

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

## Human Cardiovascular Disease

Cat. no. 330231 PAHS-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 <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 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  $\Delta\Delta\text{CT}$  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 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	ACE	ACTC1	ADRA1A	ADRA1B	ADRA1D	ADRB1	ADRB2	ADRB3	AEBP1	AGTR1	ANXA4	AR
B	ATP2A2	ATP5A1	C6	CCL11	CCL18	CCL2	CCND1	CDKN1B	COL11A1	COL1A1	COL3A1	CREB5
C	CREM	CRYAB	CRYM	CTGF	DCN	DMD	DUSP6	ENAH	EPOR	F2R	FN1	FRZB
D	G0S2	GJA1	HMGCL	HMGCR	HMGN2	KLHL3	MAOA	MAPK1	MAPK8	MMP13	MSI2	MTIX
E	MYH10	MYH6	NDUFB5	NEBL	NFIA	NKX2-5	NPPA	NPPB	NPR1	NPR2	NPR3	NR3C1
F	NR3C2	PDE3A	PDE3B	PDE5A	PDE7A	POSTN	PTN	RARRS1	RASSF1	REN	RTN4	S100A1
G	SERPINA3	SFRP4	SLC12A1	SNCA	SPOCK1	STAT1	TCF4	THBS2	TNNI3	TNNT2	UBB	ZYX
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.298469	NM_000789	ACE	Angiotensin I converting enzyme (peptidyl-dipeptidase A) 1
A02	Hs.118127	NM_005159	ACTC1	Actin, alpha, cardiac muscle 1
A03	Hs.709175	NM_033303	ADRA1A	Adrenergic, alpha-1A-, receptor
A04	Hs.670012	NM_000679	ADRA1B	Adrenergic, alpha-1B-, receptor
A05	Hs.557	NM_000678	ADRA1D	Adrenergic, alpha-1D-, receptor
A06	Hs.99913	NM_000684	ADRB1	Adrenergic, beta-1-, receptor
A07	Hs.2551	NM_000024	ADRB2	Adrenergic, beta-2-, receptor, surface
A08	Hs.2549	NM_000025	ADRB3	Adrenergic, beta-3-, receptor
A09	Hs.439463	NM_001129	AEBP1	AE binding protein 1
A10	Hs.477887	NM_031850	AGTR1	Angiotensin II receptor, type 1
A11	Hs.422986	NM_001153	ANXA4	Annexin A4
A12	Hs.76704	NM_000044	AR	Androgen receptor
B01	Hs.506759	NM_001681	ATP2A2	ATPase, Ca++ transporting, cardiac muscle, slow twitch 2
B02	Hs.298280	NM_004046	ATP5A1	ATP synthase, H+ transporting, mitochondrial F1 complex, alpha subunit 1, cardiac muscle
B03	Hs.481992	NM_000065	C6	Complement component 6
B04	Hs.54460	NM_002986	CCL11	Chemokine (C-C motif) ligand 11
B05	Hs.143961	NM_002988	CCL18	Chemokine (C-C motif) ligand 18 (pulmonary and activation-regulated)
B06	Hs.303649	NM_002982	CCL2	Chemokine (C-C motif) ligand 2
B07	Hs.523852	NM_053056	CCND1	Cyclin D1
B08	Hs.238990	NM_004064	CDKN1B	Cyclin-dependent kinase inhibitor 1B (p27, Kip1)
B09	Hs.523446	NM_080629	COL11A1	Collagen, type XI, alpha 1
B10	Hs.172928	NM_000088	COL1A1	Collagen, type I, alpha 1
B11	Hs.443625	NM_000090	COL3A1	Collagen, type III, alpha 1
B12	Hs.437075	NM_182898	CREB5	CAMP responsive element binding protein 5
C01	Hs.200250	NM_183011	CREM	CAMP responsive element modulator
C02	Hs.593379	NM_001885	CRYAB	Crystallin, alpha B
C03	Hs.924	NM_001888	CRYM	Crystallin, mu
C04	Hs.410037	NM_001901	CTGF	Connective tissue growth factor
C05	Hs.156316	NM_001920	DCN	Decorin
C06	Hs.495912	NM_000109	DMD	Dystrophin
C07	Hs.298654	NM_001946	DUSP6	Dual specificity phosphatase 6
C08	Hs.497893	NM_001008493	ENAH	Enabled homolog (Drosophila)
C09	Hs.631624	NM_000121	EPOR	Erythropoietin receptor
C10	Hs.482562	NM_001992	F2R	Coagulation factor II (thrombin) receptor
C11	Hs.203717	NM_002026	FN1	Fibronectin 1
C12	Hs.128453	NM_001463	FRZB	Frizzled-related protein
D01	Hs.432132	NM_015714	G0S2	G0/G1 switch 2
D02	Hs.700699	NM_000165	GJA1	Gap junction protein, alpha 1, 43kDa
D03	Hs.533444	NM_000191	HMGCL	3-hydroxymethyl-3-methylglutaryl-CoA lyase
D04	Hs.643495	NM_000859	HMGCR	3-hydroxy-3-methylglutaryl-CoA reductase
D05	Hs.181163	NM_005517	HMGN2	High mobility group nucleosomal binding domain 2
D06	Hs.655084	NM_017415	KLHL3	Kelch-like 3 (Drosophila)
D07	Hs.183109	NM_000240	MAOA	Monoamine oxidase A
D08	Hs.431850	NM_002745	MAPK1	Mitogen-activated protein kinase 1

Position	UniGene	GenBank	Symbol	Description
D09	Hs.138211	NM_002750	MAPK8	Mitogen-activated protein kinase 8
D10	Hs.2936	NM_002427	MMP13	Matrix metalloproteinase 13 (collagenase 3)
D11	Hs.685314	NM_138962	MSI2	Musashi homolog 2 (Drosophila)
D12	Hs.374950	NM_005952	MT1X	Metallothionein 1X
E01	Hs.16355	NM_005964	MYH10	Myosin, heavy chain 10, non-muscle
E02	Hs.278432	NM_002471	MYH6	Myosin, heavy chain 6, cardiac muscle, alpha
E03	Hs.730674	NM_002492	NDUFB5	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 5, 16kDa
E04	Hs.5025	NM_006393	NEBL	Nebulette
E05	Hs.740757	NM_005595	NFIA	Nuclear factor I/A
E06	Hs.54473	NM_004387	NKX2-5	NK2 homeobox 5
E07	Hs.75640	NM_006172	NPPA	Natriuretic peptide A
E08	Hs.219140	NM_002521	NPPB	Natriuretic peptide B
E09	Hs.490330	NM_000906	NPR1	Natriuretic peptide receptor A/guanylate cyclase A (atrionatriuretic peptide receptor A)
E10	Hs.78518	NM_003995	NPR2	Natriuretic peptide receptor B/guanylate cyclase B (atrionatriuretic peptide receptor B)
E11	Hs.13528	NM_000908	NPR3	Natriuretic peptide receptor C/guanylate cyclase C (atrionatriuretic peptide receptor C)
E12	Hs.122926	NM_000176	NR3C1	Nuclear receptor subfamily 3, group C, member 1 (glucocorticoid receptor)
F01	Hs.163924	NM_000901	NR3C2	Nuclear receptor subfamily 3, group C, member 2
F02	Hs.386791	NM_000921	PDE3A	Phosphodiesterase 3A, cGMP-inhibited
F03	Hs.445711	NM_000922	PDE3B	Phosphodiesterase 3B, cGMP-inhibited
F04	Hs.647971	NM_001083	PDE5A	Phosphodiesterase 5A, cGMP-specific
F05	Hs.527119	NM_002603	PDE7A	Phosphodiesterase 7A
F06	Hs.136348	NM_006475	POSTN	Periostin, osteoblast specific factor
F07	Hs.371249	NM_002825	PTN	Pleiotrophin
F08	Hs.131269	NM_002888	RARRES1	Retinoic acid receptor responder (tazarotene induced) 1
F09	Hs.476270	NM_007182	RASSF1	Ras association (RalGDS/AF-6) domain family member 1
F10	Hs.3210	NM_000537	REN	Renin
F11	Hs.637850	NM_007008	RTN4	Reticulon 4
F12	Hs.515715	NM_006271	S100A1	S100 calcium binding protein A1
G01	Hs.534293	NM_001085	SERPINA3	Serpin peptidase inhibitor, clade A (alpha-1 antitrypsin, antitrypsin), member 3
G02	Hs.658169	NM_003014	SFRP4	Secreted frizzled-related protein 4
G03	Hs.123116	NM_000338	SLC12A1	Solute carrier family 12 (sodium/potassium/chloride transporters), member 1
G04	Hs.21374	NM_000345	SNCA	Synuclein, alpha (non A4 component of amyloid precursor)
G05	Hs.596136	NM_004598	SPOCK1	Sparc/osteonectin, cwcv and kazal-like domains proteoglycan (testican) 1
G06	Hs.642990	NM_007315	STAT1	Signal transducer and activator of transcription 1, 91kDa
G07	Hs.742885	NM_003199	TCF4	Transcription factor 4
G08	Hs.371147	NM_003247	THBS2	Thrombospondin 2
G09	Hs.709179	NM_000363	TNNI3	Troponin I type 3 (cardiac)
G10	Hs.533613	NM_000364	TNNT2	Troponin T type 2 (cardiac)
G11	Hs.356190	NM_018955	UBB	Ubiquitin B
G12	Hs.490415	NM_003461	ZYX	Zyxin
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.

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