

qBiomarker Somatic Mutation PCR Array

Human PI3K-AKT Signaling Pathway

Cat. no. 337021 SMH-014AA

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 PI3K-AKT Signaling Pathway qBiomarker Somatic Mutation PCR Array is a translational research tool that allows rapid and accurate profiling of the somatic mutation status for key genes in the PI3K-PTEN pathway: AKT1, AKT3, PIK3CA, PIK3R1, PIK3R5, PTEN, and STK11/LKB1. Components in this pathway are frequently mutated in human cancers (mutated in >30% solid tumor types) and therefore warrant extensive investigation to enhance the understanding of carcinogenesis and identify potential drug targets. 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 Human PI3K-AKT Signaling Pathway qBiomarker Somatic Mutation PCR Array, with its comprehensive content coverage, is designed for studying mutations in the context of the PI3K-Akt pathway and provides the potential to discover and verify drug target biomarkers for a variety of human cancers involving the PI3K-Akt signaling pathway and downstream effectors. This array includes 87 DNA sequence mutation assays designed to detect the most frequent, functionally verified, and biologically significant mutations in the PI3K-AKT 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	AKT1	36918	c.145G>A	p.E49K	SMPH000354A
A03	AKT3	13303	c.511G>A	p.G171R	SMPH000355A
A04	PIK3CA	754	c.1035T>A	p.N345K	SMPH010733A
A05	PIK3CA	756	c.1132T>C	p.C378R	SMPH010784A
A06	PIK3CA	12584	c.1357G>A	p.E453K	SMPH010773A
A07	PIK3CA	28540	c.1564G>A	p.E522K	SMPH010658A
A08	PIK3CA	759	c.1616C>G	p.P539R	SMPH010637A
A09	PIK3CA	760	c.1624G>A	p.E542K	SMPH010629A
A10	PIK3CA	17442	c.1624G>C	p.E542Q	SMPH010715A
A11	PIK3CA	762	c.1625A>T	p.E542V	SMPH010641A
A12	PIK3CA	763	c.1633G>A	p.E545K	SMPH010627A
B01	PIK3CA	27133	c.1633G>C	p.E545Q	SMPH010709A
B02	PIK3CA	764	c.1634A>G	p.E545G	SMPH010633A
B03	PIK3CA	765	c.1635G>T	p.E545D	SMPH010638A
B04	PIK3CA	766	c.1636C>A	p.Q546K	SMPH010628A
B05	PIK3CA	6147	c.1636C>G	p.Q546E	SMPH010708A
B06	PIK3CA	767	c.1637A>C	p.Q546P	SMPH010652A
B07	PIK3CA	12459	c.1637A>G	p.Q546R	SMPH010642A
B08	PIK3CA	25041	c.1637A>T	p.Q546L	SMPH010660A
B09	PIK3CA	778	c.2102A>C	p.H701P	SMPH010774A
B10	PIK3CA	27493	c.277C>T	p.R93W	SMPH010710A
B11	PIK3CA	29095	c.3001C>A	p.L1001I	SMPH010662A
B12	PIK3CA	21464	c.3044C>T	p.S1015F	SMPH010654A
C01	PIK3CA	12461	c.3062A>G	p.Y1021C	SMPH010682A
C02	PIK3CA	771	c.3073A>G	p.T1025A	SMPH010686A
C03	PIK3CA	12591	c.3127A>G	p.M1043V	SMPH010649A
C04	PIK3CA	773	c.3129G>T	p.M1043I	SMPH010695A
C05	PIK3CA	774	c.3139C>T	p.H1047Y	SMPH010696A
C06	PIK3CA	775	c.3140A>G	p.H1047R	SMPH010630A
C07	PIK3CA	776	c.3140A>T	p.H1047L	SMPH010632A
C08	PIK3CA	777	c.3145G>A	p.G1049S	SMPH010659A
C09	PIK3CA	12597	c.3145G>C	p.G1049R	SMPH010661A
C10	PIK3CA	27158	c.3146G>C	p.G1049A	SMPH010732A
C11	PIK3CA	17446	c.3149G>A	p.G1050D	SMPH010664A
C12	PIK3CA	17447	c.3155C>A	p.T1052K	SMPH010689A
D01	PIK3CA	29108	c.3184A>G	p.I1062V	SMPH010667A
D02	PIK3CA	17448	c.3194A>T	p.H1065L	SMPH010688A
D03	PIK3CA	12464	c.3204_3205insA	p.N1068fs*4	SMPH010770A
D04	PIK3CA	13570	c.331A>G	p.K111E	SMPH010757A
D05	PIK3R1	35827	c.1126G>A	p.G376R	SMPH010838A
D06	PIK3R1	42912	c.1690A>G	p.N564D	SMPH029982A
D07	PIK3R5	33390	c.82C>T	p.R28C	SMPH010853A
D08	PTEN	4936	c.1040_1041delTC	p.F347fs*13	SMPH012222A
D09	PTEN	4929	c.17_18delAA	p.K6fs*4	SMPH011501A
D10	PTEN	5109	c.302T>C	p.I101T	SMPH011988A
D11	PTEN	5266	c.314G>T	p.C105F	SMPH011654A
D12	PTEN	23643	c.315T>G	p.C105W	SMPH011520A
E01	PTEN	5199	c.334C>G	p.L112V	SMPH011516A
E02	PTEN	5078	c.367C>T	p.H123Y	SMPH011588A
E03	PTEN	5092	c.385G>A	p.G129R	SMPH011491A
E04	PTEN	5219	c.388C>G	p.R130G	SMPH011480A
E05	PTEN	5152	c.388C>T	p.R130*	SMPH011473A
E06	PTEN	5033	c.389G>A	p.R130Q	SMPH011486A
E07	PTEN	5277	c.389G>C	p.R130P	SMPH011620A
E08	PTEN	5216	c.389G>T	p.R130L	SMPH011591A
E09	PTEN	5294	c.416T>G	p.L139*	SMPH011794A
E10	PTEN	5034	c.425G>A	p.R142Q	SMPH011490A
E11	PTEN	5080	c.451G>A	p.A151T	SMPH012265A
E12	PTEN	5091	c.493G>A	p.G165R	SMPH011583A
F01	PTEN	5089	c.517C>T	p.R173C	SMPH011475A
F02	PTEN	5039	c.518G>A	p.R173H	SMPH011472A
F03	PTEN	5150	c.640C>T	p.Q214*	SMPH011797A
F04	PTEN	5295	c.686C>G	p.S229*	SMPH011679A
F05	PTEN	5154	c.697C>T	p.R233*	SMPH011506A
F06	PTEN	5292	c.703G>T	p.E235*	SMPH011869A
F07	PTEN	5888	c.723_724insTT	p.E242fs*15	SMPH011734A
F08	PTEN	5159	c.733C>T	p.Q245*	SMPH011578A
F09	PTEN	5111	c.737C>T	p.P246L	SMPH011997A
F10	PTEN	4986	c.741_742insA	p.P248fs*5	SMPH011468A
F11	PTEN	5312	c.895G>T	p.E299*	SMPH011515A
F12	PTEN	4898	c.950_953delTACT	p.V317fs*3	SMPH011511A

Position	Gene	COSMIC ID	Nucleotide Change	Amino Acid Change	Assay Catalog #
G01	PTEN	5008	c.955_956insA	p.T319fs*6	SMPH011510A
G02	PTEN	39513	c.1133_1136delGATA	p.R378fs*>25	SMPH011742A
G03	PTEN	4896	c.956_959delCTTT	p.T319fs*24	SMPH011710A
G04	PTEN	4990	c.968_969insA	p.N323fs*2	SMPH011534A
G05	STK11	12925	c.109C>T	p.Q37*	SMPH014255A
G06	STK11	21212	c.169delG	p.E57fs*7	SMPH014332A
G07	STK11	27322	c.180delC	p.Y60fs*1	SMPH014282A
G08	STK11	21384	c.196G>A	p.V66M	SMPH014263A
G09	STK11	20943	c.508C>T	p.Q170*	SMPH014238A
G10	STK11	21354	c.511G>A	p.G171S	SMPH014252A
G11	STK11	20871	c.837delC	p.P281fs*6	SMPH014256A
G12	STK11	21355	c.842C>T	p.P281L	SMPH014254A
H01	STK11	12924	c.842delC	p.P281fs*6	SMPH014248A
H02	STK11	29468	c.910C>T	p.R304W	SMPH014304A
H03	STK11	18652	c.996G>A	p.W332*	SMPH014333A
H04	AKT1	99000005	copy number	copy number	SMPH017167A
H05	AKT3	99000054	copy number	copy number	SMPH017216A
H06	PIK3CA	99000012	copy number	copy number	SMPH017174A
H07	PIK3R1	99000064	copy number	copy number	SMPH017226A
H08	PIK3R5	99000058	copy number	copy number	SMPH017220A
H09	PTEN	99000013	copy number	copy number	SMPH017175A
H10	STK11	99000038	copy number	copy number	SMPH017200A
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	AKT1	AKT3	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA
B	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA
C	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3CA
D	PIK3CA	PIK3CA	PIK3CA	PIK3CA	PIK3R1	PIK3R1	PIK3R5	PTEN	PTEN	PTEN	PTEN	PTEN
E	PTEN	PTEN	PTEN	PTEN	PTEN	PTEN	PTEN	PTEN	PTEN	PTEN	PTEN	PTEN
F	PTEN	PTEN	PTEN	PTEN	PTEN	PTEN	PTEN	PTEN	PTEN	PTEN	PTEN	PTEN
G	PTEN	PTEN	PTEN	PTEN	STK11	STK11	STK11	STK11	STK11	STK11	STK11	STK11
H	STK11	STK11	STK11	AKT1	AKT3	PIK3CA	PIK3R1	PIK3R5	PTEN	STK11	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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