

RT² Profiler PCR Array (96-Well Format and 384-Well [4 x 96] Format)

Rat Embryonic Stem Cells

Cat. no. 330231 PARN-081YA

For pathway expression analysis

Format	For use with the following real-time cyclers
RT ² 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 ² Profiler PCR Array, Format C	Applied Biosystems models 7500 (Fast block), 7900HT (Fast block), StepOnePlus™, ViiA 7 (Fast block)
RT ² Profiler PCR Array, Format D	Bio-Rad CFX96™; Bio-Rad/MJ Research models DNA Engine Opticon®, DNA Engine Opticon 2; Stratagene Mx4000®
RT ² Profiler PCR Array, Format E	Applied Biosystems models 7900HT (384-well block), ViiA 7 (384-well block); Bio-Rad CFX384™
RT ² Profiler PCR Array, Format F	Roche® LightCycler® 480 (96-well block)
RT ² Profiler PCR Array, Format G	Roche LightCycler 480 (384-well block)
RT ² Profiler PCR Array, Format H	Fluidigm® BioMark™



Sample & Assay Technologies

Description

The Rat Embryonic Stem Cell RT² Profiler PCR Array profiles the expression of 84 key genes involved in the maintenance of pluripotency and the self-renewal status of embryonic stem cells. Embryonic stem cells (ESC) hold great potential in treating diseases and injuries. However, turning them into a safe therapeutic agent still requires a deeper understanding how the control mechanisms for cell-lineage commitment and differentiation work. Some of this work is performed with ESCs, but similar studies make use of induced pluripotent stem cells (iPSC). The array includes embryonic stem cell-specific genes that maintain their pluripotent and self-renewal characteristics as well as key genes necessary for the first steps of iPSC generation. The array also includes differentiation markers that can be used to monitor the early events of ESC differentiation. A set of controls present on each array enables data analysis using the $\Delta\Delta\text{CT}$ method of relative quantification, assessment of reverse transcription performance, genomic DNA contamination, and PCR performance. Using real-time PCR, research studies can easily and reliably analyze expression of a focused panel of genes involved in embryonic stem cells maintenance and differentiation with this array.

For further details, consult the *RT² Profiler PCR Array Handbook*.

Shipping and storage

RT² 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. RT² 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 RT² 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 *RT² Profiler PCR Array Handbook* for layout.

	1	2	3	4	5	6	7	8	9	10	11	12
A	Acta2	Aicda	Alb	Alpl	Ccna2	Cd44	Cdc42	Cdk1	Chd1	Chd7	Cnot3	Des
B	Dnmt3b	Dppa2	Dppa3	En2	Eng	Esrrb	Etv2	Fgf2	Fgf5	Flii	Foxd3	Gata1
C	Gata2	Gata6	Gbx2	Gdf3	Gfap	Gsc	Hand1	Hnf4a	Hspa9	Isl1	Kat5	Klf4
D	Lefty1	Lin28a	Meis1	Mesp1	Mixl1	Mybl2	Myc	Myod1	Nanog	Ncam1	Nes	Nkx2-5
E	Nodal	Nr0b1	Nr5a2	Nr6a1	Nt5e	Olig2	Otx2	Pat1	Pax6	Pou5f1	Rif1	Scn1a
F	Smad1	Smad2	Smad3	Sox15	Sox17	Sox2	Sox7	Stat3	T	Tagln	Tal1	Tat
G	Tbx3	Tcf7l1	Tcf1a	Tdgf1	Tek	Terf	Thap11	Thy1	Trim28	Uhf1	Zfp42	Zfx
H	Actb	B2m	Hprt1	Ldha	Rplp1	RGDC	RTC	RTC	RTC	PPC	PPC	PPC

Gene table: RT² Profiler PCR Array

Position	UniGene	GenBank	Symbol	Description
A01	Rn.3114	NM_031004	Acta2	Smooth muscle alpha-actin
A02	Rn.118188	NM_001100779	Aicda	Activation-induced cytidine deaminase
A03	Rn.202968	NM_134326	Alb	Albumin
A04	Rn.82764	NM_013059	Alpl	Alkaline phosphatase, liver/bone/kidney
A05	Rn.13094	NM_053702	Ccna2	Cyclin A2
A06	Rn.1120	NM_012924	Cd44	Cd44 molecule
A07	Rn.228625	NM_171994	Cdc42	Cell division cycle 42 (GTP binding protein)
A08	Rn.6934	NM_019296	Cdk1	Cyclin-dependent kinase 1
A09	Rn.198122	NM_001107465	Chd1	Chromodomain helicase DNA binding protein 1
A10	N/A	NM_001107906	Chd7	Chromodomain helicase DNA binding protein 7
A11	Rn.212216	NM_001107471	Cnot3	CCR4-NOT transcription complex, subunit 3
A12	Rn.39196	NM_022531	Des	Desmin
B01	Rn.117353	NM_001003959	Dnmt3b	DNA (cytosine-5-)-methyltransferase 3 beta
B02	N/A	XM_001063497	Dppa2	Developmental pluripotency associated 2
B03	Rn.79056	NM_001047864	Dppa3	Developmental pluripotency-associated 3
B04	Rn.156472	NM_001109214	En2	Engrailed homeobox 2
B05	Rn.187025	NM_001010968	Eng	Endoglin
B06	Rn.104984	NM_001008516	Esrrb	Estrogen-related receptor beta
B07	N/A	XM_341830	Etv2	Ets variant 2
B08	Rn.31808	NM_019305	Fgf2	Fibroblast growth factor 2
B09	Rn.44445	NM_022211	Fgf5	Fibroblast growth factor 5
B10	Rn.144698	NM_001008279	Flii	Flightless I homolog (Drosophila)
B11	Rn.92964	XM_575873	Foxd3	Forkhead box D3
B12	Rn.10024	NM_012764	Gata1	GATA binding protein 1
C01	Rn.34322	NM_033442	Gata2	GATA binding protein 2
C02	Rn.8701	NM_019185	Gata6	GATA binding protein 6
C03	Rn.92363	NM_053708	Gbx2	Gastrulation brain homeobox 2
C04	Rn.202592	NM_001109671	Gdf3	Growth differentiation factor 3
C05	Rn.91512	NM_017009	Gfap	Glial fibrillary acidic protein
C06	Rn.228175	NM_001191873	Gsc	Goosecoid homeobox
C07	Rn.100787	NM_021592	Hand1	Heart and neural crest derivatives expressed 1
C08	Rn.12238	NM_022180	Hnf4a	Hepatocyte nuclear factor 4, alpha
C09	Rn.7535	NM_001100658	Hspa9	Heat shock protein 9
C10	Rn.36202	NM_017339	Isl1	ISL LIM homeobox 1
C11	Rn.6629	NM_001005872	Kat5	K(lysine) acetyltransferase 5
C12	Rn.7719	NM_053713	Klf4	Kruppel-like factor 4 (gut)
D01	Rn.218667	NM_001109080	Lefty1	Left right determination factor 1
D02	Rn.147538	NM_001109269	Lin28a	Lin-28 homolog (C. elegans)
D03	Rn.32269	NM_001134702	Meis1	Meis homeobox 1
D04	Rn.115951	NM_001107531	Mesp1	Mesoderm posterior 1 homolog (mouse)
D05	Rn.218456	NM_001105979	Mixl1	Mix1 homeobox-like 1 (Xenopus laevis)
D06	Rn.20824	NM_001106536	Mybl2	Myeloblastosis oncogene-like 2
D07	Rn.12072	NM_012603	Myc	Myelocytomatosis oncogene
D08	Rn.9493	NM_176079	Myod1	Myogenic differentiation 1
D09	Rn.124668	NM_001100781	Nanog	Nanog homeobox

Position	UniGene	GenBank	Symbol	Description
D10	Rn.214248	NM_031521	Ncam1	Neural cell adhesion molecule 1
D11	Rn.9701	NM_012987	Nes	Nestin
D12	Rn.6179	NM_053651	Nkx2-5	NK2 transcription factor related, locus 5 (Drosophila)
E01	Rn.218528	NM_001106394	Nodal	Nodal homolog (mouse)
E02	Rn.10596	NM_053317	Nr0b1	Nuclear receptor subfamily 0, group B, member 1
E03	Rn.42941	NM_021742	Nr5a2	Nuclear receptor subfamily 5, group A, member 2
E04	Rn.233417	XM_006224403	Nr6a1	Nuclear receptor subfamily 6, group A, member 1
E05	Rn.40132	NM_021576	Nt5e	5' nucleotidase, ecto
E06	Rn.22121	NM_001100557	Olig2	Oligodendrocyte lineage transcription factor 2
E07	Rn.35222	NM_001100566	Otx2	Orthodenticle homeobox 2
E08	Rn.161558	NM_001024898	Paf1	Paf1, RNA polymerase II associated factor, homolog (S. cerevisiae)
E09	Rn.89724	NM_013001	Pax6	Paired box 6
E10	Rn.161748	NM_001009178	Pou5f1	POU class 5 homeobox 1
E11	N/A	XM_003753723	Rif1	Rap1 interacting factor 1 homolog (yeast)
E12	Rn.32079	NM_030875	Scn1a	Sodium channel, voltage-gated, type I, alpha
F01	Rn.10635	NM_013130	Smad1	SMAD family member 1
F02	Rn.2755	NM_019191	Smad2	SMAD family member 2
F03	Rn.10636	NM_013095	Smad3	SMAD family member 3
F04	Rn.145250	NM_001108830	Sox15	SRY (sex determining region Y)-box 15
F05	Rn.7884	NM_001107902	Sox17	SRY (sex determining region Y)-box 17
F06	Rn.17369	NM_001109181	Sox2	SRY (sex determining region Y)-box 2
F07	Rn.17732	NM_001106045	Sox7	SRY (sex determining region Y)-box 7
F08	Rn.10247	NM_012747	Stat3	Signal transducer and activator of transcription 3
F09	Rn.218650	NM_001106209	T	T, brachyury homolog (mouse)
F10	Rn.34397	NM_031549	Tagln	Transgelin
F11	Rn.9434	NM_001107958	Tal1	T-cell acute lymphocytic leukemia 1
F12	Rn.9947	NM_012668	Tat	Tyrosine aminotransferase
G01	Rn.162144	NM_181638	Tbx3	T-box 3
G02	Rn.33103	NM_001107865	Tcf7l1	Transcription factor 3
G03	Rn.218634	NM_001109601	Tcl1a	T-cell leukemia/lymphoma 1A
G04	N/A	XM_001056317	Tdgf1	Teratocarcinoma-derived growth factor 1
G05	Rn.9159	NM_001105737	Tek	TEK tyrosine kinase, endothelial
G06	Rn.48802	NM_053423	Tert	Telomerase reverse transcriptase
G07	Rn.2823	NM_001107422	Thap11	THAP domain containing 11
G08	Rn.108198	NM_012673	Thy1	Thy-1 cell surface antigen
G09	Rn.198494	NM_053916	Trim28	Tripartite motif-containing 28
G10	Rn.220371	NM_001131032	Ulf1	Undifferentiated embryonic cell transcription factor 1
G11	N/A	XM_002728408	Zfp42	Zinc finger protein 42
G12	Rn.218078	NM_001109017	Zfx	Zinc finger protein X-linked
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, RT² Profiler PCR Arrays should be used together with the RT² First Strand Kit for cDNA synthesis and RT² SYBR[®] Green qPCR Mastermixes for PCR.

Product	Contents	Cat. no.
RT ² First Strand Kit (12)	Enzymes and reagents for cDNA synthesis	330401
RT ² 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 ² 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 ² 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.

RT² 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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