

# RT<sup>2</sup> Profiler PCR Array (96-Well Format and 384-Well [4 x 96] Format)

## Human Breast Cancer

Cat. no. 330231 PAHS-131ZA

For pathway expression analysis

| Format                                       | For use with the following real-time cyclers                                                                                                                                                                                                                                          |
|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RT <sup>2</sup> Profiler PCR Array, Format A | Applied Biosystems® models 5700, 7000, 7300, 7500, 7700, 7900HT, ViiA™ 7 (96-well block); Bio-Rad® models iCycler®, iQ™ 5, MyiQ™, MyiQ2; Bio-Rad/MJ Research Chromo4™; Eppendorf® Mastercycler® ep realplex models 2, 2s, 4, 4s; Stratagene® models Mx3005P®, Mx3000P®; Takara TP-800 |
| RT <sup>2</sup> Profiler PCR Array, Format C | Applied Biosystems models 7500 (Fast block), 7900HT (Fast block), StepOnePlus™, ViiA 7 (Fast block)                                                                                                                                                                                   |
| RT <sup>2</sup> Profiler PCR Array, Format D | Bio-Rad CFX96™; Bio-Rad/MJ Research models DNA Engine Opticon®, DNA Engine Opticon 2; Stratagene Mx4000®                                                                                                                                                                              |
| RT <sup>2</sup> Profiler PCR Array, Format E | Applied Biosystems models 7900HT (384-well block), ViiA 7 (384-well block); Bio-Rad CFX384™                                                                                                                                                                                           |
| RT <sup>2</sup> Profiler PCR Array, Format F | Roche® LightCycler® 480 (96-well block)                                                                                                                                                                                                                                               |
| RT <sup>2</sup> Profiler PCR Array, Format G | Roche LightCycler 480 (384-well block)                                                                                                                                                                                                                                                |
| RT <sup>2</sup> Profiler PCR Array, Format H | Fluidigm® BioMark™                                                                                                                                                                                                                                                                    |



Sample & Assay Technologies

## Description

The Human Breast Cancer RT<sup>2</sup> Profiler PCR Array profiles the expression of 84 key genes commonly involved in the dysregulation of signal transduction and other normal biological processes during breast carcinogenesis and in breast cancer cell lines. Breast cancer is a heterogeneous disease, classified molecularly into normal breast-like, luminal, HER2-like, and basal-like (also inaccurately called triple-negative) tumors. Intense research into carcinogenic mechanisms identified dysregulated genes, either via functional alterations due to somatic mutations, gene expression alterations, or altered posttranslational modifications. Carcinogenic changes to gene expression affect cellular signaling and the function of entire biological pathways. Focused research of these dysregulated genes and their coincidence with known tumor classification markers can identify the underlying molecular mechanisms of breast cancer initiation, progression or metastasis of this deadly disease. This array includes genes involved in tumor classification, signal transduction, and other commonly affected pathways such as angiogenesis, adhesion, proteolysis, cell cycle, and apoptosis. Using real-time PCR, your research study can easily and reliably analyze the expression of a focused panel of genes involved in the molecular mechanisms of breast oncogenesis with this array.

For further details, consult the *RT<sup>2</sup> Profiler PCR Array Handbook*.

## Shipping and storage

RT<sup>2</sup> Profiler PCR Arrays in formats A, C, D, E, F, and G are shipped at ambient temperature, on dry ice, or blue ice packs depending on destination and accompanying products. RT<sup>2</sup> Profiler PCR Arrays in format H are shipped on dry ice or blue ice packs.

For long term storage, keep plates at –20°C.

**Note:** Ensure that you have the correct RT<sup>2</sup> Profiler PCR Array format for your real-time cycler (see table above).

**Note:** Open the package and store the products appropriately immediately on receipt.

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# Array layout (96-well)

For 384-well 4 x 96 PCR arrays, genes are present in a staggered format. Refer to the *RT<sup>2</sup> Profiler PCR Array Handbook* for layout.

|   | 1       | 2     | 3      | 4     | 5      | 6      | 7     | 8      | 9      | 10       | 11     | 12    |
|---|---------|-------|--------|-------|--------|--------|-------|--------|--------|----------|--------|-------|
| A | ABCB1   | ABCG2 | ADAM23 | AKT1  | APC    | AR     | ATM   | BAD    | BCL2   | BIRC5    | BRCA1  | BRCA2 |
| B | CCNA1   | CCND1 | CCND2  | CCNE1 | CDH1   | CDH13  | CDK2  | CDKN1A | CDKN1C | CDKN2A   | CSF1   | CST6  |
| C | CTNNB1  | CTSD  | EGF    | EGFR  | ERBB2  | ESR1   | ESR2  | FOXA1  | GATA3  | GLI1     | GRB7   | GSTP1 |
| D | HIC1    | ID1   | IGF1   | IGF1R | IGFBP3 | IL6    | JUN   | KRT18  | KRT19  | KRT5     | KRT8   | MAPK1 |
| E | MAPK3   | MAPK8 | MGMT   | MKI67 | MLH1   | MMP2   | MMP9  | MUC1   | MYC    | NME1     | NOTCH1 | NR3C1 |
| F | PGR     | PLAU  | PRDM2  | PTEN  | PTGS2  | PYCARD | RARB  | RASSF1 | RB1    | SERPINE1 | SFN    | SFRP1 |
| G | SLC39A6 | SLIT2 | SNAI2  | SRC   | TFF3   | TGFB1  | THBS1 | TP53   | TP73   | TWIST1   | VEGFA  | XPB1  |
| H | ACTB    | B2M   | GAPDH  | HPRT1 | RPLP0  | HGDC   | RTC   | RTC    | RTC    | PPC      | PPC    | PPC   |

# Gene table: RT<sup>2</sup> Profiler PCR Array

| Position | UniGene   | GenBank   | Symbol | Description                                                                                                    |
|----------|-----------|-----------|--------|----------------------------------------------------------------------------------------------------------------|
| A01      | Hs.489033 | NM_000927 | ABCB1  | ATP-binding cassette, sub-family B (MDR/TAP), member 1                                                         |
| A02      | Hs.480218 | NM_004827 | ABCG2  | ATP-binding cassette, sub-family G (WHITE), member 2                                                           |
| A03      | Hs.591643 | NM_003812 | ADAM23 | ADAM metalloproteinase domain 23                                                                               |
| A04      | Hs.525622 | NM_005163 | AKT1   | V-akt murine thymoma viral oncogene homolog 1                                                                  |
| A05      | Hs.158932 | NM_000038 | APC    | Adenomatous polyposis coli                                                                                     |
| A06      | Hs.496240 | NM_000044 | AR     | Androgen receptor                                                                                              |
| A07      | Hs.367437 | NM_000051 | ATM    | Ataxia telangiectasia mutated                                                                                  |
| A08      | Hs.370254 | NM_004322 | BAD    | BCL2-associated agonist of cell death                                                                          |
| A09      | Hs.150749 | NM_000633 | BCL2   | B-cell CLL/lymphoma 2                                                                                          |
| A10      | Hs.728893 | NM_001168 | BIRC5  | Baculoviral IAP repeat containing 5                                                                            |
| A11      | Hs.194143 | NM_007294 | BRCA1  | Breast cancer 1, early onset                                                                                   |
| A12      | Hs.34012  | NM_000059 | BRCA2  | Breast cancer 2, early onset                                                                                   |
| B01      | Hs.417050 | NM_003914 | CCNA1  | Cyclin A1                                                                                                      |
| B02      | Hs.523852 | NM_053056 | CCND1  | Cyclin D1                                                                                                      |
| B03      | Hs.376071 | NM_001759 | CCND2  | Cyclin D2                                                                                                      |
| B04      | Hs.244723 | NM_001238 | CCNE1  | Cyclin E1                                                                                                      |
| B05      | Hs.461086 | NM_004360 | CDH1   | Cadherin 1, type 1, E-cadherin (epithelial)                                                                    |
| B06      | Hs.654386 | NM_001257 | CDH13  | Cadherin 13, H-cadherin (heart)                                                                                |
| B07      | Hs.19192  | NM_001798 | CDK2   | Cyclin-dependent kinase 2                                                                                      |
| B08      | Hs.370771 | NM_000389 | CDKN1A | Cyclin-dependent kinase inhibitor 1A (p21, Cip1)                                                               |
| B09      | Hs.106070 | NM_000076 | CDKN1C | Cyclin-dependent kinase inhibitor 1C (p57, Kip2)                                                               |
| B10      | Hs.512599 | NM_000077 | CDKN2A | Cyclin-dependent kinase inhibitor 2A (melanoma, p16, inhibits CDK4)                                            |
| B11      | Hs.591402 | NM_000757 | CSF1   | Colony stimulating factor 1 (macrophage)                                                                       |
| B12      | Hs.139389 | NM_001323 | CST6   | Cystatin E/M                                                                                                   |
| C01      | Hs.476018 | NM_001904 | CTNNB1 | Catenin (cadherin-associated protein), beta 1, 88kDa                                                           |
| C02      | Hs.121575 | NM_001909 | CTSD   | Cathepsin D                                                                                                    |
| C03      | Hs.419815 | NM_001963 | EGF    | Epidermal growth factor                                                                                        |
| C04      | Hs.488293 | NM_005228 | EGFR   | Epidermal growth factor receptor                                                                               |
| C05      | Hs.446352 | NM_004448 | ERBB2  | V-erb-b2 erythroblastic leukemia viral oncogene homolog 2, neuro/glioblastoma derived oncogene homolog (avian) |
| C06      | Hs.208124 | NM_000125 | ESR1   | Estrogen receptor 1                                                                                            |
| C07      | Hs.729020 | NM_001437 | ESR2   | Estrogen receptor 2 (ER beta)                                                                                  |
| C08      | Hs.163484 | NM_004496 | FOXA1  | Forkhead box A1                                                                                                |
| C09      | Hs.524134 | NM_002051 | GATA3  | GATA binding protein 3                                                                                         |
| C10      | Hs.632702 | NM_005269 | GLI1   | GLI family zinc finger 1                                                                                       |
| C11      | Hs.86859  | NM_005310 | GRB7   | Growth factor receptor-bound protein 7                                                                         |
| C12      | Hs.523836 | NM_000852 | GSTP1  | Glutathione S-transferase pi 1                                                                                 |
| D01      | Hs.72956  | NM_006497 | HIC1   | Hypermethylated in cancer 1                                                                                    |
| D02      | Hs.504609 | NM_002165 | ID1    | Inhibitor of DNA binding 1, dominant negative helix-loop-helix protein                                         |
| D03      | Hs.160562 | NM_000618 | IGF1   | Insulin-like growth factor 1 (somatomedin C)                                                                   |
| D04      | Hs.643120 | NM_000875 | IGF1R  | Insulin-like growth factor 1 receptor                                                                          |
| D05      | Hs.450230 | NM_000598 | IGFBP3 | Insulin-like growth factor binding protein 3                                                                   |
| D06      | Hs.654458 | NM_000600 | IL6    | Interleukin 6 (interferon, beta 2)                                                                             |
| D07      | Hs.714791 | NM_002228 | JUN    | Jun proto-oncogene                                                                                             |
| D08      | Hs.406013 | NM_000224 | KRT18  | Keratin 18                                                                                                     |

| Position | UniGene   | GenBank      | Symbol   | Description                                                                                   |
|----------|-----------|--------------|----------|-----------------------------------------------------------------------------------------------|
| D09      | Hs.654568 | NM_002276    | KRT19    | Keratin 19                                                                                    |
| D10      | Hs.433845 | NM_000424    | KRT5     | Keratin 5                                                                                     |
| D11      | Hs.533782 | NM_002273    | KRT8     | Keratin 8                                                                                     |
| D12      | Hs.431850 | NM_002745    | MAPK1    | Mitogen-activated protein kinase 1                                                            |
| E01      | Hs.861    | NM_002746    | MAPK3    | Mitogen-activated protein kinase 3                                                            |
| E02      | Hs.138211 | NM_002750    | MAPK8    | Mitogen-activated protein kinase 8                                                            |
| E03      | Hs.501522 | NM_002412    | MGMT     | O-6-methylguanine-DNA methyltransferase                                                       |
| E04      | Hs.689823 | NM_002417    | MKI67    | Antigen identified by monoclonal antibody Ki-67                                               |
| E05      | Hs.195364 | NM_000249    | MLH1     | MutL homolog 1, colon cancer, nonpolyposis type 2 (E. coli)                                   |
| E06      | Hs.513617 | NM_004530    | MMP2     | Matrix metalloproteinase 2 (gelatinase A, 72kDa gelatinase, 72kDa type IV collagenase)        |
| E07      | Hs.297413 | NM_004994    | MMP9     | Matrix metalloproteinase 9 (gelatinase B, 92kDa gelatinase, 92kDa type IV collagenase)        |
| E08      | Hs.89603  | NM_001018016 | MUC1     | Mucin 1, cell surface associated                                                              |
| E09      | Hs.202453 | NM_002467    | MYC      | V-myc myelocytomatosis viral oncogene homolog (avian)                                         |
| E10      | Hs.118638 | NM_000269    | NME1     | Non-metastatic cells 1, protein (NM23A) expressed in                                          |
| E11      | Hs.495473 | NM_017617    | NOTCH1   | Notch 1                                                                                       |
| E12      | Hs.122926 | NM_000176    | NR3C1    | Nuclear receptor subfamily 3, group C, member 1 (glucocorticoid receptor)                     |
| F01      | Hs.32405  | NM_000926    | PGR      | Progesterone receptor                                                                         |
| F02      | Hs.77274  | NM_002658    | PLAU     | Plasminogen activator, urokinase                                                              |
| F03      | Hs.371823 | NM_015866    | PRDM2    | PR domain containing 2, with ZNF domain                                                       |
| F04      | Hs.500466 | NM_000314    | PTEN     | Phosphatase and tensin homolog                                                                |
| F05      | Hs.196384 | NM_000963    | PTGS2    | Prostaglandin-endoperoxide synthase 2 (prostaglandin G/H synthase and cyclooxygenase)         |
| F06      | Hs.499094 | NM_013258    | PYCARD   | PYD and CARD domain containing                                                                |
| F07      | Hs.654490 | NM_000965    | RARB     | Retinoic acid receptor, beta                                                                  |
| F08      | Hs.476270 | NM_007182    | RASSF1   | Ras association (RalGDS/AF-6) domain family member 1                                          |
| F09      | Hs.408528 | NM_000321    | RB1      | Retinoblastoma 1                                                                              |
| F10      | Hs.414795 | NM_000602    | SERPINE1 | Serpin peptidase inhibitor, clade E (nexin, plasminogen activator inhibitor type 1), member 1 |
| F11      | Hs.523718 | NM_006142    | SFN      | Stratifin                                                                                     |
| F12      | Hs.713546 | NM_003012    | SFRP1    | Secreted frizzled-related protein 1                                                           |
| G01      | Hs.729034 | NM_012319    | SLC39A6  | Solute carrier family 39 (zinc transporter), member 6                                         |
| G02      | Hs.29802  | NM_004787    | SLIT2    | Slit homolog 2 (Drosophila)                                                                   |
| G03      | Hs.360174 | NM_003068    | SNAI2    | Snail homolog 2 (Drosophila)                                                                  |
| G04      | Hs.195659 | NM_005417    | SRC      | V-src sarcoma (Schmidt-Ruppin A-2) viral oncogene homolog (avian)                             |
| G05      | Hs.82961  | NM_003226    | TFF3     | Trefoil factor 3 (intestinal)                                                                 |
| G06      | Hs.645227 | NM_000660    | TGFB1    | Transforming growth factor, beta 1                                                            |
| G07      | Hs.164226 | NM_003246    | THBS1    | Thrombospondin 1                                                                              |
| G08      | Hs.654481 | NM_000546    | TP53     | Tumor protein p53                                                                             |
| G09      | Hs.697294 | NM_005427    | TP73     | Tumor protein p73                                                                             |
| G10      | Hs.66744  | NM_000474    | TWIST1   | Twist homolog 1 (Drosophila)                                                                  |
| G11      | Hs.73793  | NM_003376    | VEGFA    | Vascular endothelial growth factor A                                                          |
| G12      | Hs.437638 | NM_005080    | XBP1     | X-box binding protein 1                                                                       |
| H01      | Hs.520640 | NM_001101    | ACTB     | Actin, beta                                                                                   |
| H02      | Hs.534255 | NM_004048    | B2M      | Beta-2-microglobulin                                                                          |
| H03      | Hs.592355 | NM_002046    | GAPDH    | Glyceraldehyde-3-phosphate dehydrogenase                                                      |
| H04      | Hs.412707 | NM_000194    | HPRT1    | Hypoxanthine phosphoribosyltransferase 1                                                      |
| H05      | Hs.546285 | NM_001002    | RPLP0    | Ribosomal protein, large, P0                                                                  |
| H06      | N/A       | SA_00105     | HGDC     | Human Genomic DNA Contamination                                                               |
| H07      | N/A       | SA_00104     | RTC      | Reverse Transcription Control                                                                 |
| H08      | N/A       | SA_00104     | RTC      | Reverse Transcription Control                                                                 |
| H09      | N/A       | SA_00104     | RTC      | Reverse Transcription Control                                                                 |
| H10      | N/A       | SA_00103     | PPC      | Positive PCR Control                                                                          |
| H11      | N/A       | SA_00103     | PPC      | Positive PCR Control                                                                          |
| H12      | N/A       | SA_00103     | PPC      | Positive PCR Control                                                                          |

## Related products

For optimal performance, RT<sup>2</sup> Profiler PCR Arrays should be used together with the RT<sup>2</sup> First Strand Kit for cDNA synthesis and RT<sup>2</sup> SYBR<sup>®</sup> Green qPCR Mastermixes for PCR.

| Product                                                         | Contents                                                                                                                                                                                                                                                                                                                                                            | Cat. no. |
|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| RT <sup>2</sup> First Strand Kit (12)                           | Enzymes and reagents for cDNA synthesis                                                                                                                                                                                                                                                                                                                             | 330401   |
| RT <sup>2</sup> SYBR Green qPCR Mastermix (2)*                  | For 2 x 96 assays in 96-well plates; suitable for use with real-time cyclers that do not require a reference dye, including: Bio-Rad models CFX96, CFX384, DNA Engine Opticon 2; Bio-Rad/MJ Research Chromo4; Roche LightCycler 480 (96-well and 384-well); all other cyclers                                                                                       | 330500   |
| RT <sup>2</sup> SYBR Green ROX <sup>™</sup> qPCR Mastermix (2)* | For 2 x 96 assays in 96-well plates; suitable for use with the following real-time cyclers: Applied Biosystems models 5700, 7000, 7300, 7500 [Standard and FAST], 7700, 7900HT 96-well block [Standard and FAST] and 384-well block, StepOnePlus; Eppendorf Mastercycler ep realplex models 2, 2S, 4, 4S; Stratagene models Mx3000P, Mx3005P, Mx4000; Takara TP-800 | 330520   |
| RT <sup>2</sup> SYBR Green Fluor qPCR Mastermix (2)*            | For 2 x 96 assays in 96-well plates; suitable for use with the following real-time cyclers: Bio-Rad models iCycler, iQ5, MyiQ, MyiQ2                                                                                                                                                                                                                                | 330510   |

\* Larger kit sizes available; please inquire.

RT<sup>2</sup> Profiler PCR Array products are intended for molecular biology applications. These products are not intended for the diagnosis, prevention, or treatment of a disease.

For up-to-date licensing information and product-specific disclaimers, see the respective QIAGEN kit handbook or user manual. QIAGEN kit handbooks and user manuals are available at [www.qiagen.com](http://www.qiagen.com) or can be requested from QIAGEN Technical Services or your local distributor.

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