

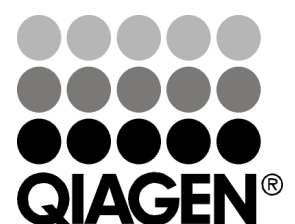
# RT<sup>2</sup> Profiler PCR Array (96-Well Format and 384-Well [4 x 96] Format)

## Zebrafish Cardiovascular Disease

Cat. no. 330231 PAZF-174ZA

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™                                                                                                                                                                                                                                                                   |



## Description

The Zebrafish Cardiovascular Disease RT<sup>2</sup> Profiler PCR Array profiles the expression of 84 genes linked to cardiac disease. Cardiovascular disease is the most important cause of morbidity and mortality in developed countries, causing twice as many deaths as cancer in the United States. Multiple genetic and environmental factors, as well as the interactions between them, increase the risk for developing major cardiovascular diseases such as coronary artery disease (CAD), myocardial infarction (MI), and congestive heart failure (CHF), to name a few. The underlying pathogenic mechanisms for these disorders are still largely unknown, but observed gene expression changes may play a central role in the development and progression of cardiovascular disease. Microarray studies have characterized gene expression patterns in diseased and non-diseased patients leading to the identification of unique subsets of genes associated with the cardiac disease process. The genes profiled with this array play roles in molecular processes such as apoptosis, cardiac remodeling, cell cycle, cell growth, stress and immune responses, transcriptional regulation, and signal transduction. Genes encoding sarcomere structural proteins are represented as well. A set of controls present on each array enables data analysis using the  $\Delta\Delta CT$  method of relative quantification and assessment of reverse transcription performance, genomic DNA contamination, and PCR performance. Using real-time PCR, research studies can easily and reliably analyze the expression of a focused panel of genes related to cardiovascular disease 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 cyclers (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 | ace    | acta1a  | actn2b  | adra1a  | adra1ba | adra1d  | adrb1   | adrb2a | adrb3a   | aebp1    | agtr1a  | anxa4  |
| B | ar     | atp2a2a | atp2a2b | atp5a1  | c6      | ccnd1   | cdkn1bb | cfh    | coll1a1a | coll1a1a | creb5b  | crema  |
| C | cryaba | cryabb  | ctgfa   | cx43    | cxcl12a | cxcl12b | dcn     | dmd    | dusp6    | enah     | epor    | f2r    |
| D | fn1a   | frzb    | g0s2    | hmgcl   | hmgcra  | hmgcn2  | klhl3   | mao    | map2k5   | mapk1    | mapk8b  | mmp13a |
| E | msi2b  | mt2     | myh10   | myh6    | ndufb5  | nebl    | nfia    | nkx2.5 | nppa     | nppb     | npr1a   | npr2   |
| F | npr3   | nr3c1   | nr3c2   | pde3a   | pde3b   | pde5ab  | pde7a   | phlda1 | postnb   | ptn      | rassf1  | ren    |
| G | rrad   | rtn4a   | s100a1  | slc12a1 | spock1  | stat1a  | tcf4    | thbs2  | tnnt2a   | tpi1a    | zbtb16a | zyx    |
| H | acta1b | b2m     | hprt1   | nono    | rpl13a  | ZGDC    | RTC     | RTC    | RTC      | PPC      | PPC     | PPC    |

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

| Position | UniGene   | GenBank      | Symbol   | Description                                                                              |
|----------|-----------|--------------|----------|------------------------------------------------------------------------------------------|
| A01      | Dr.4864   | XM_689244    | ace      | Si:ch211-124e16.1                                                                        |
| A02      | Dr.75118  | NM_001017750 | acta1a   | Actin, alpha 1a, skeletal muscle                                                         |
| A03      | Dr.80021  | NM_001037573 | actn2b   | Actinin, alpha 2                                                                         |
| A04      | N/A       | XM_001338902 | adra1a   | Alpha-1A adrenergic receptor-like                                                        |
| A05      | Dr.149623 | XM_001921978 | adra1ba  | Alpha-1B adrenergic receptor-like                                                        |
| A06      | N/A       | XM_691951    | adra1d   | Alpha-1D adrenergic receptor-like                                                        |
| A07      | Dr.81721  | NM_001128689 | adrb1    | Adrenergic receptor, beta 1                                                              |
| A08      | Dr.88172  | NM_001102652 | adrb2a   | Adrenergic receptor, beta 2a                                                             |
| A09      | Dr.91316  | NM_001128335 | adrb3a   | Adrenergic receptor, beta 3a                                                             |
| A10      | N/A       | XM_001920851 | aebp1    | Adipocyte enhancer-binding protein 1-like                                                |
| A11      | N/A       | XM_005163375 | agtr1a   | Angiotensin II receptor, type 1a                                                         |
| A12      | Dr.76727  | NM_181764    | anxa4    | Annexin A4                                                                               |
| B01      | Dr.75914  | NM_001083123 | ar       | Androgen receptor                                                                        |
| B02      | Dr.16838  | NM_200965    | atp2a2a  | ATPase, Ca++ transporting, cardiac muscle, slow twitch 2a                                |
| B03      | Dr.76755  | NM_001030277 | atp2a2b  | ATPase, Ca++ transporting, cardiac muscle, slow twitch 2b                                |
| B04      | Dr.76050  | NM_001077355 | atp5a1   | ATP synthase, H+ transporting, mitochondrial F1 complex, alpha subunit 1, cardiac muscle |
| B05      | Dr.16392  | NM_200638    | c6       | Complement component 6                                                                   |
| B06      | Dr.75056  | NM_131025    | ccnd1    | Cyclin D1                                                                                |
| B07      | Dr.75267  | NM_212792    | cdkn1bb  | Cyclin-dependent kinase inhibitor 1Bb                                                    |
| B08      | Dr.43805  | NM_001199190 | cfh      | Complement factor H                                                                      |
| B09      | Dr.3536   | NM_001083844 | coll1a1a | Collagen, type XI, alpha 1a                                                              |
| B10      | Dr.20097  | NM_199214    | coll1a1a | Collagen, type I, alpha 1a                                                               |
| B11      | N/A       | XM_009292269 | creb5b   | Cyclic AMP-responsive element-binding protein 5-like                                     |
| B12      | Dr.20584  | XM_005171403 | crema    | Si:dkey-177e13.4                                                                         |

| Position | UniGene   | GenBank      | Symbol  | Description                                                                              |
|----------|-----------|--------------|---------|------------------------------------------------------------------------------------------|
| C01      | Dr.81303  | NM_131157    | cryaba  | Crystallin, alpha B, a                                                                   |
| C02      | Dr.80498  | NM_001002670 | cryabb  | Crystallin, alpha B, b                                                                   |
| C03      | Dr.42794  | NM_001015041 | ctgfa   | Connective tissue growth factor                                                          |
| C04      | Dr.75809  | NM_131038    | cx43    | Connexin 43                                                                              |
| C05      | Dr.99352  | NM_178307    | cxcl12a | Chemokine (C-X-C motif) ligand 12a (stromal cell-derived factor 1)                       |
| C06      | Dr.27045  | NM_198068    | cxcl12b | Chemokine (C-X-C motif) ligand 12b (stromal cell-derived factor 1)                       |
| C07      | Dr.76351  | NM_131697    | dcn     | Decorin                                                                                  |
| C08      | Dr.4495   | NM_131785    | dmd     | Dystrophin                                                                               |
| C09      | Dr.16301  | NM_194380    | dusp6   | Dual specificity phosphatase 6                                                           |
| C10      | Dr.14149  | NM_001013521 | enah    | Enabled homolog (Drosophila)                                                             |
| C11      | Dr.52413  | NM_001043334 | epor    | Erythropoietin receptor                                                                  |
| C12      | Dr.111178 | NM_001114846 | f2r     | Coagulation factor II (thrombin) receptor                                                |
| D01      | Dr.51894  | NM_131520    | fn1a    | Fibronectin 1                                                                            |
| D02      | Dr.81280  | NM_130943    | frzb    | Frizzled-related protein                                                                 |
| D03      | Dr.85087  | NM_001128743 | g0s2    | Zgc:194314                                                                               |
| D04      | Dr.79394  | NM_201215    | hmgcl   | 3-hydroxymethyl-3-methylglutaryl-Coenzyme A lyase (hydroxymethylglutaricaciduria)        |
| D05      | Dr.159499 | NM_001079977 | hmgcra  | 3-hydroxy-3-methylglutaryl-Coenzyme A reductase a                                        |
| D06      | Dr.104496 | NM_001142543 | hmgn2   | High-mobility group nucleosomal binding domain 2                                         |
| D07      | N/A       | XM_691888    | klhl3   | Kelch-like 3 (Drosophila)                                                                |
| D08      | Dr.77508  | NM_212827    | mao     | Monoamine oxidase                                                                        |
| D09      | Dr.77506  | NM_001114317 | map2k5  | Mitogen-activated protein kinase kinase 5                                                |
| D10      | Dr.10452  | NM_182888    | mapk1   | Mitogen-activated protein kinase 1                                                       |
| D11      | Dr.82505  | NM_131721    | mapk8b  | Mitogen-activated protein kinase 8b                                                      |
| D12      | Dr.81475  | NM_201503    | mmp13a  | Matrix metalloproteinase 13a                                                             |
| E01      | Dr.82489  | NM_201109    | msi2b   | Musashi homolog 2b (Drosophila)                                                          |
| E02      | Dr.121290 | NM_001131053 | mt2     | Metallothionein 2                                                                        |
| E03      | Dr.159545 | XM_005165720 | myh10   | Myosin, heavy chain 10, non-muscle                                                       |
| E04      | Dr.29034  | NM_198823    | myh6    | Myosin, heavy polypeptide 6, cardiac muscle, alpha                                       |
| E05      | Dr.76451  | NM_001105596 | ndufb5  | NADH dehydrogenase (ubiquinone) 1 beta subcomplex 5                                      |
| E06      | Dr.88774  | NM_001013571 | nebl    | Zgc:113144                                                                               |
| E07      | Dr.76550  | NM_001079962 | nfia    | Nuclear factor I/A                                                                       |
| E08      | Dr.271    | NM_131421    | nkx2.5  | NK2 transcription factor related 5                                                       |
| E09      | Dr.72101  | NM_198800    | nppa    | Natriuretic peptide precursor A                                                          |
| E10      | Dr.91651  | XM_002663224 | nppb    | Brain natriuretic peptide-like                                                           |
| E11      | Dr.67958  | NM_001044937 | npr1a   | Natriuretic peptide receptor 1a                                                          |
| E12      | N/A       | XM_009301825 | npr2    | Natriuretic peptide receptor 2                                                           |
| F01      | Dr.83991  | NM_001102673 | npr3    | Natriuretic peptide receptor C/guanylate cyclase C (atrionatriuretic peptide receptor C) |
| F02      | Dr.132249 | NM_001020711 | nr3c1   | Nuclear receptor subfamily 3, group C, member 1 (glucocorticoid receptor)                |
| F03      | Dr.95279  | NM_001100403 | nr3c2   | Nuclear receptor subfamily 3, group C, member 2                                          |
| F04      | N/A       | XM_009299994 | pde3a   | Si:dkey-48h7.2                                                                           |

| Position | UniGene          | GenBank      | Symbol  | Description                                            |
|----------|------------------|--------------|---------|--------------------------------------------------------|
| F05      | N/A              | XM_686791    | pde3b   | Phosphodiesterase 3B, cGMP-inhibited                   |
| F06      | Dr.91637         | NM_001123260 | pde5ab  | Phosphodiesterase 5A, cGMP-specific, b                 |
| F07      | Dr.52540         | NM_001168263 | pde7a   | Phosphodiesterase 7A-like                              |
| F08      | Dr.134176        | NM_001006011 | phlda1  | Pleckstrin homology-like domain, family A, member 1    |
| F09      | Dr.30157         | NM_001077786 | postnb  | Periostin, osteoblast specific factor                  |
| F10      | Dr.88108         | NM_001003981 | ptn     | Pleiotrophin                                           |
| F11      | Dr.78467         | NM_001004550 | rassf1  | Ras association (RalGDS/AF-6) domain family 1          |
| F12      | Dr.88880         | NM_212860    | ren     | Renin                                                  |
| G01      | Dr.80392         | NM_199798    | rrad    | Ras-related associated with diabetes                   |
| G02      | Dr.121711        | NM_001004555 | rtn4a   | Reticulon 4a                                           |
| G03      | Dr.13960         | NM_001089351 | s100a1  | S100 calcium binding protein A1                        |
| G04      | Dr.156611        | XM_009293403 | slc12a1 | Solute carrier family 12 member 1-like                 |
| G05      | N/A              | XM_009307660 | spock1  | Testican-1-like                                        |
| G06      | Dr.143657        | NM_131480    | stat1a  | Signal transduction and activation of transcription 1a |
| G07      | Dr.153729        | XM_009301658 | tcf4    | Transcription factor 4                                 |
| G08      | N/A              | XM_009307490 | thbs2   | Thrombospondin-2-like                                  |
| G09      | Dr.14260         | NM_152893    | tnnt2a  | Troponin T2a, cardiac                                  |
| G10      | Dr.82679         | NM_153667    | tpi1a   | Triosephosphate isomerase 1a                           |
| G11      | Dr.79558         | NM_199635    | zbtb16a | Zinc finger and BTB domain containing 16a              |
| G12      | Dr.74640         | NM_001109824 | zyx     | Zgc:171680                                             |
| H01      | Dr.47173         | NM_214784    | acta1b  | Actin, alpha 1b, skeletal muscle                       |
| H02      | Dr.51646         | NM_001159768 | b2m     | Beta-2-microglobulin                                   |
| H03      | Dr.77915         | NM_212986    | hprt1   | Hypoxanthine phosphoribosyltransferase 1               |
| H04      | Dr.150274        | NM_201579    | nono    | Non-POU domain containing, octamer-binding             |
| H05      | Dr.32450         | NM_212784    | rpl13a  | Ribosomal protein L13a                                 |
| H06      | N/A<br>zebrafish | SA_00143     | ZGDC    | Zebrafish 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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