

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

## Rat TGFb Signaling Targets

Cat. no. 330231 PARN-235ZA

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 TGF $\beta$  Signaling Targets RT<sup>2</sup> Profiler PCR Array profiles the expression of 84 key genes responsive to TGF $\beta$  signal transduction. The TGF $\beta$  superfamily comprises 4 signaling pathways: TGF $\beta$ , Bone Morphogenic Protein (BMP), Activin, and Nodal. These pathways regulate multiple cellular processes, such as development and differentiation, cellular proliferation and migration, apoptosis, and cell cycle regulation. Pathway stimulation by TGF $\beta$  ligands (TGF $\beta$ s, BMPs, Growth Differentiation Factors, and others) activate the SMAD transcription factors, which translocate into the nucleus to interact with additional transcription factors and activate specific target genes. Dysregulation of the TGF $\beta$  signal transduction pathway is associated with diseases such as fibrosis or cancer. Hundreds of TGF $\beta$  target genes have been identified using experimental techniques such as expression studies and chromatin immunoprecipitation (ChIP) as well as bioinformatic analysis of predicted transcription factor binding sites. This array includes TGF $\beta$  signaling transcription factors and highly relevant target genes identified by multiple studies. Results obtained with this array can be used to analyze activation or inhibition of TGF $\beta$  signaling. Using real-time PCR, research studies can easily and reliably analyze the expression of a focused panel of genes involved in TGF $\beta$ -related cellular processes 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.

---

## 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>	Acta2	Acvr1	Acvr1l	Agt	Aipl1	Ar	Atf3	Atf4	Bach1	Bcl2l1	Bdnf	Bhlhe40
<b>B</b>	Brd2	Cdc6	Cdkn1b	Cebpb	Creb1	Crebbp	Cryab	Ctnnb1	Dnaja1	E2f5	Emp1	Eng
<b>C</b>	Ep300	Ephb2	Fn1	Fos	Furin	Gadd45b	Gli2	Ghf2i	Herpud1	Hes1	Hey1	Hmox1
<b>D</b>	Id1	Id2	Id3	lfrd1	Il10	Klf10	Map3k7	Mapk14	Mapk8	Mbd1	Mmp2	Mx2
<b>E</b>	Myc	Myod1	Nfib	Nfkbia	Notch1	Pdgfra	Plg	Ppara	Ptgs2	Pthlh	Plk2	Plk2b
<b>F</b>	Rod21	Rara	Rbl1	Rhoa	Rhob	Runx1	Rybp	S100a8	Serpine1	Shh	Smad1	Smad3
<b>G</b>	Smad5	Smad6	Snai1	Sox4	Sp1	Srebfp2	Tgfb2	Tgfb2	Thbs1	Tnfrsf10	Txnip	Vegfa
<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.195319	NM_031004	Acta2	Smooth muscle alpha-actin
A02	Rn.87899	NM_024486	Acvr1	Activin A receptor, type I
A03	Rn.10631	NM_022441	Acvr1l	Activin A receptor type II-like 1
A04	Rn.6319	NM_134432	Agt	Angiotensinogen (serpin peptidase inhibitor, clade A, member 8)
A05	Rn.102037	NM_021590	Aipl1	Aryl hydrocarbon receptor-interacting protein-like 1
A06	Rn.9813	NM_012502	Ar	Androgen receptor
A07	Rn.9664	NM_012912	Atf3	Activating transcription factor 3
A08	Rn.2423	NM_024403	Atf4	Activating transcription factor 4 (tax-responsive enhancer element B67)
A09	Rn.29793	NM_001107113	Bach1	BTB and CNC homology 1, basic leucine zipper transcription factor 1
A10	Rn.10323	NM_031535	Bcl2l1	Bcl2-like 1
A11	Rn.11266	NM_012513	Bdnf	Brain-derived neurotrophic factor
A12	Rn.81055	NM_053328	Bhlhe40	Basic helix-loop-helix family, member e40
B01	Rn.98146	NM_212495	Brd2	Bromodomain containing 2
B02	Rn.219688	NM_001108298	Cdc6	Cell division cycle 6 homolog ( <i>S. cerevisiae</i> )
B03	Rn.29897	NM_031762	Cdkn1b	Cyclin-dependent kinase inhibitor 1B
B04	Rn.6479	NM_024125	Cebpb	CCAAT/enhancer binding protein (C/EBP), beta
B05	Rn.90061	NM_031017	Creb1	CAMP responsive element binding protein 1
B06	Rn.108128	NM_133381	Crebbp	CREB binding protein
B07	Rn.98208	NM_012935	Cryab	Crystallin, alpha B
B08	Rn.112601	NM_053357	Ctnnb1	Catenin (cadherin associated protein), beta 1
B09	Rn.64562	NM_022934	Dnaja1	DnaJ (Hsp40) homolog, subfamily A, member 1
B10	Rn.52317	XM_574892	E2f5	E2F transcription factor 5
B11	Rn.19723	NM_012843	Emp1	Epithelial membrane protein 1
B12	Rn.187025	NM_001010968	Eng	Endoglin
C01	Rn.12447	XM_576312	Ep300	E1A binding protein p300
C02	Rn.27233	NM_001127319	Ephb2	Eph receptor B2
C03	Rn.1604	NM_019143	Fn1	Fibronectin 1
C04	Rn.103750	NM_022197	Fos	FBJ osteosarcoma oncogene
C05	Rn.3220	NM_019331	Furin	Furin (paired basic amino acid cleaving enzyme)
C06	Rn.35886	NM_001008321	Gadd45b	Growth arrest and DNA-damage-inducible, beta
C07	Rn.38778	NM_001107169	Gli2	GLI family zinc finger 2
C08	Rn.27575	NM_001001512	Ghf2i	General transcription factor II I
C09	Rn.4028	NM_053523	Herpud1	Homocysteine-inducible, endoplasmic reticulum stress-inducible, ubiquitin-like domain member 1
C10	Rn.19727	NM_024360	Hes1	Hairy and enhancer of split 1 ( <i>Drosophila</i> )
C11	Rn.98202	XM_342216	Hey1	Hairy/enhancer-of-split related with YRPW motif 1
C12	Rn.3160	NM_012580	Hmox1	Heme oxygenase (decycling) 1
D01	Rn.2113	NM_012797	Id1	Inhibitor of DNA binding 1
D02	Rn.3272	NM_013060	Id2	Inhibitor of DNA binding 2
D03	Rn.2760	NM_013058	Id3	Inhibitor of DNA binding 3
D04	Rn.3723	NM_019242	lfrd1	Interferon-related developmental regulator 1
D05	Rn.9868	NM_012854	Il10	Interleukin 10
D06	Rn.2398	NM_031135	Klf10	Kruppel-like factor 10
D07	Rn.24019	NM_001107920	Map3k7	Mitogen activated protein kinase kinase kinase 7
D08	Rn.88085	NM_031020	Mapk14	Mitogen activated protein kinase 14

Position	UniGene	GenBank	Symbol	Description
D09	Rn.4090	XM_341399	Mapk8	Mitogen-activated protein kinase 8
D10	Rn.3310	NM_001011924	Mbd1	Methyl-CpG binding domain protein 1
D11	Rn.6422	NM_031054	Mmp2	Matrix metalloproteinase 2
D12	Rn.10414	NM_012982	Msx2	Msh homeobox 2
E01	Rn.12072	NM_012603	Myc	Myelocytomatosis oncogene
E02	Rn.9493	NM_176079	Myod1	Myogenic differentiation 1
E03	Rn.40435	NM_031566	Nfib	Nuclear factor I/B
E04	Rn.12550	NM_001105720	Nfkbia	Nuclear factor of kappa light polypeptide gene enhancer in B-cells inhibitor, alpha
E05	Rn.25046	NM_001105721	Notch1	Notch homolog 1, translocation-associated (Drosophila)
E06	Rn.10999	NM_012801	Pdgfra	Platelet-derived growth factor alpha polypeptide
E07	Rn.20178	NM_053491	Plg	Plasminogen
E08	Rn.9753	NM_013196	Ppara	Peroxisome proliferator activated receptor alpha
E09	Rn.44369	NM_017232	Ptgs2	Prostaglandin-endoperoxide synthase 2
E10	Rn.9750	NM_012636	Pthlh	Parathyroid hormone-like hormone
E11	Rn.2809	NM_013081	Plk2	PTK2 protein tyrosine kinase 2
E12	Rn.11025	NM_017318	Plk2b	PTK2B protein tyrosine kinase 2 beta
F01	Rn.3991	NM_001025701	Rad21	RAD21 homolog (S. pombe)
F02	Rn.91057	NM_031528	Rara	Retinoic acid receptor, alpha
F03	Rn.208977	XM_001055763	Rbl1	Retinoblastoma-like 1 (p107)
F04	Rn.107401	NM_057132	Rhoa	Ras homolog gene family, member A
F05	Rn.2042	NM_022542	Rhob	Ras homolog gene family, member B
F06	Rn.11201	NM_017325	Runx1	Runt-related transcription factor 1
F07	Rn.33148	NM_001107879	Rybp	RING1 and YY1 binding protein
F08	Rn.31839	NM_053822	S100a8	S100 calcium binding protein A8
F09	Rn.29367	NM_012620	Serpine1	Serpin peptidase inhibitor, clade E (nexin, plasminogen activator inhibitor type 1), member 1
F10	Rn.10432	NM_017221	Shh	Sonic hedgehog
F11	Rn.10635	NM_013130	Smad1	SMAD family member 1
F12	Rn.10636	NM_013095	Smad3	SMAD family member 3
G01	Rn.146857	NM_021692	Smad5	SMAD family member 5
G02	Rn.42472	NM_001109002	Smad6	SMAD family member 6
G03	Rn.8008	NM_053805	Snai1	Snail homolog 1 (Drosophila)
G04	Rn.163667	XM_344594	Sox4	SRY (sex determining region Y)-box 4
G05	Rn.44609	NM_012655	Sp1	Sp1 transcription factor
G06	Rn.41063	NM_001033694	Srebf2	Sterol regulatory element binding transcription factor 2
G07	Rn.24539	NM_031131	Tgfb2	Transforming growth factor, beta 2
G08	Rn.9954	NM_031132	Tgfb2	Transforming growth factor, beta receptor II
G09	Rn.185771	NM_001013062	Thbs1	Thrombospondin 1
G10	Rn.83627	NM_145681	Tnfsf10	Tumor necrosis factor (ligand) superfamily, member 10
G11	Rn.2758	NM_001008767	Txnip	Thioredoxin interacting protein
G12	Rn.1923	NM_031836	Vegfa	Vascular endothelial growth factor A
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™ 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.

Trademarks: QIAGEN® (QIAGEN Group); Applied Biosystems®, ViiA™, StepOnePlus™, ROX™ (Applied Biosystems Corporation or its subsidiaries); Bio-Rad®, iCycler®, iQ™, MyiQ™, Chromo4™, CFX96™, DNA Engine Opticon®, CFX384™ (Bio-Rad Laboratories, Inc.); Stratagene®, Mx3005P®, Mx3000P®, Mx4000® (Stratagene); Eppendorf®, Mastercycler® (Eppendorf AG); Roche®, LightCycler® (Roche Group); Fluidigm® BioMark™ (Fluidigm Corporation); SYBR® (Molecular Probes, Inc.).

1066029 03/2011 © 2011 QIAGEN, all rights reserved.

[www.qiagen.com](http://www.qiagen.com)

Canada ■ 800-572-9613

Ireland ■ 1800 555 049

Norway ■ 800-18859

China ■ 8621-3865-3865

Italy ■ 800-787980

Singapore ■ 1800-742-4368

Denmark ■ 80-885945

Japan ■ 03-6890-7300

Spain ■ 91-630-7050

Australia ■ 1-800-243-800

Finland ■ 0800-914416

Korea (South) ■ 080-000-7145

Sweden ■ 020-790282

Austria ■ 0800/281010

France ■ 01-60-920-930

Luxembourg ■ 8002 2076

Switzerland ■ 055-254-22-11

Belgium ■ 0800-79612

Germany ■ 02103-29-12000

Mexico ■ 01-800-7742-436

UK ■ 01293-422-911

Brazil ■ 0800-557779

Hong Kong ■ 800 933 965

The Netherlands ■ 0800 0229592

USA ■ 800-426-8157



Sample & Assay Technologies