

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

## Rat Cardiotoxicity

Cat. no. 330231 PARN-095ZA

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 Rat Cardiotoxicity RT<sup>2</sup> Profiler PCR Array profiles the expression of 84 key genes involved in drug and chemical-induced cardiac injury. Minimizing toxicity remains one of the major barriers to bringing a drug to and keeping a drug on the market. The fact that almost 10 percent of drugs in the past 40 years have been withdrawn from the clinical market worldwide due to cardiovascular safety concerns makes the heart an important target of toxicological studies. Identifying cardiotoxic drugs and other compounds is difficult because the mechanism of action behind cardiac responses remains unclear. However, using gross morphological changes as a phenotype often requires expensive and time-consuming chronic studies. Quantifiable gene expression changes occur upon acute exposure prior to other measured toxic responses, and their analysis has enhanced the field's understanding of these effects. This array includes potential biomarkers of cardiac damage from cited studies using a variety of drugs and chemicals in a number of model systems. Cardiotoxic drug candidates can be identified and eliminated from the pipeline early in the validation process by analyzing the expression of such genes, reducing experimental time and costs. The organization of genes by their predicted direction of expression change eases data analysis. Using real-time PCR, you can easily and reliably analyze the expression of a focused panel of genes involved in cardiotoxicity 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
<b>A</b>	Abhd2	Abra	Acta1	Adra2a	Aifm1	Ak3	Ash1l	Atp5j	Bcat1	Bgn	Bsn	Btg2
<b>B</b>	Ccl7	Ccr1	Cd14	Cfd	Ch25h	Ckm	Col15a1	Col3a1	Crem	Csnk2a2	Dusp8	Egr1
<b>C</b>	Fcgr2b	Fhl1	Fos1	Gja1	Gpm6a	Hamp	Hspa2	Hsph1	Ifi20	Igfbp5	Il6	Itpr2
<b>D</b>	Kbtbd10	Kbtbd5	Kcnj12	Mcm6	Mt1a	Nexn	Nfib	Pdk4	Pkn2	Pla2g4a	Plau	Pin
<b>E</b>	Plunc	Postn	Ppbp	Ppp1r14c	Prkab2	Psma2	Psmc7	Pum2	Pvr	Rbm3	Reg3b	Rnd1
<b>F</b>	Rps6kb1	S1pr2	Serpine1	Sik1	Slc4a3	Sax4	Spp1	Tcf4	Tgfb2	Thrap3	Tiam1	Timp1
<b>G</b>	Tubb6	Txnip	Uba5	Ubxn2a	Uck2	Ucp1	Vcan	Vegfa	Vim	Wip1	Zfp148	Znf23
<b>H</b>	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.136611	NM_001106275	Abhd2	Abhydrolase domain containing 2
A02	Rn.21198	NM_175844	Abra	Actin-binding Rho activating protein
A03	Rn.82732	NM_019212	Acta1	Actin, alpha 1, skeletal muscle
A04	Rn.170171	NM_012739	Adra2a	Adrenergic, alpha-2A-, receptor
A05	Rn.203165	NM_031356	Aifm1	Apoptosis-inducing factor, mitochondrion-associated 1
A06	Rn.60	NM_013218	Ak3	Adenylate kinase 3
A07	Rn.206058	NM_001107689	Ash1l	Ash1 (absent, small, or homeotic)-like (Drosophila)
A08	Rn.5790	NM_053602	Atp5j	ATP synthase, H+ transporting, mitochondrial F0 complex, subunit F6
A09	Rn.8273	NM_017253	Bcat1	Branched chain aminotransferase 1, cytosolic
A10	Rn.783	NM_017087	Bgn	Biglycan
A11	Rn.29999	NM_019146	Bsn	Bassoon
A12	Rn.27923	NM_017259	Btg2	BTG family, member 2
B01	Rn.26815	NM_001007612	Ccl7	Chemokine (C-C motif) ligand 7
B02	Rn.34673	NM_020542	Ccr1	Chemokine (C-C motif) receptor 1
B03	Rn.42942	NM_021744	Cd14	CD14 molecule
B04	Rn.16172	NM_001077642	Cfd	Complement factor D (adipsin)
B05	Rn.155971	NM_001025415	Ch25h	Cholesterol 25-hydroxylase
B06	Rn.10756	NM_012530	Ckm	Creatine kinase, muscle
B07	Rn.31832	XM_216399	Col15a1	Collagen, type XV, alpha 1
B08	Rn.3247	NM_032085	Col3a1	Collagen, type III, alpha 1
B09	Rn.10251	NM_001110860	Crem	CAMP responsive element modulator
B10	Rn.24013	NM_001107409	Csnk2a2	Casein kinase 2, alpha prime polypeptide
B11	Rn.219421	NM_001108510	Dusp8	Dual specificity phosphatase 8
B12	Rn.9096	NM_012551	Egr1	Early growth response 1
C01	Rn.33323	NM_175756	Fcgr2b	Fc fragment of IgG, low affinity IIb, receptor (CD32)
C02	Rn.54261	NM_145669	Fhl1	Four and a half LIM domains 1
C03	Rn.11306	NM_012953	Fos1	Fos-like antigen 1
C04	Rn.10346	NM_012567	Gja1	Gap junction protein, alpha 1
C05	Rn.34370	NM_178105	Gpm6a	Glycoprotein m6a
C06	Rn.7865	NM_053469	Hamp	Hepcidin antimicrobial peptide
C07	Rn.211303	NM_021863	Hspa2	Heat shock protein 2
C08	Rn.37805	NM_001011901	Hsph1	Heat shock 105/110 protein 1
C09	Rn.8370	NM_001105815	Ifi20	Intraflagellar transport 20 homolog (Chlamydomonas)
C10	Rn.1593	NM_012817	Igfbp5	Insulin-like growth factor binding protein 5
C11	Rn.9873	NM_012589	Il6	Interleukin 6
C12	Rn.89152	NM_031046	Itpr2	Inositol 1,4,5-trisphosphate receptor, type 2
D01	Rn.28875	NM_057191	Kbtbd10	Kelch repeat and BTB (POZ) domain containing 10
D02	Rn.198226	NM_001108195	Kbtbd5	Kelch repeat and BTB (POZ) domain containing 5
D03	Rn.10406	NM_053981	Kcnj12	Potassium inwardly-rectifying channel, subfamily J, member 12
D04	Rn.33226	NM_017287	Mcm6	Minichromosome maintenance complex component 6
D05	Rn.54397	NM_138826	Mt1a	Metallothionein 1a
D06	Rn.107975	NM_139230	Nexn	Nexilin (F actin binding protein)
D07	Rn.40435	NM_031566	Nfib	Nuclear factor I/B
D08	Rn.30070	NM_053551	Pdk4	Pyruvate dehydrogenase kinase, isozyme 4
D09	Rn.30325	NM_001105755	Pkn2	Protein kinase N2

Position	UniGene	GenBank	Symbol	Description
D10	Rn.10162	NM_133551	Pla2g4a	Phospholipase A2, group IVA (cytosolic, calcium-dependent)
D11	Rn.6064	NM_013085	Plau	Plasminogen activator, urokinase
D12	Rn.9740	NM_022707	Pln	Phospholamban
E01	Rn.19272	NM_172031	Plunc	Palate, lung, and nasal epithelium associated
E02	Rn.30516	NM_001108550	Postn	Periostin, osteoblast specific factor
E03	Rn.67082	NM_153721	Ppbp	Pro-platelet basic protein (chemokine (C-X-C motif) ligand 7)
E04	Rn.87667	NM_133425	Ppp1r14c	Protein phosphatase 1, regulatory (inhibitor) subunit 14c
E05	Rn.207202	NM_022627	Prkab2	Protein kinase, AMP-activated, beta 2 non-catalytic subunit
E06	Rn.1617	NM_017279	Psm2	Proteasome (prosome, macropain) subunit, alpha type 2
E07	Rn.20659	NM_001107426	Psm7	Proteasome (prosome, macropain) 26S subunit, non-ATPase, 7
E08	Rn.8622	NM_001106715	Pum2	Pumilio homolog 2 (Drosophila)
E09	Rn.10677	NM_017076	Pvr	Poliovirus receptor
E10	Rn.18057	NM_053696	Rbm3	RNA binding motif (RNP1, RRM) protein 3
E11	Rn.9727	NM_053289	Reg3b	Regenerating islet-derived 3 beta
E12	Rn.198250	NM_001013222	Rnd1	Rho family GTPase 1
F01	Rn.4042	NM_031985	Rps6kb1	Ribosomal protein S6 kinase, polypeptide 1
F02	Rn.2491	NM_017192	S1pr2	Sphingosine-1-phosphate receptor 2
F03	Rn.29367	NM_012620	Serpine1	Serpin peptidase inhibitor, clade E (nexin, plasminogen activator inhibitor type 1), member 1
F04	Rn.42905	NM_021693	Sik1	Salt-inducible kinase 1
F05	Rn.87739	NM_017049	Slc4a3	Solute carrier family 4 (anion exchanger), member 3
F06	Rn.163667	XM_344594	Sox4	SRX (sex determining region Y)-box 4
F07	Rn.8871	NM_012881	Spp1	Secreted phosphoprotein 1
F08	Rn.23354	NM_053369	Tcf4	Transcription factor 4
F09	Rn.24539	NM_031131	Tgfb2	Transforming growth factor, beta 2
F10	Rn.25107	NM_001009693	Thrap3	Thyroid hormone receptor associated protein 3
F11	Rn.204561	NM_001100558	Tiam1	T-cell lymphoma invasion and metastasis 1
F12	Rn.25754	NM_053819	Timp1	TIMP metalloproteinase inhibitor 1
G01	Rn.98430	NM_001025675	Tubb6	Tubulin, beta 6
G02	Rn.2758	NM_001008767	Txnip	Thioredoxin interacting protein
G03	Rn.18210	NM_001009669	Uba5	Ubiquitin-like modifier activating enzyme 5
G04	Rn.25112	NM_001109482	Ubx2a	UBX domain protein 2A
G05	Rn.24811	NM_001102408	Uck2	Uridine-cytidine kinase 2
G06	Rn.10281	NM_012682	Ucp1	Uncoupling protein 1 (mitochondrial, proton carrier)
G07	Rn.35666	XM_215451	Vcan	Versican
G08	Rn.1923	NM_031836	Vegfa	Vascular endothelial growth factor A
G09	Rn.2710	NM_031140	Vim	Vimentin
G10	Rn.203725	NM_001127297	Wip1	WD repeat domain, phosphoinositide interacting 1
G11	Rn.64671	NM_031615	Zfp148	Zinc finger protein 148
G12	Rn.6474	NM_001107428	Znf23	Zinc finger protein 23 (KIX 16)
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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