

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

## Human Cell Lineage Identification

Cat. no. 330231 PAHS-508ZA

For pathway expression analysis

| Format                                       | For use with the following real-time cyclers   |
|--|--|
| RT <sup>2</sup> Profiler PCR Array, Format A | Applied Biosystems <sup>®</sup> models 5700, 7000, 7300, 7500, 7700, 7900HT, ViiA™ 7 (96-well block); Bio-Rad <sup>®</sup> models iCycler <sup>®</sup> , iQ™ 5, MyiQ™, MyiQ2; Bio-Rad/MJ Research Chromo4™; Eppendorf <sup>®</sup> Mastercycler <sup>®</sup> ep realplex models 2, 2s, 4, 4s; Stratagene <sup>®</sup> models Mx3005P <sup>®</sup> , Mx3000P <sup>®</sup> ; 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 <sup>®</sup> , DNA Engine Opticon 2; Stratagene Mx4000 <sup>®</sup>  |
| 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 <sup>®</sup> LightCycler <sup>®</sup> 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 <sup>®</sup> BioMark™   |



Sample & Assay Technologies

## Description

The Human Cell Lineage Identification RT<sup>2</sup> Profiler PCR Array profiles the expression of 84 key genes for cellular differentiation. During embryonic development, pluripotent stem cells differentiate into three germ layers: ectoderm, mesoderm and endoderm. These germ layers eventually differentiate into multipotent stem cells (progenitors), which progress into terminally differentiated cells. These developmental processes require tightly regulated and carefully timed gene expression changes. Analysis of these genes can suggest the identity of an intermediately or terminally differentiated cell, and/or the mechanism of a studied differentiation process. This array contains gene markers for specific cell types throughout cellular lineage progression, including pluripotent stem cells, progenitor cells from each of the three germ layers, and terminally differentiated cells. Using real-time PCR, your research study can easily and reliably analyze the expression of a focused panel of cellular lineage progression markers 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  $-20^{\circ}\text{C}$ .

**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 | ALB     | APOH   | AQP1    | BMP4   | CCR5  | CD34  | CD3E    | CD79A   | CHAT   | COL10A1 | COMP  | CPA1    |
| B | CTSK    | DCN    | DCX     | DNMT3B | DPP4  | ENO1  | FABP7   | FGF5    | FOXA1  | FOXO3   | FOXP1 | G6PC    |
| C | GAD1    | GAD2   | GALC    | GATA1  | GATA2 | GATA6 | GBX2    | GDF3    | GFAP   | HAND1   | HAND2 | HES5    |
| D | HNF4A   | IBSP   | IGF2    | INS    | ITGB4 | KRT10 | KRT14   | KRT19   | LEFTY1 | MAP3K12 | MIOX  | MIXL1   |
| E | MSLN    | MYH1   | MYH11   | MYH7   | MYL3  | NANOG | NEUROD1 | NEUROG2 | NKX2-2 | NPPA    | OLIG2 | OTX2    |
| F | PDGFRA  | PODXL  | POU4F2  | POU5F1 | PROM1 | PTCRA | RCVRN   | RUNX1   | RYR2   | SFTPB   | SFTPD | SLC17A6 |
| G | SLC17A7 | SLC2A2 | SLC32A1 | SMTN   | SOX17 | SOX2  | SOX7    | T       | TAT    | TYR     | ZFP42 | ZIC1    |
| 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.418167 | NM_000477    | ALB     | Albumin  |
| A02      | Hs.445358 | NM_000042    | APOH    | Apolipoprotein H (beta-2-glycoprotein I)                       |
| A03      | Hs.76152  | NM_198098    | AQP1    | Aquaporin 1 (Colton blood group)                               |
| A04      | Hs.68879  | NM_130851    | BMP4    | Bone morphogenetic protein 4                                   |
| A05      | Hs.450802 | NM_000579    | CCR5    | Chemokine (C-C motif) receptor 5                               |
| A06      | Hs.374990 | NM_001773    | CD34    | CD34 molecule  |
| A07      | Hs.3003   | NM_000733    | CD3E    | CD3e molecule, epsilon (CD3-TCR complex)                       |
| A08      | Hs.631567 | NM_001783    | CD79A   | CD79a molecule, immunoglobulin-associated alpha                |
| A09      | Hs.302002 | NM_020985    | CHAT    | Choline O-acetyltransferase                                    |
| A10      | Hs.520339 | NM_000493    | COL10A1 | Collagen, type X, alpha 1                                      |
| A11      | Hs.1584   | NM_000095    | COMP    | Cartilage oligomeric matrix protein                            |
| A12      | Hs.2879   | NM_001868    | CPA1    | Carboxypeptidase A1 (pancreatic)                               |
| B01      | Hs.632466 | NM_000396    | CTSK    | Cathepsin K  |
| B02      | Hs.728830 | NM_001920    | DCN     | Decorin  |
| B03      | Hs.34780  | NM_178153    | DCX     | Doublecortin   |
| B04      | Hs.643024 | NM_006892    | DNMT3B  | DNA (cytosine-5)-methyltransferase 3 beta                      |
| B05      | Hs.368912 | NM_001935    | DPP4    | Dipeptidyl-peptidase 4   |
| B06      | Hs.517145 | NM_001428    | ENO1    | Enolase 1, (alpha)   |
| B07      | Hs.26770  | NM_001446    | FABP7   | Fatty acid binding protein 7, brain                            |
| B08      | Hs.37055  | NM_004464    | FGF5    | Fibroblast growth factor 5                                     |
| B09      | Hs.163484 | NM_004496    | FOXA1   | Forkhead box A1  |
| B10      | Hs.546573 | NM_012183    | FOXO3   | Forkhead box D3  |
| B11      | Hs.695962 | NM_005249    | FOXP1   | Forkhead box G1  |
| B12      | Hs.212293 | NM_000151    | G6PC    | Glucose-6-phosphatase, catalytic subunit                       |
| C01      | Hs.420036 | NM_000817    | GAD1    | Glutamate decarboxylase 1 (brain, 67kDa)                       |
| C02      | Hs.231829 | NM_000818    | GAD2    | Glutamate decarboxylase 2 (pancreatic islets and brain, 65kDa) |
| C03      | Hs.513439 | NM_000153    | GALC    | Galactosylceramidase   |
| C04      | Hs.765    | NM_002049    | GATA1   | GATA binding protein 1 (globin transcription factor 1)         |
| C05      | Hs.367725 | NM_032638    | GATA2   | GATA binding protein 2   |
| C06      | Hs.514746 | NM_005257    | GATA6   | GATA binding protein 6   |
| C07      | Hs.184945 | NM_001485    | GBX2    | Gastrulation brain homeobox 2                                  |
| C08      | Hs.86232  | NM_020634    | GDF3    | Growth differentiation factor 3                                |
| C09      | Hs.514227 | NM_002055    | GFAP    | Glial fibrillary acidic protein                                |
| C10      | Hs.152531 | NM_004821    | HAND1   | Heart and neural crest derivatives expressed 1                 |
| C11      | Hs.388245 | NM_021973    | HAND2   | Heart and neural crest derivatives expressed 2                 |
| C12      | Hs.57971  | NM_001010926 | HES5    | Hairy and enhancer of split 5 (Drosophila)                     |
| D01      | Hs.116462 | NM_178849    | HNF4A   | Hepatocyte nuclear factor 4, alpha                             |
| D02      | Hs.518726 | NM_004967    | IBSP    | Integrin-binding sialoprotein                                  |
| D03      | Hs.523414 | NM_000612    | IGF2    | Insulin-like growth factor 2 (somatomedin A)                   |
| D04      | Hs.654579 | NM_000207    | INS     | Insulin  |
| D05      | Hs.632226 | NM_000213    | ITGB4   | Integrin, beta 4   |
| D06      | Hs.99936  | NM_000421    | KRT10   | Keratin 10   |
| D07      | Hs.654380 | NM_000526    | KRT14   | Keratin 14   |
| D08      | Hs.654568 | NM_002276    | KRT19   | Keratin 19   |
| D09      | Hs.656214 | NM_020997    | LEFTY1  | Left-right determination factor 1                              |

| Position | UniGene   | GenBank   | Symbol  | Description   |
|----------|-----------|-----------|---------|---|
| D10      | Hs.713539 | NM_006301 | MAP3K12 | Mitogen-activated protein kinase kinase kinase 12                                       |
| D11      | Hs.129227 | NM_017584 | MIOX    | Myo-inositol oxygenase  |
| D12      | Hs.710576 | NM_031944 | MIXL1   | Mix paired-like homeobox  |
| E01      | Hs.408488 | NM_005823 | MSLN    | Mesothelin  |
| E02      | Hs.689619 | NM_005963 | MYH1    | Myosin, heavy chain 1, skeletal muscle, adult   |
| E03      | Hs.460109 | NM_022844 | MYH11   | Myosin, heavy chain 11, smooth muscle   |
| E04      | Hs.929    | NM_000257 | MYH7    | Myosin, heavy chain 7, cardiac muscle, beta   |
| E05      | Hs.517939 | NM_000258 | MYL3    | Myosin, light chain 3, alkali; ventricular, skeletal, slow                              |
| E06      | Hs.661360 | NM_024865 | NANOG   | Nanog homeobox  |
| E07      | Hs.574626 | NM_002500 | NEUROD1 | Neurogenic differentiation 1  |
| E08      | Hs.567563 | NM_024019 | NEUROG2 | Neurogenin 2  |
| E09      | Hs.516922 | NM_002509 | NKX2-2  | NK2 homeobox 2  |
| E10      | Hs.75640  | NM_006172 | NPPA    | Natriuretic peptide A   |
| E11      | Hs.176977 | NM_005806 | OLIG2   | Oligodendrocyte lineage transcription factor 2  |
| E12      | Hs.288655 | NM_021728 | OTX2    | Orthodenticle homeobox 2  |
| F01      | Hs.74615  | NM_006206 | PDGFRA  | Platelet-derived growth factor receptor, alpha polypeptide                              |
| F02      | Hs.690098 | NM_005397 | PODXL   | Podocalyxin-like  |
| F03      | Hs.266    | NM_004575 | POU4F2  | POU class 4 homeobox 2  |
| F04      | Hs.249184 | NM_002701 | POU5F1  | POU class 5 homeobox 1  |
| F05      | Hs.614734 | NM_006017 | PROM1   | Prominin 1  |
| F06      | Hs.169002 | NM_138296 | PTCRA   | Pre T-cell antigen receptor alpha   |
| F07      | Hs.80539  | NM_002903 | RCVRN   | Recoverin   |
| F08      | Hs.149261 | NM_001754 | RUNX1   | Runt-related transcription factor 1   |
| F09      | Hs.109514 | NM_001035 | RYR2    | Ryanodine receptor 2 (cardiac)  |
| F10      | Hs.512690 | NM_000542 | SFTPB   | Surfactant protein B  |
| F11      | Hs.253495 | NM_003019 | SFTPD   | Surfactant protein D  |
| F12      | Hs.242821 | NM_020346 | SLC17A6 | Solute carrier family 17 (sodium-dependent inorganic phosphate cotransporter), member 6 |
| G01      | Hs.375616 | NM_020309 | SLC17A7 | Solute carrier family 17 (sodium-dependent inorganic phosphate cotransporter), member 7 |
| G02      | Hs.167584 | NM_000340 | SLC2A2  | Solute carrier family 2 (facilitated glucose transporter), member 2                     |
| G03      | Hs.179080 | NM_080552 | SLC32A1 | Solute carrier family 32 (GABA vesicular transporter), member 1                         |
| G04      | Hs.149098 | NM_006932 | SMTN    | Smoothelin  |
| G05      | Hs.98367  | NM_022454 | SOX17   | SRY (sex determining region Y)-box 17   |
| G06      | Hs.518438 | NM_003106 | SOX2    | SRY (sex determining region Y)-box 2  |
| G07      | Hs.709543 | NM_031439 | SOX7    | SRY (sex determining region Y)-box 7  |
| G08      | Hs.389457 | NM_003181 | T       | T, brachyury homolog (mouse)  |
| G09      | Hs.161640 | NM_000353 | TAT     | Tyrosine aminotransferase   |
| G10      | Hs.503555 | NM_000372 | TYR     | Tyrosinase (oculocutaneous albinism IA)   |
| G11      | Hs.335787 | NM_174900 | ZFP42   | Zinc finger protein 42 homolog (mouse)  |
| G12      | Hs.598590 | NM_003412 | ZIC1    | Zic family member 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™ 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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