qBiomarker Somatic Mutation PCR Array

Human KIT Pathway

Cat. no. 337021 SMH-006

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

Format	For use with the following real-time cyclers
Format A, with fluorescein	Bio-Rad® models iCycler®, iQ™5, MyiQ™, MyiQ2
Format A, with ROX™	Applied Biosystems® models 5700, 7000, 7300, 7500, 7700, 7900HT, ViiA™ 7 (96-well blocks); Bio-Rad/MJ Research Chromo4™; Eppendorf® Mastercycler® ep realplex models 2, 2s, 4, 4s; Stratagene® models Mx3005P®, Mx3000P®
Format C, with ROX	Applied Biosystems models 7500 (Fast, 96-well block), 7900HT (Fast, 96-well block), StepOnePlus™, ViiA 7 (Fast, 96-well block)
Format D, with ROX	Bio-Rad CFX96™; Bio-Rad/MJ Research models DNA Engine Opticon®, DNA Engine Opticon 2; Stratagene Mx4000®
Format E, with ROX	Applied Biosystems models 7900HT (384-well block), ViiA 7 (384-well block); Bio-Rad CFX384™
Format F, with ROX	Roche® LightCycler® 480 (96-well block)
Format G, with ROX	Roche LightCycler 480 (384-well block)

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Description

The receptor tyrosine kinase Kit (also called CD117 or C-kit receptor) plays a critical role in hematopoiesis. Gain-of-function mutations in the gene are frequently seen in several malignancies, including acute myeloid leukemia, gastrointestinal stromal tumors, and testicular carcinoma. KIT mutations are usually clustered and include deletions, point mutations and duplications. Different types of mutations correspond to different disease aggressiveness and sensitivity to KIT inhibitors, and have the potential to guide tyrosine kinase inhibitor selection in the future. Activation of the KIT pathway involves key downstream mediators, including Ras-MAPK, PI3K and phospholipase-γ pathways, whose components are also possible targets of inhibition. The Human KIT Pathway qBiomarker Somatic Mutation PCR Array is a translational research tool that allows rapid and accurate profiling of the somatic mutation status of the KIT gene and additional key genes in the KIT signaling pathway / network: AKT, BRAF, KRAS, HRAS, NRAS, MEK1, PIK3CA, and PTEN. Gene components were selected based on their frequency of mutation in human cancers. The utility of individual and multiple somatic mutation status information in identifying key signaling transduction disruptions has been demonstrated in numerous research studies. For example, the mutation status of the EGFR and KRAS genes can predict the physiological response to certain drugs targeting these molecules. The KIT Pathway qBiomarker Somatic Mutation PCR Array, with its comprehensive content coverage, is designed for studying mutations in the context of the KIT pathway and downstream effectors. This array covers 85 DNA sequence mutation assays designed to detect the most frequent, functionally verified, and biologically most significant mutations in the KIT pathway. 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	AKT1	33765	c.49G>A	p.E17K	SMPH017162A
A02	BRAF	450	c.1391G>T	p.G464V	SMPH001927A
A03	BRAF	451	c.1397G>T	p.G466V	SMPH001870A
A04	BRAF	460	c.1406G>C	p.G469A	SMPH001906A
A05	BRAF	470	c.1789C>G	p.L597V	SMPH001869A
A06	BRAF	1130	c.1798G>A	p.V600M	SMPH001846A
A07	BRAF	476	c.1799T>A	p.V600E	SMPH001828A
A08	BRAF	18443	c.1799T>C	p.V600A	SMPH001845A
A09	BRAF	6137	c.1799T>G	p.V600G	SMPH001912A
A10	KIT	1326	c.1509_1510insGCCTAT	p.Y503_F504insAY	SMPH007133A
A11	KIT	1146	c.154G>A	p.D52N	SMPH007360A
A12	KIT	28026	c.1621A>C	p.M541L	SMPH007208A
B01	KIT	1169	c.1651_1665del15	p.P551_V555del	SMPH007432A
B02	KIT	27909	c.1656_1673del18	p.Y553_K558>	SMPH007203A
B03	KIT	1210	c.1667_1672delAGTGGA	p.W557_K558del	SMPH007192A
B04	KIT	1332	c.1669_1683del15	p.W557_E561del	SMPH007293A
B05	KIT	1216	c.1669T>A	p.W557R	SMPH007358A
B06	KIT	1219	c.1669T>C	p.W557R	SMPH007164A
B07	KIT	1221	c.1669T>G	p.W557G	SMPH007170A
B08	KIT	1247	c.1675_1677delGTT	p.V559del	SMPH007131A
B09	KIT	1252	c.1676T>A	p.V559D	SMPH007129A
B10	KIT	1253	c.1676T>G	p.V559G	SMPH007128A
B11	KIT	1257	c.1679T>A	p.V560D	SMPH007114A
B12	KIT	1290	c.1727T>C	p.L576P	SMPH007118A
C01	KIT	1294	c.1735_1737delGAT	p.D579del	SMPH007195A
C02	KIT	1304	c.1924A>G	p.K642E	SMPH007132A
C03	KIT	12706	c.1961T>C	p.V654A	SMPH007172A
C04	KIT	12708	c.2009C>T	p.T670I	SMPH007253A
C05	KIT	1306	c.2143_2145delAGC	p.S715del	SMPH007455A
C06	KIT	1311	c.2446G>C	p.D816H	SMPH007137A
C07	KIT	1310	c.2446G>T	p.D816Y	SMPH007144A
C08	KIT	1314	c.2447A>T	p.D816V	SMPH007122A
C09	KIT	1321	c.2466T>A	p.N822K	SMPH007146A
C10	KIT	1322	c.2466T>G	p.N822K	SMPH007260A
C11	KIT	18681	c.2467T>G	p.Y823D	SMPH007206A
C12	KIT	1323	c.2474T>C	p.V825A	SMPH007117A
D01	KRAS	553	c.182A>T	p.Q61L	SMPH007544A
D02	KRAS	555	c.183A>T	p.Q61H	SMPH007546A
D03	KRAS	517	c.34G>A	p.G12S	SMPH007533A
D04	KRAS	518	c.34G>C	p.G12R	SMPH007534A
D05	KRAS	516	c.34G>T	p.G12C	SMPH007535A
D06	KRAS	521	c.35G>A	p.G12D	SMPH007531A
D07	KRAS	522	c.35G>C	p.G12A	SMPH007536A
D08	KRAS	520	c.35G>T	p.G12V	SMPH007537A
D09	KRAS	528	c.37G>A	p.G13S	SMPH007543A
D10	KRAS	529	c.37G>C	p.G13R	SMPH007549A
D11	KRAS	527	c.37G>T	p.G13C	SMPH007541A
D12	KRAS	532	c.38G>A	p.G13D	SMPH007538A
E01	HRAS	496	c.181C>A	p.Q61K	SMPH006505A
E02	HRAS	499	c.182A>G	p.Q61R	SMPH006502A
E03	HRAS	498	c.182A>T	p.Q61L	SMPH006503A
E04	HRAS	502	c.183G>T	p.Q61H	SMPH006516A
E05	HRAS	480	c.34G>A	p.G12S	SMPH006499A
E06	HRAS	482	c.34G>C	p.G12R	SMPH006506A
E07	HRAS	481	c.34G>T	p.G12C	SMPH006500A
E08	HRAS	484	c.35G>A	p.G12D	SMPH006507A
E09	HRAS	483	c.35G>T	p.G12V	SMPH006497A
E10	HRAS	486	c.37G>C	p.G13R	SMPH006498A
E11	NRAS	580	c.181C>A	p.Q61K	SMPH010073A
E12	NRAS	582	c.182A>C	p.Q61P	SMPH010096A
F01	NRAS	584	c.182A>G	p.Q61R	SMPH010069A
F02	NRAS	583	c.182A>T	p.Q61L	SMPH010076A
F03	NRAS	563	c.34G>A	p.G12S	SMPH010075A
F04	NRAS	564	c.35G>A	p.G12D	SMPH010071A
F05	NRAS	565	c.35G>C	p.G12A	SMPH010066A
F06	NRAS	569	c.37G>C	p.G13R	SMPH010074A
F07	NRAS	573	c.38G>A	p.G13D	SMPH010070A
F08	NRAS	574	c.38G>T	p.G13V	SMPH010082A
F09	MEK1	99000002	167A>C	Q56P	SMPH017164A
F10	MEK1	99000004	171G>T	K57N	SMPH017166A

Position	Gene	COSMIC ID	Nucleotide Change	Amino Acid Change	Assay Catalog #
F11	MEK1	99000001	199G>A	D67N	SMPH017163A
F12	MEK1	99000003	371C>T	P124L	SMPH017165A
G01	PIK3CA	759	c.1616C>G	p.P539R	SMPH010637A
G02	PIK3CA	760	c.1624G>A	p.E542K	SMPH010629A
G03	PIK3CA	763	c.1633G>A	p.E545K	SMPH010627A
G04	PIK3CA	764	c.1634A>G	p.E545G	SMPH010633A
G05	PIK3CA	765	c.1635G>T	p.E545D	SMPH010638A
G06	PIK3CA	775	c.3140A>G	p.H1047R	SMPH010630A
G07	PIK3CA	776	c.3140A>T	p.H1047L	SMPH010632A
G08	PTEN	5033	c.389G>A	p.R130Q	SMPH011486A
G09	PTEN	5219	c.388C>G	p.R130G	SMPH011480A
G10	PTEN	5152	c.388C>T	p.R130*	SMPH011473A
G11	PTEN	5089	c.517C>T	p.R173C	SMPH011475A
G12	PTEN	5039	c.518G>A	p.R173H	SMPH011472A
H01	PTEN	5154	c.697C>T	p.R233*	SMPH011506A
H02	AKT1	99000005	copy number	copy number	SMPH017167A
H03	BRAF	99000006	copy number	copy number	SMPH017168A
H04	KIT	99000021	copy number	copy number	SMPH017183A
H05	KRAS	99000008	copy number	copy number	SMPH017170A
H06	HRAS	99000009	copy number	copy number	SMPH017171A
H07	NRAS	99000010	copy number	copy number	SMPH017172A
H08	MEK1	99000011	copy number	copy number	SMPH017173A
H09	PIK3CA	99000012	copy number	copy number	SMPH017174A
H10	PTEN	99000013	copy number	copy number	SMPH017175A
H11	SMPC	99000017	positive PCR control	positive PCR control	SMPH017179A
H12	SMPC	99000017	positive PCR control	positive PCR control	SMPH017179A

Array layout

	1	2	3	4	5	6	7	8	9	10	11	12
A	AKT1	BRAF	BRAF	BRAF	BRAF	BRAF	BRAF	BRAF	BRAF	KIT	KIT	KIT
B	KIT	KIT	KIT	KIT	KIT	KIT	KIT	KIT	KIT	KIT	KIT	KIT
C	KIT	KIT	KIT	KIT	KIT	KIT	KIT	KIT	KIT	KIT	KIT	KIT
D	KRAS	KRAS	KRAS	KRAS	KRAS	KRAS	KRAS	KRAS	KRAS	KRAS	KRAS	KRAS
E	HRAS	HRAS	HRAS	HRAS	HRAS	HRAS	HRAS	HRAS	HRAS	HRAS	NRAS	NRAS
F	NRAS	NRAS	NRAS	NRAS	NRAS	NRAS	NRAS	NRAS	MEK1	MEK1	MEK1	MEK1
G	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PTEN	PTEN	PTEN	PTEN	PTEN
H	PTEN	AKT1	BRAF	KIT	KRAS	HRAS	NRAS	MEK1	PIK3CA	PTEN	SMPC	SMPC

qBiomarker Somatic Mutation PCR Array products are intended for molecular biology applications. These products are not intended for the diagnosis, prevention, or treatment of a disease.

For up-to-date licensing information and product-specific disclaimers, see the respective QIAGEN kit handbook or user manual. QIAGEN kit handbooks and user manuals are available at www.qiagen.com or can be requested from QIAGEN Technical Services or your local distributor.

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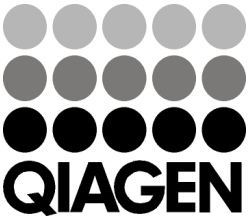

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