

qBiomarker Somatic Mutation PCR Array

Human Thyroid Cancer

Cat. no. 337021 SMH-028A

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 Thyroid 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 thyroid cancer samples in the following genes: AKT1, BRAF, CDKN2A, CTNNB1/beta-catenin, GNAS, HRAS, KRAS, MET, NRAS, PIK3CA, RET, and TSHR. 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 Thyroid Cancer qBiomarker Somatic Mutation PCR Array, with its comprehensive content coverage, is designed for the study of mutations in the context of thyroid 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 81 DNA sequence mutation assays designed to detect the most frequent, functionally verified, and biologically significant mutations in human thyroid 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 8400 thyroid 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	BRAF	476	c.1799T>A	p.V600E	SMPH001828A
A03	BRAF	478	c.1801A>G	p.K601E	SMPH001863A
A04	CDKN2A	12475	c.238C>T	p.R80*	SMPH002667A
A05	CTNNB1	5662	c.110C>T	p.S37F	SMPH003946A
A06	CTNNB1	5708	c.119C>T	p.T40I	SMPH003987A
A07	CTNNB1	5704	c.130C>T	p.P44S	SMPH004179A
A08	CTNNB1	5663	c.133T>C	p.S45P	SMPH003970A
A09	CTNNB1	5709	c.146A>G	p.K49R	SMPH004177A
A10	EGFR	6223	c.2235_2249del15	p.E746_A750del	SMPH004662A
A11	EGFR	6225	c.2236_2250del15	p.E746_A750del	SMPH004663A
A12	EGFR	6224	c.2573T>G	p.L858R	SMPH004661A
B01	GNAS	27887	c.601C>T	p.R201C	SMPH006160A
B02	GNAS	27895	c.602G>A	p.R201H	SMPH006159A
B03	GNAS	27900	c.681G>T	p.Q227H	SMPH006158A
B04	HRAS	496	c.181C>A	p.Q61K	SMPH006505A
B05	HRAS	499	c.182A>G	p.Q61R	SMPH006502A
B06	HRAS	503	c.183G>C	p.Q61H	SMPH006519A
B07	HRAS	480	c.34G>A	p.G12S	SMPH006499A
B08	HRAS	481	c.34G>T	p.G12C	SMPH006500A
B09	HRAS	484	c.35G>A	p.G12D	SMPH006507A
B10	HRAS	483	c.35G>T	p.G12V	SMPH006497A
B11	HRAS	486	c.37G>C	p.G13R	SMPH006498A
B12	HRAS	488	c.37G>T	p.G13C	SMPH006511A
C01	KRAS	552	c.182A>G	p.Q61R	SMPH007553A
C02	KRAS	517	c.34G>A	p.G12S	SMPH007533A
C03	KRAS	518	c.34G>C	p.G12R	SMPH007534A
C04	KRAS	516	c.34G>T	p.G12C	SMPH007535A
C05	KRAS	521	c.35G>A	p.G12D	SMPH007531A
C06	KRAS	522	c.35G>C	p.G12A	SMPH007536A
C07	KRAS	520	c.35G>T	p.G12V	SMPH007537A
C08	KRAS	528	c.37G>A	p.G13S	SMPH007543A
C09	KRAS	529	c.37G>C	p.G13R	SMPH007549A
C10	KRAS	532	c.38G>A	p.G13D	SMPH007538A
C11	KRAS	533	c.38G>C	p.G13A	SMPH007542A
C12	MET	707	c.3029C>T	p.T1010I	SMPH008297A
D01	NRAS	580	c.181C>A	p.Q61K	SMPH010073A
D02	NRAS	584	c.182A>G	p.Q61R	SMPH010069A
D03	NRAS	583	c.182A>T	p.Q61L	SMPH010076A
D04	NRAS	586	c.183A>C	p.Q61H	SMPH010072A
D05	NRAS	585	c.183A>T	p.Q61H	SMPH010068A
D06	NRAS	562	c.34G>T	p.G12C	SMPH010078A
D07	NRAS	564	c.35G>A	p.G12D	SMPH010071A
D08	NRAS	566	c.35G>T	p.G12V	SMPH010067A
D09	PIK3CA	28540	c.1564G>A	p.E522K	SMPH010658A
D10	PIK3CA	760	c.1624G>A	p.E542K	SMPH010629A
D11	PIK3CA	763	c.1633G>A	p.E545K	SMPH010627A
D12	PIK3CA	27133	c.1633G>C	p.E545Q	SMPH010709A
E01	PIK3CA	29095	c.3001C>A	p.L1001I	SMPH010662A
E02	PIK3CA	28544	c.3026G>A	p.G1009E	SMPH010741A
E03	PIK3CA	771	c.3073A>G	p.T1025A	SMPH010686A
E04	PIK3CA	21451	c.3075C>T	p.T1025T	SMPH010651A
E05	PIK3CA	29110	c.3115T>C	p.F1039L	SMPH010668A
E06	PIK3CA	775	c.3140A>G	p.H1047R	SMPH010630A
E07	PIK3CA	776	c.3140A>T	p.H1047L	SMPH010632A
E08	PIK3CA	777	c.3145G>A	p.G1049S	SMPH010659A
E09	PIK3CA	17446	c.3149G>A	p.G1050D	SMPH010664A
E10	PIK3CA	29108	c.3184A>G	p.I1062V	SMPH010667A
E11	RET	964	c.1888T>C	p.C630R	SMPH012913A
E12	RET	968	c. 1894_1899delGAGCTG	p.E632_L633del	SMPH012905A
F01	RET	1048	c.1894_1906>AGCT	p.E632_T636>SS	SMPH012944A
F02	RET	974	c.1901G>A	p.C634Y	SMPH012914A
F03	RET	975	c.1902C>G	p.C634W	SMPH012938A
F04	RET	21338	c.2304G>C	p.E768D	SMPH012916A
F05	RET	977	c.2647_2648GC>TT	p.A883F	SMPH012904A
F06	RET	965	c.2753T>C	p.M918T	SMPH012901A
F07	TSHR	26449	c.1358T>C	p.M453T	SMPH015424A
F08	TSHR	26450	c.1456A>T	p.I486F	SMPH015425A
F09	TSHR	26448	c.1535T>A	p.L512Q	SMPH015423A
F10	TSHR	26484	c.1535T>G	p.L512R	SMPH015437A
F11	TSHR	26451	c.1703T>C	p.I568T	SMPH015426A

Position	Gene	COSMIC ID	Nucleotide Change	Amino Acid Change	Assay Catalog #
F12	TSHR	26415	c.1856A>G	p.D619G	SMPH015411A
G01	TSHR	26416	c.1867G>T	p.A623S	SMPH015412A
G02	TSHR	26417	c.1868C>T	p.A623V	SMPH015413A
G03	TSHR	26453	c.1887G>C	p.L629F	SMPH015428A
G04	TSHR	26422	c.1887G>T	p.L629F	SMPH015420A
G05	TSHR	26423	c.1888A>C	p.I630L	SMPH015417A
G06	TSHR	26418	c.1895C>T	p.T632I	SMPH015414A
G07	TSHR	26420	c.1897G>C	p.D633H	SMPH015416A
G08	TSHR	26419	c.1897G>T	p.D633Y	SMPH015415A
G09	TSHR	26477	c.1899C>A	p.D633E	SMPH015430A
G10	AKT1	99000005	copy number	copy number	SMPH017167A
G11	BRAF	99000006	copy number	copy number	SMPH017168A
G12	CDKN2A	99000032	copy number	copy number	SMPH017194A
H01	CTNNB1	99000042	copy number	copy number	SMPH017204A
H02	EGFR	99000007	copy number	copy number	SMPH017169A
H03	GNAS	99000039	copy number	copy number	SMPH017201A
H04	HRAS	99000009	copy number	copy number	SMPH017171A
H05	KRAS	99000008	copy number	copy number	SMPH017170A
H06	MET	99000022	copy number	copy number	SMPH017184A
H07	NRAS	99000010	copy number	copy number	SMPH017172A
H08	PIK3CA	99000012	copy number	copy number	SMPH017174A
H09	RET	99000060	copy number	copy number	SMPH017222A
H10	TSHR	99000037	copy number	copy number	SMPH017199A
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	CDKN2A	CTNNB1	CTNNB1	CTNNB1	CTNNB1	CTNNB1	EGFR	EGFR	EGFR
B	GNAS	GNAS	GNAS	HRAS	HRAS	HRAS	HRAS	HRAS	HRAS	HRAS	HRAS	HRAS
C	KRAS	KRAS	KRAS	KRAS	KRAS	KRAS	KRAS	KRAS	KRAS	KRAS	KRAS	MET
D	NRAS	NRAS	NRAS	NRAS	NRAS	NRAS	NRAS	NRAS	PIK3CA	PIK3CA	PIK3CA	PIK3CA
E	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA	RET	RET
F	RET	RET	RET	RET	RET	RET	TSHR	TSHR	TSHR	TSHR	TSHR	TSHR
G	TSHR	TSHR	TSHR	TSHR	TSHR	TSHR	TSHR	TSHR	TSHR	AKT1	BRAF	CDKN2A
H	CTNNB1	EGFR	GNAS	HRAS	KRAS	MET	NRAS	PIK3CA	RET	TSHR	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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