

# qBiomarker Somatic Mutation PCR Array

## Human PTEN Gene

Cat. no. 337021 SMH-809AA

**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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Sample & Assay Technologies

## Description

The Human PTEN Gene qBiomarker Somatic Mutation PCR Array allows the detection of 20 unique mutations in the human PTEN gene. PTEN, a tumor suppressor gene and protein phosphatase, regulates apoptosis and AKT signaling. Previous scientific reports have shown a strong association between mutations in the PTEN gene and glioblastoma, head-and-neck cancer, and malignant melanoma, as well as cancers of endometrium, prostate, and thyroid. The PTEN mutations found in cancer samples are predominately loss-of-function mutations due to either truncation (such as p.R233\* and p.R130\*) or point mutations disrupting its phosphatase activity (such as p.R130 and p.R173 mutations). The DNA sequence mutation assays in the array detect the most frequent mutations in PTEN compiled from over 2,000 reported cancer sample sequences. Each mutation assay is bench-tested for the sensitive detection of a low percentage of mutation-containing DNA in a background of wild-type genomic DNA. The 96-well format of this array profiles the mutation status of 4 samples, while the 384-well array format profiles 16 samples, and each set of plates includes qPCR mastermix. Using real-time PCR, research studies can easily and reliably detect a panel of mutations in the PTEN gene with this array.

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  $-20^{\circ}\text{C}$ . 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  $4^{\circ}\text{C}$ .

**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.

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## Assay table

| Position | Gene | COSMIC ID | Nucleotide Change    | Amino Acid Change    | Assay Catalog # |
|----------|------|-----------|----------------------|----------------------|-----------------|
| A01      | PTEN | 5219      | c.388C>G             | p.R130G              | SMPH011480A     |
| A02      | PTEN | 5154      | c.697C>T             | p.R233*              | SMPH011506A     |
| A03      | PTEN | 5152      | c.388C>T             | p.R130*              | SMPH011473A     |
| A04      | PTEN | 5033      | c.389G>A             | p.R130Q              | SMPH011486A     |
| A05      | PTEN | 4898      | c.950_953delTACT     | p.V317fs*3           | SMPH011511A     |
| A06      | PTEN | 5089      | c.517C>T             | p.R173C              | SMPH011475A     |
| A07      | PTEN | 4990      | c.968_969insA        | p.N323fs*2           | SMPH011534A     |
| A08      | PTEN | 5039      | c.518G>A             | p.R173H              | SMPH011472A     |
| A09      | PTEN | 5817      | c.389delG            | p.R130fs*4           | SMPH011514A     |
| A10      | PTEN | 4986      | c.741_742insA        | p.P248fs*5           | SMPH011468A     |
| A11      | PTEN | 4894      | c.952_955delCTTA     | p.L318fs*2           | SMPH011686A     |
| A12      | PTEN | 4929      | c.17_18delAA         | p.K6fs*4             | SMPH011501A     |
| B01      | PTEN | 4956      | c.227_228delAT       | p.Y76fs*1            | SMPH011617A     |
| B02      | PTEN | 5150      | c.640C>T             | p.Q214*              | SMPH011797A     |
| B03      | PTEN | 5216      | c.389G>T             | p.R130L              | SMPH011591A     |
| B04      | PTEN | 5888      | c.723_724insTT       | p.E242fs*15          | SMPH011734A     |
| B05      | PTEN | 5109      | c.302T>C             | p.I101T              | SMPH011988A     |
| B06      | PTEN | 5092      | c.385G>A             | p.G129R              | SMPH011491A     |
| B07      | PTEN | 5312      | c.895G>T             | p.E299*              | SMPH011515A     |
| B08      | PTEN | 5294      | c.416T>G             | p.L139*              | SMPH011794A     |
| B09      | PTEN | 99000013  | copy number          | copy number          | SMPH0117175A    |
| B10      | PTEN | 99000013  | copy number          | copy number          | SMPH0117175A    |
| B11      | SMPC | 99000017  | positive PCR control | positive PCR control | SMPH0117179A    |
| B12      | SMPC | 99000017  | positive PCR control | positive PCR control | SMPH0117179A    |
| C01      | PTEN | 5219      | c.388C>G             | p.R130G              | SMPH011480A     |
| C02      | PTEN | 5154      | c.697C>T             | p.R233*              | SMPH011506A     |
| C03      | PTEN | 5152      | c.388C>T             | p.R130*              | SMPH011473A     |
| C04      | PTEN | 5033      | c.389G>A             | p.R130Q              | SMPH011486A     |
| C05      | PTEN | 4898      | c.950_953delTACT     | p.V317fs*3           | SMPH011511A     |
| C06      | PTEN | 5089      | c.517C>T             | p.R173C              | SMPH011475A     |
| C07      | PTEN | 4990      | c.968_969insA        | p.N323fs*2           | SMPH011534A     |
| C08      | PTEN | 5039      | c.518G>A             | p.R173H              | SMPH011472A     |
| C09      | PTEN | 5817      | c.389delG            | p.R130fs*4           | SMPH011514A     |
| C10      | PTEN | 4986      | c.741_742insA        | p.P248fs*5           | SMPH011468A     |
| C11      | PTEN | 4894      | c.952_955delCTTA     | p.L318fs*2           | SMPH011686A     |
| C12      | PTEN | 4929      | c.17_18delAA         | p.K6fs*4             | SMPH011501A     |
| D01      | PTEN | 4956      | c.227_228delAT       | p.Y76fs*1            | SMPH011617A     |
| D02      | PTEN | 5150      | c.640C>T             | p.Q214*              | SMPH011797A     |
| D03      | PTEN | 5216      | c.389G>T             | p.R130L              | SMPH011591A     |
| D04      | PTEN | 5888      | c.723_724insTT       | p.E242fs*15          | SMPH011734A     |
| D05      | PTEN | 5109      | c.302T>C             | p.I101T              | SMPH011988A     |
| D06      | PTEN | 5092      | c.385G>A             | p.G129R              | SMPH011491A     |
| D07      | PTEN | 5312      | c.895G>T             | p.E299*              | SMPH011515A     |
| D08      | PTEN | 5294      | c.416T>G             | p.L139*              | SMPH011794A     |
| D09      | PTEN | 99000013  | copy number          | copy number          | SMPH0117175A    |
| D10      | PTEN | 99000013  | copy number          | copy number          | SMPH0117175A    |
| D11      | SMPC | 99000017  | positive PCR control | positive PCR control | SMPH0117179A    |
| D12      | SMPC | 99000017  | positive PCR control | positive PCR control | SMPH0117179A    |
| E01      | PTEN | 5219      | c.388C>G             | p.R130G              | SMPH011480A     |
| E02      | PTEN | 5154      | c.697C>T             | p.R233*              | SMPH011506A     |
| E03      | PTEN | 5152      | c.388C>T             | p.R130*              | SMPH011473A     |
| E04      | PTEN | 5033      | c.389G>A             | p.R130Q              | SMPH011486A     |
| E05      | PTEN | 4898      | c.950_953delTACT     | p.V317fs*3           | SMPH011511A     |
| E06      | PTEN | 5089      | c.517C>T             | p.R173C              | SMPH011475A     |
| E07      | PTEN | 4990      | c.968_969insA        | p.N323fs*2           | SMPH011534A     |
| E08      | PTEN | 5039      | c.518G>A             | p.R173H              | SMPH011472A     |
| E09      | PTEN | 5817      | c.389delG            | p.R130fs*4           | SMPH011514A     |
| E10      | PTEN | 4986      | c.741_742insA        | p.P248fs*5           | SMPH011468A     |
| E11      | PTEN | 4894      | c.952_955delCTTA     | p.L318fs*2           | SMPH011686A     |
| E12      | PTEN | 4929      | c.17_18delAA         | p.K6fs*4             | SMPH011501A     |
| F01      | PTEN | 4956      | c.227_228delAT       | p.Y76fs*1            | SMPH011617A     |
| F02      | PTEN | 5150      | c.640C>T             | p.Q214*              | SMPH011797A     |
| F03      | PTEN | 5216      | c.389G>T             | p.R130L              | SMPH011591A     |
| F04      | PTEN | 5888      | c.723_724insTT       | p.E242fs*15          | SMPH011734A     |
| F05      | PTEN | 5109      | c.302T>C             | p.I101T              | SMPH011988A     |
| F06      | PTEN | 5092      | c.385G>A             | p.G129R              | SMPH011491A     |
| F07      | PTEN | 5312      | c.895G>T             | p.E299*              | SMPH011515A     |
| F08      | PTEN | 5294      | c.416T>G             | p.L139*              | SMPH011794A     |
| F09      | PTEN | 99000013  | copy number          | copy number          | SMPH0117175A    |
| F10      | PTEN | 99000013  | copy number          | copy number          | SMPH0117175A    |
| F11      | SMPC | 99000017  | positive PCR control | positive PCR control | SMPH0117179A    |
| F12      | SMPC | 99000017  | positive PCR control | positive PCR control | SMPH0117179A    |

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| G03      | PTEN | 5152      | c.388C>T             | p.R130*              | SMPH011473A     |
| G04      | PTEN | 5033      | c.389G>A             | p.R130Q              | SMPH011486A     |
| G05      | PTEN | 4898      | c.950_953delTACT     | p.V317fs*3           | SMPH011511A     |
| G06      | PTEN | 5089      | c.517C>T             | p.R173C              | SMPH011475A     |
| G07      | PTEN | 4990      | c.968_969insA        | p.N323fs*2           | SMPH011534A     |
| G08      | PTEN | 5039      | c.518G>A             | p.R173H              | SMPH011472A     |
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| G10      | PTEN | 4986      | c.741_742insA        | p.P248fs*5           | SMPH011468A     |
| G11      | PTEN | 4894      | c.952_955delCTTA     | p.L318fs*2           | SMPH011686A     |
| G12      | PTEN | 4929      | c.17_18delAA         | p.K6fs*4             | SMPH011501A     |
| H01      | PTEN | 4956      | c.227_228delAT       | p.Y76fs*1            | SMPH011617A     |
| H02      | PTEN | 5150      | c.640C>T             | p.Q214*              | SMPH011797A     |
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| H05      | PTEN | 5109      | c.302T>C             | p.I101T              | SMPH011988A     |
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| H09      | PTEN | 99000013  | copy number          | copy number          | SMPH017175A     |
| 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 | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN |
| B | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | SMPC | SMPC |
| C | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN |
| D | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | SMPC | SMPC |
| E | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN |
| F | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | SMPC | SMPC |
| G | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN |
| H | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | PTEN | 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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