

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

## Mouse Embryonic Stem Cells

Cat. no. 330231 PAMM-081YA

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 Mouse Embryonic Stem Cell RT<sup>2</sup> 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 *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
<b>A</b>	<i>Acta2</i>	<i>Aicda</i>	<i>Alb</i>	<i>Alpl</i>	<i>Ccna2</i>	<i>Cd44</i>	<i>Cdc42</i>	<i>Cdk1</i>	<i>Chd1</i>	<i>Chd7</i>	<i>Cnot3</i>	<i>Des</i>
<b>B</b>	<i>Dppa2</i>	<i>Dppa3</i>	<i>Dppa4</i>	<i>Dppa5a</i>	<i>En2</i>	<i>Eng</i>	<i>Esrrb</i>	<i>Etv2</i>	<i>Fgf2</i>	<i>Fgf5</i>	<i>Flii</i>	<i>Gata1</i>
<b>C</b>	<i>Gata2</i>	<i>Gata6</i>	<i>Gdf3</i>	<i>Gfap</i>	<i>Gsc</i>	<i>Hand1</i>	<i>Hnf4a</i>	<i>Hspa9</i>	<i>Isl1</i>	<i>Kat5</i>	<i>Klf4</i>	<i>Lin28a</i>
<b>D</b>	<i>Meis1</i>	<i>Mesp1</i>	<i>Mix1</i>	<i>Mybl2</i>	<i>Myc</i>	<i>Myod1</i>	<i>Nanog</i>	<i>Ncam1</i>	<i>Nes</i>	<i>Nkx2-5</i>	<i>Nr0b1</i>	<i>Nr5a2</i>
<b>E</b>	<i>Nr6a1</i>	<i>Nr5e</i>	<i>Olig2</i>	<i>Otx2</i>	<i>Paf1</i>	<i>Pax6</i>	<i>Pou5f1</i>	<i>Prdm14</i>	<i>Rif1</i>	<i>Sall4</i>	<i>Scn1a</i>	<i>Smad1</i>
<b>F</b>	<i>Smad2</i>	<i>Smad3</i>	<i>Sox15</i>	<i>Sox17</i>	<i>Sox2</i>	<i>Sox3</i>	<i>Sox7</i>	<i>Stat3</i>	<i>T</i>	<i>Tagln</i>	<i>Tal1</i>	<i>Tat</i>
<b>G</b>	<i>Tbx3</i>	<i>Tcf3</i>	<i>Tcf1</i>	<i>Tdgf1</i>	<i>Tek</i>	<i>Tert</i>	<i>Thap11</i>	<i>Thy1</i>	<i>Trim28</i>	<i>Uhf1</i>	<i>Zfp42</i>	<i>Zfx</i>
<b>H</b>	<i>Actb</i>	<i>B2m</i>	<i>Gapdh</i>	<i>Gusb</i>	<i>Hsp90ab1</i>	<i>MGDC</i>	<i>RTC</i>	<i>RTC</i>	<i>RTC</i>	<i>PPC</i>	<i>PPC</i>	<i>PPC</i>

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

Position	UniGene	GenBank	Symbol	Description
A01	Mm.213025	NM_007392	<i>Acta2</i>	Actin, alpha 2, smooth muscle, aorta
A02	Mm.391503	NM_009645	<i>Aicda</i>	Activation-induced cytidine deaminase
A03	Mm.16773	NM_009654	<i>Alb</i>	Albumin
A04	Mm.288186	NM_007431	<i>Alpl</i>	Alkaline phosphatase, liver/bone/kidney
A05	Mm.4189	NM_009828	<i>Ccna2</i>	Cyclin A2
A06	Mm.423621	NM_009851	<i>Cd44</i>	CD44 antigen
A07	Mm.447553	NM_009861	<i>Cdc42</i>	Cell division cycle 42 homolog ( <i>S. cerevisiae</i> )
A08	Mm.281367	NM_007659	<i>Cdk1</i>	Cyclin-dependent kinase 1
A09	Mm.8137	NM_007690	<i>Chd1</i>	Chromodomain helicase DNA binding protein 1
A10	Mm.138792	NM_001081417	<i>Chd7</i>	Chromodomain helicase DNA binding protein 7
A11	Mm.358731	NM_146176	<i>Cnot3</i>	CCR4-NOT transcription complex, subunit 3
A12	Mm.6712	NM_010043	<i>Des</i>	Desmin
B01	Mm.27857	NM_028615	<i>Dppa2</i>	Developmental pluripotency associated 2
B02	Mm.27982	NM_139218	<i>Dppa3</i>	Developmental pluripotency-associated 3
B03	Mm.35597	NM_028610	<i>Dppa4</i>	Developmental pluripotency associated 4
B04	Mm.440500	NM_025274	<i>Dppa5a</i>	Developmental pluripotency associated 5A
B05	Mm.4298	NM_010134	<i>En2</i>	Engrailed 2
B06	Mm.225297	NM_007932	<i>Eng</i>	Endoglin
B07	Mm.235550	NM_011934	<i>Esrrb</i>	Estrogen related receptor, beta
B08	Mm.4829	NM_007959	<i>Etv2</i>	Ets variant gene 2
B09	Mm.473689	NM_008006	<i>Fgf2</i>	Fibroblast growth factor 2
B10	Mm.5055	NM_010203	<i>Fgf5</i>	Fibroblast growth factor 5
B11	Mm.339755	NM_022009	<i>Flii</i>	Flightless 1 homolog ( <i>Drosophila</i> )
B12	Mm.335973	NM_008089	<i>Gata1</i>	GATA binding protein 1
C01	Mm.491156	NM_008090	<i>Gata2</i>	GATA binding protein 2
C02	Mm.329287	NM_010258	<i>Gata6</i>	GATA binding protein 6
C03	Mm.299742	NM_008108	<i>Gdf3</i>	Growth differentiation factor 3
C04	Mm.1239	NM_010277	<i>Gfap</i>	Glial fibrillary acidic protein
C05	Mm.129	NM_010351	<i>Gsc</i>	Goosecoid homeobox
C06	Mm.4746	NM_008213	<i>Hand1</i>	Heart and neural crest derivatives expressed transcript 1
C07	Mm.202383	NM_008261	<i>Hnf4a</i>	Hepatic nuclear factor 4, alpha
C08	Mm.209419	NM_010481	<i>Hspa9</i>	Heat shock protein 9
C09	Mm.42242	NM_021459	<i>Isl1</i>	ISL1 transcription factor, LIM/homeodomain
C10	Mm.228930	NM_178637	<i>Kat5</i>	K(lysine) acetyltransferase 5
C11	Mm.4325	NM_010637	<i>Klf4</i>	Kruppel-like factor 4 (gut)
C12	Mm.302567	NM_145833	<i>Lin28a</i>	Lin-28 homolog A ( <i>C. elegans</i> )
D01	Mm.445192	NM_010789	<i>Meis1</i>	Meis homeobox 1
D02	Mm.1404	NM_008588	<i>Mesp1</i>	Mesoderm posterior 1
D03	Mm.103647	NM_013729	<i>Mix1</i>	Mix1 homeobox-like 1 ( <i>Xenopus laevis</i> )
D04	Mm.4594	NM_008652	<i>Mybl2</i>	Myeloblastosis oncogene-like 2
D05	Mm.2444	NM_010849	<i>Myc</i>	Myelocytomatosis oncogene
D06	Mm.1526	NM_010866	<i>Myod1</i>	Myogenic differentiation 1
D07	Mm.6047	NM_028016	<i>Nanog</i>	Nanog homeobox
D08	Mm.439182	NM_010875	<i>Ncam1</i>	Neural cell adhesion molecule 1
D09	Mm.331129	NM_016701	<i>Nes</i>	Nestin

Position	UniGene	GenBank	Symbol	Description
D10	Mm.41974	NM_008700	Nkx2-5	NK2 transcription factor related, locus 5 (Drosophila)
D11	Mm.5180	NM_007430	Nr0b1	Nuclear receptor subfamily 0, group B, member 1
D12	Mm.16794	NM_030676	Nr5a2	Nuclear receptor subfamily 5, group A, member 2
E01	Mm.439703	NM_010264	Nr6a1	Nuclear receptor subfamily 6, group A, member 1
E02	Mm.244235	NM_011851	Nt5e	5' nucleotidase, ecto
E03	Mm.37289	NM_016967	Olig2	Oligodendrocyte transcription factor 2
E04	Mm.487292	NM_144841	Otx2	Orthodenticle homolog 2 (Drosophila)
E05	Mm.7916	NM_019458	Paf1	Paf1, RNA polymerase II associated factor, homolog (S. cerevisiae)
E06	Mm.33870	NM_013627	Pax6	Paired box gene 6
E07	Mm.17031	NM_013633	Pou5f1	POU domain, class 5, transcription factor 1
E08	Mm.309380	NM_001081209	Prdm14	PR domain containing 14
E09	Mm.389247	NM_175238	Rif1	Rap1 interacting factor 1 homolog (yeast)
E10	Mm.491245	NM_175303	Sall4	Sal-like 4 (Drosophila)
E11	Mm.455166	NM_018733	Scn1a	Sodium channel, voltage-gated, type I, alpha
E12	Mm.223717	NM_008539	Smad1	MAD homolog 1 (Drosophila)
F01	Mm.490934	NM_010754	Smad2	MAD homolog 2 (Drosophila)
F02	Mm.7320	NM_016769	Smad3	MAD homolog 3 (Drosophila)
F03	Mm.347499	NM_009235	Sox15	SRY-box containing gene 15
F04	Mm.279103	NM_011441	Sox17	SRY-box containing gene 17
F05	Mm.65396	NM_011443	Sox2	SRY-box containing gene 2
F06	Mm.35784	NM_009237	Sox3	SRY-box containing gene 3
F07	Mm.42162	NM_011446	Sox7	SRY-box containing gene 7
F08	Mm.249934	NM_011486	Stat3	Signal transducer and activator of transcription 3
F09	Mm.913	NM_009309	T	Brachyury
F10	Mm.283283	NM_011526	Tagln	Transgelin
F11	Mm.439685	NM_011527	Tal1	T-cell acute lymphocytic leukemia 1
F12	Mm.28110	NM_146214	Tat	Tyrosine aminotransferase
G01	Mm.219139	NM_011535	Tbx3	T-box 3
G02	Mm.3406	NM_011548	Tcf3	Transcription factor 3
G03	Mm.18154	NM_009337	Tcl1	T-cell lymphoma breakpoint 1
G04	Mm.5090	NM_011562	Tdgf1	Teratocarcinoma-derived growth factor 1
G05	Mm.14313	NM_013690	Tek	Endothelial-specific receptor tyrosine kinase
G06	Mm.10109	NM_009354	Tert	Telomerase reverse transcriptase
G07	Mm.286598	NM_021513	Thap11	THAP domain containing 11
G08	Mm.3951	NM_009382	Thy1	Thymus cell antigen 1, theta
G09	Mm.398345	NM_011588	Trim28	Tripartite motif-containing 28
G10	Mm.10205	NM_009482	Uf1	Undifferentiated embryonic cell transcription factor 1
G11	Mm.285848	NM_009556	Zfp42	Zinc finger protein 42
G12	Mm.919	NM_011768	Zfx	Zinc finger protein X-linked
H01	Mm.391967	NM_007393	Actb	Actin, beta
H02	Mm.163	NM_009735	B2m	Beta-2 microglobulin
H03	Mm.304088	NM_008084	Gapdh	Glyceraldehyde-3-phosphate dehydrogenase
H04	Mm.3317	NM_010368	Gusb	Glucuronidase, beta
H05	Mm.2180	NM_008302	Hsp90ab1	Heat shock protein 90 alpha (cytosolic), class B member 1
H06	N/A	SA_00106	MGDC	Mouse 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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