

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

## Rat Hedgehog Signaling Pathway

Cat. no. 330231 PARN-078ZA

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 Rat Hedgehog Signaling RT<sup>2</sup> Profiler PCR Array profiles the expression of 84 key genes involved in the hedgehog signaling pathway. The hedgehog family members, including Sonic hedgehog (Shh), are the most well-known morphogens involved in the developmental pattern formation of various organs, such as the nervous system, muscle, the heart and the lungs. Hedgehog signaling has also been implicated in the development of several Rat cancers. The array includes hedgehog family members, hedgehog receptors, and other associated proteins. The array also includes key genes involved in cell differentiation and multi-cellular organism development. Using real-time PCR, you can easily and reliably analyze expression of a focused panel of genes related to hedgehog signaling 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 | Bcl2   | Bmp2    | Bmp4   | Bmp5  | Bmp6   | Bmp7   | Bmp8a | Boc   | Btrc   | Cd1g2 | Cdon   | Csnk1a1 |
| B | Csnk1e | Csnk1g1 | Ctnnb1 | Dchs1 | Dhh    | Disp1  | Disp2 | ErbB4 | Fbxw11 | Fgf9  | Fgfr3  | Fkbp8   |
| C | Foxe1  | Gli1    | Gli2   | Gli3  | Grem1  | Gsk3b  | Hhat  | Hhip  | Irf52  | Igf2  | Ilhh   | Kctd11  |
| D | Lats1  | Lats2   | Lrp2   | Mapk1 | Mdm2   | Mobk1a | Mtss1 | Nf2   | Numb   | Otx2  | Pdgfra | Prkaca  |
| E | Prkacb | Ptch1   | Ptch2  | Rab23 | Rassf4 | Runx2  | Sfrp1 | Shh   | Shox2  | Smo   | Slk3   | Sufu    |
| F | Tp53   | Vegfa   | Wif1   | Wnt1  | Wnt10a | Wnt10b | Wnt11 | Wnt16 | Wnt2   | Wnt2b | Wnt3   | Wnt3a   |
| G | Wnt4   | Wnt5a   | Wnt5b  | Wnt6  | Wnt7a  | Wnt7b  | Wnt8a | Wnt8b | Wnt9a  | Wnt9b | Zic1   | Zic2    |
| H | Actb   | B2m     | Hprt1  | Ldha  | Rplp1  | RGDC   | RTC   | RTC   | RTC    | PPC   | PPC    | PPC     |

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

| Position | UniGene   | GenBank      | Symbol  | Description  |
|----------|-----------|--------------|---------|--|
| A01      | Rn.9996   | NM_016993    | Bcl2    | B-cell CLL/lymphoma 2  |
| A02      | Rn.90931  | NM_017178    | Bmp2    | Bone morphogenetic protein 2   |
| A03      | Rn.10318  | NM_012827    | Bmp4    | Bone morphogenetic protein 4   |
| A04      | Rn.135799 | NM_001108168 | Bmp5    | Bone morphogenetic protein 5   |
| A05      | Rn.40476  | NM_013107    | Bmp6    | Bone morphogenetic protein 6   |
| A06      | Rn.18030  | XM_342591    | Bmp7    | Bone morphogenetic protein 7   |
| A07      | Rn.126011 | NM_001109432 | Bmp8a   | Bone morphogenetic protein 8a  |
| A08      | Rn.51907  | NM_001108317 | Boc     | Biregional cell adhesion molecule-related/down-regulated by oncogenes (Cdon) binding protein |
| A09      | Rn.21800  | NM_001007148 | Btrc    | Beta-transducin repeat containing  |
| A10      | Rn.115253 | NM_153624    | Cd1g2   | Cd1g2 protein  |
| A11      | Rn.10818  | NM_017358    | Cdon    | Cdon homolog (mouse)   |
| A12      | Rn.23810  | NM_053615    | Csnk1a1 | Casein kinase 1, alpha 1   |
| B01      | Rn.203721 | NM_031617    | Csnk1e  | Casein kinase 1, epsilon   |
| B02      | Rn.10082  | NM_022288    | Csnk1g1 | Casein kinase 1, gamma 1   |
| B03      | Rn.112601 | NM_053357    | Ctnnb1  | Catenin (cadherin associated protein), beta 1  |
| B04      | Rn.15768  | NM_001107544 | Dchs1   | Dachsous 1 (Drosophila)  |
| B05      | Rn.198251 | NM_053367    | Dhh     | Desert hedgehog homolog (Drosophila)   |
| B06      | Rn.41748  | NM_001105983 | Disp1   | Dispatched homolog 1 (Drosophila)  |
| B07      | Rn.19932  | NM_001107759 | Disp2   | Dispatched homolog 2 (Drosophila)  |
| B08      | Rn.163078 | NM_021687    | ErbB4   | V-erb-a erythroblastic leukemia viral oncogene homolog 4 (avian)                             |
| B09      | Rn.159760 | NM_001106993 | Fbxw11  | F-box and WD repeat domain containing 11   |
| B10      | Rn.25174  | NM_012952    | Fgf9    | Fibroblast growth factor 9   |
| B11      | Rn.23671  | NM_053429    | Fgfr3   | Fibroblast growth factor receptor 3  |
| B12      | Rn.99789  | NM_001037180 | Fkbp8   | FK506 binding protein 8  |
| C01      | Rn.26546  | NM_138909    | Foxe1   | Forkhead box E1 (thyroid transcription factor 2)   |
| C02      | Rn.219157 | XM_345832    | Gli1    | GLI family zinc finger 1   |
| C03      | Rn.38778  | NM_001107169 | Gli2    | GLI family zinc finger 2   |
| C04      | Rn.199034 | NM_080405    | Gli3    | GLI-Kruppel family member GLI3   |
| C05      | Rn.42929  | NM_019282    | Grem1   | Gremlin 1, cysteine knot superfamily, homolog (Xenopus laevis)                               |
| C06      | Rn.10426  | NM_032080    | Gsk3b   | Glycogen synthase kinase 3 beta  |
| C07      | Rn.104610 | XM_002724902 | Hhat    | Hedgehog acyltransferase   |
| C08      | Rn.204425 | XM_238042    | Hhip    | Hedgehog-interacting protein   |
| C09      | Rn.36626  | NM_001177685 | Irf52   | Intraflagellar transport 52 homolog (Chlamydomonas)  |
| C10      | Rn.118681 | NM_031511    | Igf2    | Insulin-like growth factor 2   |
| C11      | Rn.8711   | NM_053384    | Ilhh    | Indian hedgehog  |
| C12      | Rn.27301  | NM_001108831 | Kctd11  | Potassium channel tetramerisation domain containing 11                                       |
| D01      | Rn.213335 | NM_001134543 | Lats1   | LATS, large tumor suppressor, homolog 1 (Drosophila)   |
| D02      | Rn.48618  | NM_001107267 | Lats2   | Large tumor suppressor 2   |
| D03      | Rn.26430  | NM_030827    | Lrp2    | Low density lipoprotein-related protein 2  |
| D04      | Rn.34914  | NM_053842    | Mapk1   | Mitogen activated protein kinase 1   |
| D05      | Rn.91829  | NM_001108099 | Mdm2    | Mdm2 p53 binding protein homolog (mouse)   |
| D06      | Rn.7775   | NM_001108357 | Mobk1a  | MOB1, Mps One Binder kinase activator-like 1A (yeast)  |
| D07      | Rn.38488  | NM_001130563 | Mtss1   | Metastasis suppressor 1  |
| D08      | Rn.46695  | NM_013193    | Nf2     | Neurofibromin 2 (merlin)   |

| Position | UniGene   | GenBank      | Symbol | Description  |
|----------|-----------|--------------|--------|--|
| D09      | Rn.102078 | NM_133287    | Numb   | Numb homolog (Drosophila)                                  |
| D10      | Rn.35222  | NM_001100566 | Otx2   | Orthodenticle homeobox 2                                   |
| D11      | Rn.55127  | NM_012802    | Pdgfra | Platelet derived growth factor receptor, alpha polypeptide |
| D12      | Rn.20     | NM_001100922 | Prkaca | Protein kinase, cAMP-dependent, catalytic, alpha           |
| E01      | Rn.202491 | NM_001077645 | Prkacb | Protein kinase, cAMP dependent, catalytic, beta            |
| E02      | Rn.105585 | NM_053566    | Ptch1  | Patched homolog 1 (Drosophila)                             |
| E03      | Rn.103010 | NM_001107992 | Ptchd2 | Patched domain containing 2                                |
| E04      | Rn.24441  | NM_001109005 | Rab23  | RAB23, member RAS oncogene family                          |
| E05      | Rn.195253 | NM_001024275 | Rassf4 | Ras association (RalGDS/AF-6) domain family member 4       |
| E06      | Rn.214214 | NM_053470    | Runx2  | Runt-related transcription factor 2                        |
| E07      | Rn.163333 | XM_224987    | Sfrp1  | Secreted frizzled-related protein 1                        |
| E08      | Rn.10432  | NM_017221    | Shh    | Sonic hedgehog   |
| E09      | Rn.11258  | NM_013028    | Shox2  | Short stature homeobox 2                                   |
| E10      | Rn.44429  | NM_012807    | Smo    | Smoothened homolog (Drosophila)                            |
| E11      | Rn.89363  | NM_031735    | Stk3   | Serine/threonine kinase 3 (STE20 homolog, yeast)           |
| E12      | Rn.211670 | NM_001024899 | Sufu   | Suppressor of fused homolog (Drosophila)                   |
| F01      | Rn.54443  | NM_030989    | Tp53   | Tumor protein p53  |
| F02      | Rn.1923   | NM_031836    | Vegfa  | Vascular endothelial growth factor A                       |
| F03      | Rn.74256  | NM_053738    | Wif1   | Wnt inhibitory factor 1                                    |
| F04      | Rn.138108 | NM_001105714 | Wnt1   | Wingless-type MMTV integration site family, member 1       |
| F05      | Rn.18155  | NM_001108227 | Wnt10a | Wingless-type MMTV integration site family, member 10A     |
| F06      | Rn.218544 | NM_001108111 | Wnt10b | Wingless-type MMTV integration site family, member 10B     |
| F07      | Rn.55941  | NM_080401    | Wnt11  | Wingless-type MMTV integration site family, member 11      |
| F08      | Rn.209854 | NM_001109223 | Wnt16  | Wingless-type MMTV integration site family, member 16      |
| F09      | Rn.203764 | XM_575397    | Wnt2   | Wingless-type MMTV integration site family member 2        |
| F10      | Rn.17219  | XM_342308    | Wnt2b  | Wingless-type MMTV integration site family, member 2B      |
| F11      | Rn.148140 | NM_001105715 | Wnt3   | Wingless-type MMTV integration site family, member 3       |
| F12      | Rn.218621 | XM_220546    | Wnt3a  | Wingless-type MMTV integration site family, member 3A      |
| G01      | Rn.34782  | NM_053402    | Wnt4   | Wingless-type MMTV integration site family, member 4       |
| G02      | Rn.48749  | NM_022631    | Wnt5a  | Wingless-type MMTV integration site family, member 5A      |
| G03      | Rn.58724  | NM_001100489 | Wnt5b  | Wingless-type MMTV integration site family, member 5B      |
| G04      | Rn.22149  | NM_001108226 | Wnt6   | Wingless-type MMTV integration site family, member 6       |
| G05      | Rn.160583 | XM_342723    | Wnt7a  | Wingless-type MMTV integration site family, member 7A      |
| G06      | Rn.129727 | NM_001009695 | Wnt7b  | Wingless-type MMTV integration site family, member 7B      |
| G07      | Rn.218696 | NM_001106155 | Wnt8a  | Wingless-type MMTV integration site family, member 8A      |
| G08      | Rn.58872  | NM_001106359 | Wnt8b  | Wingless-type MMTV integration site family, member 8B      |
| G09      | Rn.40411  | NM_001105783 | Wnt9a  | Wingless-type MMTV integration site family, member 9A      |
| G10      | Rn.16625  | NM_001107055 | Wnt9b  | Wingless-type MMTV integration site family, member 9B      |
| G11      | Rn.161923 | NM_022677    | Zic1   | Zic family member 1 (odd-paired homolog, Drosophila)       |
| G12      | Rn.64359  | NM_001108392 | Zic2   | Zic family member 2 (odd-paired homolog, Drosophila)       |
| H01      | Rn.94978  | NM_031144    | Actb   | Actin, beta  |
| H02      | Rn.1868   | NM_012512    | B2m    | Beta-2 microglobulin                                       |
| H03      | Rn.47     | NM_012583    | Hprt1  | Hypoxanthine phosphoribosyltransferase 1                   |
| H04      | Rn.107896 | NM_017025    | Ldha   | Lactate dehydrogenase A                                    |
| H05      | Rn.973    | NM_001007604 | Rplp1  | Ribosomal protein, large, P1                               |
| H06      | N/A       | U26919       | RGDC   | Rat 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.

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