

qBiomarker Somatic Mutation PCR Array

Human Receptor Tyrosine Kinase Signaling 384HC

Cat. no. 337021 SMH-3009AE

For real-time PCR-based, pathway-focused,
somatic mutation profiling

Format	For use with the following real-time cyclers
Format E, with ROX™	Applied Biosystems® models 7900HT (384-well block), ViiA™ 7 (384-well block); Bio-Rad CFX384™
Format G, with ROX	Roche® LightCycler® 480 (384-well block)



Sample & Assay Technologies

Description

The Human Receptor Tyrosine Kinase Signaling qBiomarker Somatic Mutation PCR Array is a translational research tool that allows rapid, comprehensive, and accurate profiling of the somatic mutation status of 34 key genes in tyrosine kinases and cell signaling pathways. Genes covered on this panel are among the most frequently mutated in major signaling pathways (including tyrosine kinase signaling) and therefore warrant extensive investigation to enhance the understanding of carcinogenesis and identify potential drug targets. Numerous research studies have demonstrated the utility of individual and multiple somatic mutation status information in identifying key signaling transduction disruptions. For example, the mutation status of the EGFR and KRAS genes can predict the physiological response to certain drugs targeting these molecules. The Human Receptor Tyrosine Kinase Signaling qBiomarker Somatic Mutation PCR Array, with its comprehensive content coverage, is designed for the study of mutations in all major signaling pathways and has the potential for discovery and verification of drug target biomarkers for a variety of human cancers. This array includes 348 DNA sequence mutation assays designed to detect the most frequent, functionally verified, and biologically significant mutations in genes involved in tyrosine kinase signaling and other major signaling pathways. These mutations were chosen from curated, comprehensive somatic mutation databases and peer-reviewed scientific literature. The simplicity of the product format and operating procedure allows routine somatic mutation profiling in any research laboratory with access to real-time PCR instruments.

For further details, consult the *qBiomarker Somatic Mutation PCR Handbook*.

Shipping and storage

qBiomarker Somatic Mutation PCR Arrays are shipped at ambient temperature or on blue ice packs. For long term storage, keep plates at -20°C . Ensure that you have the correct qBiomarker Somatic Mutation PCR Array format for your real-time cycler (see table above). qBiomarker Probe Mastermixes are shipped on blue ice packs. For long term storage, keep qBiomarker Probe Mastermixes at 4°C .

Note: Ensure that you have the correct qBiomarker Probe Mastermix, with the correct reference dye if required, for your instrument.

Note: Open the package and store the products appropriately immediately on receipt.

Assay table

Position	Gene	COSMIC ID	Nucleotide Change	Amino Acid Change	Assay Catalog #
A01	ABL1	12578	c.1052T>C	p.M351T	SMPH000066A
A02	ABL1	12605	c.1075T>G	p.F359V	SMPH000073A
A03	ABL1	12577	c.749G>A	p.G250E	SMPH000065A
A04	ABL1	12609	c.756G>C	p.Q252H	SMPH000068A
A05	ABL1	12576	c.757T>C	p.Y253H	SMPH000062A
A06	ABL1	12573	c.763G>A	p.E255K	SMPH000061A
A07	ABL1	12574	c.764A>T	p.E255V	SMPH000060A
A08	ABL1	12560	c.944C>T	p.T315I	SMPH000059A
A09	AKT1	33765	c.49G>A	p.E17K	SMPH017162A
A10	ALK	28055	c.3522C>A	p.F1174L	SMPH000375A
A11	ALK	28056	c.3824G>A	p.R1275Q	SMPH000379A
A12	BRAF	451	c.1397G>T	p.G466V	SMPH001870A
A13	BRAF	460	c.1406G>C	p.G469A	SMPH001906A
A14	BRAF	470	c.1789C>G	p.L597V	SMPH001869A
A15	BRAF	1125	c.1790T>A	p.L597Q	SMPH001855A
A16	BRAF	473	c.1798_1799GT>AA	p.V600K	SMPH001831A
A17	BRAF	474	c.1798_1799GT>AG	p.V600R	SMPH001833A
A18	BRAF	1130	c.1798G>A	p.V600M	SMPH001846A
A19	BRAF	475	c.1799_1800TG>AA	p.V600E	SMPH001832A
A20	BRAF	477	c.1799_1800TG>AT	p.V600D	SMPH001940A
A21	BRAF	476	c.1799T>A	p.V600E	SMPH001828A
A22	BRAF	18443	c.1799T>C	p.V600A	SMPH001845A
A23	BRAF	6137	c.1799T>G	p.V600G	SMPH001912A
A24	BRAF	478	c.1801A>G	p.K601E	SMPH001863A
B01	CBL	34055	c.1139T>C	p.L380P	SMPH002298A
B02	CBL	34057	c.1150T>C	p.C384R	SMPH002315A
B03	CBL	34066	c.1151G>A	p.C384Y	SMPH002313A
B04	CBL	34077	c.1259G>A	p.R420Q	SMPH002300A
B05	CRLF2	41268	c.695T>G	p.F232C	SMPH003850A
B06	CSF1R	947	c.2906A>G	p.Y969C	SMPH003862A
B07	CTNNB1	5686	c.100G>A	p.G34R	SMPH003974A
B08	CTNNB1	5684	c.100G>C	p.G34R	SMPH003983A
B09	CTNNB1	5671	c.101G>A	p.G34E	SMPH003960A
B10	CTNNB1	5670	c.101G>T	p.G34V	SMPH003948A
B11	CTNNB1	5674	c.104T>G	p.I35S	SMPH003993A
B12	CTNNB1	5678	c.107A>C	p.H36P	SMPH003951A
B13	CTNNB1	5687	c.109T>C	p.S37P	SMPH003981A
B14	CTNNB1	5675	c.109T>G	p.S37A	SMPH003985A
B15	CTNNB1	5666	c.110C>A	p.S37Y	SMPH003961A
B16	CTNNB1	5679	c.110C>G	p.S37C	SMPH003962A
B17	CTNNB1	5662	c.110C>T	p.S37F	SMPH003946A
B18	CTNNB1	5708	c.119C>T	p.T40I	SMPH003987A
B19	CTNNB1	5664	c.121A>G	p.T41A	SMPH003950A
B20	CTNNB1	5676	c.122C>T	p.T41I	SMPH003952A
B21	CTNNB1	6128	c.133_135delTCT	p.S45del	SMPH004022A
B22	CTNNB1	5663	c.133T>C	p.S45P	SMPH003970A
B23	CTNNB1	5685	c.133T>G	p.S45A	SMPH003966A
B24	CTNNB1	5692	c.134C>A	p.S45Y	SMPH003995A
C01	CTNNB1	5689	c.134C>G	p.S45C	SMPH004023A
C02	CTNNB1	5667	c.134C>T	p.S45F	SMPH003953A
C03	CTNNB1	5733	c.143G>A	p.G48D	SMPH003935A
C04	CTNNB1	5709	c.146A>G	p.K49R	SMPH004177A
C05	CTNNB1	5737	c.157G>A	p.E53K	SMPH003937A
C06	CTNNB1	5672	c.94G>A	p.D32N	SMPH003957A
C07	CTNNB1	5668	c.94G>C	p.D32H	SMPH003967A
C08	CTNNB1	5661	c.94G>T	p.D32Y	SMPH003956A
C09	CTNNB1	5690	c.95A>C	p.D32A	SMPH003965A
C10	CTNNB1	5681	c.95A>G	p.D32G	SMPH003973A
C11	CTNNB1	5691	c.95A>T	p.D32V	SMPH003958A
C12	CTNNB1	5682	c.97T>C	p.S33P	SMPH003969A
C13	CTNNB1	5683	c.97T>G	p.S33A	SMPH003968A
C14	CTNNB1	5673	c.98C>A	p.S33Y	SMPH003959A
C15	CTNNB1	5677	c.98C>G	p.S33C	SMPH003963A
C16	CTNNB1	5669	c.98C>T	p.S33F	SMPH003964A
C17	EGFR	21690	c.1793G>T	p.G598V	SMPH004847A
C18	EGFR	12988	c.2125G>A	p.E709K	SMPH004670A
C19	EGFR	13427	c.2126A>C	p.E709A	SMPH004764A
C20	EGFR	6252	c.2155G>A	p.G719S	SMPH004671A
C21	EGFR	6253	c.2155G>T	p.G719C	SMPH004672A
C22	EGFR	6239	c.2156G>C	p.G719A	SMPH004704A
C23	EGFR	6223	c.2235_2249del15	p.E746_A750del	SMPH004662A
C24	EGFR	6225	c.2236_2250del15	p.E746_A750del	SMPH004663A

Position	Gene	COSMIC ID	Nucleotide Change	Amino Acid Change	Assay Catalog #
D01	EGFR	12678	c.2237_2251del15	p.E746_T751>A	SMPH004667A
D02	EGFR	12384	c.2237_2255>T	p.E746_S752>V	SMPH004669A
D03	EGFR	12422	c.2238_2248>GC	p.L747_A750>P	SMPH004768A
D04	EGFR	6220	c.2238_2255del18	p.E746_S752>D	SMPH004905A
D05	EGFR	6218	c.2239_2247del9	p.L747_E749del	SMPH004664A
D06	EGFR	12382	c. 2239_2248TTAAGAGA AG>C	p.L747_A750>P	SMPH004676A
D07	EGFR	12383	c.2239_2251>C	p.L747_T751>P	SMPH004708A
D08	EGFR	6254	c.2239_2253del15	p.L747_T751del	SMPH004697A
D09	EGFR	6255	c.2239_2256del18	p.L747_S752del	SMPH004694A
D10	EGFR	12369	c.2240_2254del15	p.L747_T751del	SMPH004682A
D11	EGFR	12370	c.2240_2257del18	p.L747_P753>S	SMPH004675A
D12	EGFR	6241	c.2303G>T	p.S768I	SMPH004666A
D13	EGFR	12376	c. 2307_2308insGCCAGC GTG	p.V769_D770insASV	SMPH004736A
D14	EGFR	12378	c.2310_2311insGGT	p.D770_N771insG	SMPH004900A
D15	EGFR	6240	c.2369C>T	p.T790M	SMPH004665A
D16	EGFR	13424	c.2497T>G	p.L833V	SMPH004751A
D17	EGFR	12366	c.2572C>A	p.L858M	SMPH004880A
D18	EGFR	6224	c.2573T>G	p.L858R	SMPH004661A
D19	EGFR	6213	c.2582T>A	p.L861Q	SMPH004716A
D20	EGFR	21683	c.323G>A	p.R108K	SMPH004967A
D21	EGFR	21684	c.787A>C	p.T263P	SMPH004966A
D22	EGFR	21687	c.866C>T	p.A289V	SMPH004846A
D23	ERBB2	682	c. 2322_2323insGCATAC GTGATG	p.M774_A775insAYVM	SMPH005128A
D24	ERBB2	12558	c. 2325_2326insTACGTG ATGGCT	p.A775_G776insYVMA	SMPH005129A
E01	ERBB2	14062	c.2329G>T	p.V777L	SMPH005130A
E02	FBXW7	22973	c.1177C>T	p.R393*	SMPH005399A
E03	FBXW7	22932	c.1393C>T	p.R465C	SMPH005382A
E04	FBXW7	22965	c.1394G>A	p.R465H	SMPH005386A
E05	FBXW7	22974	c.1436G>A	p.R479Q	SMPH005404A
E06	FBXW7	22975	c.1513C>T	p.R505C	SMPH005417A
E07	FBXW7	22979	c.1745C>T	p.S582L	SMPH005396A
E08	FGFR2	36903	c.755C>G	p.S252W	SMPH005503A
E09	FGFR3	716	c.1108G>T	p.G370C	SMPH005551A
E10	FGFR3	17461	c.1111A>T	p.S371C	SMPH005553A
E11	FGFR3	718	c.1118A>G	p.Y373C	SMPH005550A
E12	FGFR3	24842	c.1138G>A	p.G380R	SMPH005554A
E13	FGFR3	719	c.1948A>G	p.K650E	SMPH005557A
E14	FGFR3	720	c.1949A>T	p.K650M	SMPH005558A
E15	FGFR3	24802	c.2089G>T	p.G697C	SMPH005556A
E16	FGFR3	714	c.742C>T	p.R248C	SMPH005552A
E17	FLT3	19737	c. 1803_1804insCAGCTA CAGATGGTACAGTG ACCGGCTCCTCAGATA ATGAGTACTTCTACGTT GATTTCAGAGAATATG AATATGATCTC	p.L601_K602ins27	SMPH005704A
E18	FLT3	785	c.2503G>C	p.D835H	SMPH005662A
E19	FLT3	783	c.2503G>T	p.D835Y	SMPH005661A
E20	FLT3	788	c.2505T>G	p.D835E	SMPH005668A
E21	GNAQ	28759	c.625_626CA>TT	p.Q209L	SMPH006152A
E22	GNAQ	28758	c.626A>C	p.Q209P	SMPH006151A
E23	GNAQ	28757	c.626A>T	p.Q209L	SMPH006150A
E24	GNAS	27899	c.601C>A	p.R201S	SMPH006163A
F01	GNAS	27887	c.601C>T	p.R201C	SMPH006160A
F02	GNAS	27895	c.602G>A	p.R201H	SMPH006159A
F03	GNAS	27896	c.680A>G	p.Q227R	SMPH006161A
F04	GNAS	27888	c.680A>T	p.Q227L	SMPH006162A
F05	GNAS	27900	c.681G>T	p.Q227H	SMPH006158A
F06	HRAS	496	c.181C>A	p.Q61K	SMPH006505A
F07	HRAS	499	c.182A>G	p.Q61R	SMPH006502A
F08	HRAS	498	c.182A>T	p.Q61L	SMPH006503A
F09	HRAS	503	c.183G>C	p.Q61H	SMPH006519A
F10	HRAS	502	c.183G>T	p.Q61H	SMPH006516A
F11	HRAS	480	c.34G>A	p.G12S	SMPH006499A
F12	HRAS	482	c.34G>C	p.G12R	SMPH006506A

Position	Gene	COSMIC ID	Nucleotide Change	Amino Acid Change	Assay Catalog #
F13	HRAS	481	c.34G>T	p.G12C	SMPH006500A
F14	HRAS	484	c.35G>A	p.G12D	SMPH006507A
F15	HRAS	483	c.35G>T	p.G12V	SMPH006497A
F16	HRAS	487	c.37G>A	p.G13S	SMPH006515A
F17	HRAS	486	c.37G>C	p.G13R	SMPH006498A
F18	HRAS	488	c.37G>T	p.G13C	SMPH006511A
F19	JAK2	29024	c.1615_1616AA>CT	p.K539L	SMPH006852A
F20	JAK2	24439	c.1615_1616AA>TT	p.K539L	SMPH006842A
F21	JAK2	27147	c. 1620_1629CAGAAATG AA>GAAA	p.I540_E543>MK	SMPH006853A
F22	JAK2	26735	c. 1622_1627delGAAATG	p.R541_E543>K	SMPH006845A
F23	JAK2	12600	c.1849G>T	p.V617F	SMPH006837A
F24	JAK2	29300	c.2047A>G	p.R683G	SMPH006891A
G01	JAK2	29302	c.2049A>T	p.R683S	SMPH006890A
G02	KIT	1326	c. 1509_1510insGCCTAT	p.Y503_F504insAY	SMPH007133A
G03	KIT	1146	c.154G>A	p.D52N	SMPH007360A
G04	KIT	28026	c.1621A>C	p.M541L	SMPH007208A
G05	KIT	1169	c.1651_1665del15	p.P551_V555del	SMPH007432A
G06	KIT	27909	c.1656_1673del18	p.Y553_K558>	SMPH007203A
G07	KIT	1210	c. 1667_1672delAGTGGGA	p.W557_K558del	SMPH007192A
G08	KIT	1332	c.1669_1683del15	p.W557_E561del	SMPH007293A
G09	KIT	1216	c.1669T>A	p.W557R	SMPH007358A
G10	KIT	1219	c.1669T>C	p.W557R	SMPH007164A
G11	KIT	1221	c.1669T>G	p.W557G	SMPH007170A
G12	KIT	1226	c. 1670_1675delGGAAG G	p.W557_V559>F	SMPH007211A
G13	KIT	18896	c.1673_1687del15	p.K558_E562del	SMPH007329A
G14	KIT	1247	c.1675_1677delGTT	p.V559del	SMPH007131A
G15	KIT	1252	c.1676T>A	p.V559D	SMPH007129A
G16	KIT	1255	c.1676T>C	p.V559A	SMPH007246A
G17	KIT	1253	c.1676T>G	p.V559G	SMPH007128A
G18	KIT	1257	c.1679T>A	p.V560D	SMPH007114A
G19	KIT	1285	c.1708_1728del21	p.Y570_L576del	SMPH007220A
G20	KIT	1290	c.1727T>C	p.L576P	SMPH007118A
G21	KIT	1294	c.1735_1737delGAT	p.D579del	SMPH007195A
G22	KIT	1304	c.1924A>G	p.K642E	SMPH007132A
G23	KIT	12706	c.1961T>C	p.V654A	SMPH007172A
G24	KIT	12708	c.2009C>T	p.T670I	SMPH007253A
H01	KIT	1306	c.2143_2145delAGC	p.S715del	SMPH007455A
H02	KIT	1311	c.2446G>C	p.D816H	SMPH007137A
H03	KIT	1310	c.2446G>T	p.D816Y	SMPH007144A
H04	KIT	1314	c.2447A>T	p.D816V	SMPH007122A
H05	KIT	1321	c.2466T>A	p.N822K	SMPH007146A
H06	KIT	1322	c.2466T>G	p.N822K	SMPH007260A
H07	KIT	18681	c.2467T>G	p.Y823D	SMPH007206A
H08	KIT	1323	c.2474T>C	p.V825A	SMPH007117A
H09	KRAS	550	c.181C>G	p.Q61E	SMPH007606A
H10	KRAS	552	c.182A>G	p.Q61R	SMPH007553A
H11	KRAS	553	c.182A>T	p.Q61L	SMPH007544A
H12	KRAS	554	c.183A>C	p.Q61H	SMPH007540A
H13	KRAS	555	c.183A>T	p.Q61H	SMPH007546A
H14	KRAS	512	c.34_35GG>TT	p.G12F	SMPH007551A
H15	KRAS	517	c.34G>A	p.G12S	SMPH007533A
H16	KRAS	518	c.34G>C	p.G12R	SMPH007534A
H17	KRAS	516	c.34G>T	p.G12C	SMPH007535A
H18	KRAS	521	c.35G>A	p.G12D	SMPH007531A
H19	KRAS	522	c.35G>C	p.G12A	SMPH007536A
H20	KRAS	520	c.35G>T	p.G12V	SMPH007537A
H21	KRAS	528	c.37G>A	p.G13S	SMPH007543A
H22	KRAS	529	c.37G>C	p.G13R	SMPH007549A
H23	KRAS	527	c.37G>T	p.G13C	SMPH007541A
H24	KRAS	531	c.38_39GC>AT	p.G13D	SMPH007589A
I01	KRAS	532	c.38G>A	p.G13D	SMPH007538A
I02	KRAS	533	c.38G>C	p.G13A	SMPH007542A
I03	KRAS	534	c.38G>T	p.G13V	SMPH007545A
I04	KRAS	19404	c.436G>A	p.A146T	SMPH007562A
I05	KRAS	543	c.64C>A	p.Q22K	SMPH007565A
I06	MEK1	99000002	167A>C	Q56P	SMPH017164A
I07	MEK1	99000004	171G>T	K57N	SMPH017166A

Position	Gene	COSMIC ID	Nucleotide Change	Amino Acid Change	Assay Catalog #
I08	MEK1	99000001	199G>A	D67N	SMPH017163A
I09	MEK1	99000003	371C>T	P124L	SMPH017165A
I10	MET	707	c.3029C>T	p.T1010I	SMPH008297A
I11	MET	699	c.3743A>G	p.Y1248C	SMPH008303A
I12	MET	700	c.3757T>G	p.Y1253D	SMPH008298A
I13	MET	691	c.3803T>C	p.M1268T	SMPH008293A
I14	NOTCH1	12772	c.4724T>C	p.L1575P	SMPH009661A
I15	NOTCH1	13047	c.4735_4737delGTG	p.V1579del	SMPH009660A
I16	NOTCH1	13046	c.4757T>C	p.L1586P	SMPH009662A
I17	NOTCH1	13042	c.4781T>C	p.L1594P	SMPH009666A
I18	NOTCH1	13053	c.4796G>C	p.R1599P	SMPH009667A
I19	NOTCH1	12771	c.4802T>C	p.L1601P	SMPH009669A
I20	NOTCH1	13048	c.5036T>C	p.L1679P	SMPH009677A
I21	NOTCH1	12776	c.7378C>T	p.Q2460*	SMPH009759A
I22	NOTCH2	36210	c.7198C>T	p.R2400*	SMPH009925A
I23	NRAS	580	c.181C>A	p.Q61K	SMPH010073A
I24	NRAS	582	c.182A>C	p.Q61P	SMPH010096A
J01	NRAS	584	c.182A>G	p.Q61R	SMPH010069A
J02	NRAS	583	c.182A>T	p.Q61L	SMPH010076A
J03	NRAS	586	c.183A>C	p.Q61H	SMPH010072A
J04	NRAS	585	c.183A>T	p.Q61H	SMPH010068A
J05	NRAS	563	c.34G>A	p.G12S	SMPH010075A
J06	NRAS	562	c.34G>T	p.G12C	SMPH010078A
J07	NRAS	564	c.35G>A	p.G12D	SMPH010071A
J08	NRAS	565	c.35G>C	p.G12A	SMPH010066A
J09	NRAS	566	c.35G>T	p.G12V	SMPH010067A
J10	NRAS	569	c.37G>C	p.G13R	SMPH010074A
J11	NRAS	570	c.37G>T	p.G13C	SMPH010081A
J12	NRAS	573	c.38G>A	p.G13D	SMPH010070A
J13	NRAS	575	c.38G>C	p.G13A	SMPH010084A
J14	NRAS	574	c.38G>T	p.G13V	SMPH010082A
J15	NRAS	577	c.52G>A	p.A18T	SMPH010105A
J16	PDGFRA	739	c.1682T>A	p.V561D	SMPH010452A
J17	PDGFRA	742	c.1696_1713>CGC	p.S566_E571>R	SMPH010473A
J18	PDGFRA	12417	c.1697_1711del15	p.S566_E571>K	SMPH010472A
J19	PDGFRA	12418	c.1698_1712del15	p.S566_E571>R	SMPH010471A
J20	PDGFRA	737	c.2524_2535del12	p.D842_H845del	SMPH010476A
J21	PDGFRA	736	c.2525A>T	p.D842V	SMPH010453A
J22	PDGFRA	12400	c.2527_2538del12	p.I843_D846del	SMPH010484A
J23	PIK3CA	754	c.1035T>A	p.N345K	SMPH010733A
J24	PIK3CA	759	c.1616C>G	p.P539R	SMPH010637A
K01	PIK3CA	760	c.1624G>A	p.E542K	SMPH010629A
K02	PIK3CA	17442	c.1624G>C	p.E542Q	SMPH010715A
K03	PIK3CA	762	c.1625A>T	p.E542V	SMPH010641A
K04	PIK3CA	763	c.1633G>A	p.E545K	SMPH010627A
K05	PIK3CA	27133	c.1633G>C	p.E545Q	SMPH010709A
K06	PIK3CA	764	c.1634A>G	p.E545G	SMPH010633A
K07	PIK3CA	27374	c.1635G>C	p.E545D	SMPH010698A
K08	PIK3CA	765	c.1635G>T	p.E545D	SMPH010638A
K09	PIK3CA	766	c.1636C>A	p.Q546K	SMPH010628A
K10	PIK3CA	6147	c.1636C>G	p.Q546E	SMPH010708A
K11	PIK3CA	767	c.1637A>C	p.Q546P	SMPH010652A
K12	PIK3CA	12459	c.1637A>G	p.Q546R	SMPH010642A
K13	PIK3CA	25041	c.1637A>T	p.Q546L	SMPH010660A
K14	PIK3CA	778	c.2102A>C	p.H701P	SMPH010774A
K15	PIK3CA	12461	c.3062A>G	p.Y1021C	SMPH010682A
K16	PIK3CA	771	c.3073A>G	p.T1025A	SMPH010686A
K17	PIK3CA	21451	c.3075C>T	p.T1025T	SMPH010651A
K18	PIK3CA	12591	c.3127A>G	p.M1043V	SMPH010649A
K19	PIK3CA	773	c.3129G>T	p.M1043I	SMPH010695A
K20	PIK3CA	774	c.3139C>T	p.H1047Y	SMPH010696A
K21	PIK3CA	775	c.3140A>G	p.H1047R	SMPH010630A
K22	PIK3CA	776	c.3140A>T	p.H1047L	SMPH010632A
K23	PIK3CA	777	c.3145G>A	p.G1049S	SMPH010659A
K24	PIK3CA	12597	c.3145G>C	p.G1049R	SMPH010661A
L01	PIK3CA	27158	c.3146G>C	p.G1049A	SMPH010732A
L02	PIK3CA	17447	c.3155C>A	p.T1052K	SMPH010689A
L03	PIK3CA	12464	c.3204_3205insA	p.N1068fs*4	SMPH010770A
L04	PIK3CA	27497	c.323G>A	p.R108H	SMPH010714A
L05	PTCH1	14440	c.1093C>T	p.Q365*	SMPH011301A
L06	PTCH1	17471	c.1682T>G	p.M561R	SMPH011431A
L07	PTEN	4929	c.17_18delAA	p.K6fs*4	SMPH011501A
L08	PTEN	4956	c.227_228delAT	p.Y76fs*1	SMPH011617A
L09	PTEN	5219	c.388C>G	p.R130G	SMPH011480A

Position	Gene	COSMIC ID	Nucleotide Change	Amino Acid Change	Assay Catalog #
L10	PTEN	5152	c.388C>T	p.R130*	SMPH011473A
L11	PTEN	5817	c.389delG	p.R130fs*4	SMPH011514A
L12	PTEN	5033	c.389G>A	p.R130Q	SMPH011486A
L13	PTEN	5216	c.389G>T	p.R130L	SMPH011591A
L14	PTEN	5089	c.517C>T	p.R173C	SMPH011475A
L15	PTEN	5039	c.518G>A	p.R173H	SMPH011472A
L16	PTEN	5150	c.640C>T	p.Q214*	SMPH011797A
L17	PTEN	5154	c.697C>T	p.R233*	SMPH011506A
L18	PTEN	4986	c.741_742insA	p.P248fs*5	SMPH011468A
L19	PTEN	4898	c.950_953delTACT	p.V317fs*3	SMPH011511A
L20	PTEN	4894	c.952_955delCTTA	p.L318fs*2	SMPH011686A
L21	PTEN	39513	c.1133_1136delGATA	p.R378fs*>25	SMPH011742A
L22	PTEN	4990	c.968_969insA	p.N323fs*2	SMPH011534A
L23	PTPN11	13020	c.1504T>C	p.S502P	SMPH012393A
L24	PTPN11	13027	c.1508G>C	p.G503A	SMPH012401A
M01	PTPN11	14271	c.1508G>T	p.G503V	SMPH012402A
M02	PTPN11	13028	c.179G>T	p.G60V	SMPH012377A
M03	PTPN11	13011	c.181G>T	p.D61Y	SMPH012376A
M04	PTPN11	13022	c.182A>T	p.D61V	SMPH012385A
M05	PTPN11	13013	c.205G>A	p.E69K	SMPH012378A
M06	PTPN11	13014	c.214G>A	p.A72T	SMPH012384A
M07	PTPN11	13015	c.215C>T	p.A72V	SMPH012390A
M08	PTPN11	13019	c.218C>T	p.T73I	SMPH012398A
M09	PTPN11	13000	c.226G>A	p.E76K	SMPH012382A
M10	PTPN11	13016	c.226G>C	p.E76Q	SMPH012388A
M11	PTPN11	13026	c.227A>C	p.E76A	SMPH012392A
M12	PTPN11	13017	c.227A>G	p.E76G	SMPH012387A
M13	PTPN11	13025	c.227A>T	p.E76V	SMPH012389A
M14	RET	968	c. 1894_1899delGAGCTG	p.E632_L633del	SMPH012905A
M15	RET	1048	c.1894_1906>AGCT	p.E632_T636>SS	SMPH012944A
M16	RET	966	c.1900T>C	p.C634R	SMPH012912A
M17	RET	974	c.1901G>A	p.C634Y	SMPH012914A
M18	RET	21338	c.2304G>C	p.E768D	SMPH012916A
M19	RET	977	c.2647_2648GC>TT	p.A883F	SMPH012904A
M20	RET	965	c.2753T>C	p.M918T	SMPH012901A
M21	SRC	1369	c.1591C>T	p.Q531*	SMPH014190A
M22	STK11	21360	c.1062C>G	p.F354L	SMPH014253A
M23	STK11	12925	c.109C>T	p.Q37*	SMPH014255A
M24	STK11	20943	c.508C>T	p.Q170*	SMPH014238A
N01	STK11	20944	c.580G>T	p.D194Y	SMPH014239A
N02	STK11	20857	c.787_790delTTGT	p.F264fs*22	SMPH014329A
N03	STK11	21355	c.842C>T	p.P281L	SMPH014254A
N04	STK11	12924	c.842delC	p.P281fs*6	SMPH014248A
N05	TP53	43708	c.422G>A	p.C141Y	SMPH034537A
N06	TP53	10905	c.451C>T	p.P151S	SMPH015043A
N07	TP53	10790	c.455C>T	p.P152L	SMPH014958A
N08	TP53	10670	c.469G>T	p.V157F	SMPH014984A
N09	TP53	10690	c.473G>A	p.R158H	SMPH014957A
N10	TP53	10808	c.488A>G	p.Y163C	SMPH014931A
N11	TP53	10648	c.524G>A	p.R175H	SMPH014921A
N12	TP53	10645	c.527G>T	p.C176F	SMPH014960A
N13	TP53	10768	c.535C>T	p.H179Y	SMPH015208A
N14	TP53	10889	c.536A>G	p.H179R	SMPH015072A
N15	TP53	10733	c.574C>T	p.Q192*	SMPH015161A
N16	TP53	10742	c.578A>G	p.H193R	SMPH014975A
N17	TP53	10705	c.586C>T	p.R196*	SMPH014949A
N18	TP53	10654	c.637C>T	p.R213*	SMPH014928A
N19	TP53	10758	c.659A>G	p.Y220C	SMPH014964A
N20	TP53	10725	c.701A>G	p.Y234C	SMPH014944A
N21	TP53	10834	c.711G>A	p.M237I	SMPH015199A
N22	TP53	10812	c.722C>T	p.S241F	SMPH014924A
N23	TP53	10810	c.725G>T	p.C242F	SMPH015002A
N24	TP53	6932	c.733G>A	p.G245S	SMPH014940A
O01	TP53	43606	c.734G>A	p.G245D	SMPH034441A
O02	TP53	10656	c.742C>T	p.R248W	SMPH014929A
O03	TP53	10662	c.743G>A	p.R248Q	SMPH014902A
O04	TP53	6549	c.743G>T	p.R248L	SMPH015015A
O05	TP53	10817	c.747G>T	p.R249S	SMPH015066A
O06	TP53	10891	c.814G>A	p.V272M	SMPH014987A
O07	TP53	10659	c.817C>T	p.R273C	SMPH014907A
O08	TP53	10660	c.818G>A	p.R273H	SMPH014913A
O09	TP53	10779	c.818G>T	p.R273L	SMPH015005A
O10	TP53	10704	c.844C>T	p.R282W	SMPH014941A

Position	Gene	COSMIC ID	Nucleotide Change	Amino Acid Change	Assay Catalog #
O11	TP53	10722	c.853G>A	p.E285K	SMPH014937A
O12	TP53	11066	c.578A>T	p.H193L	SMPH014968A
O13	ABL1	99000065	copy number	copy number	SMPH017227A
O14	AKT1	99000005	copy number	copy number	SMPH017167A
O15	ALK	99000047	copy number	copy number	SMPH017209A
O16	BRAF	99000006	copy number	copy number	SMPH017168A
O17	CBL	99000050	copy number	copy number	SMPH017212A
O18	CRLF2	99000029	copy number	copy number	SMPH017191A
O19	CSF1R	99000051	copy number	copy number	SMPH017213A
O20	CTNNB1	99000042	copy number	copy number	SMPH017204A
O21	EGFR	99000007	copy number	copy number	SMPH017169A
O22	ERBB2	99000016	copy number	copy number	SMPH017178A
O23	FBXW7	99000063	copy number	copy number	SMPH017225A
O24	FGFR2	99000019	copy number	copy number	SMPH017181A
P01	FGFR3	99000020	copy number	copy number	SMPH017182A
P02	FLT3	99000015	copy number	copy number	SMPH017177A
P03	GNAQ	99000044	copy number	copy number	SMPH017206A
P04	GNAS	99000039	copy number	copy number	SMPH017201A
P05	HRAS	99000009	copy number	copy number	SMPH017171A
P06	JAK2	99000025	copy number	copy number	SMPH017187A
P07	KIT	99000021	copy number	copy number	SMPH017183A
P08	KRAS	99000008	copy number	copy number	SMPH017170A
P09	MEK1	99000011	copy number	copy number	SMPH017173A
P10	MET	99000022	copy number	copy number	SMPH017184A
P11	NOTCH1	99000059	copy number	copy number	SMPH017221A
P12	NOTCH2	99000066	copy number	copy number	SMPH017228A
P13	NRAS	99000010	copy number	copy number	SMPH017172A
P14	PDGFRA	99000014	copy number	copy number	SMPH017176A
P15	PIK3CA	99000012	copy number	copy number	SMPH017174A
P16	PTCH1	99000034	copy number	copy number	SMPH017196A
P17	PTEN	99000013	copy number	copy number	SMPH017175A
P18	PTPN11	99000023	copy number	copy number	SMPH017185A
P19	RET	99000060	copy number	copy number	SMPH017222A
P20	SRC	99000071	copy number	copy number	SMPH038607A
P21	STK11	99000038	copy number	copy number	SMPH017200A
P22	TP53	99000041	copy number	copy number	SMPH017203A
P23	SMPC	99000017	positive PCR control	positive PCR control	SMPH017179A
P24	SMPC	99000017	positive PCR control	positive PCR control	SMPH017179A

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