE-6225G-05	\$ 70.00
IDH2	c.419G>T	p.R140L	COSM41875	100% (Homozygous)	500 ng/ 1 vial	ASE-6227G-05	\$ 70.00
IDH2	c.514A>G	p.R172G	COSM33731	100% (Homozygous)	500 ng/ 1 vial	ASE-6232G-05	\$ 70.00
IDH2	c.514A>T	p.R172W	COSM34039	100% (Homozygous)	500 ng/ 1 vial	ASE-6231G-05	\$ 70.00
IDH2	c.515G>A	p.R172K	COSM33733	100% (Homozygous)	500 ng/ 1 vial	ASE-6228G-05	\$ 70.00
IDH2	c.515G>T	p.R172M	COSM33732	100% (Homozygous)	500 ng/ 1 vial	ASE-6229G-05	\$ 70.00
IDH2	c.516G>T	p.R172S	COSM34090	100% (Homozygous)	500 ng/ 1 vial	ASE-6230G-05	\$ 70.00
KRAS	c.37G>T	p.G13C	COSM527	100% (Homozygous)	500 ng/ 1 vial	ASO-6038-05	\$ 70.00
KRAS	c.183A>C	p.Q61H	COSM554	100% (Homozygous)	500 ng/ 1 vial	ASE-6062G-05	\$ 70.00
KRAS	c.34G>A	p.G12S	COSM517	100% (Homozygous)	500 ng/ 1 vial	ASO-6033-05	\$ 70.00
KRAS	c.34G>C	p.G12R	COSM518	100% (Homozygous)	500 ng/ 1 vial	ASO-6034-05	\$ 70.00
KRAS	c.34G>T	p.G12C	COSM516	100% (Homozygous)	500 ng/ 1 vial	ASO-6032-05	\$ 70.00
KRAS	c.35G>A	p.G12D	COSM521	100% (Homozygous)	500 ng/ 1 vial	ASO-6036-05	\$ 70.00
KRAS	c.35G>C	p.G12A	COSM522	100% (Homozygous)	500 ng/ 1 vial	ASO-6037-05	\$ 70.00
KRAS	c.35G>T	p.G12V	COSM520	100% (Homozygous)	500 ng/ 1 vial	ASO-6035-05	\$ 70.00
KRAS	c.37G>A	p.G13S	COSM528	100% (Homozygous)	500 ng/ 1 vial	ASO-6039-05	\$ 70.00
KRAS	c.37G>C	p.G13R	COSM529	100% (Homozygous)	500 ng/ 1 vial	ASO-6040-05	\$ 70.00
KRAS	c.38G>A	p.G13D	COSM532	100% (Homozygous)	500 ng/ 1 vial	ASO-6041-05	\$ 70.00
KRAS	c.38G>C	p.G13A	COSM533	100% (Homozygous)	500 ng/ 1 vial	ASO-6042-05	\$ 70.00
KRAS	c.38G>T	p.G13V	COSM534	100% (Homozygous)	500 ng/ 1 vial	ASO-6043-05	\$ 70.00
NRAS	c.181C>A	p.Q61K	COSM580	100% (Homozygous)	500 ng/ 1 vial	ASE-6072G-05	\$ 70.00
NRAS	c.182A>G	p.Q61R	COSM584	100% (Homozygous)	500 ng/ 1 vial	ASE-6071G-05	\$ 70.00
NRAS	c.182A>T	p.Q61R	COSM583	100% (Homozygous)	500 ng/ 1 vial	ASE-6073G-05	\$ 70.00
NRAS	c.183_183delA	p.E62fs*6	COSM5044298	100% (Homozygous)	500 ng/ 1 vial	ASE-6200G-05	\$ 70.00
NRAS	c.34G>A	p.G12S	COSM563	100% (Homozygous)	500 ng/ 1 vial	ASE-6066G-05	\$ 70.00
NRAS	c.34G>T	p.G12C	COSM562	100% (Homozygous)	500 ng/ 1 vial	ASE-6067G-05	\$ 70.00
NRAS	c.35G>A	p.G12D	COSM564	100% (Homozygous)	500 ng/ 1 vial	ASE-6065G-05	\$ 70.00
NRAS	c.37G>C	p.G13R	COSM569	100% (Homozygous)	500 ng/ 1 vial	ASE-6069G-05	\$ 70.00
PIK3CA	c.1634A>C	p.E545A	COSM12458	100% (Homozygous)	500 ng/ 1 vial	ASE-6056G-05	\$ 70.00
PIK3CA	c.1258T>C	p.C420R	COSM757	100% (Homozygous)	500 ng/ 1 vial	ASE-6060G-05	\$ 70.00
PIK3CA	c.1624G>A	p.E542K	COSM760	100% (Homozygous)	500 ng/ 1 vial	ASE-6053G-05	\$ 70.00

## Onco-Ref™ Genomic DNA

Gene	Nucleotide Change	Amino Acid Change	ID	Mutation AF	Size/ Format	Catalog #	List Price
PTEN	c.518G>A	p.R173H	COSM5039	100% (Homozygous)	500 ng/ 1 vial	ASE-6132G-05	\$ 70.00
APC	c.4393_4394delAG	p.S1465fs*3	COSM13864	100% (Homozygous)	500 ng/ 1 vial	ASE-6148G-05	\$ 70.00
KIT	c.1670_1675delGGAAGG	p.W557_V559>F	COSM1226	100% (Homozygous)	500 ng/ 1 vial	ASE-6160G-05	\$ 70.00
KIT	c.2447A>T	p.D816V	COSM1314	100% (Homozygous)	500 ng/ 1 vial	ASE-6162G-05	\$ 70.00
KIT	c.2446G>T	p.D816Y	COSM1310	100% (Homozygous)	500 ng/ 1 vial	ASE-6163G-05	\$ 70.00
KIT	c.2446G>C	p.D816H	COSM1311	100% (Homozygous)	500 ng/ 1 vial	ASE-6164G-05	\$ 70.00
KIT	c.1676T>C	p.V559A	COSM1255	100% (Homozygous)	500 ng/ 1 vial	ASE-6166G-05	\$ 70.00
KIT	c.1679T>A	p.V560D	COSM1257	100% (Homozygous)	500 ng/ 1 vial	ASE-6167G-05	\$ 70.00
ERBB2	c.2326_2327insTGT	p.G776>VC	COSM12553	100% (Homozygous)	500 ng/ 1 vial	ASE-6175G-05	\$ 70.00
TP53	c.473G>A	p.R158H	COSM10690	100% (Homozygous)	500 ng/ 1 vial	ASE-6191G-05	\$ 70.00
TP53	c.473G>T	p.R158L	COSM10714	100% (Homozygous)	500 ng/ 1 vial	ASE-6192G-05	\$ 70.00
TP53	c.469G>T	p.V157F	COSM10670	100% (Homozygous)	500 ng/ 1 vial	ASE-6195G-05	\$ 70.00
TP53	c.470T>G	p.V157G	COSM43903	100% (Homozygous)	500 ng/ 1 vial	ASE-6196G-05	\$ 70.00
TP53	c.536A>G	p.H179R	COSM10889	100% (Homozygous)	500 ng/ 1 vial	ASE-6198G-05	\$ 70.00
MAP2K1	c.370C>T	p.P124S	COSM235614	100% (Homozygous)	500 ng/ 1 vial	ASE-6201G-05	\$ 70.00
MAP2K1	c.607G>A	p.E203K	COSM232755	100% (Homozygous)	500 ng/ 1 vial	ASE-6204G-05	\$ 70.00
FGFR3	c.742C>T	p.R248C	COSM714	100% (Homozygous)	500 ng/ 1 vial	ASE-6208G-05	\$ 70.00
FGFR3	c.1118A>G	p.Y373C	COSM718	100% (Homozygous)	500 ng/ 1 vial	ASE-6209G-05	\$ 70.00
IDH1	c.395G>A	p.R132H	COSM28746	100% (Homozygous)	500 ng/ 1 vial	ASE-6218G-05	\$ 70.00
PIK3R1	c.1718T>C	p.L573P	COSM1069619	100% (Homozygous)	500 ng/ 1 vial	ASE-6243G-05	\$ 70.00
PIK3R1	c.1721G>T	p.R574I	COSM85927	100% (Homozygous)	500 ng/ 1 vial	ASE-6244G-05	\$ 70.00
PIK3R1	c.1721_1722insA	p.T576fs*26	COSM1069623	100% (Homozygous)	500 ng/ 1 vial	ASE-6245G-05	\$ 70.00
PIK3R1	c.1727_1729delCGA	p.T576del	COSM35737	100% (Homozygous)	500 ng/ 1 vial	ASE-6246G-05	\$ 70.00
GNAQ	c.626A>C	p.Q209P	COSM28758	100% (Homozygous)	500 ng/ 1 vial	ASE-6279G-05	\$ 70.00
GNAQ	c.626A>G	p.Q209R	COSM28760	100% (Homozygous)	500 ng/ 1 vial	ASE-6281G-05	\$ 70.00

## Onco-Ref™ Frozen Cell Pellet

Gene	Nucleotide Change	Amino Acid Change	ID	MAF (State)	Size/Format	Catalog #	List Price
APC	c.3921_3925delAAAAG	p.E1309fs*4	COSM18764	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6146P	\$ 250.00
APC	c.637C>T	p.R213*	COSM13134	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6150P	\$ 250.00
BRAF	c.1799T>A	p.V600E	COSM476	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7047	\$ 250.00
BRAF	c.1798_1799GT>AA	p.V600K	COSM473	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7044	\$ 250.00
BRAF	c.1798_1799GT>AG	p.V600R	COSM474	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7045	\$ 250.00
BRAF	c.1798G>A	p.V600M	COSM1130	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7049	\$ 250.00
BRAF	c.1799_1800TG>AA	p.V600E	COSM475	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7046	\$ 250.00
BRAF	c.1799_1800TG>AT	p.V600D	COSM477	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7048	\$ 250.00
BRAF	c.1799T>G	p.V600G	COSM6137	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7050	\$ 250.00
BRCA1	c.5263_5264insC(5382insC)	p.Q1756fs*74	COSM35891	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6108P	\$ 250.00
BRCA1	c.68_69delAG(185delAG)	p.E23fs*17	COSM3190163	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6107P	\$ 250.00
BRCA1	c.3481_3491del11	p.E1161Fs	OMIM: 113705.0025	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6112P	\$ 250.00
CTNNB1	c.133_135delTCT	p.S45del	COSM6128	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6143P	\$ 250.00
CTNNB1	c.3140A>T	p.H1047L	COSM776	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6052P	\$ 250.00
CTNNB1	c.98C>A	p.S33Y	COSM5673	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6140P	\$ 250.00
CTNNB1	c.98C>G	p.S33C	COSM5677	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6139P	\$ 250.00
EGFR	c.2237_2255>T	p.E746_S752>V	COSM12384	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7008	\$ 250.00
EGFR	c.2239_2256del18	p.L747_S752del	COSM6255	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7003	\$ 250.00
EGFR	c.2369C>T	p.T790M	COSM6240	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7029	\$ 250.00
EGFR	c.2155G>A	p.G719S	COSM6252	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7000	\$ 250.00
EGFR	c.2155G>T	p.G719C	COSM6253	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7001	\$ 250.00
EGFR	c.2156G>C	p.G719A	COSM6239	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7002	\$ 250.00
EGFR	c.2233_2247del15	p.K745_E749del	COSM26038	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7015	\$ 250.00
EGFR	c.2235_2248>AATTC	p.E746_A750>IP	COSM13550	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7024	\$ 250.00
EGFR	c.2235_2249del15	p.E746_A750del	COSM6223	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7016	\$ 250.00
EGFR	c.2235_2252>AAT	p.E746_T751>I	COSM13551	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7014	\$ 250.00
EGFR	c.2236_2250del15	p.E746_A750del	COSM6225	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7017	\$ 250.00
EGFR	c.2236_2253del18	p.E746_T751del	COSM12728	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7009	\$ 250.00
EGFR	c.2237_2251del15	p.E746_T751>A	COSM12678	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7010	\$ 250.00
EGFR	c.2237_2252>T	p.E746_T751>V	COSM12386	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7013	\$ 250.00
EGFR	c.2237_2254del18	p.E746_S752>A	COSM12367	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7007	\$ 250.00
EGFR	c.2238_2248>GC	p.L747_A750>P	COSM12422	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7022	\$ 250.00
EGFR	c.2238_2252>GCA	p.L747_T751>Q	COSM12419	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7020	\$ 250.00
EGFR	c.2238_2255del18	p.E746_S752>D	COSM6220	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7005	\$ 250.00
EGFR	c.2239_2247del9	p.L747_E749del	COSM6218	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7023	\$ 250.00
EGFR	c.2239_2248TTAAGAGAAG>C	p.L747_A750>P	COSM12382	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7021	\$ 250.00
EGFR	c.2239_2251>C	p.L747_T751>P	COSM12383	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7018	\$ 250.00
EGFR	c.2239_2253del15	p.L747_T751del	COSM6254	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7011	\$ 250.00
EGFR	c.2239_2258>CA	p.L747_P753>Q	COSM12387	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7006	\$ 250.00
EGFR	c.2240_2251del12	p.L747_T751>S	COSM6210	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7019	\$ 250.00
EGFR	c.2240_2254del15	p.L747_T751del	COSM12369	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7012	\$ 250.00
EGFR	c.2240_2257del18	p.L747_P753>S	COSM12370	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7004	\$ 250.00
EGFR	c.2303G>T	p.S768I	COSM6241	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7025	\$ 250.00
EGFR	c.2307_2308insGCCAGCGTG	p.V769_D770insASV	COSM12376	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7026	\$ 250.00
EGFR	c.2310_2311insGGT	p.D770_N771insG	COSM12378	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7027	\$ 250.00
EGFR	c.2319_2320insCAC	p.H773_V774insH	COSM12377	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7028	\$ 250.00
EGFR	c.2573T>G	p.L858R	COSM6224	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7030	\$ 250.00

## Onco-Ref™ Frozen Cell Pellet

Gene	Nucleotide Change	Amino Acid Change	ID	MAF (State)	Size/Format	Catalog #	List Price
EGFR	c.2582T>A	p.L861Q	COSM6213	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7031	\$ 250.00
EGFR	c.2360A>G	p.Q787R	COSM18422	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6182P	\$ 250.00
EGFR	c.2389T>A	p.C797S/T790M	COSM14018	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6177P	\$ 250.00
EGFR	c.2527G>A	p.V843I	COSM85894	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6185P	\$ 250.00
EGFR	c.2390G>C	p.C797S/T790M	COSM5945664	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6176P	\$ 250.00
ESR1	c.1609T>A	p.Y537N	COSM1074635	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6171P	\$ 250.00
ESR1	c.1610A>C	p.Y537S	COSM1074639	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6170P	\$ 250.00
ESR1	c.1610A>G	p.Y537C	COSM1074637	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6172P	\$ 250.00
ESR1	c.1613A>G	p.D538G	COSM94250	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6169P	\$ 250.00
FLT3	c.2503G>C	p.D835H	COSM785	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6154P	\$ 250.00
FLT3	c.2508_2510delCAT	p.I836delI	COSM19836	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6157P	\$ 250.00
HCT116 WT	n/a	n/a	n/a	n/a	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7052	\$ 250.00
HRAS	c.181C>A	p.Q61K	COSM496	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6079P	\$ 250.00
HRAS	c.37G>C	p.G13R	COSM486	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6078P	\$ 250.00
HRAS	c.182A>G	p.Q61R	COSM487	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6080P	\$ 250.00
IDH2	c.418C>T	p.R140W	COSM41877	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6226P	\$ 250.00
IDH2	c.419G>A	p.R140Q	COSM41590	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6225P	\$ 250.00
IDH2	c.419G>T	p.R140L	COSM41875	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6227P	\$ 250.00
IDH2	c.514A>G	p.R172G	COSM33731	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6232P	\$ 250.00
IDH2	c.514A>T	p.R172W	COSM34039	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6231P	\$ 250.00
IDH2	c.515G>A	p.R172K	COSM33733	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6228P	\$ 250.00
IDH2	c.515G>T	p.R172M	COSM33732	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6229P	\$ 250.00
IDH2	c.516G>T	p.R172S	COSM34090	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6230P	\$ 250.00
KRAS	c.37G>T	p.G13C	COSM527	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7038	\$ 250.00
KRAS	c.183A>C	p.Q61H	COSM554	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6062P	\$ 250.00
KRAS	c.34G>A	p.G12S	COSM517	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7033	\$ 250.00
KRAS	c.34G>C	p.G12R	COSM518	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7034	\$ 250.00
KRAS	c.34G>T	p.G12C	COSM516	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7032	\$ 250.00
KRAS	c.35G>A	p.G12D	COSM521	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7036	\$ 250.00
KRAS	c.35G>C	p.G12A	COSM522	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7037	\$ 250.00
KRAS	c.35G>T	p.G12V	COSM520	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7035	\$ 250.00
KRAS	c.37G>A	p.G13S	COSM528	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7039	\$ 250.00
KRAS	c.37G>C	p.G13R	COSM529	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7040	\$ 250.00
KRAS	c.38G>A	p.G13D	COSM532	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7041	\$ 250.00
KRAS	c.38G>C	p.G13A	COSM533	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7042	\$ 250.00
KRAS	c.38G>T	p.G13V	COSM534	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7043	\$ 250.00
NRAS	c.181C>A	p.Q61K	COSM580	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6072P	\$ 250.00
NRAS	c.182A>G	p.Q61R	COSM584	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6071P	\$ 250.00
NRAS	c.182A>T	p.Q61R	COSM583	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6073P	\$ 250.00
NRAS	c.183_183delA	p.E62fs*6	COSM5044298	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6200P	\$ 250.00
NRAS	c.34G>A	p.G12S	COSM563	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6066P	\$ 250.00
NRAS	c.34G>T	p.G12C	COSM562	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6067P	\$ 250.00
NRAS	c.35G>A	p.G12D	COSM564	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6065P	\$ 250.00
NRAS	c.37G>C	p.G13R	COSM569	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6069P	\$ 250.00
PIK3CA	c.1634A>C	p.E545A	COSM12458	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6056P	\$ 250.00
PIK3CA	c.1258T>C	p.C420R	COSM757	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6060P	\$ 250.00
PIK3CA	c.1624G>A	p.E542K	COSM760	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6053P	\$ 250.00

## Onco-Ref™ Frozen Cell Pellet

Gene	Nucleotide Change	Amino Acid Change	ID	MAF (State)	Size/Format	Catalog #	List Price
PIK3CA	c.1633G>A	p.E545K	COSM763	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6054P	\$ 250.00
PIK3CA	c.1634A>G	p.E545G	COSM764	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6055P	\$ 250.00
PIK3CA	c.1636C>A	p.Q546K	COSM766	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6057P	\$ 250.00
PIK3CA	c.3140A>G	p.H1047R	COSM775	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6051P	\$ 250.00
PIK3CA	c.38G>T	p.G13V	COSM574	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6070P	\$ 250.00
PTEN	c.388C>G	p.R130G	COSM5219	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6127P	\$ 250.00
PTEN	c.389G>A	p.R130Q	COSM5033	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6128P	\$ 250.00
PTEN	c.697C>T	p.R233*	COSM5154	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6133P	\$ 250.00
RKO WT	n/a	n/a	n/a	n/a	1 x 10 <sup>6</sup> cells/ 1 vial	ASO-7051	\$ 250.00
TP53	c.743G>A	p.R248Q	COSM10662	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6091P	\$ 250.00
TP53	c.472C>G	p.R158G	COSM11087	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6194P	\$ 250.00
TP53	c.472C>T	p.R158C	COSM43848	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6193P	\$ 250.00
TP53	c.725G>A	p.C242Y	COSM10646	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6086P	\$ 250.00
TP53	c.733G>A	p.G245S	COSM6932	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6087P	\$ 250.00
TP53	c.733G>T	p.G245C	COSM11081	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6090P	\$ 250.00
TP53	c.734G>A	p.G245D	COSM43606	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6088P	\$ 250.00
TP53	c.734G>T	p.G245V	COSM11196	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6089P	\$ 250.00
TP53	c.742C>T	p.R248W	COSM10656	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6092P	\$ 250.00
TP53	c.743G>T	p.R248L	COSM6549	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6093P	\$ 250.00
TP53	c.817C>T	p.R273C	COSM10659	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6099P	\$ 250.00
TP53	c.818G>A	p.R273H	COSM10660	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6098P	\$ 250.00
TP53	c.842A>G	p.D281G	COSM11232	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6101P	\$ 250.00
TP53	c.844C>G	p.R282G	COSM10992	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6103P	\$ 250.00
TP53	c.845G>A	p.R282Q	COSM44338	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6104P	\$ 250.00
PIK3CA	c.263G>A	p.R88Q	COSM746	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6058P	\$ 250.00
AKT1	c.49G>A	p.E17K	COSM33765	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6061P	\$ 250.00
NRAS	c.38G>A	p.G13D	COSM573	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6068P	\$ 250.00
HRAS	c.35G>T	p.G12V	COSM483	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6076P	\$ 250.00
HRAS	c.35G>A	p.G12D	COSM484	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6077P	\$ 250.00
TP53	c.524G>A	p.R175H	COSM10648	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6082P	\$ 250.00
TP53	c.523C>G	p.R175G	COSM10870	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6083P	\$ 250.00
TP53	c.524G>T	p.R175L	COSM10718	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6084P	\$ 250.00
TP53	c.747G>T	p.R249S	COSM10817	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6094P	\$ 250.00
TP53	c.745A>T	p.R249W	COSM43629	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6095P	\$ 250.00
TP53	c.746G>T	p.R249M	COSM43871	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6096P	\$ 250.00
TP53	c.745A>G	p.R249G	COSM10668	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6097P	\$ 250.00
BRCA1	c.5503C>T	p.R1835*	COSM78883	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6106P	\$ 250.00
BRCA1	c.5137GdelG	p.V1713*	rs80357997	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6113P	\$ 250.00
BRCA2	c.7934delG	p.R2645fs*3	COSM1738242	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6119P	\$ 250.00
JAK2	c.1849G>T	p.V617F	COSM12600	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6120P	\$ 250.00
JAK2	c.1843G>T	p.V615L	COSM4391514	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6121P	\$ 250.00
JAK2	c.1849G>A	p.V617I	COSM29117	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6122P	\$ 250.00
RB1	c.1735C>T	p.R579*	COSM892	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6123P	\$ 250.00
RB1	c.751C>T	p.R251*	COSM878	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6125P	\$ 250.00
PTEN	c.388C>T	p.R130*	COSM5152	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6129P	\$ 250.00
PTEN	c.389G>T	p.R130L	COSM5216	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6130P	\$ 250.00
PTEN	c.517C>T	p.R173C	COSM5089	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6131P	\$ 250.00



## Onco-Ref™ Frozen Cell Pellet

Gene	Nucleotide Change	Amino Acid Change	ID	MAF (State)	Size/ Format	Catalog #	List Price
PTEN	c.518G>A	p.R173H	COSM5039	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6132P	\$ 250.00
APC	c.4393_4394delAG	p.S1465fs*3	COSM13864	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6148P	\$ 250.00
KIT	c.1670_1675delGGAAGG	p.W557_V559>F	COSM1226	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6160P	\$ 250.00
KIT	c.2447A>T	p.D816V	COSM1314	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6162P	\$ 250.00
KIT	c.2446G>T	p.D816Y	COSM1310	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6163P	\$ 250.00
KIT	c.2446G>C	p.D816H	COSM1311	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6164P	\$ 250.00
KIT	c.1676T>C	p.V559A	COSM1255	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6166P	\$ 250.00
KIT	c.1679T>A	p.V560D	COSM1257	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6167P	\$ 250.00
ERBB2	c.2326_2327insTGT	p.G776>VC	COSM12553	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6175P	\$ 250.00
TP53	c.473G>A	p.R158H	COSM10690	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6191P	\$ 250.00
TP53	c.473G>T	p.R158L	COSM10714	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6192P	\$ 250.00
TP53	c.469G>T	p.V157F	COSM10670	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6195P	\$ 250.00
TP53	c.470T>G	p.V157G	COSM43903	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6196P	\$ 250.00
TP53	c.536A>G	p.H179R	COSM10889	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6198P	\$ 250.00
MAP2K1	c.370C>T	p.P124S	COSM235614	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6201P	\$ 250.00
MAP2K1	c.607G>A	p.E203K	COSM232755	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6204P	\$ 250.00
FGFR3	c.742C>T	p.R248C	COSM714	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6208P	\$ 250.00
FGFR3	c.1118A>G	p.Y373C	COSM718	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6209P	\$ 250.00
IDH1	c.395G>A	p.R132H	COSM28746	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6218P	\$ 250.00
PIK3R1	c.1718T>C	p.L573P	COSM1069619	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6243P	\$ 250.00
PIK3R1	c.1721G>T	p.R574I	COSM85927	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6244P	\$ 250.00
PIK3R1	c.1721_1722insA	p.T576fs*26	COSM1069623	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6245P	\$ 250.00
PIK3R1	c.1727_1729delCGA	p.T576del	COSM35737	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6246P	\$ 250.00
GNAQ	c.626A>C	p.Q209P	COSM28758	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6279P	\$ 250.00
GNAQ	c.626A>G	p.Q209R	COSM28760	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6281P	\$ 250.00

## Onco-Ref™ FFPE Cell Block

Gene	Nucleotide Change	Amino Acid Change	ID	Mutation AF	Size/Format	Catalog #	List Price
APC	c.3921_3925delAAAAG	p.E1309fs*4	COSM18764	100% (Homozygous)	1 block (6.5mm)	ASE-6146B	\$ 3,000.00
APC	c.637C>T	p.R213*	COSM13134	100% (Homozygous)	1 block (6.5mm)	ASE-6150B	\$ 3,000.00
BRAF	c.1799T>A	p.V600E	COSM476	100% (Homozygous)	1 block (6.5mm)	ASO-4047	\$ 3,000.00
BRAF	c.1798_1799GT>AA	p.V600K	COSM473	100% (Homozygous)	1 block (6.5mm)	ASO-4044	\$ 3,000.00
BRAF	c.1798_1799GT>AG	p.V600R	COSM474	100% (Homozygous)	1 block (6.5mm)	ASO-4045	\$ 3,000.00
BRAF	c.1798G>A	p.V600M	COSM1130	100% (Homozygous)	1 block (6.5mm)	ASO-4049	\$ 3,000.00
BRAF	c.1799_1800TG>AA	p.V600E	COSM475	100% (Homozygous)	1 block (6.5mm)	ASO-4046	\$ 3,000.00
BRAF	c.1799_1800TG>AT	p.V600D	COSM477	100% (Homozygous)	1 block (6.5mm)	ASO-4048	\$ 3,000.00
BRAF	c.1799T>G	p.V600G	COSM6137	100% (Homozygous)	1 block (6.5mm)	ASO-4050	\$ 3,000.00
BRCA1	c.5263_5264insC(5382insC)	p.Q1756fs*74	COSM35891	100% (Homozygous)	1 block (6.5mm)	ASE-6108B	\$ 3,000.00
BRCA1	c.68_69delAG(185delAG)	p.E23fs*17	COSM3190163	100% (Homozygous)	1 block (6.5mm)	ASE-6107B	\$ 3,000.00
BRCA1	c.3481_3491del11	p.E1161Fs	OMIM: 113705.0025	100% (Homozygous)	1 block (6.5mm)	ASE-6112B	\$ 3,000.00
CTNNB1	c.133_135delTCT	p.S45del	COSM6128	100% (Homozygous)	1 block (6.5mm)	ASE-6143B	\$ 3,000.00
CTNNB1	c.3140A>T	p.H1047L	COSM776	100% (Homozygous)	1 block (6.5mm)	ASE-6052B	\$ 3,000.00
CTNNB1	c.98C>A	p.S33Y	COSM5673	100% (Homozygous)	1 block (6.5mm)	ASE-6140B	\$ 3,000.00
CTNNB1	c.98C>G	p.S33C	COSM5677	100% (Homozygous)	1 block (6.5mm)	ASE-6139B	\$ 3,000.00
EGFR	c.2237_2255>T	p.E746_S752>V	COSM12384	100% (Homozygous)	1 block (6.5mm)	ASO-4008	\$ 3,000.00
EGFR	c.2239_2256del18	p.L747_S752del	COSM6255	100% (Homozygous)	1 block (6.5mm)	ASO-4003	\$ 3,000.00
EGFR	c.2369C>T	p.T790M	COSM6240	100% (Homozygous)	1 block (6.5mm)	ASO-4029	\$ 3,000.00
EGFR	c.2155G>A	p.G719S	COSM6252	100% (Homozygous)	1 block (6.5mm)	ASO-4000	\$ 3,000.00
EGFR	c.2155G>T	p.G719C	COSM6253	100% (Homozygous)	1 block (6.5mm)	ASO-4001	\$ 3,000.00
EGFR	c.2156G>C	p.G719A	COSM6239	100% (Homozygous)	1 block (6.5mm)	ASO-4002	\$ 3,000.00
EGFR	c.2233_2247del15	p.K745_E749del	COSM26038	100% (Homozygous)	1 block (6.5mm)	ASO-4015	\$ 3,000.00
EGFR	c.2235_2248>AATTC	p.E746_A750>IP	COSM13550	100% (Homozygous)	1 block (6.5mm)	ASO-4024	\$ 3,000.00
EGFR	c.2235_2249del15	p.E746_A750del	COSM6223	100% (Homozygous)	1 block (6.5mm)	ASO-4016	\$ 3,000.00
EGFR	c.2235_2252>AAT	p.E746_T751>I	COSM13551	100% (Homozygous)	1 block (6.5mm)	ASO-4014	\$ 3,000.00
EGFR	c.2236_2250del15	p.E746_A750del	COSM6225	100% (Homozygous)	1 block (6.5mm)	ASO-4017	\$ 3,000.00
EGFR	c.2236_2253del18	p.E746_T751del	COSM12728	100% (Homozygous)	1 block (6.5mm)	ASO-4009	\$ 3,000.00
EGFR	c.2237_2251del15	p.E746_T751>A	COSM12678	100% (Homozygous)	1 block (6.5mm)	ASO-4010	\$ 3,000.00
EGFR	c.2237_2252>T	p.E746_T751>V	COSM12386	100% (Homozygous)	1 block (6.5mm)	ASO-4013	\$ 3,000.00
EGFR	c.2237_2254del18	p.E746_S752>A	COSM12367	100% (Homozygous)	1 block (6.5mm)	ASO-4007	\$ 3,000.00
EGFR	c.2238_2248>GC	p.L747_A750>P	COSM12422	100% (Homozygous)	1 block (6.5mm)	ASO-4022	\$ 3,000.00
EGFR	c.2238_2252>GCA	p.L747_T751>Q	COSM12419	100% (Homozygous)	1 block (6.5mm)	ASO-4020	\$ 3,000.00
EGFR	c.2238_2255del18	p.E746_S752>D	COSM6220	100% (Homozygous)	1 block (6.5mm)	ASO-4005	\$ 3,000.00
EGFR	c.2239_2247del9	p.L747_E749del	COSM6218	100% (Homozygous)	1 block (6.5mm)	ASO-4023	\$ 3,000.00
EGFR	c.2239_2248TTAAGAGAAG>C	p.L747_A750>P	COSM12382	100% (Homozygous)	1 block (6.5mm)	ASO-4021	\$ 3,000.00
EGFR	c.2239_2251>C	p.L747_T751>P	COSM12383	100% (Homozygous)	1 block (6.5mm)	ASO-4018	\$ 3,000.00
EGFR	c.2239_2253del15	p.L747_T751del	COSM6254	100% (Homozygous)	1 block (6.5mm)	ASO-4011	\$ 3,000.00
EGFR	c.2239_2258>CA	p.L747_P753>Q	COSM12387	100% (Homozygous)	1 block (6.5mm)	ASO-4006	\$ 3,000.00
EGFR	c.2240_2251del12	p.L747_T751>S	COSM6210	100% (Homozygous)	1 block (6.5mm)	ASO-4019	\$ 3,000.00
EGFR	c.2240_2254del15	p.L747_T751del	COSM12369	100% (Homozygous)	1 block (6.5mm)	ASO-4012	\$ 3,000.00
EGFR	c.2240_2257del18	p.L747_P753>S	COSM12370	100% (Homozygous)	1 block (6.5mm)	ASO-4004	\$ 3,000.00
EGFR	c.2303G>T	p.S768I	COSM6241	100% (Homozygous)	1 block (6.5mm)	ASO-4025	\$ 3,000.00
EGFR	c.2307_2308insGCCAGCGTG	p.V769_D770insASV	COSM12376	100% (Homozygous)	1 block (6.5mm)	ASO-4026	\$ 3,000.00
EGFR	c.2310_2311insGGT	p.D770_N771insG	COSM12378	100% (Homozygous)	1 block (6.5mm)	ASO-4027	\$ 3,000.00
EGFR	c.2319_2320insCAC	p.H773_V774insH	COSM12377	100% (Homozygous)	1 block (6.5mm)	ASO-4028	\$ 3,000.00
EGFR	c.2573T>G	p.L858R	COSM6224	100% (Homozygous)	1 block (6.5mm)	ASO-4030	\$ 3,000.00

## Onco-Ref™ FFPE Cell Block

Gene	Nucleotide Change	Amino Acid Change	ID	MAF (State)	Size/Format	Catalog #	List Price
EGFR	c.2582T>A	p.L861Q	COSM6213	100% (Homozygous)	1 block (6.5mm)	ASO-4031	\$ 3,000.00
EGFR	c.2360A>G	p.Q787R	COSM18422	100% (Homozygous)	1 block (6.5mm)	ASE-6182B	\$ 3,000.00
EGFR	c.2389T>A	p.C797S/T790M	COSM14018	100% (Homozygous)	1 block (6.5mm)	ASE-6177B	\$ 3,000.00
EGFR	c.2527G>A	p.V843I	COSM85894	100% (Homozygous)	1 block (6.5mm)	ASE-6185B	\$ 3,000.00
EGFR	c.2390G>C	p.C797S/T790M	COSM5945664	100% (Homozygous)	1 block (6.5mm)	ASE-6176B	\$ 3,000.00
ESR1	c.1609T>A	p.Y537N	COSM1074635	100% (Homozygous)	1 block (6.5mm)	ASE-6171B	\$ 3,000.00
ESR1	c.1610A>C	p.Y537S	COSM1074639	100% (Homozygous)	1 block (6.5mm)	ASE-6170B	\$ 3,000.00
ESR1	c.1610A>G	p.Y537C	COSM1074637	100% (Homozygous)	1 block (6.5mm)	ASE-6172B	\$ 3,000.00
ESR1	c.1613A>G	p.D538G	COSM94250	100% (Homozygous)	1 block (6.5mm)	ASE-6169B	\$ 3,000.00
FLT3	c.2503G>C	p.D835H	COSM785	100% (Homozygous)	1 block (6.5mm)	ASE-6154B	\$ 3,000.00
FLT3	c.2508_2510delCAT	p.I836delI	COSM19836	100% (Homozygous)	1 block (6.5mm)	ASE-6157B	\$ 3,000.00
HCT116 WT	n/a	n/a	n/a	n/a	1 block (6.5mm)	ASO-4052	\$ 3,000.00
HRAS	c.181C>A	p.Q61K	COSM496	100% (Homozygous)	1 block (6.5mm)	ASE-6079B	\$ 3,000.00
HRAS	c.37G>C	p.G13R	COSM486	100% (Homozygous)	1 block (6.5mm)	ASE-6078B	\$ 3,000.00
HRAS	c.182A>G	p.Q61R	COSM487	100% (Homozygous)	1 block (6.5mm)	ASE-6080B	\$ 3,000.00
IDH2	c.418C>T	p.R140W	COSM41877	100% (Homozygous)	1 block (6.5mm)	ASE-6226B	\$ 3,000.00
IDH2	c.419G>A	p.R140Q	COSM41590	100% (Homozygous)	1 block (6.5mm)	ASE-6225B	\$ 3,000.00
IDH2	c.419G>T	p.R140L	COSM41875	100% (Homozygous)	1 block (6.5mm)	ASE-6227B	\$ 3,000.00
IDH2	c.514A>G	p.R172G	COSM33731	100% (Homozygous)	1 block (6.5mm)	ASE-6232B	\$ 3,000.00
IDH2	c.514A>T	p.R172W	COSM34039	100% (Homozygous)	1 block (6.5mm)	ASE-6231B	\$ 3,000.00
IDH2	c.515G>A	p.R172K	COSM33733	100% (Homozygous)	1 block (6.5mm)	ASE-6228B	\$ 3,000.00
IDH2	c.515G>T	p.R172M	COSM33732	100% (Homozygous)	1 block (6.5mm)	ASE-6229B	\$ 3,000.00
IDH2	c.516G>T	p.R172S	COSM34090	100% (Homozygous)	1 block (6.5mm)	ASE-6230B	\$ 3,000.00
KRAS	c.37G>T	p.G13C	COSM527	100% (Homozygous)	1 block (6.5mm)	ASO-4038	\$ 3,000.00
KRAS	c.183A>C	p.Q61H	COSM554	100% (Homozygous)	1 block (6.5mm)	ASE-6062B	\$ 3,000.00
KRAS	c.34G>A	p.G12S	COSM517	100% (Homozygous)	1 block (6.5mm)	ASO-4033	\$ 3,000.00
KRAS	c.34G>C	p.G12R	COSM518	100% (Homozygous)	1 block (6.5mm)	ASO-4034	\$ 3,000.00
KRAS	c.34G>T	p.G12C	COSM516	100% (Homozygous)	1 block (6.5mm)	ASO-4032	\$ 3,000.00
KRAS	c.35G>A	p.G12D	COSM521	100% (Homozygous)	1 block (6.5mm)	ASO-4036	\$ 3,000.00
KRAS	c.35G>C	p.G12A	COSM522	100% (Homozygous)	1 block (6.5mm)	ASO-4037	\$ 3,000.00
KRAS	c.35G>T	p.G12V	COSM520	100% (Homozygous)	1 block (6.5mm)	ASO-4035	\$ 3,000.00
KRAS	c.37G>A	p.G13S	COSM528	100% (Homozygous)	1 block (6.5mm)	ASO-4039	\$ 3,000.00
KRAS	c.37G>C	p.G13R	COSM529	100% (Homozygous)	1 block (6.5mm)	ASO-4040	\$ 3,000.00
KRAS	c.38G>A	p.G13D	COSM532	100% (Homozygous)	1 block (6.5mm)	ASO-4041	\$ 3,000.00
KRAS	c.38G>C	p.G13A	COSM533	100% (Homozygous)	1 block (6.5mm)	ASO-4042	\$ 3,000.00
KRAS	c.38G>T	p.G13V	COSM534	100% (Homozygous)	1 block (6.5mm)	ASO-4043	\$ 3,000.00
NRAS	c.181C>A	p.Q61K	COSM580	100% (Homozygous)	1 block (6.5mm)	ASE-6072B	\$ 3,000.00
NRAS	c.182A>G	p.Q61R	COSM584	100% (Homozygous)	1 block (6.5mm)	ASE-6071B	\$ 3,000.00
NRAS	c.182A>T	p.Q61R	COSM583	100% (Homozygous)	1 block (6.5mm)	ASE-6073B	\$ 3,000.00
NRAS	c.183_183delA	p.E62fs*6	COSM5044298	100% (Homozygous)	1 block (6.5mm)	ASE-6200B	\$ 3,000.00
NRAS	c.34G>A	p.G12S	COSM563	100% (Homozygous)	1 block (6.5mm)	ASE-6066B	\$ 3,000.00
NRAS	c.34G>T	p.G12C	COSM562	100% (Homozygous)	1 block (6.5mm)	ASE-6067B	\$ 3,000.00
NRAS	c.35G>A	p.G12D	COSM564	100% (Homozygous)	1 block (6.5mm)	ASE-6065B	\$ 3,000.00
NRAS	c.37G>C	p.G13R	COSM569	100% (Homozygous)	1 block (6.5mm)	ASE-6069B	\$ 3,000.00
PIK3CA	c.1634A>C	p.E545A	COSM12458	100% (Homozygous)	1 block (6.5mm)	ASE-6056B	\$ 3,000.00
PIK3CA	c.1258T>C	p.C420R	COSM757	100% (Homozygous)	1 block (6.5mm)	ASE-6060B	\$ 3,000.00
PIK3CA	c.1624G>A	p.E542K	COSM760	100% (Homozygous)	1 block (6.5mm)	ASE-6053B	\$ 3,000.00

## Onco-Ref™ FFPE Cell Block

Gene	Nucleotide Change	Amino Acid Change	ID	MAF (State)	Size/Format	Catalog #	List Price
PIK3CA	c.1633G>A	p.E545K	COSM763	100% (Homozygous)	1 block (6.5mm)	ASE-6054B	\$ 3,000.00
PIK3CA	c.1634A>G	p.E545G	COSM764	100% (Homozygous)	1 block (6.5mm)	ASE-6055B	\$ 3,000.00
PIK3CA	c.1636C>A	p.Q546K	COSM766	100% (Homozygous)	1 block (6.5mm)	ASE-6057B	\$ 3,000.00
PIK3CA	c.3140A>G	p.H1047R	COSM775	100% (Homozygous)	1 block (6.5mm)	ASE-6051B	\$ 3,000.00
PIK3CA	c.38G>T	p.G13V	COSM574	100% (Homozygous)	1 block (6.5mm)	ASE-6070B	\$ 3,000.00
PTEN	c.388C>G	p.R130G	COSM5219	100% (Homozygous)	1 block (6.5mm)	ASE-6127B	\$ 3,000.00
PTEN	c.389G>A	p.R130Q	COSM5033	100% (Homozygous)	1 block (6.5mm)	ASE-6128B	\$ 3,000.00
PTEN	c.697C>T	p.R233*	COSM5154	100% (Homozygous)	1 block (6.5mm)	ASE-6133B	\$ 3,000.00
RKO WT	n/a	n/a	n/a	n/a	1 block (6.5mm)	ASO-4051	\$ 3,000.00
TP53	c.743G>A	p.R248Q	COSM10662	100% (Homozygous)	1 block (6.5mm)	ASE-6091B	\$ 3,000.00
TP53	c.472C>G	p.R158G	COSM11087	100% (Homozygous)	1 block (6.5mm)	ASE-6194B	\$ 3,000.00
TP53	c.472C>T	p.R158C	COSM43848	100% (Homozygous)	1 block (6.5mm)	ASE-6193B	\$ 3,000.00
TP53	c.725G>A	p.C242Y	COSM10646	100% (Homozygous)	1 block (6.5mm)	ASE-6086B	\$ 3,000.00
TP53	c.733G>A	p.G245S	COSM6932	100% (Homozygous)	1 block (6.5mm)	ASE-6087B	\$ 3,000.00
TP53	c.733G>T	p.G245C	COSM11081	100% (Homozygous)	1 block (6.5mm)	ASE-6090B	\$ 3,000.00
TP53	c.734G>A	p.G245D	COSM43606	100% (Homozygous)	1 block (6.5mm)	ASE-6088B	\$ 3,000.00
TP53	c.734G>T	p.G245V	COSM11196	100% (Homozygous)	1 block (6.5mm)	ASE-6089B	\$ 3,000.00
TP53	c.742C>T	p.R248W	COSM10656	100% (Homozygous)	1 block (6.5mm)	ASE-6092B	\$ 3,000.00
TP53	c.743G>T	p.R248L	COSM6549	100% (Homozygous)	1 block (6.5mm)	ASE-6093B	\$ 3,000.00
TP53	c.817C>T	p.R273C	COSM10659	100% (Homozygous)	1 block (6.5mm)	ASE-6099B	\$ 3,000.00
TP53	c.818G>A	p.R273H	COSM10660	100% (Homozygous)	1 block (6.5mm)	ASE-6098B	\$ 3,000.00
TP53	c.842A>G	p.D281G	COSM11232	100% (Homozygous)	1 block (6.5mm)	ASE-6101B	\$ 3,000.00
TP53	c.844C>G	p.R282G	COSM10992	100% (Homozygous)	1 block (6.5mm)	ASE-6103B	\$ 3,000.00
TP53	c.845G>A	p.R282Q	COSM44338	100% (Homozygous)	1 block (6.5mm)	ASE-6104B	\$ 3,000.00
PIK3CA	c.263G>A	p.R88Q	COSM746	100% (Homozygous)	1 block (6.5mm)	ASE-6058B	\$ 3,000.00
AKT1	c.49G>A	p.E17K	COSM33765	100% (Homozygous)	1 block (6.5mm)	ASE-6061B	\$ 3,000.00
NRAS	c.38G>A	p.G13D	COSM573	100% (Homozygous)	1 block (6.5mm)	ASE-6068B	\$ 3,000.00
HRAS	c.35G>T	p.G12V	COSM483	100% (Homozygous)	1 block (6.5mm)	ASE-6076B	\$ 3,000.00
HRAS	c.35G>A	p.G12D	COSM484	100% (Homozygous)	1 block (6.5mm)	ASE-6077B	\$ 3,000.00
TP53	c.524G>A	p.R175H	COSM10648	100% (Homozygous)	1 block (6.5mm)	ASE-6082B	\$ 3,000.00
TP53	c.523C>G	p.R175G	COSM10870	100% (Homozygous)	1 block (6.5mm)	ASE-6083B	\$ 3,000.00
TP53	c.524G>T	p.R175L	COSM10718	100% (Homozygous)	1 block (6.5mm)	ASE-6084B	\$ 3,000.00
TP53	c.747G>T	p.R249S	COSM10817	100% (Homozygous)	1 block (6.5mm)	ASE-6094B	\$ 3,000.00
TP53	c.745A>T	p.R249W	COSM43629	100% (Homozygous)	1 block (6.5mm)	ASE-6095B	\$ 3,000.00
TP53	c.746G>T	p.R249M	COSM43871	100% (Homozygous)	1 block (6.5mm)	ASE-6096B	\$ 3,000.00
TP53	c.745A>G	p.R249G	COSM10668	100% (Homozygous)	1 block (6.5mm)	ASE-6097B	\$ 3,000.00
BRCA1	c.5503C>T	p.R1835*	COSM78883	100% (Homozygous)	1 block (6.5mm)	ASE-6106B	\$ 3,000.00
BRCA1	c.5137GdelG	p.V1713*	rs80357997	100% (Homozygous)	1 block (6.5mm)	ASE-6113B	\$ 3,000.00
BRCA2	c.7934delG	p.R2645fs*3	COSM1738242	100% (Homozygous)	1 block (6.5mm)	ASE-6119B	\$ 3,000.00
JAK2	c.1849G>T	p.V617F	COSM12600	100% (Homozygous)	1 block (6.5mm)	ASE-6120B	\$ 3,000.00
JAK2	c.1843G>T	p.V615L	COSM4391514	100% (Homozygous)	1 block (6.5mm)	ASE-6121B	\$ 3,000.00
JAK2	c.1849G>A	p.V617I	COSM29117	100% (Homozygous)	1 block (6.5mm)	ASE-6122B	\$ 3,000.00
RB1	c.1735C>T	p.R579*	COSM892	100% (Homozygous)	1 block (6.5mm)	ASE-6123B	\$ 3,000.00
RB1	c.751C>T	p.R251*	COSM878	100% (Homozygous)	1 block (6.5mm)	ASE-6125B	\$ 3,000.00
PTEN	c.388C>T	p.R130*	COSM5152	100% (Homozygous)	1 block (6.5mm)	ASE-6129B	\$ 3,000.00
PTEN	c.389G>T	p.R130L	COSM5216	100% (Homozygous)	1 block (6.5mm)	ASE-6130B	\$ 3,000.00
PTEN	c.517C>T	p.R173C	COSM5089	100% (Homozygous)	1 block (6.5mm)	ASE-6131B	\$ 3,000.00

## Onco-Ref™ FFPE Cell Slide

Gene	Nucleotide Change	Amino Acid Change	ID	MAF (State)	Size/Format	Catalog #	List Price
APC	c.3921_3925delAAAAG	p.E1309fs*4	COSM18764	100% (Homozygous)	5 Slides/ 5µm	ASE-6146F	\$ 100.00
APC	c.637C>T	p.R213*	COSM13134	100% (Homozygous)	5 Slides/ 5µm	ASE-6150F	\$ 100.00
BRAF	c.1799T>A	p.V600E	COSM476	100% (Homozygous)	5 Slides/ 5µm	ASO-3047	\$ 100.00
BRAF	c.1798_1799GT>AA	p.V600K	COSM473	100% (Homozygous)	5 Slides/ 5µm	ASO-3044	\$ 100.00
BRAF	c.1798_1799GT>AG	p.V600R	COSM474	100% (Homozygous)	5 Slides/ 5µm	ASO-3045	\$ 100.00
BRAF	c.1798G>A	p.V600M	COSM1130	100% (Homozygous)	5 Slides/ 5µm	ASO-3049	\$ 100.00
BRAF	c.1799_1800TG>AA	p.V600E	COSM475	100% (Homozygous)	5 Slides/ 5µm	ASO-3046	\$ 100.00
BRAF	c.1799_1800TG>AT	p.V600D	COSM477	100% (Homozygous)	5 Slides/ 5µm	ASO-3048	\$ 100.00
BRAF	c.1799T>G	p.V600G	COSM6137	100% (Homozygous)	5 Slides/ 5µm	ASO-3050	\$ 100.00
BRCA1	c.5263_5264insC(5382insC)	p.Q1756fs*74	COSM35891	100% (Homozygous)	5 Slides/ 5µm	ASE-6108F	\$ 100.00
BRCA1	c.68_69delAG(185delAG)	p.E23fs*17	COSM3190163	100% (Homozygous)	5 Slides/ 5µm	ASE-6107F	\$ 100.00
BRCA1	c.3481_3491del11	p.E1161Fs	OMIM: 113705.0025	100% (Homozygous)	5 Slides/ 5µm	ASE-6112F	\$ 100.00
CTNNB1	c.133_135delTCT	p.S45del	COSM6128	100% (Homozygous)	5 Slides/ 5µm	ASE-6143F	\$ 100.00
CTNNB1	c.3140A>T	p.H1047L	COSM776	100% (Homozygous)	5 Slides/ 5µm	ASE-6052F	\$ 100.00
CTNNB1	c.98C>A	p.S33Y	COSM5673	100% (Homozygous)	5 Slides/ 5µm	ASE-6140F	\$ 100.00
CTNNB1	c.98C>G	p.S33C	COSM5677	100% (Homozygous)	5 Slides/ 5µm	ASE-6139F	\$ 100.00
EGFR	c.2237_2255>T	p.E746_S752>V	COSM12384	100% (Homozygous)	5 Slides/ 5µm	ASO-3008	\$ 100.00
EGFR	c.2239_2256del18	p.L747_S752del	COSM6255	100% (Homozygous)	5 Slides/ 5µm	ASO-3003	\$ 100.00
EGFR	c.2369C>T	p.T790M	COSM6240	100% (Homozygous)	5 Slides/ 5µm	ASO-3029	\$ 100.00
EGFR	c.2155G>A	p.G719S	COSM6252	100% (Homozygous)	5 Slides/ 5µm	ASO-3000	\$ 100.00
EGFR	c.2155G>T	p.G719C	COSM6253	100% (Homozygous)	5 Slides/ 5µm	ASO-3001	\$ 100.00
EGFR	c.2156G>C	p.G719A	COSM6239	100% (Homozygous)	5 Slides/ 5µm	ASO-3002	\$ 100.00
EGFR	c.2233_2247del15	p.K745_E749del	COSM26038	100% (Homozygous)	5 Slides/ 5µm	ASO-3015	\$ 100.00
EGFR	c.2235_2248>AATTC	p.E746_A750>IP	COSM13550	100% (Homozygous)	5 Slides/ 5µm	ASO-3024	\$ 100.00
EGFR	c.2235_2249del15	p.E746_A750del	COSM6223	100% (Homozygous)	5 Slides/ 5µm	ASO-3016	\$ 100.00
EGFR	c.2235_2252>AAT	p.E746_T751>I	COSM13551	100% (Homozygous)	5 Slides/ 5µm	ASO-3014	\$ 100.00
EGFR	c.2236_2250del15	p.E746_A750del	COSM6225	100% (Homozygous)	5 Slides/ 5µm	ASO-3017	\$ 100.00
EGFR	c.2236_2253del18	p.E746_T751del	COSM12728	100% (Homozygous)	5 Slides/ 5µm	ASO-3009	\$ 100.00
EGFR	c.2237_2251del15	p.E746_T751>A	COSM12678	100% (Homozygous)	5 Slides/ 5µm	ASO-3010	\$ 100.00
EGFR	c.2237_2252>T	p.E746_T751>V	COSM12386	100% (Homozygous)	5 Slides/ 5µm	ASO-3013	\$ 100.00
EGFR	c.2237_2254del18	p.E746_S752>A	COSM12367	100% (Homozygous)	5 Slides/ 5µm	ASO-3007	\$ 100.00
EGFR	c.2238_2248>GC	p.L747_A750>P	COSM12422	100% (Homozygous)	5 Slides/ 5µm	ASO-3022	\$ 100.00
EGFR	c.2238_2252>GCA	p.L747_T751>Q	COSM12419	100% (Homozygous)	5 Slides/ 5µm	ASO-3020	\$ 100.00
EGFR	c.2238_2255del18	p.E746_S752>D	COSM6220	100% (Homozygous)	5 Slides/ 5µm	ASO-3005	\$ 100.00
EGFR	c.2239_2247del9	p.L747_E749del	COSM6218	100% (Homozygous)	5 Slides/ 5µm	ASO-3023	\$ 100.00
EGFR	c.2239_2248TTAAGAGAAG>C	p.L747_A750>P	COSM12382	100% (Homozygous)	5 Slides/ 5µm	ASO-3021	\$ 100.00
EGFR	c.2239_2251>C	p.L747_T751>P	COSM12383	100% (Homozygous)	5 Slides/ 5µm	ASO-3018	\$ 100.00
EGFR	c.2239_2253del15	p.L747_T751del	COSM6254	100% (Homozygous)	5 Slides/ 5µm	ASO-3011	\$ 100.00
EGFR	c.2239_2258>CA	p.L747_P753>Q	COSM12387	100% (Homozygous)	5 Slides/ 5µm	ASO-3006	\$ 100.00
EGFR	c.2240_2251del12	p.L747_T751>S	COSM6210	100% (Homozygous)	5 Slides/ 5µm	ASO-3019	\$ 100.00
EGFR	c.2240_2254del15	p.L747_T751del	COSM12369	100% (Homozygous)	5 Slides/ 5µm	ASO-3012	\$ 100.00
EGFR	c.2240_2257del18	p.L747_P753>S	COSM12370	100% (Homozygous)	5 Slides/ 5µm	ASO-3004	\$ 100.00
EGFR	c.2303G>T	p.S768I	COSM6241	100% (Homozygous)	5 Slides/ 5µm	ASO-3025	\$ 100.00
EGFR	c.2307_2308insGCCAGCGTG	p.V769_D770insASV	COSM12376	100% (Homozygous)	5 Slides/ 5µm	ASO-3026	\$ 100.00
EGFR	c.2310_2311insGGT	p.D770_N771insG	COSM12378	100% (Homozygous)	5 Slides/ 5µm	ASO-3027	\$ 100.00
EGFR	c.2319_2320insCAC	p.H773_V774insH	COSM12377	100% (Homozygous)	5 Slides/ 5µm	ASO-3028	\$ 100.00
EGFR	c.2573T>G	p.L858R	COSM6224	100% (Homozygous)	5 Slides/ 5µm	ASO-3030	\$ 100.00

## Onco-Ref™ FFPE Cell Slide

Gene	Nucleotide Change	Amino Acid Change	ID	MAF (State)	Size/Format	Catalog #	List Price
EGFR	c.2582T>A	p.L861Q	COSM6213	100% (Homozygous)	5 Slides/ 5µm	ASO-3031	\$ 100.00
EGFR	c.2360A>G	p.Q787R	COSM18422	100% (Homozygous)	5 Slides/ 5µm	ASE-6182F	\$ 100.00
EGFR	c.2389T>A	p.C797S/T790M	COSM14018	100% (Homozygous)	5 Slides/ 5µm	ASE-6177F	\$ 100.00
EGFR	c.2527G>A	p.V843I	COSM85894	100% (Homozygous)	5 Slides/ 5µm	ASE-6185F	\$ 100.00
EGFR	c.2390G>C	p.C797S/T790M	COSM5945664	100% (Homozygous)	5 Slides/ 5µm	ASE-6176F	\$ 100.00
ESR1	c.1609T>A	p.Y537N	COSM1074635	100% (Homozygous)	5 Slides/ 5µm	ASE-6171F	\$ 100.00
ESR1	c.1610A>C	p.Y537S	COSM1074639	100% (Homozygous)	5 Slides/ 5µm	ASE-6170F	\$ 100.00
ESR1	c.1610A>G	p.Y537C	COSM1074637	100% (Homozygous)	5 Slides/ 5µm	ASE-6172F	\$ 100.00
ESR1	c.1613A>G	p.D538G	COSM94250	100% (Homozygous)	5 Slides/ 5µm	ASE-6169F	\$ 100.00
FLT3	c.2503G>C	p.D835H	COSM785	100% (Homozygous)	5 Slides/ 5µm	ASE-6154F	\$ 100.00
FLT3	c.2508_2510delCAT	p.I836delI	COSM19836	100% (Homozygous)	5 Slides/ 5µm	ASE-6157F	\$ 100.00
HCT116 WT	n/a	n/a	n/a	n/a	5 Slides/ 5µm	ASO-3052	\$ 100.00
HRAS	c.181C>A	p.Q61K	COSM496	100% (Homozygous)	5 Slides/ 5µm	ASE-6079F	\$ 100.00
HRAS	c.37G>C	p.G13R	COSM486	100% (Homozygous)	5 Slides/ 5µm	ASE-6078F	\$ 100.00
HRAS	c.182A>G	p.Q61R	COSM487	100% (Homozygous)	5 Slides/ 5µm	ASE-6080F	\$ 100.00
IDH2	c.418C>T	p.R140W	COSM41877	100% (Homozygous)	5 Slides/ 5µm	ASE-6226F	\$ 100.00
IDH2	c.419G>A	p.R140Q	COSM41590	100% (Homozygous)	5 Slides/ 5µm	ASE-6225F	\$ 100.00
IDH2	c.419G>T	p.R140L	COSM41875	100% (Homozygous)	5 Slides/ 5µm	ASE-6227F	\$ 100.00
IDH2	c.514A>G	p.R172G	COSM33731	100% (Homozygous)	5 Slides/ 5µm	ASE-6232F	\$ 100.00
IDH2	c.514A>T	p.R172W	COSM34039	100% (Homozygous)	5 Slides/ 5µm	ASE-6231F	\$ 100.00
IDH2	c.515G>A	p.R172K	COSM33733	100% (Homozygous)	5 Slides/ 5µm	ASE-6228F	\$ 100.00
IDH2	c.515G>T	p.R172M	COSM33732	100% (Homozygous)	5 Slides/ 5µm	ASE-6229F	\$ 100.00
IDH2	c.516G>T	p.R172S	COSM34090	100% (Homozygous)	5 Slides/ 5µm	ASE-6230F	\$ 100.00
KRAS	c.37G>T	p.G13C	COSM527	100% (Homozygous)	5 Slides/ 5µm	ASO-3038	\$ 100.00
KRAS	c.183A>C	p.Q61H	COSM554	100% (Homozygous)	5 Slides/ 5µm	ASE-6062F	\$ 100.00
KRAS	c.34G>A	p.G12S	COSM517	100% (Homozygous)	5 Slides/ 5µm	ASO-3033	\$ 100.00
KRAS	c.34G>C	p.G12R	COSM518	100% (Homozygous)	5 Slides/ 5µm	ASO-3034	\$ 100.00
KRAS	c.34G>T	p.G12C	COSM516	100% (Homozygous)	5 Slides/ 5µm	ASO-3032	\$ 100.00
KRAS	c.35G>A	p.G12D	COSM521	100% (Homozygous)	5 Slides/ 5µm	ASO-3036	\$ 100.00
KRAS	c.35G>C	p.G12A	COSM522	100% (Homozygous)	5 Slides/ 5µm	ASO-3037	\$ 100.00
KRAS	c.35G>T	p.G12V	COSM520	100% (Homozygous)	5 Slides/ 5µm	ASO-3035	\$ 100.00
KRAS	c.37G>A	p.G13S	COSM528	100% (Homozygous)	5 Slides/ 5µm	ASO-3039	\$ 100.00
KRAS	c.37G>C	p.G13R	COSM529	100% (Homozygous)	5 Slides/ 5µm	ASO-3040	\$ 100.00
KRAS	c.38G>A	p.G13D	COSM532	100% (Homozygous)	5 Slides/ 5µm	ASO-3041	\$ 100.00
KRAS	c.38G>C	p.G13A	COSM533	100% (Homozygous)	5 Slides/ 5µm	ASO-3042	\$ 100.00
KRAS	c.38G>T	p.G13V	COSM534	100% (Homozygous)	5 Slides/ 5µm	ASO-3043	\$ 100.00
NRAS	c.181C>A	p.Q61K	COSM580	100% (Homozygous)	5 Slides/ 5µm	ASE-6072F	\$ 100.00
NRAS	c.182A>G	p.Q61R	COSM584	100% (Homozygous)	5 Slides/ 5µm	ASE-6071F	\$ 100.00
NRAS	c.182A>T	p.Q61R	COSM583	100% (Homozygous)	5 Slides/ 5µm	ASE-6073F	\$ 100.00
NRAS	c.183_183delA	p.E62fs*6	COSM5044298	100% (Homozygous)	5 Slides/ 5µm	ASE-6200F	\$ 100.00
NRAS	c.34G>A	p.G12S	COSM563	100% (Homozygous)	5 Slides/ 5µm	ASE-6066F	\$ 100.00
NRAS	c.34G>T	p.G12C	COSM562	100% (Homozygous)	5 Slides/ 5µm	ASE-6067F	\$ 100.00
NRAS	c.35G>A	p.G12D	COSM564	100% (Homozygous)	5 Slides/ 5µm	ASE-6065F	\$ 100.00
NRAS	c.37G>C	p.G13R	COSM569	100% (Homozygous)	5 Slides/ 5µm	ASE-6069F	\$ 100.00
PIK3CA	c.1634A>C	p.E545A	COSM12458	100% (Homozygous)	5 Slides/ 5µm	ASE-6056F	\$ 100.00
PIK3CA	c.1258T>C	p.C420R	COSM757	100% (Homozygous)	5 Slides/ 5µm	ASE-6060F	\$ 100.00
PIK3CA	c.1624G>A	p.E542K	COSM760	100% (Homozygous)	5 Slides/ 5µm	ASE-6053F	\$ 100.00

## Onco-Ref™ FFPE Cell Slide

Gene	Nucleotide Change	Amino Acid Change	ID	MAF (State)	Size/Format	Catalog #	List Price
PIK3CA	c.1633G>A	p.E545K	COSM763	100% (Homozygous)	5 Slides/ 5µm	ASE-6054F	\$ 100.00
PIK3CA	c.1634A>G	p.E545G	COSM764	100% (Homozygous)	5 Slides/ 5µm	ASE-6055F	\$ 100.00
PIK3CA	c.1636C>A	p.Q546K	COSM766	100% (Homozygous)	5 Slides/ 5µm	ASE-6057F	\$ 100.00
PIK3CA	c.3140A>G	p.H1047R	COSM775	100% (Homozygous)	5 Slides/ 5µm	ASE-6051F	\$ 100.00
PIK3CA	c.38G>T	p.G13V	COSM574	100% (Homozygous)	5 Slides/ 5µm	ASE-6070F	\$ 100.00
PTEN	c.388C>G	p.R130G	COSM5219	100% (Homozygous)	5 Slides/ 5µm	ASE-6127F	\$ 100.00
PTEN	c.389G>A	p.R130Q	COSM5033	100% (Homozygous)	5 Slides/ 5µm	ASE-6128F	\$ 100.00
PTEN	c.697C>T	p.R233*	COSM5154	100% (Homozygous)	5 Slides/ 5µm	ASE-6133F	\$ 100.00
RKO WT	n/a	n/a	n/a	n/a	5 Slides/ 5µm	ASO-3051	\$ 100.00
TP53	c.743G>A	p.R248Q	COSM10662	100% (Homozygous)	5 Slides/ 5µm	ASE-6091F	\$ 100.00
TP53	c.472C>G	p.R158G	COSM11087	100% (Homozygous)	5 Slides/ 5µm	ASE-6194F	\$ 100.00
TP53	c.472C>T	p.R158C	COSM43848	100% (Homozygous)	5 Slides/ 5µm	ASE-6193F	\$ 100.00
TP53	c.725G>A	p.C242Y	COSM10646	100% (Homozygous)	5 Slides/ 5µm	ASE-6086F	\$ 100.00
TP53	c.733G>A	p.G245S	COSM6932	100% (Homozygous)	5 Slides/ 5µm	ASE-6087F	\$ 100.00
TP53	c.733G>T	p.G245C	COSM11081	100% (Homozygous)	5 Slides/ 5µm	ASE-6090F	\$ 100.00
TP53	c.734G>A	p.G245D	COSM43606	100% (Homozygous)	5 Slides/ 5µm	ASE-6088F	\$ 100.00
TP53	c.734G>T	p.G245V	COSM11196	100% (Homozygous)	5 Slides/ 5µm	ASE-6089F	\$ 100.00
TP53	c.742C>T	p.R248W	COSM10656	100% (Homozygous)	5 Slides/ 5µm	ASE-6092F	\$ 100.00
TP53	c.743G>T	p.R248L	COSM6549	100% (Homozygous)	5 Slides/ 5µm	ASE-6093F	\$ 100.00
TP53	c.817C>T	p.R273C	COSM10659	100% (Homozygous)	5 Slides/ 5µm	ASE-6099F	\$ 100.00
TP53	c.818G>A	p.R273H	COSM10660	100% (Homozygous)	5 Slides/ 5µm	ASE-6098F	\$ 100.00
TP53	c.842A>G	p.D281G	COSM11232	100% (Homozygous)	5 Slides/ 5µm	ASE-6101F	\$ 100.00
TP53	c.844C>G	p.R282G	COSM10992	100% (Homozygous)	5 Slides/ 5µm	ASE-6103F	\$ 100.00
TP53	c.845G>A	p.R282Q	COSM44338	100% (Homozygous)	5 Slides/ 5µm	ASE-6104F	\$ 100.00
PIK3CA	c.263G>A	p.R88Q	COSM746	100% (Homozygous)	5 Slides/ 5µm	ASE-6058F	\$ 100.00
AKT1	c.49G>A	p.E17K	COSM33765	100% (Homozygous)	5 Slides/ 5µm	ASE-6061F	\$ 100.00
NRAS	c.38G>A	p.G13D	COSM573	100% (Homozygous)	5 Slides/ 5µm	ASE-6068F	\$ 100.00
HRAS	c.35G>T	p.G12V	COSM483	100% (Homozygous)	5 Slides/ 5µm	ASE-6076F	\$ 100.00
HRAS	c.35G>A	p.G12D	COSM484	100% (Homozygous)	5 Slides/ 5µm	ASE-6077F	\$ 100.00
TP53	c.524G>A	p.R175H	COSM10648	100% (Homozygous)	5 Slides/ 5µm	ASE-6082F	\$ 100.00
TP53	c.523C>G	p.R175G	COSM10870	100% (Homozygous)	5 Slides/ 5µm	ASE-6083F	\$ 100.00
TP53	c.524G>T	p.R175L	COSM10718	100% (Homozygous)	5 Slides/ 5µm	ASE-6084F	\$ 100.00
TP53	c.747G>T	p.R249S	COSM10817	100% (Homozygous)	5 Slides/ 5µm	ASE-6094F	\$ 100.00
TP53	c.745A>T	p.R249W	COSM43629	100% (Homozygous)	5 Slides/ 5µm	ASE-6095F	\$ 100.00
TP53	c.746G>T	p.R249M	COSM43871	100% (Homozygous)	5 Slides/ 5µm	ASE-6096F	\$ 100.00
TP53	c.745A>G	p.R249G	COSM10668	100% (Homozygous)	5 Slides/ 5µm	ASE-6097F	\$ 100.00
BRCA1	c.5503C>T	p.R1835*	COSM78883	100% (Homozygous)	5 Slides/ 5µm	ASE-6106F	\$ 100.00
BRCA1	c.5137GdelG	p.V1713*	rs80357997	100% (Homozygous)	5 Slides/ 5µm	ASE-6113F	\$ 100.00
BRCA2	c.7934delG	p.R2645fs*3	COSM1738242	100% (Homozygous)	5 Slides/ 5µm	ASE-6119F	\$ 100.00
JAK2	c.1849G>T	p.V617F	COSM12600	100% (Homozygous)	5 Slides/ 5µm	ASE-6120F	\$ 100.00
JAK2	c.1843G>T	p.V615L	COSM4391514	100% (Homozygous)	5 Slides/ 5µm	ASE-6121F	\$ 100.00
JAK2	c.1849G>A	p.V617I	COSM29117	100% (Homozygous)	5 Slides/ 5µm	ASE-6122F	\$ 100.00
RB1	c.1735C>T	p.R579*	COSM892	100% (Homozygous)	5 Slides/ 5µm	ASE-6123F	\$ 100.00
RB1	c.751C>T	p.R251*	COSM878	100% (Homozygous)	5 Slides/ 5µm	ASE-6125F	\$ 100.00
PTEN	c.388C>T	p.R130*	COSM5152	100% (Homozygous)	5 Slides/ 5µm	ASE-6129F	\$ 100.00
PTEN	c.389G>T	p.R130L	COSM5216	100% (Homozygous)	5 Slides/ 5µm	ASE-6130F	\$ 100.00
PTEN	c.517C>T	p.R173C	COSM5089	100% (Homozygous)	5 Slides/ 5µm	ASE-6131F	\$ 100.00

## Onco-Ref™ FFPE Cell Slide

Gene	Nucleotide Change	Amino Acid Change	ID	MAF (State)	Size/ Format	Catalog #	List Price
PTEN	c.518G>A	p.R173H	COSM5039	100% (Homozygous)	5 Slides/ 5µm	ASE-6132F	\$ 100.00
APC	c.4393_4394delAG	p.S1465fs*3	COSM13864	100% (Homozygous)	5 Slides/ 5µm	ASE-6148F	\$ 100.00
KIT	c.1670_1675delGGAAGG	p.W557_V559>F	COSM1226	100% (Homozygous)	5 Slides/ 5µm	ASE-6160F	\$ 100.00
KIT	c.2447A>T	p.D816V	COSM1314	100% (Homozygous)	5 Slides/ 5µm	ASE-6162F	\$ 100.00
KIT	c.2446G>T	p.D816Y	COSM1310	100% (Homozygous)	5 Slides/ 5µm	ASE-6163F	\$ 100.00
KIT	c.2446G>C	p.D816H	COSM1311	100% (Homozygous)	5 Slides/ 5µm	ASE-6164F	\$ 100.00
KIT	c.1676T>C	p.V559A	COSM1255	100% (Homozygous)	5 Slides/ 5µm	ASE-6166F	\$ 100.00
KIT	c.1679T>A	p.V560D	COSM1257	100% (Homozygous)	5 Slides/ 5µm	ASE-6167F	\$ 100.00
ERBB2	c.2326_2327insTGT	p.G776>VC	COSM12553	100% (Homozygous)	5 Slides/ 5µm	ASE-6175F	\$ 100.00
TP53	c.473G>A	p.R158H	COSM10690	100% (Homozygous)	5 Slides/ 5µm	ASE-6191F	\$ 100.00
TP53	c.473G>T	p.R158L	COSM10714	100% (Homozygous)	5 Slides/ 5µm	ASE-6192F	\$ 100.00
TP53	c.469G>T	p.V157F	COSM10670	100% (Homozygous)	5 Slides/ 5µm	ASE-6195F	\$ 100.00
TP53	c.470T>G	p.V157G	COSM43903	100% (Homozygous)	5 Slides/ 5µm	ASE-6196F	\$ 100.00
TP53	c.536A>G	p.H179R	COSM10889	100% (Homozygous)	5 Slides/ 5µm	ASE-6198F	\$ 100.00
MAP2K1	c.370C>T	p.P124S	COSM235614	100% (Homozygous)	5 Slides/ 5µm	ASE-6201F	\$ 100.00
MAP2K1	c.607G>A	p.E203K	COSM232755	100% (Homozygous)	5 Slides/ 5µm	ASE-6204F	\$ 100.00
FGFR3	c.742C>T	p.R248C	COSM714	100% (Homozygous)	5 Slides/ 5µm	ASE-6208F	\$ 100.00
FGFR3	c.1118A>G	p.Y373C	COSM718	100% (Homozygous)	5 Slides/ 5µm	ASE-6209F	\$ 100.00
IDH1	c.395G>A	p.R132H	COSM28746	100% (Homozygous)	5 Slides/ 5µm	ASE-6218F	\$ 100.00
PIK3R1	c.1718T>C	p.L573P	COSM1069619	100% (Homozygous)	5 Slides/ 5µm	ASE-6243F	\$ 100.00
PIK3R1	c.1721G>T	p.R574I	COSM85927	100% (Homozygous)	5 Slides/ 5µm	ASE-6244F	\$ 100.00
PIK3R1	c.1721_1722insA	p.T576fs*26	COSM1069623	100% (Homozygous)	5 Slides/ 5µm	ASE-6245F	\$ 100.00
PIK3R1	c.1727_1729delCGA	p.T576del	COSM35737	100% (Homozygous)	5 Slides/ 5µm	ASE-6246F	\$ 100.00
GNAQ	c.626A>C	p.Q209P	COSM28758	100% (Homozygous)	5 Slides/ 5µm	ASE-6279F	\$ 100.00
GNAQ	c.626A>G	p.Q209R	COSM28760	100% (Homozygous)	5 Slides/ 5µm	ASE-6281F	\$ 100.00



## Onco-Ref™ FFPE Cell Scroll

Gene	Nucleotide Change	Amino Acid Change	ID	MAF (State)	Size/Format	Catalog #	List Price
APC	c.3921_3925delAAAAG	p.E1309fs*4	COSM18764	100% (Homozygous)	1 Scroll/ 20µm	ASE-6146S	\$ 100.00
APC	c.637C>T	p.R213*	COSM13134	100% (Homozygous)	1 Scroll/ 20µm	ASE-6150S	\$ 100.00
BRAF	c.1799T>A	p.V600E	COSM476	100% (Homozygous)	1 Scroll/ 20µm	ASO-5047	\$ 100.00
BRAF	c.1798_1799GT>AA	p.V600K	COSM473	100% (Homozygous)	1 Scroll/ 20µm	ASO-5044	\$ 100.00
BRAF	c.1798_1799GT>AG	p.V600R	COSM474	100% (Homozygous)	1 Scroll/ 20µm	ASO-5045	\$ 100.00
BRAF	c.1798G>A	p.V600M	COSM1130	100% (Homozygous)	1 Scroll/ 20µm	ASO-5049	\$ 100.00
BRAF	c.1799_1800TG>AA	p.V600E	COSM475	100% (Homozygous)	1 Scroll/ 20µm	ASO-5046	\$ 100.00
BRAF	c.1799_1800TG>AT	p.V600D	COSM477	100% (Homozygous)	1 Scroll/ 20µm	ASO-5048	\$ 100.00
BRAF	c.1799T>G	p.V600G	COSM6137	100% (Homozygous)	1 Scroll/ 20µm	ASO-5050	\$ 100.00
BRCA1	c.5263_5264insC(5382insC)	p.Q1756fs*74	COSM35891	100% (Homozygous)	1 Scroll/ 20µm	ASE-6108S	\$ 100.00
BRCA1	c.68_69delAG(185delAG)	p.E23fs*17	COSM3190163	100% (Homozygous)	1 Scroll/ 20µm	ASE-6107S	\$ 100.00
BRCA1	c.3481_3491del11	p.E1161Fs	OMIM: 113705.0025	100% (Homozygous)	1 Scroll/ 20µm	ASE-6112S	\$ 100.00
CTNNB1	c.133_135delTCT	p.S45del	COSM6128	100% (Homozygous)	1 Scroll/ 20µm	ASE-6143S	\$ 100.00
CTNNB1	c.3140A>T	p.H1047L	COSM776	100% (Homozygous)	1 Scroll/ 20µm	ASE-6052S	\$ 100.00
CTNNB1	c.98C>A	p.S33Y	COSM5673	100% (Homozygous)	1 Scroll/ 20µm	ASE-6140S	\$ 100.00
CTNNB1	c.98C>G	p.S33C	COSM5677	100% (Homozygous)	1 Scroll/ 20µm	ASE-6139S	\$ 100.00
EGFR	c.2237_2255>T	p.E746_S752>V	COSM12384	100% (Homozygous)	1 Scroll/ 20µm	ASO-5008	\$ 100.00
EGFR	c.2239_2256del18	p.L747_S752del	COSM6255	100% (Homozygous)	1 Scroll/ 20µm	ASO-5003	\$ 100.00
EGFR	c.2369C>T	p.T790M	COSM6240	100% (Homozygous)	1 Scroll/ 20µm	ASO-5029	\$ 100.00
EGFR	c.2155G>A	p.G719S	COSM6252	100% (Homozygous)	1 Scroll/ 20µm	ASO-5000	\$ 100.00
EGFR	c.2155G>T	p.G719C	COSM6253	100% (Homozygous)	1 Scroll/ 20µm	ASO-5001	\$ 100.00
EGFR	c.2156G>C	p.G719A	COSM6239	100% (Homozygous)	1 Scroll/ 20µm	ASO-5002	\$ 100.00
EGFR	c.2233_2247del15	p.K745_E749del	COSM26038	100% (Homozygous)	1 Scroll/ 20µm	ASO-5015	\$ 100.00
EGFR	c.2235_2248>AATTC	p.E746_A750>IP	COSM13550	100% (Homozygous)	1 Scroll/ 20µm	ASO-5024	\$ 100.00
EGFR	c.2235_2249del15	p.E746_A750del	COSM6223	100% (Homozygous)	1 Scroll/ 20µm	ASO-5016	\$ 100.00
EGFR	c.2235_2252>AAT	p.E746_T751>I	COSM13551	100% (Homozygous)	1 Scroll/ 20µm	ASO-5014	\$ 100.00
EGFR	c.2236_2250del15	p.E746_A750del	COSM6225	100% (Homozygous)	1 Scroll/ 20µm	ASO-5017	\$ 100.00
EGFR	c.2236_2253del18	p.E746_T751del	COSM12728	100% (Homozygous)	1 Scroll/ 20µm	ASO-5009	\$ 100.00
EGFR	c.2237_2251del15	p.E746_T751>A	COSM12678	100% (Homozygous)	1 Scroll/ 20µm	ASO-5010	\$ 100.00
EGFR	c.2237_2252>T	p.E746_T751>V	COSM12386	100% (Homozygous)	1 Scroll/ 20µm	ASO-5013	\$ 100.00
EGFR	c.2237_2254del18	p.E746_S752>A	COSM12367	100% (Homozygous)	1 Scroll/ 20µm	ASO-5007	\$ 100.00
EGFR	c.2238_2248>GC	p.L747_A750>P	COSM12422	100% (Homozygous)	1 Scroll/ 20µm	ASO-5022	\$ 100.00
EGFR	c.2238_2252>GCA	p.L747_T751>Q	COSM12419	100% (Homozygous)	1 Scroll/ 20µm	ASO-5020	\$ 100.00
EGFR	c.2238_2255del18	p.E746_S752>D	COSM6220	100% (Homozygous)	1 Scroll/ 20µm	ASO-5005	\$ 100.00
EGFR	c.2239_2247del9	p.L747_E749del	COSM6218	100% (Homozygous)	1 Scroll/ 20µm	ASO-5023	\$ 100.00
EGFR	c.2239_2248TTAAGAGAAG>C	p.L747_A750>P	COSM12382	100% (Homozygous)	1 Scroll/ 20µm	ASO-5021	\$ 100.00
EGFR	c.2239_2251>C	p.L747_T751>P	COSM12383	100% (Homozygous)	1 Scroll/ 20µm	ASO-5018	\$ 100.00
EGFR	c.2239_2253del15	p.L747_T751del	COSM6254	100% (Homozygous)	1 Scroll/ 20µm	ASO-5011	\$ 100.00
EGFR	c.2239_2258>CA	p.L747_P753>Q	COSM12387	100% (Homozygous)	1 Scroll/ 20µm	ASO-5006	\$ 100.00
EGFR	c.2240_2251del12	p.L747_T751>S	COSM6210	100% (Homozygous)	1 Scroll/ 20µm	ASO-5019	\$ 100.00
EGFR	c.2240_2254del15	p.L747_T751del	COSM12369	100% (Homozygous)	1 Scroll/ 20µm	ASO-5012	\$ 100.00
EGFR	c.2240_2257del18	p.L747_P753>S	COSM12370	100% (Homozygous)	1 Scroll/ 20µm	ASO-5004	\$ 100.00
EGFR	c.2303G>T	p.S768I	COSM6241	100% (Homozygous)	1 Scroll/ 20µm	ASO-5025	\$ 100.00
EGFR	c.2307_2308insGCCAGCGTG	p.V769_D770insASV	COSM12376	100% (Homozygous)	1 Scroll/ 20µm	ASO-5026	\$ 100.00
EGFR	c.2310_2311insGGT	p.D770_N771insG	COSM12378	100% (Homozygous)	1 Scroll/ 20µm	ASO-5027	\$ 100.00
EGFR	c.2319_2320insCAC	p.H773_V774insH	COSM12377	100% (Homozygous)	1 Scroll/ 20µm	ASO-5028	\$ 100.00
EGFR	c.2573T>G	p.L858R	COSM6224	100% (Homozygous)	1 Scroll/ 20µm	ASO-5030	\$ 100.00

## Onco-Ref™ FFPE Cell Scroll

Gene	Nucleotide Change	Amino Acid Change	ID	MAF (State)	Size/Format	Catalog #	List Price
EGFR	c.2582T>A	p.L861Q	COSM6213	100% (Homozygous)	1 Scroll/ 20µm	ASO-5031	\$ 100.00
EGFR	c.2360A>G	p.Q787R	COSM18422	100% (Homozygous)	1 Scroll/ 20µm	ASE-6182S	\$ 100.00
EGFR	c.2389T>A	p.C797S/T790M	COSM14018	100% (Homozygous)	1 Scroll/ 20µm	ASE-6177S	\$ 100.00
EGFR	c.2527G>A	p.V843I	COSM85894	100% (Homozygous)	1 Scroll/ 20µm	ASE-6185S	\$ 100.00
EGFR	c.2390G>C	p.C797S/T790M	COSM5945664	100% (Homozygous)	1 Scroll/ 20µm	ASE-6176S	\$ 100.00
ESR1	c.1609T>A	p.Y537N	COSM1074635	100% (Homozygous)	1 Scroll/ 20µm	ASE-6171S	\$ 100.00
ESR1	c.1610A>C	p.Y537S	COSM1074639	100% (Homozygous)	1 Scroll/ 20µm	ASE-6170S	\$ 100.00
ESR1	c.1610A>G	p.Y537C	COSM1074637	100% (Homozygous)	1 Scroll/ 20µm	ASE-6172S	\$ 100.00
ESR1	c.1613A>G	p.D538G	COSM94250	100% (Homozygous)	1 Scroll/ 20µm	ASE-6169S	\$ 100.00
FLT3	c.2503G>C	p.D835H	COSM785	100% (Homozygous)	1 Scroll/ 20µm	ASE-6154S	\$ 100.00
FLT3	c.2508_2510delCAT	p.I836delI	COSM19836	100% (Homozygous)	1 Scroll/ 20µm	ASE-6157S	\$ 100.00
HCT116 WT	n/a	n/a	n/a	n/a	1 Scroll/ 20µm	ASO-5052	\$ 100.00
HRAS	c.181C>A	p.Q61K	COSM496	100% (Homozygous)	1 Scroll/ 20µm	ASE-6079S	\$ 100.00
HRAS	c.37G>C	p.G13R	COSM486	100% (Homozygous)	1 Scroll/ 20µm	ASE-6078S	\$ 100.00
HRAS	c.182A>G	p.Q61R	COSM487	100% (Homozygous)	1 Scroll/ 20µm	ASE-6080S	\$ 100.00
IDH2	c.418C>T	p.R140W	COSM41877	100% (Homozygous)	1 Scroll/ 20µm	ASE-6226S	\$ 100.00
IDH2	c.419G>A	p.R140Q	COSM41590	100% (Homozygous)	1 Scroll/ 20µm	ASE-6225S	\$ 100.00
IDH2	c.419G>T	p.R140L	COSM41875	100% (Homozygous)	1 Scroll/ 20µm	ASE-6227S	\$ 100.00
IDH2	c.514A>G	p.R172G	COSM33731	100% (Homozygous)	1 Scroll/ 20µm	ASE-6232S	\$ 100.00
IDH2	c.514A>T	p.R172W	COSM34039	100% (Homozygous)	1 Scroll/ 20µm	ASE-6231S	\$ 100.00
IDH2	c.515G>A	p.R172K	COSM33733	100% (Homozygous)	1 Scroll/ 20µm	ASE-6228S	\$ 100.00
IDH2	c.515G>T	p.R172M	COSM33732	100% (Homozygous)	1 Scroll/ 20µm	ASE-6229S	\$ 100.00
IDH2	c.516G>T	p.R172S	COSM34090	100% (Homozygous)	1 Scroll/ 20µm	ASE-6230S	\$ 100.00
KRAS	c.37G>T	p.G13C	COSM527	100% (Homozygous)	1 Scroll/ 20µm	ASO-5038	\$ 100.00
KRAS	c.183A>C	p.Q61H	COSM554	100% (Homozygous)	1 Scroll/ 20µm	ASE-6062S	\$ 100.00
KRAS	c.34G>A	p.G12S	COSM517	100% (Homozygous)	1 Scroll/ 20µm	ASO-5033	\$ 100.00
KRAS	c.34G>C	p.G12R	COSM518	100% (Homozygous)	1 Scroll/ 20µm	ASO-5034	\$ 100.00
KRAS	c.34G>T	p.G12C	COSM516	100% (Homozygous)	1 Scroll/ 20µm	ASO-5032	\$ 100.00
KRAS	c.35G>A	p.G12D	COSM521	100% (Homozygous)	1 Scroll/ 20µm	ASO-5036	\$ 100.00
KRAS	c.35G>C	p.G12A	COSM522	100% (Homozygous)	1 Scroll/ 20µm	ASO-5037	\$ 100.00
KRAS	c.35G>T	p.G12V	COSM520	100% (Homozygous)	1 Scroll/ 20µm	ASO-5035	\$ 100.00
KRAS	c.37G>A	p.G13S	COSM528	100% (Homozygous)	1 Scroll/ 20µm	ASO-5039	\$ 100.00
KRAS	c.37G>C	p.G13R	COSM529	100% (Homozygous)	1 Scroll/ 20µm	ASO-5040	\$ 100.00
KRAS	c.38G>A	p.G13D	COSM532	100% (Homozygous)	1 Scroll/ 20µm	ASO-5041	\$ 100.00
KRAS	c.38G>C	p.G13A	COSM533	100% (Homozygous)	1 Scroll/ 20µm	ASO-5042	\$ 100.00
KRAS	c.38G>T	p.G13V	COSM534	100% (Homozygous)	1 Scroll/ 20µm	ASO-5043	\$ 100.00
NRAS	c.181C>A	p.Q61K	COSM580	100% (Homozygous)	1 Scroll/ 20µm	ASE-6072S	\$ 100.00
NRAS	c.182A>G	p.Q61R	COSM584	100% (Homozygous)	1 Scroll/ 20µm	ASE-6071S	\$ 100.00
NRAS	c.182A>T	p.Q61R	COSM583	100% (Homozygous)	1 Scroll/ 20µm	ASE-6073S	\$ 100.00
NRAS	c.183_183delA	p.E62fs*6	COSM5044298	100% (Homozygous)	1 Scroll/ 20µm	ASE-6200S	\$ 100.00
NRAS	c.34G>A	p.G12S	COSM563	100% (Homozygous)	1 Scroll/ 20µm	ASE-6066S	\$ 100.00
NRAS	c.34G>T	p.G12C	COSM562	100% (Homozygous)	1 Scroll/ 20µm	ASE-6067S	\$ 100.00
NRAS	c.35G>A	p.G12D	COSM564	100% (Homozygous)	1 Scroll/ 20µm	ASE-6065S	\$ 100.00
NRAS	c.37G>C	p.G13R	COSM569	100% (Homozygous)	1 Scroll/ 20µm	ASE-6069S	\$ 100.00
PIK3CA	c.1634A>C	p.E545A	COSM12458	100% (Homozygous)	1 Scroll/ 20µm	ASE-6056S	\$ 100.00
PIK3CA	c.1258T>C	p.C420R	COSM757	100% (Homozygous)	1 Scroll/ 20µm	ASE-6060S	\$ 100.00
PIK3CA	c.1624G>A	p.E542K	COSM760	100% (Homozygous)	1 Scroll/ 20µm	ASE-6053S	\$ 100.00

## Onco-Ref™ FFPE Cell Scroll

Gene	Nucleotide Change	Amino Acid Change	ID	MAF (State)	Size/Format	Catalog #	List Price
PIK3CA	c.1633G>A	p.E545K	COSM763	100% (Homozygous)	1 Scroll/ 20µm	ASE-6054S	\$ 100.00
PIK3CA	c.1634A>G	p.E545G	COSM764	100% (Homozygous)	1 Scroll/ 20µm	ASE-6055S	\$ 100.00
PIK3CA	c.1636C>A	p.Q546K	COSM766	100% (Homozygous)	1 Scroll/ 20µm	ASE-6057S	\$ 100.00
PIK3CA	c.3140A>G	p.H1047R	COSM775	100% (Homozygous)	1 Scroll/ 20µm	ASE-6051S	\$ 100.00
PIK3CA	c.38G>T	p.G13V	COSM574	100% (Homozygous)	1 Scroll/ 20µm	ASE-6070S	\$ 100.00
PTEN	c.388C>G	p.R130G	COSM5219	100% (Homozygous)	1 Scroll/ 20µm	ASE-6127S	\$ 100.00
PTEN	c.389G>A	p.R130Q	COSM5033	100% (Homozygous)	1 Scroll/ 20µm	ASE-6128S	\$ 100.00
PTEN	c.697C>T	p.R233*	COSM5154	100% (Homozygous)	1 Scroll/ 20µm	ASE-6133S	\$ 100.00
RKO WT	n/a	n/a	n/a	n/a	1 Scroll/ 20µm	ASO-5051	\$ 100.00
TP53	c.743G>A	p.R248Q	COSM10662	100% (Homozygous)	1 Scroll/ 20µm	ASE-6091S	\$ 100.00
TP53	c.472C>G	p.R158G	COSM11087	100% (Homozygous)	1 Scroll/ 20µm	ASE-6194S	\$ 100.00
TP53	c.472C>T	p.R158C	COSM43848	100% (Homozygous)	1 Scroll/ 20µm	ASE-6193S	\$ 100.00
TP53	c.725G>A	p.C242Y	COSM10646	100% (Homozygous)	1 Scroll/ 20µm	ASE-6086S	\$ 100.00
TP53	c.733G>A	p.G245S	COSM6932	100% (Homozygous)	1 Scroll/ 20µm	ASE-6087S	\$ 100.00
TP53	c.733G>T	p.G245C	COSM11081	100% (Homozygous)	1 Scroll/ 20µm	ASE-6090S	\$ 100.00
TP53	c.734G>A	p.G245D	COSM43606	100% (Homozygous)	1 Scroll/ 20µm	ASE-6088S	\$ 100.00
TP53	c.734G>T	p.G245V	COSM11196	100% (Homozygous)	1 Scroll/ 20µm	ASE-6089S	\$ 100.00
TP53	c.742C>T	p.R248W	COSM10656	100% (Homozygous)	1 Scroll/ 20µm	ASE-6092S	\$ 100.00
TP53	c.743G>T	p.R248L	COSM6549	100% (Homozygous)	1 Scroll/ 20µm	ASE-6093S	\$ 100.00
TP53	c.817C>T	p.R273C	COSM10659	100% (Homozygous)	1 Scroll/ 20µm	ASE-6099S	\$ 100.00
TP53	c.818G>A	p.R273H	COSM10660	100% (Homozygous)	1 Scroll/ 20µm	ASE-6098S	\$ 100.00
TP53	c.842A>G	p.D281G	COSM11232	100% (Homozygous)	1 Scroll/ 20µm	ASE-6101S	\$ 100.00
TP53	c.844C>G	p.R282G	COSM10992	100% (Homozygous)	1 Scroll/ 20µm	ASE-6103S	\$ 100.00
TP53	c.845G>A	p.R282Q	COSM44338	100% (Homozygous)	1 Scroll/ 20µm	ASE-6104S	\$ 100.00
PIK3CA	c.263G>A	p.R88Q	COSM746	100% (Homozygous)	1 Scroll/ 20µm	ASE-6058S	\$ 100.00
AKT1	c.49G>A	p.E17K	COSM33765	100% (Homozygous)	1 Scroll/ 20µm	ASE-6061S	\$ 100.00
NRAS	c.38G>A	p.G13D	COSM573	100% (Homozygous)	1 Scroll/ 20µm	ASE-6068S	\$ 100.00
HRAS	c.35G>T	p.G12V	COSM483	100% (Homozygous)	1 Scroll/ 20µm	ASE-6076S	\$ 100.00
HRAS	c.35G>A	p.G12D	COSM484	100% (Homozygous)	1 Scroll/ 20µm	ASE-6077S	\$ 100.00
TP53	c.524G>A	p.R175H	COSM10648	100% (Homozygous)	1 Scroll/ 20µm	ASE-6082S	\$ 100.00
TP53	c.523C>G	p.R175G	COSM10870	100% (Homozygous)	1 Scroll/ 20µm	ASE-6083S	\$ 100.00
TP53	c.524G>T	p.R175L	COSM10718	100% (Homozygous)	1 Scroll/ 20µm	ASE-6084S	\$ 100.00
TP53	c.747G>T	p.R249S	COSM10817	100% (Homozygous)	1 Scroll/ 20µm	ASE-6094S	\$ 100.00
TP53	c.745A>T	p.R249W	COSM43629	100% (Homozygous)	1 Scroll/ 20µm	ASE-6095S	\$ 100.00
TP53	c.746G>T	p.R249M	COSM43871	100% (Homozygous)	1 Scroll/ 20µm	ASE-6096S	\$ 100.00
TP53	c.745A>G	p.R249G	COSM10668	100% (Homozygous)	1 Scroll/ 20µm	ASE-6097S	\$ 100.00
BRCA1	c.5503C>T	p.R1835*	COSM78883	100% (Homozygous)	1 Scroll/ 20µm	ASE-6106S	\$ 100.00
BRCA1	c.5137GdelG	p.V1713*	rs80357997	100% (Homozygous)	1 Scroll/ 20µm	ASE-6113S	\$ 100.00
BRCA2	c.7934delG	p.R2645fs*3	COSM1738242	100% (Homozygous)	1 Scroll/ 20µm	ASE-6119S	\$ 100.00
JAK2	c.1849G>T	p.V617F	COSM12600	100% (Homozygous)	1 Scroll/ 20µm	ASE-6120S	\$ 100.00
JAK2	c.1843G>T	p.V615L	COSM4391514	100% (Homozygous)	1 Scroll/ 20µm	ASE-6121S	\$ 100.00
JAK2	c.1849G>A	p.V617I	COSM29117	100% (Homozygous)	1 Scroll/ 20µm	ASE-6122S	\$ 100.00
RB1	c.1735C>T	p.R579*	COSM892	100% (Homozygous)	1 Scroll/ 20µm	ASE-6123S	\$ 100.00
RB1	c.751C>T	p.R251*	COSM878	100% (Homozygous)	1 Scroll/ 20µm	ASE-6125S	\$ 100.00
PTEN	c.388C>T	p.R130*	COSM5152	100% (Homozygous)	1 Scroll/ 20µm	ASE-6129S	\$ 100.00
PTEN	c.389G>T	p.R130L	COSM5216	100% (Homozygous)	1 Scroll/ 20µm	ASE-6130S	\$ 100.00
PTEN	c.517C>T	p.R173C	COSM5089	100% (Homozygous)	1 Scroll/ 20µm	ASE-6131S	\$ 100.00

## Onco-Ref™ FFPE Cell Scroll

Gene	Nucleotide Change	Amino Acid Change	ID	M AF (State)	Size/ Format	Catalog #	List Price
PTEN	c.518G>A	p.R173H	COSM5039	100% (Homozygous)	1 Scroll/ 20µm	ASE-6132S	\$ 100.00
APC	c.4393_4394delAG	p.S1465fs*3	COSM13864	100% (Homozygous)	1 Scroll/ 20µm	ASE-6148S	\$ 100.00
KIT	c.1670_1675delGGAAGG	p.W557_V559>F	COSM1226	100% (Homozygous)	1 Scroll/ 20µm	ASE-6160S	\$ 100.00
KIT	c.2447A>T	p.D816V	COSM1314	100% (Homozygous)	1 Scroll/ 20µm	ASE-6162S	\$ 100.00
KIT	c.2446G>T	p.D816Y	COSM1310	100% (Homozygous)	1 Scroll/ 20µm	ASE-6163S	\$ 100.00
KIT	c.2446G>C	p.D816H	COSM1311	100% (Homozygous)	1 Scroll/ 20µm	ASE-6164S	\$ 100.00
KIT	c.1676T>C	p.V559A	COSM1255	100% (Homozygous)	1 Scroll/ 20µm	ASE-6166S	\$ 100.00
KIT	c.1679T>A	p.V560D	COSM1257	100% (Homozygous)	1 Scroll/ 20µm	ASE-6167S	\$ 100.00
ERBB2	c.2326_2327insTGT	p.G776>VC	COSM12553	100% (Homozygous)	1 Scroll/ 20µm	ASE-6175S	\$ 100.00
TP53	c.473G>A	p.R158H	COSM10690	100% (Homozygous)	1 Scroll/ 20µm	ASE-6191S	\$ 100.00
TP53	c.473G>T	p.R158L	COSM10714	100% (Homozygous)	1 Scroll/ 20µm	ASE-6192S	\$ 100.00
TP53	c.469G>T	p.V157F	COSM10670	100% (Homozygous)	1 Scroll/ 20µm	ASE-6195S	\$ 100.00
TP53	c.470T>G	p.V157G	COSM43903	100% (Homozygous)	1 Scroll/ 20µm	ASE-6196S	\$ 100.00
TP53	c.536A>G	p.H179R	COSM10889	100% (Homozygous)	1 Scroll/ 20µm	ASE-6198S	\$ 100.00
MAP2K1	c.370C>T	p.P124S	COSM235614	100% (Homozygous)	1 Scroll/ 20µm	ASE-6201S	\$ 100.00
MAP2K1	c.607G>A	p.E203K	COSM232755	100% (Homozygous)	1 Scroll/ 20µm	ASE-6204S	\$ 100.00
FGFR3	c.742C>T	p.R248C	COSM714	100% (Homozygous)	1 Scroll/ 20µm	ASE-6208S	\$ 100.00
FGFR3	c.1118A>G	p.Y373C	COSM718	100% (Homozygous)	1 Scroll/ 20µm	ASE-6209S	\$ 100.00
IDH1	c.395G>A	p.R132H	COSM28746	100% (Homozygous)	1 Scroll/ 20µm	ASE-6218S	\$ 100.00
PIK3R1	c.1718T>C	p.L573P	COSM1069619	100% (Homozygous)	1 Scroll/ 20µm	ASE-6243S	\$ 100.00
PIK3R1	c.1721G>T	p.R574I	COSM85927	100% (Homozygous)	1 Scroll/ 20µm	ASE-6244S	\$ 100.00
PIK3R1	c.1721_1722insA	p.T576fs*26	COSM1069623	100% (Homozygous)	1 Scroll/ 20µm	ASE-6245S	\$ 100.00
PIK3R1	c.1727_1729delCGA	p.T576del	COSM35737	100% (Homozygous)	1 Scroll/ 20µm	ASE-6246S	\$ 100.00
GNAQ	c.626A>C	p.Q209P	COSM28758	100% (Homozygous)	1 Scroll/ 20µm	ASE-6279S	\$ 100.00
GNAQ	c.626A>G	p.Q209R	COSM28760	100% (Homozygous)	1 Scroll/ 20µm	ASE-6281S	\$ 100.00

## Onco-Ref™ Isogenic Cell Line

Gene	Nucleotide Change	Amino Acid Change	ID	Mutation AF	Size/Format	Catalog #	List Price (academic)
APC	c.3921_3925delAAAAG	p.E1309fs*4	COSM18764	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6146C	\$ 1,250.00
APC	c.637C>T	p.R213*	COSM13134	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6150C	\$ 1,250.00
BRAF	c.1799T>A	p.V600E	COSM476	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8047	\$ 1,250.00
BRAF	c.1798_1799GT>AA	p.V600K	COSM473	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8044	\$ 1,250.00
BRAF	c.1798_1799GT>AG	p.V600R	COSM474	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8045	\$ 1,250.00
BRAF	c.1798G>A	p.V600M	COSM1130	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8049	\$ 1,250.00
BRAF	c.1799_1800TG>AA	p.V600E	COSM475	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8046	\$ 1,250.00
BRAF	c.1799_1800TG>AT	p.V600D	COSM477	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8048	\$ 1,250.00
BRAF	c.1799T>G	p.V600G	COSM6137	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8050	\$ 1,250.00
BRCA1	c.5263_5264insC(5382insC)	p.Q1756fs*74	COSM35891	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6108C	\$ 1,250.00
BRCA1	c.68_69delAG(185delAG)	p.E23fs*17	COSM3190163	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6107C	\$ 1,250.00
BRCA1	c.3481_3491del11	p.E1161Fs	OMIM: 113705.0025	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6112C	\$ 1,250.00
CTNNB1	c.133_135delTCT	p.S45del	COSM6128	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6143C	\$ 1,250.00
CTNNB1	c.3140A>T	p.H1047L	COSM776	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6052C	\$ 1,250.00
CTNNB1	c.98C>A	p.S33Y	COSM5673	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6140C	\$ 1,250.00
CTNNB1	c.98C>G	p.S33C	COSM5677	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6139C	\$ 1,250.00
EGFR	c.2237_2255>T	p.E746_S752>V	COSM12384	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8008	\$ 1,250.00
EGFR	c.2239_2256del18	p.L747_S752del	COSM6255	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8003	\$ 1,250.00
EGFR	c.2369C>T	p.T790M	COSM6240	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8029	\$ 1,250.00
EGFR	c.2155G>A	p.G719S	COSM6252	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8000	\$ 1,250.00
EGFR	c.2155G>T	p.G719C	COSM6253	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8001	\$ 1,250.00
EGFR	c.2156G>C	p.G719A	COSM6239	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8002	\$ 1,250.00
EGFR	c.2233_2247del15	p.K745_E749del	COSM26038	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8015	\$ 1,250.00
EGFR	c.2235_2248>AATTC	p.E746_A750>IP	COSM13550	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8024	\$ 1,250.00
EGFR	c.2235_2249del15	p.E746_A750del	COSM6223	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8016	\$ 1,250.00
EGFR	c.2235_2252>AAT	p.E746_T751>I	COSM13551	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8014	\$ 1,250.00
EGFR	c.2236_2250del15	p.E746_A750del	COSM6225	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8017	\$ 1,250.00
EGFR	c.2236_2253del18	p.E746_T751del	COSM12728	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8009	\$ 1,250.00
EGFR	c.2237_2251del15	p.E746_T751>A	COSM12678	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8010	\$ 1,250.00
EGFR	c.2237_2252>T	p.E746_T751>V	COSM12386	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8013	\$ 1,250.00
EGFR	c.2237_2254del18	p.E746_S752>A	COSM12367	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8007	\$ 1,250.00
EGFR	c.2238_2248>GC	p.L747_A750>P	COSM12422	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8022	\$ 1,250.00
EGFR	c.2238_2252>GCA	p.L747_T751>Q	COSM12419	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8020	\$ 1,250.00
EGFR	c.2238_2255del18	p.E746_S752>D	COSM6220	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8005	\$ 1,250.00
EGFR	c.2239_2247del9	p.L747_E749del	COSM6218	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8023	\$ 1,250.00
EGFR	c.2239_2248TTAAGAGAAG>C	p.L747_A750>P	COSM12382	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8021	\$ 1,250.00
EGFR	c.2239_2251>C	p.L747_T751>P	COSM12383	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8018	\$ 1,250.00
EGFR	c.2239_2253del15	p.L747_T751del	COSM6254	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8011	\$ 1,250.00
EGFR	c.2239_2258>CA	p.L747_P753>Q	COSM12387	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8006	\$ 1,250.00
EGFR	c.2240_2251del12	p.L747_T751>S	COSM6210	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8019	\$ 1,250.00
EGFR	c.2240_2254del15	p.L747_T751del	COSM12369	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8012	\$ 1,250.00
EGFR	c.2240_2257del18	p.L747_P753>S	COSM12370	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8004	\$ 1,250.00
EGFR	c.2303G>T	p.S768I	COSM6241	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8025	\$ 1,250.00
EGFR	c.2307_2308insGCCAGCGTG	p.V769_D770insASV	COSM12376	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8026	\$ 1,250.00
EGFR	c.2310_2311insGGT	p.D770_N771insG	COSM12378	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8027	\$ 1,250.00
EGFR	c.2319_2320insCAC	p.H773_V774insH	COSM12377	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8028	\$ 1,250.00
EGFR	c.2573T>G	p.L858R	COSM6224	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8030	\$ 1,250.00

## Onco-Ref™ Isogenic Cell Line

Gene	Nucleotide Change	Amino Acid Change	ID	Mutation AF	Size/Format	Catalog #	List Price (academic)
EGFR	c.2582T>A	p.L861Q	COSM6213	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8031	\$ 1,250.00
EGFR	c.2360A>G	p.Q787R	COSM18422	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6182C	\$ 1,250.00
EGFR	c.2389T>A	p.C797S/T790M	COSM14018	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6177C	\$ 1,250.00
EGFR	c.2527G>A	p.V843I	COSM85894	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6185C	\$ 1,250.00
EGFR	c.2390G>C	p.C797S/T790M	COSM5945664	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6176C	\$ 1,250.00
ESR1	c.1609T>A	p.Y537N	COSM1074635	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6171C	\$ 1,250.00
ESR1	c.1610A>C	p.Y537S	COSM1074639	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6170C	\$ 1,250.00
ESR1	c.1610A>G	p.Y537C	COSM1074637	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6172C	\$ 1,250.00
ESR1	c.1613A>G	p.D538G	COSM94250	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6169C	\$ 1,250.00
FLT3	c.2503G>C	p.D835H	COSM785	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6154C	\$ 1,250.00
FLT3	c.2508_2510delCAT	p.I836delI	COSM19836	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6157C	\$ 1,250.00
HCT116 WT	n/a	n/a	n/a	n/a	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8052	\$ 200.00
HRAS	c.181C>A	p.Q61K	COSM496	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6079C	\$ 1,250.00
HRAS	c.37G>C	p.G13R	COSM486	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6078C	\$ 1,250.00
HRAS	c.182A>G	p.Q61R	COSM487	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6080C	\$ 1,250.00
IDH2	c.418C>T	p.R140W	COSM41877	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6226C	\$ 1,250.00
IDH2	c.419G>A	p.R140Q	COSM41590	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6225C	\$ 1,250.00
IDH2	c.419G>T	p.R140L	COSM41875	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6227C	\$ 1,250.00
IDH2	c.514A>G	p.R172G	COSM33731	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6232C	\$ 1,250.00
IDH2	c.514A>T	p.R172W	COSM34039	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6231C	\$ 1,250.00
IDH2	c.515G>A	p.R172K	COSM33733	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6228C	\$ 1,250.00
IDH2	c.515G>T	p.R172M	COSM33732	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6229C	\$ 1,250.00
IDH2	c.516G>T	p.R172S	COSM34090	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6230C	\$ 1,250.00
KRAS	c.37G>T	p.G13C	COSM527	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8038	\$ 1,250.00
KRAS	c.183A>C	p.Q61H	COSM554	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6062C	\$ 1,250.00
KRAS	c.34G>A	p.G12S	COSM517	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8033	\$ 1,250.00
KRAS	c.34G>C	p.G12R	COSM518	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8034	\$ 1,250.00
KRAS	c.34G>T	p.G12C	COSM516	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8032	\$ 1,250.00
KRAS	c.35G>A	p.G12D	COSM521	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8036	\$ 1,250.00
KRAS	c.35G>C	p.G12A	COSM522	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8037	\$ 1,250.00
KRAS	c.35G>T	p.G12V	COSM520	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8035	\$ 1,250.00
KRAS	c.37G>A	p.G13S	COSM528	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8039	\$ 1,250.00
KRAS	c.37G>C	p.G13R	COSM529	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8040	\$ 1,250.00
KRAS	c.38G>A	p.G13D	COSM532	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8041	\$ 1,250.00
KRAS	c.38G>C	p.G13A	COSM533	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8042	\$ 1,250.00
KRAS	c.38G>T	p.G13V	COSM534	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8043	\$ 1,250.00
NRAS	c.181C>A	p.Q61K	COSM580	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6072C	\$ 1,250.00
NRAS	c.182A>G	p.Q61R	COSM584	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6071C	\$ 1,250.00
NRAS	c.182A>T	p.Q61R	COSM583	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6073C	\$ 1,250.00
NRAS	c.183_183delA	p.E62fs*6	COSM5044298	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6200C	\$ 1,250.00
NRAS	c.34G>A	p.G12S	COSM563	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6066C	\$ 1,250.00
NRAS	c.34G>T	p.G12C	COSM562	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6067C	\$ 1,250.00
NRAS	c.35G>A	p.G12D	COSM564	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6065C	\$ 1,250.00
NRAS	c.37G>C	p.G13R	COSM569	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6069C	\$ 1,250.00
PIK3CA	c.1634A>C	p.E545A	COSM12458	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6056C	\$ 1,250.00
PIK3CA	c.1258T>C	p.C420R	COSM757	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6060C	\$ 1,250.00
PIK3CA	c.1624G>A	p.E542K	COSM760	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6053C	\$ 1,250.00

## Onco-Ref™ Isogenic Cell Line

Gene	Nucleotide Change	Amino Acid Change	ID	Mutation AF	Size/Format	Catalog #	List Price (academic)
PIK3CA	c.1633G>A	p.E545K	COSM763	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6054C	\$ 1,250.00
PIK3CA	c.1634A>G	p.E545G	COSM764	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6055C	\$ 1,250.00
PIK3CA	c.1636C>A	p.Q546K	COSM766	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6057C	\$ 1,250.00
PIK3CA	c.3140A>G	p.H1047R	COSM775	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6051C	\$ 1,250.00
PIK3CA	c.38G>T	p.G13V	COSM574	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6070C	\$ 1,250.00
PTEN	c.388C>G	p.R130G	COSM5219	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6127C	\$ 1,250.00
PTEN	c.389G>A	p.R130Q	COSM5033	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6128C	\$ 1,250.00
PTEN	c.697C>T	p.R233*	COSM5154	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6133C	\$ 1,250.00
RKO WT	n/a	n/a	n/a	n/a	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-8051	\$ 200.00
TP53	c.743G>A	p.R248Q	COSM10662	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6091C	\$ 1,250.00
TP53	c.472C>G	p.R158G	COSM11087	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6194C	\$ 1,250.00
TP53	c.472C>T	p.R158C	COSM43848	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6193C	\$ 1,250.00
TP53	c.725G>A	p.C242Y	COSM10646	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6086C	\$ 1,250.00
TP53	c.733G>A	p.G245S	COSM6932	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6087C	\$ 1,250.00
TP53	c.733G>T	p.G245C	COSM11081	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6090C	\$ 1,250.00
TP53	c.734G>A	p.G245D	COSM43606	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6088C	\$ 1,250.00
TP53	c.734G>T	p.G245V	COSM11196	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6089C	\$ 1,250.00
TP53	c.742C>T	p.R248W	COSM10656	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6092C	\$ 1,250.00
TP53	c.743G>T	p.R248L	COSM6549	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6093C	\$ 1,250.00
TP53	c.817C>T	p.R273C	COSM10659	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6099C	\$ 1,250.00
TP53	c.818G>A	p.R273H	COSM10660	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6098C	\$ 1,250.00
TP53	c.842A>G	p.D281G	COSM11232	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6101C	\$ 1,250.00
TP53	c.844C>G	p.R282G	COSM10992	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6103C	\$ 1,250.00
TP53	c.845G>A	p.R282Q	COSM44338	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6104C	\$ 1,250.00
PIK3CA	c.263G>A	p.R88Q	COSM746	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6058C	\$ 1,250.00
AKT1	c.49G>A	p.E17K	COSM33765	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6061C	\$ 1,250.00
NRAS	c.38G>A	p.G13D	COSM573	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6068C	\$ 1,250.00
HRAS	c.35G>T	p.G12V	COSM483	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6076C	\$ 1,250.00
HRAS	c.35G>A	p.G12D	COSM484	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6077C	\$ 1,250.00
TP53	c.524G>A	p.R175H	COSM10648	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6082C	\$ 1,250.00
TP53	c.523C>G	p.R175G	COSM10870	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6083C	\$ 1,250.00
TP53	c.524G>T	p.R175L	COSM10718	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6084C	\$ 1,250.00
TP53	c.747G>T	p.R249S	COSM10817	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6094C	\$ 1,250.00
TP53	c.745A>T	p.R249W	COSM43629	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6095C	\$ 1,250.00
TP53	c.746G>T	p.R249M	COSM43871	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6096C	\$ 1,250.00
TP53	c.745A>G	p.R249G	COSM10668	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6097C	\$ 1,250.00
BRCA1	c.5503C>T	p.R1835*	COSM78883	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6106C	\$ 1,250.00
BRCA1	c.5137GdelG	p.V1713*	rs80357997	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6113C	\$ 1,250.00
BRCA2	c.7934delG	p.R2645fs*3	COSM1738242	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6119C	\$ 1,250.00
JAK2	c.1849G>T	p.V617F	COSM12600	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6120C	\$ 1,250.00
JAK2	c.1843G>T	p.V615L	COSM4391514	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6121C	\$ 1,250.00
JAK2	c.1849G>A	p.V617I	COSM29117	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6122C	\$ 1,250.00
RB1	c.1735C>T	p.R579*	COSM892	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6123C	\$ 1,250.00
RB1	c.751C>T	p.R251*	COSM878	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6125C	\$ 1,250.00
PTEN	c.388C>T	p.R130*	COSM5152	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6129C	\$ 1,250.00
PTEN	c.389G>T	p.R130L	COSM5216	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6130C	\$ 1,250.00
PTEN	c.517C>T	p.R173C	COSM5089	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6131C	\$ 1,250.00

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PTEN	c.518G>A	p.R173H	COSM5039	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6132C	\$ 1,250.00
APC	c.4393_4394delAG	p.S1465fs*3	COSM13864	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6148C	\$ 1,250.00
KIT	c.1670_1675delGGAAGG	p.W557_V559>F	COSM1226	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6160C	\$ 1,250.00
KIT	c.2447A>T	p.D816V	COSM1314	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6162C	\$ 1,250.00
KIT	c.2446G>T	p.D816Y	COSM1310	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6163C	\$ 1,250.00
KIT	c.2446G>C	p.D816H	COSM1311	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6164C	\$ 1,250.00
KIT	c.1676T>C	p.V559A	COSM1255	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6166C	\$ 1,250.00
KIT	c.1679T>A	p.V560D	COSM1257	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6167C	\$ 1,250.00
ERBB2	c.2326_2327insTGT	p.G776>VC	COSM12553	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6175C	\$ 1,250.00
TP53	c.473G>A	p.R158H	COSM10690	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6191C	\$ 1,250.00
TP53	c.473G>T	p.R158L	COSM10714	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6192C	\$ 1,250.00
TP53	c.469G>T	p.V157F	COSM10670	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6195C	\$ 1,250.00
TP53	c.470T>G	p.V157G	COSM43903	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6196C	\$ 1,250.00
TP53	c.536A>G	p.H179R	COSM10889	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6198C	\$ 1,250.00
MAP2K1	c.370C>T	p.P124S	COSM235614	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6201C	\$ 1,250.00
MAP2K1	c.607G>A	p.E203K	COSM232755	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6204C	\$ 1,250.00
FGFR3	c.742C>T	p.R248C	COSM714	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6208C	\$ 1,250.00
FGFR3	c.1118A>G	p.Y373C	COSM718	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6209C	\$ 1,250.00
IDH1	c.395G>A	p.R132H	COSM28746	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6218C	\$ 1,250.00
PIK3R1	c.1718T>C	p.L573P	COSM1069619	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6243C	\$ 1,250.00
PIK3R1	c.1721G>T	p.R574I	COSM85927	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6244C	\$ 1,250.00
PIK3R1	c.1721_1722insA	p.T576fs*26	COSM1069623	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6245C	\$ 1,250.00
PIK3R1	c.1727_1729delCGA	p.T576del	COSM35737	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6246C	\$ 1,250.00
GNAQ	c.626A>C	p.Q209P	COSM28758	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6279C	\$ 1,250.00
GNAQ	c.626A>G	p.Q209R	COSM28760	100% (Homozygous)	1 x 10 <sup>6</sup> cells/ 1 vial	ASE-6281C	\$ 1,250.00