

qBiomarker Somatic Mutation PCR Array

Human Breast Cancer

Cat. no. 337021 SMH-020A

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 Human Breast Cancer qBiomarker Somatic Mutation PCR Array is a translational research tool that allows rapid, accurate, and comprehensive profiling of the top somatic mutations in human breast cancer samples in the following genes: AKT1, APC, BRAF, CDH1, CTNNB1, HRAS, KRAS, NRAS, PIK3CA, and TP53. These mutations 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 Breast Cancer qBiomarker Somatic Mutation PCR Array, with its comprehensive content coverage, is designed for the study of mutations in the context of breast cancer and has the potential for discovery and verification of drug target biomarkers for this cancer type and other cancer types in which these mutations have been identified. This array includes 84 DNA sequence mutation assays designed to detect the most frequent, functionally verified, and biologically significant mutations in human breast cancer. These mutations were chosen from curated, comprehensive somatic mutation databases and peer-reviewed scientific literature, and represent the most frequently recurring somatic mutations compiled from over 6000 breast cancer samples. 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	APC	13123	c.4729G>T	p.E1577*	SMPH001200A
A03	BRAF	450	c.1391G>T	p.G464V	SMPH001927A
A04	BRAF	476	c.1799T>A	p.V600E	SMPH001828A
A05	CDH1	19761	c.1196_1199delCTGA	p.T399fs*17	SMPH002533A
A06	CDH1	28934	c.240_241insGGTG	p.V82fs*13	SMPH002484A
A07	CDH1	19785	c. 786_794CACCCAGGA >T	p.T263fs*3	SMPH002457A
A08	CTNNB1	5677	c.98C>G	p.S33C	SMPH003963A
A09	HRAS	484	c.35G>A	p.G12D	SMPH006507A
A10	KRAS	518	c.34G>C	p.G12R	SMPH007534A
A11	KRAS	516	c.34G>T	p.G12C	SMPH007535A
A12	KRAS	521	c.35G>A	p.G12D	SMPH007531A
B01	KRAS	520	c.35G>T	p.G12V	SMPH007537A
B02	KRAS	532	c.38G>A	p.G13D	SMPH007538A
B03	NRAS	584	c.182A>G	p.Q61R	SMPH010069A
B04	PIK3CA	754	c.1035T>A	p.N345K	SMPH010733A
B05	PIK3CA	759	c.1616C>G	p.P539R	SMPH010637A
B06	PIK3CA	760	c.1624G>A	p.E542K	SMPH010629A
B07	PIK3CA	763	c.1633G>A	p.E545K	SMPH010627A
B08	PIK3CA	764	c.1634A>G	p.E545G	SMPH010633A
B09	PIK3CA	766	c.1636C>A	p.Q546K	SMPH010628A
B10	PIK3CA	6147	c.1636C>G	p.Q546E	SMPH010708A
B11	PIK3CA	12459	c.1637A>G	p.Q546R	SMPH010642A
B12	PIK3CA	21451	c.3075C>T	p.T1025T	SMPH010651A
C01	PIK3CA	775	c.3140A>G	p.H1047R	SMPH010630A
C02	PIK3CA	776	c.3140A>T	p.H1047L	SMPH010632A
C03	PIK3CA	12597	c.3145G>C	p.G1049R	SMPH010661A
C04	PIK3CA	12580	c.333G>C	p.K111N	SMPH010778A
C05	TP53	11073	c.1024C>T	p.R342*	SMPH015065A
C06	TP53	11582	c.395A>G	p.K132R	SMPH015094A
C07	TP53	10801	c.404G>A	p.C135Y	SMPH015154A
C08	TP53	43708	c.422G>A	p.C141Y	SMPH034537A
C09	TP53	11245	c.430C>T	p.Q144*	SMPH014994A
C10	TP53	10905	c.451C>T	p.P151S	SMPH015043A
C11	TP53	11476	c.452C>A	p.P151H	SMPH014969A
C12	TP53	10760	c.467G>C	p.R156P	SMPH015042A
D01	TP53	10670	c.469G>T	p.V157F	SMPH014984A
D02	TP53	11148	c.476C>T	p.A159V	SMPH014972A
D03	TP53	10808	c.488A>G	p.Y163C	SMPH014931A
D04	TP53	11084	c.517G>A	p.V173M	SMPH015105A
D05	TP53	43559	c.517G>T	p.V173L	SMPH034455A
D06	TP53	10648	c.524G>A	p.R175H	SMPH014921A
D07	TP53	10645	c.527G>T	p.C176F	SMPH014960A
D08	TP53	10768	c.535C>T	p.H179Y	SMPH015208A
D09	TP53	10889	c.536A>G	p.H179R	SMPH015072A
D10	TP53	10733	c.574C>T	p.Q192*	SMPH015161A
D11	TP53	10672	c.577C>T	p.H193Y	SMPH015192A
D12	TP53	10742	c.578A>G	p.H193R	SMPH014975A
E01	TP53	44571	c.581T>G	p.L194R	SMPH034553A
E02	TP53	11089	c.584T>C	p.I195T	SMPH015069A
E03	TP53	10705	c.586C>T	p.R196*	SMPH014949A
E04	TP53	43947	c.614A>G	p.Y205C	SMPH034421A
E05	TP53	10654	c.637C>T	p.R213*	SMPH014928A
E06	TP53	10758	c.659A>G	p.Y220C	SMPH014964A
E07	TP53	10725	c.701A>G	p.Y234C	SMPH014944A
E08	TP53	10731	c.707A>G	p.Y236C	SMPH015023A
E09	TP53	10834	c.711G>A	p.M237I	SMPH015199A
E10	TP53	11059	c.713G>A	p.C238Y	SMPH015089A
E11	TP53	43778	c.713G>T	p.C238F	SMPH034467A
E12	TP53	10709	c.722C>G	p.S241C	SMPH014933A
F01	TP53	10646	c.725G>A	p.C242Y	SMPH015220A
F02	TP53	6932	c.733G>A	p.G245S	SMPH014940A
F03	TP53	43606	c.734G>A	p.G245D	SMPH034441A
F04	TP53	11196	c.734G>T	p.G245V	SMPH014986A
F05	TP53	10656	c.742C>T	p.R248W	SMPH014929A
F06	TP53	10662	c.743G>A	p.R248Q	SMPH014902A
F07	TP53	6549	c.743G>T	p.R248L	SMPH015015A
F08	TP53	43629	c.745A>T	p.R249W	SMPH034698A
F09	TP53	10817	c.747G>T	p.R249S	SMPH015066A
F10	TP53	10867	c.797G>A	p.G266E	SMPH015003A

Position	Gene	COSMIC ID	Nucleotide Change	Amino Acid Change	Assay Catalog #
F11	TP53	10891	c.814G>A	p.V272M	SMPH014987A
F12	TP53	10659	c.817C>T	p.R273C	SMPH014907A
G01	TP53	10660	c.818G>A	p.R273H	SMPH014913A
G02	TP53	10701	c.824G>T	p.C275F	SMPH014991A
G03	TP53	10939	c.832C>T	p.P278S	SMPH014915A
G04	TP53	10887	c.833C>G	p.P278R	SMPH015178A
G05	TP53	10728	c.839G>A	p.R280K	SMPH015091A
G06	TP53	10724	c.839G>C	p.R280T	SMPH014901A
G07	TP53	10992	c.844C>G	p.R282G	SMPH015139A
G08	TP53	10704	c.844C>T	p.R282W	SMPH014941A
G09	TP53	10722	c.853G>A	p.E285K	SMPH014937A
G10	TP53	10726	c.856G>A	p.E286K	SMPH015084A
G11	TP53	10856	c.880G>T	p.E294*	SMPH015028A
G12	TP53	10710	c.892G>T	p.E298*	SMPH015116A
H01	AKT1	99000005	copy number	copy number	SMPH017167A
H02	APC	99000030	copy number	copy number	SMPH017192A
H03	BRAF	99000006	copy number	copy number	SMPH017168A
H04	CDH1	99000048	copy number	copy number	SMPH017210A
H05	CTNNB1	99000042	copy number	copy number	SMPH017204A
H06	HRAS	99000009	copy number	copy number	SMPH017171A
H07	KRAS	99000008	copy number	copy number	SMPH017170A
H08	NRAS	99000010	copy number	copy number	SMPH017172A
H09	PIK3CA	99000012	copy number	copy number	SMPH017174A
H10	TP53	99000041	copy number	copy number	SMPH017203A
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	APC	BRAF	BRAF	CDH1	CDH1	CDH1	CTNNB1	HRAS	KRAS	KRAS	KRAS
B	KRAS	KRAS	NRAS	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA
C	PIK3CA	PIK3CA	PIK3CA	PIK3CA	TP53	TP53	TP53	TP53	TP53	TP53	TP53	TP53
D	TP53	TP53	TP53	TP53	TP53	TP53	TP53	TP53	TP53	TP53	TP53	TP53
E	TP53	TP53	TP53	TP53	TP53	TP53	TP53	TP53	TP53	TP53	TP53	TP53
F	TP53	TP53	TP53	TP53	TP53	TP53	TP53	TP53	TP53	TP53	TP53	TP53
G	TP53	TP53	TP53	TP53	TP53	TP53	TP53	TP53	TP53	TP53	TP53	TP53
H	AKT1	APC	BRAF	CDH1	CTNNB1	HRAS	KRAS	NRAS	PIK3CA	TP53	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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