

qBiomarker Somatic Mutation PCR Array

Human FGFR Pathway

Cat. no. 337021 SMH-005

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)



Sample & Assay Technologies

Description

The fibroblast growth factor receptors (FGFRs) are receptors that bind fibroblast growth factors (FGFs), members of the largest family of growth factor ligands. The FGFRs and their downstream signaling cascades have been implicated in a diverse range of cellular processes including proliferation, apoptosis, survival, chemotaxis, cell adhesion, and differentiation. The importance of proper FGFR signaling is evident from genetic studies in human and mouse models demonstrating disruption of FGF signaling by mutations cause a variety of disorders including skeletal diseases, infertility, and cancer. The Human FGFR Pathway qBiomarker Somatic Mutation PCR Array is a translational research tool that allows rapid and accurate profiling of the somatic mutation status of FGFR genes and key genes in the FGFR signaling pathways: AKT, BRAF, KRAS, HRAS, NRAS, MEK1, PIK3CA, and PTEN. 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 FGFR Pathway qBiomarker Somatic Mutation PCR Array, with its comprehensive content coverage, is designed for studying mutations in the context of the FGFR 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 FGFR 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	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	1125	c.1790T>A	p.L597Q	SMPH001855A
A07	BRAF	1130	c.1798G>A	p.V600M	SMPH001846A
A08	BRAF	476	c.1799T>A	p.V600E	SMPH001828A
A09	BRAF	18443	c.1799T>C	p.V600A	SMPH001845A
A10	BRAF	6137	c.1799T>G	p.V600G	SMPH001912A
A11	FGFR1	601	c.374C>T	p.S125L	SMPH005498A
A12	FGFR1	12834	c.754C>A	p.P252T	SMPH005499A
B01	FGFR2	36903	c.755C>G	p.S252W	SMPH005503A
B02	FGFR2	36902	c.1647T>G	p.N549K	SMPH005506A
B03	FGFR3	714	c.742C>T	p.R248C	SMPH005552A
B04	FGFR3	716	c.1108G>T	p.G370C	SMPH005551A
B05	FGFR3	17461	c.1111A>T	p.S371C	SMPH005553A
B06	FGFR3	718	c.1118A>G	p.Y373C	SMPH005550A
B07	FGFR3	24842	c.1138G>A	p.G380R	SMPH005554A
B08	FGFR3	29438	c.1921G>A	p.D641N	SMPH005574A
B09	FGFR3	726	c.1948A>C	p.K650Q	SMPH005555A
B10	FGFR3	719	c.1948A>G	p.K650E	SMPH005557A
B11	FGFR3	731	c.1949A>C	p.K650T	SMPH005562A
B12	FGFR3	720	c.1949A>T	p.K650M	SMPH005558A
C01	FGFR3	24802	c.2089G>T	p.G697C	SMPH005556A
C02	KRAS	552	c.182A>G	p.Q61R	SMPH007553A
C03	KRAS	553	c.182A>T	p.Q61L	SMPH007544A
C04	KRAS	555	c.183A>T	p.Q61H	SMPH007546A
C05	KRAS	517	c.34G>A	p.G12S	SMPH007533A
C06	KRAS	518	c.34G>C	p.G12R	SMPH007534A
C07	KRAS	516	c.34G>T	p.G12C	SMPH007535A
C08	KRAS	521	c.35G>A	p.G12D	SMPH007531A
C09	KRAS	522	c.35G>C	p.G12A	SMPH007536A
C10	KRAS	520	c.35G>T	p.G12V	SMPH007537A
C11	KRAS	528	c.37G>A	p.G13S	SMPH007543A
C12	KRAS	529	c.37G>C	p.G13R	SMPH007549A
D01	KRAS	527	c.37G>T	p.G13C	SMPH007541A
D02	KRAS	532	c.38G>A	p.G13D	SMPH007538A
D03	KRAS	533	c.38G>C	p.G13A	SMPH007542A
D04	KRAS	534	c.38G>T	p.G13V	SMPH007545A
D05	KRAS	543	c.64C>A	p.Q22K	SMPH007565A
D06	HRAS	496	c.181C>A	p.Q61K	SMPH006505A
D07	HRAS	499	c.182A>G	p.Q61R	SMPH006502A
D08	HRAS	498	c.182A>T	p.Q61L	SMPH006503A
D09	HRAS	503	c.183G>C	p.Q61H	SMPH006519A
D10	HRAS	502	c.183G>T	p.Q61H	SMPH006516A
D11	HRAS	480	c.34G>A	p.G12S	SMPH006499A
D12	HRAS	482	c.34G>C	p.G12R	SMPH006506A
E01	HRAS	481	c.34G>T	p.G12C	SMPH006500A
E02	HRAS	484	c.35G>A	p.G12D	SMPH006507A
E03	HRAS	483	c.35G>T	p.G12V	SMPH006497A
E04	HRAS	487	c.37G>A	p.G13S	SMPH006515A
E05	HRAS	486	c.37G>C	p.G13R	SMPH006498A
E06	HRAS	488	c.37G>T	p.G13C	SMPH006511A
E07	NRAS	580	c.181C>A	p.Q61K	SMPH010073A
E08	NRAS	582	c.182A>C	p.Q61P	SMPH010096A
E09	NRAS	584	c.182A>G	p.Q61R	SMPH010069A
E10	NRAS	583	c.182A>T	p.Q61L	SMPH010076A
E11	NRAS	563	c.34G>A	p.G12S	SMPH010075A
E12	NRAS	564	c.35G>A	p.G12D	SMPH010071A
F01	NRAS	565	c.35G>C	p.G12A	SMPH010066A
F02	NRAS	569	c.37G>C	p.G13R	SMPH010074A
F03	NRAS	573	c.38G>A	p.G13D	SMPH010070A
F04	NRAS	575	c.38G>C	p.G13A	SMPH010084A
F05	NRAS	574	c.38G>T	p.G13V	SMPH010082A
F06	NRAS	577	c.52G>A	p.A18T	SMPH010105A
F07	MEK1	99000002	167A>C	Q56P	SMPH017164A
F08	MEK1	99000004	171G>T	K57N	SMPH017166A
F09	MEK1	99000001	199G>A	D67N	SMPH017163A
F10	MEK1	99000003	371C>T	P124L	SMPH017165A
F11	PIK3CA	759	c.1616C>G	p.P539R	SMPH010637A
F12	PIK3CA	760	c.1624G>A	p.E542K	SMPH010629A

Position	Gene	COSMIC ID	Nucleotide Change	Amino Acid Change	Assay Catalog #
G01	PIK3CA	763	c.1633G>A	p.E545K	SMPH010627A
G02	PIK3CA	764	c.1634A>G	p.E545G	SMPH010633A
G03	PIK3CA	765	c.1635G>T	p.E545D	SMPH010638A
G04	PIK3CA	775	c.3140A>G	p.H1047R	SMPH010630A
G05	PIK3CA	776	c.3140A>T	p.H1047L	SMPH010632A
G06	PTEN	5033	c.389G>A	p.R130Q	SMPH011486A
G07	PTEN	5219	c.388C>G	p.R130G	SMPH011480A
G08	PTEN	5152	c.388C>T	p.R130*	SMPH011473A
G09	PTEN	5089	c.517C>T	p.R173C	SMPH011475A
G10	PTEN	5039	c.518G>A	p.R173H	SMPH011472A
G11	PTEN	5154	c.697C>T	p.R233*	SMPH011506A
G12	AKT1	99000005	copy number	copy number	SMPH017167A
H01	BRAF	99000006	copy number	copy number	SMPH017168A
H02	FGFR1	99000018	copy number	copy number	SMPH017180A
H03	FGFR2	99000019	copy number	copy number	SMPH017181A
H04	FGFR3	99000020	copy number	copy number	SMPH017182A
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	SMPK	99000017	positive PCR control	positive PCR control	SMPH017179A
H12	SMPK	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	BRAF	FGFR1	FGFR1
B	FGFR2	FGFR2	FGFR3	FGFR3	FGFR3	FGFR3	FGFR3	FGFR3	FGFR3	FGFR3	FGFR3	FGFR3
C	FGFR3	KRAS	KRAS	KRAS	KRAS	KRAS	KRAS	KRAS	KRAS	KRAS	KRAS	KRAS
D	KRAS	KRAS	KRAS	KRAS	KRAS	HRAS	HRAS	HRAS	HRAS	HRAS	HRAS	HRAS
E	HRAS	HRAS	HRAS	HRAS	HRAS	HRAS	NRAS	NRAS	NRAS	NRAS	NRAS	NRAS
F	NRAS	NRAS	NRAS	NRAS	NRAS	NRAS	MEK1	MEK1	MEK1	MEK1	PIK3CA	PIK3CA
G	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PTEN	PTEN	PTEN	PTEN	PTEN	PTEN	AKT1
H	BRAF	FGFR1	FGFR2	FGFR3	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.

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