# qBiomarker Somatic Mutation PCR Array

# Human EGFR Pathway

**Cat. no. 337021 SMH-001**

**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) |

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## Description

The Human EGFR Pathway qBiomarker Somatic Mutation PCR Array is a translational research tool that allows rapid and accurate profiling of the somatic mutation status for the epidermal growth factor receptor gene (EGFR; alias ErbB-1; HER1 in human) and 8 additional key genes in the EGFR pathway: AKT, BRAF, KRAS, HRAS, NRAS, MEK1, PIK3CA, and PTEN. Components in this pathway are frequently mutated in human cancers such as lung cancer, colorectal cancer, and glioblastoma multiforme, 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 EGFR Pathway qBiomarker Somatic Mutation PCR Array, with its comprehensive content coverage, is designed for studying mutations in the context of the EGFR pathway and downstream effectors. This array includes 85 DNA sequence mutation assays designed to detect the most frequent, functionally verified, and biologically significant mutations in the EGFR 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 | 1130 | c.1798G>A | p.V600M | SMPH001846A |
| A07 | BRAF | 476 | c.1799T>A | p.V600E | SMPH001828A |
| A08 | BRAF | 18443 | c.1799T>C | p.V600A | SMPH001845A |
| A09 | BRAF | 6137 | c.1799T>G | p.V600G | SMPH001912A |
| A10 | EGFR | 6252 | c.2155G>A | p.G719S | SMPH004671A |
| A11 | EGFR | 6253 | c.2155G>T | p.G719C | SMPH004672A |
| A12 | EGFR | 6239 | c.2156G>C | p.G719A | SMPH004704A |
| B01 | EGFR | 6223 | c.2235_2249del15 | p.E746_A750del | SMPH004662A |
| B02 | EGFR | 6225 | c.2236_2250del15 | p.E746_A750del | SMPH004663A |
| B03 | EGFR | 12728 | c.2236_2253del18 | p.E746_T751del | SMPH004907A |
| B04 | EGFR | 12678 | c.2237_2251del15 | p.E746_T751>A | SMPH004667A |
| B05 | EGFR | 12422 | c.2238_2248>GC | p.L747_A750>P | SMPH004768A |
| B06 | EGFR | 6220 | c.2238_2255del18 | p.E746_S752>D | SMPH004905A |
| B07 | EGFR | 6218 | c.2239_2247del9 | p.L747_E749del | SMPH004664A |
| B08 | EGFR | 6255 | c.2239_2256del18 | p.L747_S752del | SMPH004694A |
| B09 | EGFR | 12369 | c.2240_2254del15 | p.L747_T751del | SMPH004682A |
| B10 | EGFR | 6241 | c.2303G>T | p.S768I | SMPH004666A |
| B11 | EGFR | 12376 | c.<br>2307_2308insGCCAGC<br>GTG | p.V769_D770insASV | SMPH004736A |
| B12 | EGFR | 12378 | c.2310_2311insGGT | p.D770_N771insG | SMPH004900A |
| C01 | EGFR | 12377 | c.2319_2320insCAC | p.H773_V774insH | SMPH004899A |
| C02 | EGFR | 6240 | c.2369C>T | p.T790M | SMPH004665A |
| C03 | EGFR | 12366 | c.2572C>A | p.L858M | SMPH004880A |
| C04 | EGFR | 6224 | c.2573T>G | p.L858R | SMPH004661A |
| C05 | EGFR | 6213 | c.2582T>A | p.L861Q | SMPH004716A |
| C06 | KRAS | 552 | c.182A>G | p.Q61R | SMPH007553A |
| C07 | KRAS | 553 | c.182A>T | p.Q61L | SMPH007544A |
| C08 | KRAS | 555 | c.183A>T | p.Q61H | SMPH007546A |
| C09 | KRAS | 517 | c.34G>A | p.G12S | SMPH007533A |
| C10 | KRAS | 518 | c.34G>C | p.G12R | SMPH007534A |
| C11 | KRAS | 516 | c.34G>T | p.G12C | SMPH007535A |
| C12 | KRAS | 521 | c.35G>A | p.G12D | SMPH007531A |
| D01 | KRAS | 522 | c.35G>C | p.G12A | SMPH007536A |
| D02 | KRAS | 520 | c.35G>T | p.G12V | SMPH007537A |
| D03 | KRAS | 528 | c.37G>A | p.G13S | SMPH007543A |
| D04 | KRAS | 529 | c.37G>C | p.G13R | SMPH007549A |
| D05 | KRAS | 527 | c.37G>T | p.G13C | SMPH007541A |
| D06 | KRAS | 532 | c.38G>A | p.G13D | SMPH007538A |
| D07 | KRAS | 533 | c.38G>C | p.G13A | SMPH007542A |
| D08 | KRAS | 534 | c.38G>T | p.G13V | SMPH007545A |
| D09 | KRAS | 543 | c.64C>A | p.Q22K | SMPH007565A |
| D10 | HRAS | 496 | c.181C>A | p.Q61K | SMPH006505A |
| D11 | HRAS | 499 | c.182A>G | p.Q61R | SMPH006502A |
| D12 | HRAS | 498 | c.182A>T | p.Q61L | SMPH006503A |
| E01 | HRAS | 502 | c.183G>T | p.Q61H | SMPH006516A |
| E02 | HRAS | 480 | c.34G>A | p.G12S | SMPH006499A |
| E03 | HRAS | 482 | c.34G>C | p.G12R | SMPH006506A |
| E04 | HRAS | 481 | c.34G>T | p.G12C | SMPH006500A |
| E05 | HRAS | 484 | c.35G>A | p.G12D | SMPH006507A |
| E06 | HRAS | 483 | c.35G>T | p.G12V | SMPH006497A |
| E07 | HRAS | 486 | c.37G>C | p.G13R | SMPH006498A |
| E08 | HRAS | 488 | c.37G>T | p.G13C | SMPH006511A |
| E09 | NRAS | 580 | c.181C>A | p.Q61K | SMPH010073A |
| E10 | NRAS | 582 | c.182A>C | p.Q61P | SMPH010096A |
| E11 | NRAS | 584 | c.182A>G | p.Q61R | SMPH010069A |
| E12 | NRAS | 583 | c.182A>T | p.Q61L | SMPH010076A |
| F01 | NRAS | 563 | c.34G>A | p.G12S | SMPH010075A |
| F02 | NRAS | 564 | c.35G>A | p.G12D | SMPH010071A |
| F03 | NRAS | 565 | c.35G>C | p.G12A | SMPH010066A |
| F04 | NRAS | 569 | c.37G>C | p.G13R | SMPH010074A |
| F05 | NRAS | 573 | c.38G>A | p.G13D | SMPH010070A |
| F06 | NRAS | 575 | c.38G>C | p.G13A | SMPH010084A |
| F07 | NRAS | 574 | c.38G>T | p.G13V | SMPH010082A |
| F08 | NRAS | 577 | c.52G>A | p.A18T | SMPH010105A |
| F09 | MEK1 | 99000002 | 167A>C | Q56P | SMPH017164A |
| F10 | MEK1 | 99000004 | 171G>T | K57N | SMPH017166A |

| Position | Gene | COSMIC ID | Nucleotide Change | Amino Acid Change | Assay Catalog # |
|---|---|---|---|---|---|
| F11 | MEK1 | 99000001 | 199G>A | D67N | SMPH017163A |
| F12 | MEK1 | 99000003 | 371C>T | P124L | SMPH017165A |
| G01 | PIK3CA | 759 | c.1616C>G | p.P539R | SMPH010637A |
| G02 | PIK3CA | 760 | c.1624G>A | p.E542K | SMPH010629A |
| G03 | PIK3CA | 763 | c.1633G>A | p.E545K | SMPH010627A |
| G04 | PIK3CA | 764 | c.1634A>G | p.E545G | SMPH010633A |
| G05 | PIK3CA | 765 | c.1635G>T | p.E545D | SMPH010638A |
| G06 | PIK3CA | 775 | c.3140A>G | p.H1047R | SMPH010630A |
| G07 | PIK3CA | 776 | c.3140A>T | p.H1047L | SMPH010632A |
| G08 | PTEN | 5033 | c.389G>A | p.R130Q | SMPH011486A |
| G09 | PTEN | 5219 | c.388C>G | p.R130G | SMPH011480A |
| G10 | PTEN | 5152 | c.388C>T | p.R130* | SMPH011473A |
| G11 | PTEN | 5089 | c.517C>T | p.R173C | SMPH011475A |
| G12 | PTEN | 5039 | c.518G>A | p.R173H | SMPH011472A |
| H01 | PTEN | 5154 | c.697C>T | p.R233* | SMPH011506A |
| H02 | AKT1 | 99000005 | copy number | copy number | SMPH017167A |
| H03 | BRAF | 99000006 | copy number | copy number | SMPH017168A |
| H04 | EGFR | 99000007 | copy number | copy number | SMPH017169A |
| 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 | 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 | EGFR | EGFR | EGFR |
| **B** | EGFR | EGFR | EGFR | EGFR | EGFR | EGFR | EGFR | EGFR | EGFR | EGFR | EGFR | EGFR |
| **C** | EGFR | EGFR | EGFR | EGFR | EGFR | KRAS | KRAS | KRAS | KRAS | KRAS | KRAS | KRAS |
| **D** | KRAS | KRAS | KRAS | KRAS | KRAS | KRAS | KRAS | KRAS | KRAS | HRAS | HRAS | HRAS |
| **E** | HRAS | HRAS | HRAS | HRAS | HRAS | HRAS | HRAS | HRAS | NRAS | NRAS | NRAS | NRAS |
| **F** | NRAS | NRAS | NRAS | NRAS | NRAS | NRAS | NRAS | NRAS | MEK1 | MEK1 | MEK1 | MEK1 |
| **G** | PIK3CA | PIK3CA | PIK3CA | PIK3CA | PIK3CA | PIK3CA | PIK3CA | PTEN | PTEN | PTEN | PTEN | PTEN |
| **H** | PTEN | AKT1 | BRAF | EGFR | 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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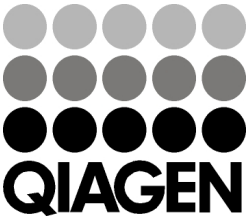


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