

qBiomarker Somatic Mutation PCR Array

Human ERBB2/HER2/neu Pathway

Cat. no. 337021 SMH-002

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

ERBB2 (also known as HER2 and neu) is a cell membrane surface-bound receptor tyrosine kinase and is normally involved in signal transduction pathways leading to cell growth and differentiation. ERBB2 is a member of the ERBB protein family, more commonly known as the epidermal growth factor receptor family. Recent studies show that ERBB2 kinase domain somatic mutations occur in common human cancers, such as lung adenocarcinomas, breast, gastric, and colorectal cancers, and suggest that alterations of ERBB2-mediated signaling pathways by ERBB2 mutations alone, or together with downstream mediator mutations, may contribute to the development of human cancers. The Human ERBB2 Pathway qBiomarker Somatic Mutation PCR Array is a translational research tool that allows rapid and accurate profiling of the somatic mutation status for the ERBB2/HER2/neu gene and several key downstream signaling genes, including the RAS-MAPK and PI3K signaling pathway components. 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 ERBB2/HER2/neu Pathway qBiomarker Somatic Mutation PCR Array, with its comprehensive content coverage, is designed for studying mutations in the context of the ERBB2 pathway and downstream effectors. This array covers 85 DNA sequence mutation assays designed to detect the most frequent, functionally verified, and clinically significant mutations in the ERBB2 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	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	KRAS	552	c.182A>G	p.Q61R	SMPH007553A
A12	KRAS	553	c.182A>T	p.Q61L	SMPH007544A
B01	KRAS	555	c.183A>T	p.Q61H	SMPH007546A
B02	KRAS	517	c.34G>A	p.G12S	SMPH007533A
B03	KRAS	518	c.34G>C	p.G12R	SMPH007534A
B04	KRAS	516	c.34G>T	p.G12C	SMPH007535A
B05	KRAS	521	c.35G>A	p.G12D	SMPH007531A
B06	KRAS	522	c.35G>C	p.G12A	SMPH007536A
B07	KRAS	520	c.35G>T	p.G12V	SMPH007537A
B08	KRAS	528	c.37G>A	p.G13S	SMPH007543A
B09	KRAS	529	c.37G>C	p.G13R	SMPH007549A
B10	KRAS	527	c.37G>T	p.G13C	SMPH007541A
B11	KRAS	532	c.38G>A	p.G13D	SMPH007538A
B12	KRAS	533	c.38G>C	p.G13A	SMPH007542A
C01	KRAS	534	c.38G>T	p.G13V	SMPH007545A
C02	KRAS	12703	c.57G>C	p.L19F	SMPH007583A
C03	KRAS	543	c.64C>A	p.Q22K	SMPH007565A
C04	HRAS	496	c.181C>A	p.Q61K	SMPH006505A
C05	HRAS	499	c.182A>G	p.Q61R	SMPH006502A
C06	HRAS	498	c.182A>T	p.Q61L	SMPH006503A
C07	HRAS	503	c.183G>C	p.Q61H	SMPH006519A
C08	HRAS	502	c.183G>T	p.Q61H	SMPH006516A
C09	HRAS	480	c.34G>A	p.G12S	SMPH006499A
C10	HRAS	482	c.34G>C	p.G12R	SMPH006506A
C11	HRAS	481	c.34G>T	p.G12C	SMPH006500A
C12	HRAS	484	c.35G>A	p.G12D	SMPH006507A
D01	HRAS	483	c.35G>T	p.G12V	SMPH006497A
D02	HRAS	487	c.37G>A	p.G13S	SMPH006515A
D03	HRAS	486	c.37G>C	p.G13R	SMPH006498A
D04	HRAS	488	c.37G>T	p.G13C	SMPH006511A
D05	NRAS	580	c.181C>A	p.Q61K	SMPH010073A
D06	NRAS	582	c.182A>C	p.Q61P	SMPH010096A
D07	NRAS	584	c.182A>G	p.Q61R	SMPH010069A
D08	NRAS	583	c.182A>T	p.Q61L	SMPH010076A
D09	NRAS	563	c.34G>A	p.G12S	SMPH010075A
D10	NRAS	564	c.35G>A	p.G12D	SMPH010071A
D11	NRAS	565	c.35G>C	p.G12A	SMPH010066A
D12	NRAS	569	c.37G>C	p.G13R	SMPH010074A
E01	NRAS	573	c.38G>A	p.G13D	SMPH010070A
E02	NRAS	575	c.38G>C	p.G13A	SMPH010084A
E03	NRAS	574	c.38G>T	p.G13V	SMPH010082A
E04	NRAS	577	c.52G>A	p.A18T	SMPH010105A
E05	MEK1	99000002	167A>C	Q56P	SMPH017164A
E06	MEK1	99000004	171G>T	K57N	SMPH017166A
E07	MEK1	99000001	199G>A	D67N	SMPH017163A
E08	MEK1	99000003	371C>T	P124L	SMPH017165A
E09	PIK3CA	759	c.1616C>G	p.P539R	SMPH010637A
E10	PIK3CA	760	c.1624G>A	p.E542K	SMPH010629A
E11	PIK3CA	763	c.1633G>A	p.E545K	SMPH010627A
E12	PIK3CA	764	c.1634A>G	p.E545G	SMPH010633A
F01	PIK3CA	765	c.1635G>T	p.E545D	SMPH010638A
F02	PIK3CA	775	c.3140A>G	p.H1047R	SMPH010630A
F03	PIK3CA	776	c.3140A>T	p.H1047L	SMPH010632A
F04	PIK3CA	12464	c.3204_3205insA	p.N1068fs*4	SMPH010770A
F05	PTEN	5817	c.389delG	p.R130fs*4	SMPH011514A
F06	PTEN	5033	c.389G>A	p.R130Q	SMPH011486A
F07	PTEN	5219	c.388C>G	p.R130G	SMPH011480A
F08	PTEN	5152	c.388C>T	p.R130*	SMPH011473A
F09	PTEN	5089	c.517C>T	p.R173C	SMPH011475A
F10	PTEN	5039	c.518G>A	p.R173H	SMPH011472A
F11	PTEN	5154	c.697C>T	p.R233*	SMPH011506A
F12	PTEN	4929	c.17_18delAA	p.K6fs*4	SMPH011501A

Position	Gene	COSMIC ID	Nucleotide Change	Amino Acid Change	Assay Catalog #
G01	PTEN	4986	c.741_742insA	p.P248fs*5	SMPH011468A
G02	PTEN	4898	c.950_953delTACT	p.V317fs*3	SMPH011511A
G03	ERBB2	683	c.2263_2264TT>CC	p.L755P	SMPH005131A
G04	ERBB2	13170	c.2305G>C	p.D769H	SMPH005135A
G05	ERBB2	682	c. 2322_2323insGCATAC GTGATG	p.M774_A775insAYVM	SMPH005128A
G06	ERBB2	12553	c.2326_2327insTGT	p.G776>VC	SMPH005156A
G07	ERBB2	685	c.2326G>A	p.G776S	SMPH005159A
G08	ERBB2	18609	c.2327G>T	p.G776V	SMPH005157A
G09	ERBB2	14062	c.2329G>T	p.V777L	SMPH005130A
G10	ERBB2	681	c. 2335_2336insCTGTGG GCT	p.S779_P780insVGS	SMPH005142A
G11	ERBB2	12556	c. 2340_2341insGGCTCC CCA	p.P780_Y781insGSP	SMPH005138A
G12	ERBB2	14065	c.2524G>A	p.V842I	SMPH005151A
H01	ERBB2	21985	c.2632C>T	p.H878Y	SMPH005133A
H02	AKT1	99000005	copy number	copy number	SMPH017167A
H03	BRAF	99000006	copy number	copy number	SMPH017168A
H04	KRAS	99000008	copy number	copy number	SMPH017170A
H05	HRAS	99000009	copy number	copy number	SMPH017171A
H06	NRAS	99000010	copy number	copy number	SMPH017172A
H07	MEK1	99000011	copy number	copy number	SMPH017173A
H08	PIK3CA	99000012	copy number	copy number	SMPH017174A
H09	PTEN	99000013	copy number	copy number	SMPH017175A
H10	ERBB2	99000016	copy number	copy number	SMPH017178A
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	BRAF	KRAS	KRAS
B	KRAS	KRAS	KRAS	KRAS	KRAS	KRAS	KRAS	KRAS	KRAS	KRAS	KRAS	KRAS
C	KRAS	KRAS	KRAS	HRAS	HRAS	HRAS	HRAS	HRAS	HRAS	HRAS	HRAS	HRAS
D	HRAS	HRAS	HRAS	HRAS	NRAS	NRAS	NRAS	NRAS	NRAS	NRAS	NRAS	NRAS
E	NRAS	NRAS	NRAS	NRAS	MEK1	MEK1	MEK1	MEK1	PIK3CA	PIK3CA	PIK3CA	PIK3CA
F	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PTEN	PTEN	PTEN	PTEN	PTEN	PTEN	PTEN	PTEN
G	PTEN	PTEN	ERBB2	ERBB2	ERBB2	ERBB2	ERBB2	ERBB2	ERBB2	ERBB2	ERBB2	ERBB2
H	ERBB2	AKT1	BRAF	KRAS	HRAS	NRAS	MEK1	PIK3CA	PTEN	ERBB2	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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