

qBiomarker Somatic Mutation PCR Array

Human Cancer Comprehensive 384HC

Cat. no. 337021 SMH-3007AE

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)



Description

The Human Cancer Comprehensive Panel qBiomarker Somatic Mutation PCR Array is a translational research tool that allows rapid, comprehensive, and accurate profiling of the somatic mutation status of 61 key genes of the human cancer genome. Components covered on this panel are among the most frequently mutated in human cancers 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 Cancer Comprehensive Panel qBiomarker Somatic Mutation PCR Array, with its comprehensive content coverage, is designed for the study of mutations in all major cancer pathways and has the potential for discovery and verification of drug target biomarkers for a variety of human cancers. This array includes 321 DNA sequence mutation assays designed to detect the most frequent, functionally verified, and biologically significant mutations in the human cancer genome. 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. Researchers with interest in in-depth mutation analysis for a specific pathway or disease are encouraged to explore relevant pathway- or disease-specific somatic mutation PCR arrays. Additional mutation assays (not included in this array) for the majority of the genes are also available.

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	12576	c.757T>C	p.Y253H	SMPH000062A
A03	ABL1	12573	c.763G>A	p.E255K	SMPH000061A
A04	ABL1	12574	c.764A>T	p.E255V	SMPH000060A
A05	ABL1	12560	c.944C>T	p.T315I	SMPH000059A
A06	AKT1	33765	c.49G>A	p.E17K	SMPH017162A
A07	AKT3	13303	c.511G>A	p.G171R	SMPH000355A
A08	ALK	28055	c.3522C>A	p.F1174L	SMPH000375A
A09	ALK	28495	c.3633C>A	p.T1211T	SMPH000381A
A10	ALK	28056	c.3824G>A	p.R1275Q	SMPH000379A
A11	APC	18764	c.3921_3925delAAAAG	p.E1309fs*4	SMPH000606A
A12	APC	13113	c.3927_3931delAAAGA	p.E1309fs*4	SMPH000523A
A13	APC	18817	c.3934G>T	p.G1312*	SMPH000565A
A14	APC	19033	c.4110_4111delAA	p.P1372fs*2	SMPH001245A
A15	APC	18862	c.4132C>T	p.Q1378*	SMPH000590A
A16	APC	18836	c.4285C>T	p.Q1429*	SMPH000549A
A17	APC	13127	c.4348C>T	p.R1450*	SMPH000539A
A18	APC	19695	c.4660_4661insA	p.T1556fs*3	SMPH001074A
A19	ATM	21642	c.9022C>T	p.R3008C	SMPH001484A
A20	ATM	21626	c.9023G>A	p.R3008H	SMPH001470A
A21	BRAF	460	c.1406G>C	p.G469A	SMPH001906A
A22	BRAF	1130	c.1798G>A	p.V600M	SMPH001846A
A23	BRAF	476	c.1799T>A	p.V600E	SMPH001828A
A24	BRAF	18443	c.1799T>C	p.V600A	SMPH001845A
B01	BRAF	6137	c.1799T>G	p.V600G	SMPH001912A
B02	CBL	34055	c.1139T>C	p.L380P	SMPH002298A
B03	CBL	34057	c.1150T>C	p.C384R	SMPH002315A
B04	CBL	34066	c.1151G>A	p.C384Y	SMPH002313A
B05	CBL	34077	c.1259G>A	p.R420Q	SMPH002300A
B06	CDH1	28934	c.240_241insGGTG	p.V82fs*13	SMPH002484A
B07	CDH1	19785	c. 786_794CACCCAGGA >T	p.T263fs*3	SMPH002457A
B08	CDKN2A	13653	c.128G>T	p.S43I	SMPH002892A
B09	CDKN2A	12743	c.143C>T	p.P48L	SMPH002676A
B10	CDKN2A	13520	c.322G>C	p.D108H	SMPH002744A
B11	CDKN2A	13489	c.322G>T	p.D108Y	SMPH002662A
B12	CDKN2A	12481	c.329G>A	p.W110*	SMPH002702A
B13	CDKN2A	12547	c.330G>A	p.W110*	SMPH002718A
B14	CDKN2A	12476	c.341C>T	p.P114L	SMPH002680A
B15	CEBPA	18495	c.107delG	p.G36fs*124	SMPH003386A
B16	CEBPA	18161	c.247delC	p.Q83fs*77	SMPH003191A
B17	CEBPA	18543	c.912_913insTTG	p.K304_Q305insL	SMPH003195A
B18	CEBPA	18466	c.936_937insCAG	p.Q312_K313insQ	SMPH003181A
B19	CEBPA	18099	c.939_940insAAG	p.K313_V314insK	SMPH003179A
B20	CRLF2	41268	c.695T>G	p.F232C	SMPH003850A
B21	CSF1R	947	c.2906A>G	p.Y969C	SMPH003862A
B22	CTNNB1	5671	c.101G>A	p.G34E	SMPH003960A
B23	CTNNB1	5670	c.101G>T	p.G34V	SMPH003948A
B24	CTNNB1	5675	c.109T>G	p.S37A	SMPH003985A
C01	CTNNB1	5679	c.110C>G	p.S37C	SMPH003962A
C02	CTNNB1	5662	c.110C>T	p.S37F	SMPH003946A
C03	CTNNB1	5664	c.121A>G	p.T41A	SMPH003950A
C04	CTNNB1	5676	c.122C>T	p.T41I	SMPH003952A
C05	CTNNB1	5663	c.133T>C	p.S45P	SMPH003970A
C06	CTNNB1	5667	c.134C>T	p.S45F	SMPH003953A
C07	CTNNB1	5661	c.94G>T	p.D32Y	SMPH003956A
C08	CTNNB1	5677	c.98C>G	p.S33C	SMPH003963A
C09	CTNNB1	5669	c.98C>T	p.S33F	SMPH003964A
C10	EGFR	21690	c.1793G>T	p.G598V	SMPH004847A
C11	EGFR	12988	c.2125G>A	p.E709K	SMPH004670A
C12	EGFR	13427	c.2126A>C	p.E709A	SMPH004764A
C13	EGFR	6252	c.2155G>A	p.G719S	SMPH004671A
C14	EGFR	6253	c.2155G>T	p.G719C	SMPH004672A
C15	EGFR	6239	c.2156G>C	p.G719A	SMPH004704A
C16	EGFR	6223	c.2235_2249del15	p.E746_A750del	SMPH004662A
C17	EGFR	6225	c.2236_2250del15	p.E746_A750del	SMPH004663A
C18	EGFR	12678	c.2237_2251del15	p.E746_T751>A	SMPH004667A
C19	EGFR	6218	c.2239_2247del9	p.L747_E749del	SMPH004664A
C20	EGFR	6255	c.2239_2256del18	p.L747_S752del	SMPH004694A
C21	EGFR	12369	c.2240_2254del15	p.L747_T751del	SMPH004682A
C22	EGFR	6241	c.2303G>T	p.S768I	SMPH004666A

Position	Gene	COSMIC ID	Nucleotide Change	Amino Acid Change	Assay Catalog #
C23	EGFR	6240	c.2369C>T	p.T790M	SMPH004665A
C24	EGFR	6224	c.2573T>G	p.L858R	SMPH004661A
D01	EGFR	6213	c.2582T>A	p.L861Q	SMPH004716A
D02	EGFR	21683	c.323G>A	p.R108K	SMPH004967A
D03	EGFR	21687	c.866C>T	p.A289V	SMPH004846A
D04	ERBB2	13170	c.2305G>C	p.D769H	SMPH005135A
D05	ERBB2	682	c. 2322_2323insGCATAC GTGATG	p.M774_A775insAYVM	SMPH005128A
D06	ERBB2	12553	c.2326_2327insTGT	p.G776>VC	SMPH005156A
D07	ERBB2	14062	c.2329G>T	p.V777L	SMPH005130A
D08	EZH2	37031	c.1936T>A	p.Y646N	SMPH022879A
D09	EZH2	37029	c.1937A>C	p.Y646S	SMPH022880A
D10	EZH2	37028	c.1937A>T	p.Y646F	SMPH022878A
D11	FBXW7	22932	c.1393C>T	p.R465C	SMPH005382A
D12	FBXW7	22965	c.1394G>A	p.R465H	SMPH005386A
D13	FBXW7	22974	c.1436G>A	p.R479Q	SMPH005404A
D14	FBXW7	22975	c.1513C>T	p.R505C	SMPH005417A
D15	FGFR1	601	c.374C>T	p.S125L	SMPH005498A
D16	FGFR1	12834	c.754C>A	p.P252T	SMPH005499A
D17	FGFR2	36902	c.1647T>G	p.N549K	SMPH005506A
D18	FGFR2	36903	c.755C>G	p.S252W	SMPH005503A
D19	FGFR3	17461	c.1111A>T	p.S371C	SMPH005553A
D20	FGFR3	718	c.1118A>G	p.Y373C	SMPH005550A
D21	FGFR3	24842	c.1138G>A	p.G380R	SMPH005554A
D22	FGFR3	726	c.1948A>C	p.K650Q	SMPH005555A
D23	FGFR3	719	c.1948A>G	p.K650E	SMPH005557A
D24	FGFR3	731	c.1949A>C	p.K650T	SMPH005562A
E01	FGFR3	720	c.1949A>T	p.K650M	SMPH005558A
E02	FGFR3	24802	c.2089G>T	p.G697C	SMPH005556A
E03	FGFR3	714	c.742C>T	p.R248C	SMPH005552A
E04	FLT3	19737	c. 1803_1804insCAGCTA CAGATGGTACAGGTG ACCGGGCTCTCAGATA ATGAGTACTTCTACGTT GATTTCAGAGAATATG AATATGATCTC	p.L601_K602ins27	SMPH005704A
E05	FLT3	783	c.2503G>T	p.D835Y	SMPH005661A
E06	FLT3	788	c.2505T>G	p.D835E	SMPH005668A
E07	FLT3	19836	c.2508_2510delCAT	p.I836del	SMPH005657A
E08	FOXJ2	33661	c.402C>G	p.C134W	SMPH005818A
E09	GATA1	13219	c.1_220del220	p.M1fs	SMPH006000A
E10	GATA1	17833	c.220G>A	p.V74I	SMPH005940A
E11	GATA1	13211	c.49C>T	p.Q17*	SMPH005985A
E12	GATA1	13225	c.90_91delAG	p.S30fs*9	SMPH005946A
E13	GATA2	41611	c.1075T>G	p.L359V	SMPH023872A
E14	GNAQ	28758	c.626A>C	p.Q209P	SMPH006151A
E15	GNAQ	28757	c.626A>T	p.Q209L	SMPH006150A
E16	GNAS	27887	c.601C>T	p.R201C	SMPH006160A
E17	GNAS	27895	c.602G>A	p.R201H	SMPH006159A
E18	GNAS	27896	c.680A>G	p.Q227R	SMPH006161A
E19	GNAS	27888	c.680A>T	p.Q227L	SMPH006162A
E20	GNAS	27900	c.681G>T	p.Q227H	SMPH006158A
E21	HNFI1A	21471	c.617G>T	p.W206L	SMPH006413A
E22	HNFI1A	21478	c.618G>T	p.W206C	SMPH006420A
E23	HRAS	496	c.181C>A	p.Q61K	SMPH006505A
E24	HRAS	499	c.182A>G	p.Q61R	SMPH006502A
F01	HRAS	498	c.182A>T	p.Q61L	SMPH006503A
F02	HRAS	502	c.183G>T	p.Q61H	SMPH006516A
F03	HRAS	480	c.34G>A	p.G12S	SMPH006499A
F04	HRAS	482	c.34G>C	p.G12R	SMPH006506A
F05	HRAS	481	c.34G>T	p.G12C	SMPH006500A
F06	HRAS	484	c.35G>A	p.G12D	SMPH006507A
F07	HRAS	483	c.35G>T	p.G12V	SMPH006497A
F08	HRAS	486	c.37G>C	p.G13R	SMPH006498A
F09	IDH1	28748	c.394C>A	p.R132S	SMPH006591A
F10	IDH1	28749	c.394C>G	p.R132G	SMPH006592A
F11	IDH1	28747	c.394C>T	p.R132C	SMPH006589A
F12	IDH1	28746	c.395G>A	p.R132H	SMPH006590A
F13	IDH1	28750	c.395G>T	p.R132L	SMPH006593A
F14	IDH2	41590	c.419G>A	p.R140Q	SMPH025021A
F15	IDH2	34039	c.514A>T	p.R172W	SMPH006598A
F16	IDH2	33733	c.515G>A	p.R172K	SMPH006597A

Position	Gene	COSMIC ID	Nucleotide Change	Amino Acid Change	Assay Catalog #
F17	IDH2	33732	c.515G>T	p.R172M	SMPH00659A
F18	JAK2	24439	c.1615_1616AA>TT	p.K539L	SMPH006842A
F19	JAK2	27147	c. 1620_1629CAGAAATG AA>GAAA	p.I540_E543>MK	SMPH006853A
F20	JAK2	26735	c. 1622_1627delGAAATG	p.R541_E543>K	SMPH006845A
F21	JAK2	12600	c.1849G>T	p.V617F	SMPH006837A
F22	JAK2	29300	c.2047A>G	p.R683G	SMPH006891A
F23	JAK2	29302	c.2049A>T	p.R683S	SMPH006890A
F24	KIT	1326	c. 1509_1510insGCCTAT	p.Y503_F504insAY	SMPH007133A
G01	KIT	28026	c.1621A>C	p.M541L	SMPH007208A
G02	KIT	27909	c.1656_1673del18	p.Y553_K558>	SMPH007203A
G03	KIT	1210	c. 1667_1672delAGTGGGA	p.W557_K558del	SMPH007192A
G04	KIT	1332	c.1669_1683del15	p.W557_E561del	SMPH007293A
G05	KIT	1219	c.1669T>C	p.W557R	SMPH007164A
G06	KIT	1221	c.1669T>G	p.W557G	SMPH007170A
G07	KIT	1226	c. 1670_1675delGGAAG G	p.W557_V559>F	SMPH007211A
G08	KIT	1247	c.1675_1677delGTT	p.V559del	SMPH007131A
G09	KIT	1252	c.1676T>A	p.V559D	SMPH007129A
G10	KIT	1257	c.1679T>A	p.V560D	SMPH007114A
G11	KIT	1290	c.1727T>C	p.L576P	SMPH007118A
G12	KIT	1294	c.1735_1737delGAT	p.D579del	SMPH007195A
G13	KIT	1304	c.1924A>G	p.K642E	SMPH007132A
G14	KIT	12706	c.1961T>C	p.V654A	SMPH007172A
G15	KIT	1311	c.2446G>C	p.D816H	SMPH007137A
G16	KIT	1310	c.2446G>T	p.D816Y	SMPH007144A
G17	KIT	1314	c.2447A>T	p.D816V	SMPH007122A
G18	KIT	1323	c.2474T>C	p.V825A	SMPH007117A
G19	KRAS	552	c.182A>G	p.Q61R	SMPH007553A
G20	KRAS	553	c.182A>T	p.Q61L	SMPH007544A
G21	KRAS	555	c.183A>T	p.Q61H	SMPH007546A
G22	KRAS	517	c.34G>A	p.G12S	SMPH007533A
G23	KRAS	518	c.34G>C	p.G12R	SMPH007534A
G24	KRAS	516	c.34G>T	p.G12C	SMPH007535A
H01	KRAS	521	c.35G>A	p.G12D	SMPH007531A
H02	KRAS	522	c.35G>C	p.G12A	SMPH007536A
H03	KRAS	520	c.35G>T	p.G12V	SMPH007537A
H04	KRAS	528	c.37G>A	p.G13S	SMPH007543A
H05	KRAS	529	c.37G>C	p.G13R	SMPH007549A
H06	KRAS	527	c.37G>T	p.G13C	SMPH007541A
H07	KRAS	532	c.38G>A	p.G13D	SMPH007538A
H08	KRAS	533	c.38G>C	p.G13A	SMPH007542A
H09	KRAS	534	c.38G>T	p.G13V	SMPH007545A
H10	MEK1	99000002	167A>C	Q56P	SMPH017164A
H11	MEK1	99000004	171G>T	K57N	SMPH017166A
H12	MEK1	99000001	199G>A	D67N	SMPH017163A
H13	MEK1	99000003	371C>T	P124L	SMPH017165A
H14	MET	29632	c.2942_3082del141	p.L982_D1028del	SMPH008291A
H15	MET	705	c.2962C>T	p.R988C	SMPH008317A
H16	MET	707	c.3029C>T	p.T1010I	SMPH008297A
H17	MET	699	c.3743A>G	p.Y1248C	SMPH008303A
H18	MET	700	c.3757T>G	p.Y1253D	SMPH008298A
H19	MET	691	c.3803T>C	p.M1268T	SMPH008293A
H20	MPL	27286	c.1514G>A	p.S505N	SMPH008531A
H21	MPL	19193	c.1543_1544TG>AA	p.W515K	SMPH008528A
H22	MPL	18918	c.1544G>T	p.W515L	SMPH008530A
H23	NF2	22249	c.1009C>T	p.Q337*	SMPH009129A
H24	NF2	21990	c.1021C>T	p.R341*	SMPH009122A
I01	NF2	22209	c.1228C>T	p.Q410*	SMPH009114A
I02	NF2	23667	c.1396C>T	p.R466*	SMPH009308A
I03	NF2	21991	c.169C>T	p.R57*	SMPH009090A
I04	NF2	22240	c.634C>T	p.Q212*	SMPH009212A
I05	NF2	22000	c.784C>T	p.R262*	SMPH009108A
I06	NOTCH1	12772	c.4724T>C	p.L1575P	SMPH009661A
I07	NOTCH1	13047	c.4735_4737delGTG	p.V1579del	SMPH009660A
I08	NOTCH1	13046	c.4757T>C	p.L1586P	SMPH009662A
I09	NOTCH1	13042	c.4781T>C	p.L1594P	SMPH009666A
I10	NOTCH1	13053	c.4796G>C	p.R1599P	SMPH009667A
I11	NOTCH1	12771	c.4802T>C	p.L1601P	SMPH009669A

Position	Gene	COSMIC ID	Nucleotide Change	Amino Acid Change	Assay Catalog #
I12	NOTCH1	13048	c.5036T>C	p.L1679P	SMPH009677A
I13	NOTCH2	36210	c.7198C>T	p.R2400*	SMPH009925A
I14	NPM1	17571	c.863_864insCATG	p.W288fs*12	SMPH009953A
I15	NPM1	17573	c.863_864insCCTG	p.W288fs*12	SMPH009954A
I16	NPM1	17559	c.863_864insTCTG	p.W288fs*12	SMPH009952A
I17	NRAS	580	c.181C>A	p.Q61K	SMPH010073A
I18	NRAS	582	c.182A>C	p.Q61P	SMPH010096A
I19	NRAS	584	c.182A>G	p.Q61R	SMPH010069A
I20	NRAS	583	c.182A>T	p.Q61L	SMPH010076A
I21	NRAS	563	c.34G>A	p.G12S	SMPH010075A
I22	NRAS	564	c.35G>A	p.G12D	SMPH010071A
I23	NRAS	565	c.35G>C	p.G12A	SMPH010066A
I24	NRAS	569	c.37G>C	p.G13R	SMPH010074A
J01	NRAS	573	c.38G>A	p.G13D	SMPH010070A
J02	NRAS	575	c.38G>C	p.G13A	SMPH010084A
J03	NRAS	574	c.38G>T	p.G13V	SMPH010082A
J04	PDGFRA	739	c.1682T>A	p.V561D	SMPH010452A
J05	PDGFRA	742	c.1696_1713>CGC	p.S566_E571>R	SMPH010473A
J06	PDGFRA	12417	c.1697_1711del15	p.S566_E571>K	SMPH010472A
J07	PDGFRA	12418	c.1698_1712del15	p.S566_E571>R	SMPH010471A
J08	PDGFRA	737	c.2524_2535del12	p.D842_H845del	SMPH010476A
J09	PDGFRA	736	c.2525A>T	p.D842V	SMPH010453A
J10	PDGFRA	12400	c.2527_2538del12	p.I843_D846del	SMPH010484A
J11	PIK3CA	754	c.1035T>A	p.N345K	SMPH010733A
J12	PIK3CA	759	c.1616C>G	p.P539R	SMPH010637A
J13	PIK3CA	760	c.1624G>A	p.E542K	SMPH010629A
J14	PIK3CA	763	c.1633G>A	p.E545K	SMPH010627A
J15	PIK3CA	764	c.1634A>G	p.E545G	SMPH010633A
J16	PIK3CA	765	c.1635G>T	p.E545D	SMPH010638A
J17	PIK3CA	766	c.1636C>A	p.Q546K	SMPH010628A
J18	PIK3CA	6147	c.1636C>G	p.Q546E	SMPH010708A
J19	PIK3CA	12459	c.1637A>G	p.Q546R	SMPH010642A
J20	PIK3CA	771	c.3073A>G	p.T1025A	SMPH010686A
J21	PIK3CA	773	c.3129G>T	p.M1043I	SMPH010695A
J22	PIK3CA	774	c.3139C>T	p.H1047Y	SMPH010696A
J23	PIK3CA	775	c.3140A>G	p.H1047R	SMPH010630A
J24	PIK3CA	776	c.3140A>T	p.H1047L	SMPH010632A
K01	PIK3CA	12597	c.3145G>C	p.G1049R	SMPH010661A
K02	PIK3CA	12464	c.3204_3205insA	p.N1068fs*4	SMPH010770A
K03	PIK3R1	35827	c.1126G>A	p.G376R	SMPH010838A
K04	PIK3R1	42912	c.1690A>G	p.N564D	SMPH029982A
K05	PIK3R5	33390	c.82C>T	p.R28C	SMPH010853A
K06	PTCH1	14440	c.1093C>T	p.Q365*	SMPH011301A
K07	PTCH1	17471	c.1682T>G	p.M561R	SMPH011431A
K08	PTEN	5219	c.388C>G	p.R130G	SMPH011480A
K09	PTEN	5152	c.388C>T	p.R130*	SMPH011473A
K10	PTEN	5817	c.389delG	p.R130fs*4	SMPH011514A
K11	PTEN	5033	c.389G>A	p.R130Q	SMPH011486A
K12	PTEN	5089	c.517C>T	p.R173C	SMPH011475A
K13	PTEN	5039	c.518G>A	p.R173H	SMPH011472A
K14	PTEN	5154	c.697C>T	p.R233*	SMPH011506A
K15	PTEN	4986	c.741_742insA	p.P248fs*5	SMPH011468A
K16	PTEN	4898	c.950_953delTACT	p.V317fs*3	SMPH011511A
K17	PTEN	4894	c.952_955delCTTA	p.L318fs*2	SMPH011686A
K18	PTEN	39513	c.1133_1136delGATA	p.R378fs*>25	SMPH011742A
K19	PTEN	4990	c.968_969insA	p.N323fs*2	SMPH011534A
K20	PTPN11	13027	c.1508G>C	p.G503A	SMPH012401A
K21	PTPN11	13028	c.179G>T	p.G60V	SMPH012377A
K22	PTPN11	13011	c.181G>T	p.D61Y	SMPH012376A
K23	PTPN11	13022	c.182A>T	p.D61V	SMPH012385A
K24	PTPN11	13000	c.226G>A	p.E76K	SMPH012382A
L01	PTPN11	13017	c.227A>G	p.E76G	SMPH012387A
L02	RB1	895	c.1363C>T	p.R455*	SMPH012679A
L03	RB1	887	c.1654C>T	p.R552*	SMPH012681A
L04	RET	968	c. 1894_1899delGAGCTG	p.E632_L633del	SMPH012905A
L05	RET	1048	c.1894_1906>AGCT	p.E632_T636>SS	SMPH012944A
L06	RET	966	c.1900T>A	p.C634R	SMPH012912A
L07	RET	965	c.2753T>C	p.M918T	SMPH012901A
L08	RUNX1	24756	c.167T>C	p.L56S	SMPH013193A
L09	RUNX1	24751	c.342C>A	p.I114I	SMPH013189A
L10	RUNX1	24769	c.496C>T	p.R166*	SMPH013201A
L11	RUNX1	24721	c.592G>A	p.D198N	SMPH013176A
L12	RUNX1	24805	c.602G>A	p.R201Q	SMPH013202A

Position	Gene	COSMIC ID	Nucleotide Change	Amino Acid Change	Assay Catalog #
L13	RUNX1	24731	c.611G>A	p.R204Q	SMPH013182A
L14	SMAD4	14057	c.733C>T	p.Q245*	SMPH013685A
L15	SMARCB1	1057	c.1148delC	p.P383fs*3	SMPH013861A
L16	SMARCB1	1002	c.118C>T	p.R40*	SMPH013852A
L17	SMARCB1	991	c.141C>A	p.Y47*	SMPH013889A
L18	SMARCB1	24595	c.157C>T	p.R53*	SMPH013853A
L19	SMARCB1	992	c.472C>T	p.R158*	SMPH013863A
L20	SMO	13146	c.1604G>T	p.W535L	SMPH013985A
L21	STK11	21360	c.1062C>G	p.F354L	SMPH014253A
L22	STK11	12925	c.109C>T	p.Q37*	SMPH014255A
L23	STK11	20943	c.508C>T	p.Q170*	SMPH014238A
L24	STK11	12924	c.842delC	p.P281fs*6	SMPH014248A
M01	TET2	41644	c.1648C>T	p.R550*	SMPH033769A
M02	TP53	10670	c.469G>T	p.V157F	SMPH014984A
M03	TP53	10648	c.524G>A	p.R175H	SMPH014921A
M04	TP53	10705	c.586C>T	p.R196*	SMPH014949A
M05	TP53	10654	c.637C>T	p.R213*	SMPH014928A
M06	TP53	10758	c.659A>G	p.Y220C	SMPH014964A
M07	TP53	6932	c.733G>A	p.G245S	SMPH014940A
M08	TP53	10656	c.742C>T	p.R248W	SMPH014929A
M09	TP53	10662	c.743G>A	p.R248Q	SMPH014902A
M10	TP53	10817	c.747G>T	p.R249S	SMPH015066A
M11	TP53	10659	c.817C>T	p.R273C	SMPH014907A
M12	TP53	10660	c.818G>A	p.R273H	SMPH014913A
M13	TP53	10704	c.844C>T	p.R282W	SMPH014941A
M14	TSHR	26449	c.1358T>C	p.M453T	SMPH015424A
M15	TSHR	26450	c.1456A>T	p.I486F	SMPH015425A
M16	TSHR	26451	c.1703T>C	p.I568T	SMPH015426A
M17	TSHR	26415	c.1856A>G	p.D619G	SMPH015411A
M18	TSHR	26416	c.1867G>T	p.A623S	SMPH015412A
M19	TSHR	26417	c.1868C>T	p.A623V	SMPH015413A
M20	TSHR	26423	c.1888A>C	p.I630L	SMPH015417A
M21	TSHR	26418	c.1895C>T	p.T632I	SMPH015414A
M22	TSHR	26420	c.1897G>C	p.D633H	SMPH015416A
M23	TSHR	26419	c.1897G>T	p.D633Y	SMPH015415A
M24	VHL	14290	c.240T>A	p.S80R	SMPH015875A
N01	VHL	17859	c.254T>C	p.L85P	SMPH016010A
N02	VHL	14305	c.266T>A	p.L89H	SMPH016097A
N03	VHL	17658	c.286C>T	p.Q96*	SMPH016181A
N04	VHL	14407	c.388G>C	p.V130L	SMPH015927A
N05	VHL	17735	c.444delT	p.F148fs*11	SMPH015969A
N06	WT1	21397	c.1168C>T	p.R390*	SMPH016744A
N07	WT1	21418	c.906_907insT	p.V303fs*14	SMPH016762A
N08	WT1	27307	c.938C>A	p.S313*	SMPH016803A
N09	WT1	21392	c.940_941insTCGG	p.A314fs*4	SMPH016740A
N10	ABL1	99000065	copy number	copy number	SMPH017227A
N11	AKT1	99000005	copy number	copy number	SMPH017167A
N12	AKT3	99000054	copy number	copy number	SMPH017216A
N13	ALK	99000047	copy number	copy number	SMPH017209A
N14	APC	99000030	copy number	copy number	SMPH017192A
N15	ATM	99000031	copy number	copy number	SMPH017193A
N16	BRAF	99000006	copy number	copy number	SMPH017168A
N17	CBL	99000050	copy number	copy number	SMPH017212A
N18	CDH1	99000048	copy number	copy number	SMPH017210A
N19	CDKN2A	99000032	copy number	copy number	SMPH017194A
N20	CEBPA	99000049	copy number	copy number	SMPH017211A
N21	CRLF2	99000029	copy number	copy number	SMPH017191A
N22	CSF1R	99000051	copy number	copy number	SMPH017213A
N23	CTNNB1	99000042	copy number	copy number	SMPH017204A
N24	EGFR	99000007	copy number	copy number	SMPH017169A
O01	ERBB2	99000016	copy number	copy number	SMPH017178A
O02	EZH2	99000067	copy number	copy number	SMPH017229A
O03	FBXW7	99000063	copy number	copy number	SMPH017225A
O04	FGFR1	99000018	copy number	copy number	SMPH017180A
O05	FGFR2	99000019	copy number	copy number	SMPH017181A
O06	FGFR3	99000020	copy number	copy number	SMPH017182A
O07	FLT3	99000015	copy number	copy number	SMPH017177A
O08	FOXL2	99000061	copy number	copy number	SMPH017223A
O09	GATA1	99000043	copy number	copy number	SMPH017205A
O10	GATA2	99000068	copy number	copy number	SMPH017230A
O11	GNAQ	99000044	copy number	copy number	SMPH017206A
O12	GNAS	99000039	copy number	copy number	SMPH017201A
O13	HNF1A	99000040	copy number	copy number	SMPH017202A
O14	HRAS	99000009	copy number	copy number	SMPH017171A

Position	Gene	COSMIC ID	Nucleotide Change	Amino Acid Change	Assay Catalog #
O15	IDH1	99000056	copy number	copy number	SMPH017218A
O16	IDH2	99000045	copy number	copy number	SMPH017207A
O17	JAK2	99000025	copy number	copy number	SMPH017187A
O18	KIT	99000021	copy number	copy number	SMPH017183A
O19	KRAS	99000008	copy number	copy number	SMPH017170A
O20	MEK1	99000011	copy number	copy number	SMPH017173A
O21	MET	99000022	copy number	copy number	SMPH017184A
O22	MPL	99000053	copy number	copy number	SMPH017215A
O23	NF2	99000035	copy number	copy number	SMPH017197A
O24	NOTCH1	99000059	copy number	copy number	SMPH017221A
P01	NOTCH2	99000066	copy number	copy number	SMPH017228A
P02	NPM1	99000070	copy number	copy number	SMPH017232A
P03	NRAS	99000010	copy number	copy number	SMPH017172A
P04	PDGFRA	99000014	copy number	copy number	SMPH017176A
P05	PIK3CA	99000012	copy number	copy number	SMPH017174A
P06	PIK3R1	99000064	copy number	copy number	SMPH017226A
P07	PIK3R5	99000058	copy number	copy number	SMPH017220A
P08	PTCH1	99000034	copy number	copy number	SMPH017196A
P09	PTEN	99000013	copy number	copy number	SMPH017175A
P10	PTPN11	99000023	copy number	copy number	SMPH017185A
P11	RB1	99000036	copy number	copy number	SMPH017198A
P12	RET	99000060	copy number	copy number	SMPH017222A
P13	RUNX1	99000026	copy number	copy number	SMPH017188A
P14	SMAD4	99000052	copy number	copy number	SMPH017214A
P15	SMARCB1	99000046	copy number	copy number	SMPH017208A
P16	SMO	99000055	copy number	copy number	SMPH017217A
P17	STK11	99000038	copy number	copy number	SMPH017200A
P18	TET2	99000069	copy number	copy number	SMPH017231A
P19	TP53	99000041	copy number	copy number	SMPH017203A
P20	TSHR	99000037	copy number	copy number	SMPH017199A
P21	VHL	99000024	copy number	copy number	SMPH017186A
P22	WT1	99000062	copy number	copy number	SMPH017224A
P23	SMPC	99000017	positive PCR control	positive PCR control	SMPH017179A
P24	SMPC	99000017	positive PCR control	positive PCR control	SMPH017179A

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