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

Human Induced Pluripotent Stem Cells

Cat. no. 330231 PAHS-092ZA

For pathway expression analysis

Format	For use with the following real-time cyclers
RT² 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
RT² Profiler PCR Array, Format C	Applied Biosystems models 7500 (Fast block), 7900HT (Fast block), StepOnePlus™, ViiA 7 (Fast block)
RT² Profiler PCR Array, Format D	Bio-Rad CFX96™; Bio-Rad/MJ Research models DNA Engine Opticon®, DNA Engine Opticon 2; Stratagene Mx4000®
RT² Profiler PCR Array, Format E	Applied Biosystems models 7900HT (384-well block), ViiA 7 (384-well block); Bio-Rad CFX384™
RT² Profiler PCR Array, Format F	Roche® LightCycler® 480 (96-well block)
RT² Profiler PCR Array, Format G	Roche LightCycler 480 (384-well block)
RT² Profiler PCR Array, Format H	Fluidigm® BioMark™

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Description

The Human Induced Pluripotent Stem Cells RT² Profiler PCR Array profiles the expression of 84 key genes involved in induced pluripotent stem cell (iPSC) research. iPSCs hold the promise to provide treatments for a multitude of diseases by converting adult somatic cells into pluripotent cells that are able to differentiate into any one of a variety of cell types, avoiding the ethics of embryonic stem cell (ESC) use. The process starts by transfecting or transducing somatic cells (such as keratinocytes) with constructs ectopically expressing a combination of specific transcription factors (KLF4, MYC, POU5F1, and/or SOX2). These transcription factors reprogram or induce the somatic cells to "dedifferentiate", losing markers of the original cell type and gaining markers of pluripotent cells. Often, a combination of additional transcription factors (such as ESRRB, LIN28A, NANOG, MYCN, and/or NR5A2) increases induction efficiency. To control the procedure, the expression of multiple gene classes included on this array must be monitored simultaneously: representative parental cell line genes, the ectopically expressed transcription factors, markers of iPSCs, and markers of the redifferentiation into ectoderm, endoderm, and mesoderm. ESCs and iPSCs have proven to not be functionally identical. Therefore, this array also analyzes genes highly expressed in both cell types to help distinguish them and better understand their differences. Because the expression of typical housekeeping or reference genes often proves inconsistent in these types of studies, the array includes another gene (NAT1) used in iPSC gene expression for data normalization if needed. A set of controls present on each array enables data analysis using the ΔΔCT 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 involved in the induced pluripotent stem cell dedifferentiation and redifferentiation processes 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	ACTC1	AICDA	ALDH1A1	ALDH2	ALPL	APC	BGLAP	BMP2	BRIX1	CCNA2	CCNE1	CD34
B	CD9	CDC42	CDH1	CDH2	CDK1	COL1A1	COL2A1	COL9A1	DNMT3B	DPPA2	DPPA3	EMX2
C	EP300	ESRRB	FABP7	FGF2	FGF4	FGFR1	FOXA2	FOXD3	GABRB3	GATA2	GATA4	GDF3
D	GJA1	GJB2	GRB7	HAND1	HDAC2	HNF4A	HSPA9	KAT2A	KAT7	KAT8	KLF4	KRT15
E	LEFTY1	LEFTY2	LIN28A	MESP1	MYBL2	MYC	MYCN	NANOG	NAT1	NCAM1	NES	NODAL
F	NR5A2	NUMB	OLIG2	OTX2	PARD6A	PAX6	PECAM1	PODXL	POU5F1	REST	RUNX1	RUNX2
G	SOX15	SOX17	SOX2	SYCP3	TBX3	TCF3	TDGF1	TERT	TP53	TUBB3	UTF1	ZFP42
H	ACTB	B2M	GAPDH	HPRT1	RPLP0	HGDC	RTC	RTC	RTC	PPC	PPC	PPC

Gene table: RT² Profiler PCR Array

Position	UniGene	GenBank	Symbol	Description
A01	Hs.118127	NM_005159	ACTC1	Actin, alpha, cardiac muscle 1
A02	Hs.149342	NM_020661	AICDA	Activation-induced cytidine deaminase
A03	Hs.76392	NM_000689	ALDH1A1	Aldehyde dehydrogenase 1 family, member A1
A04	Hs.604551	NM_000690	ALDH2	Aldehyde dehydrogenase 2 family (mitochondrial)
A05	Hs.75431	NM_000478	ALPL	Alkaline phosphatase, liver/bone/kidney
A06	Hs.158932	NM_000038	APC	Adenomatous polyposis coli
A07	Hs.654541	NM_199173	BGLAP	Bone gamma-carboxyglutamate (gla) protein
A08	Hs.73853	NM_001200	BMP2	Bone morphogenetic protein 2
A09	Hs.718510	NM_018321	BRIX1	BRX1, biogenesis of ribosomes, homolog (S. cerevisiae)
A10	Hs.58974	NM_001237	CCNA2	Cyclin A2
A11	Hs.244723	NM_001238	CCNE1	Cyclin E1
A12	Hs.374990	NM_001773	CD34	CD34 molecule
B01	Hs.114286	NM_001769	CD9	CD9 molecule
B02	Hs.467637	NM_001791	CDC42	Cell division cycle 42 (GTP binding protein, 25kDa)
B03	Hs.461086	NM_004360	CDH1	Cadherin 1, type 1, E-cadherin (epithelial)
B04	Hs.464829	NM_001792	CDH2	Cadherin 2, type 1, N-cadherin (neuronal)
B05	Hs.732435	NM_001786	CDK1	Cyclin-dependent kinase 1
B06	Hs.172928	NM_000088	COL1A1	Collagen, type I, alpha 1
B07	Hs.408182	NM_001844	COL2A1	Collagen, type II, alpha 1
B08	Hs.590892	NM_001851	COL9A1	Collagen, type IX, alpha 1
B09	Hs.643024	NM_006892	DNMT3B	DNA (cytosine-5-)-methyltransferase 3 beta
B10	Hs.351113	NM_138815	DPPA2	Developmental pluripotency associated 2
B11	Hs.131358	NM_199286	DPPA3	Developmental pluripotency associated 3
B12	Hs.202095	NM_004098	EMX2	Empty spiracles homeobox 2
C01	Hs.517517	NM_001429	EP300	E1A binding protein p300
C02	Hs.435845	NM_004452	ESRRB	Estrogen-related receptor beta
C03	Hs.26770	NM_001446	FABP7	Fatty acid binding protein 7, brain
C04	Hs.284244	NM_002006	FGF2	Fibroblast growth factor 2 (basic)
C05	Hs.1755	NM_002007	FGF4	Fibroblast growth factor 4
C06	Hs.264887	NM_015850	FGFR1	Fibroblast growth factor receptor 1
C07	Hs.155651	NM_021784	FOXA2	Forkhead box A2
C08	Hs.546573	NM_012183	FOXD3	Forkhead box D3
C09	Hs.302352	NM_000814	GABRB3	Gamma-aminobutyric acid (GABA) A receptor, beta 3
C10	Hs.367725	NM_032638	GATA2	GATA binding protein 2
C11	Hs.243987	NM_002052	GATA4	GATA binding protein 4
C12	Hs.86232	NM_020634	GDF3	Growth differentiation factor 3
D01	Hs.700699	NM_000165	GJA1	Gap junction protein, alpha 1, 43kDa
D02	Hs.524894	NM_004004	GJB2	Gap junction protein, beta 2, 26kDa
D03	Hs.86859	NM_005310	GRB7	Growth factor receptor-bound protein 7
D04	Hs.152531	NM_004821	HAND1	Heart and neural crest derivatives expressed 1
D05	Hs.3352	NM_001527	HDAC2	Histone deacetylase 2
D06	Hs.116462	NM_178849	HNF4A	Hepatocyte nuclear factor 4, alpha
D07	Hs.184233	NM_004134	HSPA9	Heat shock 70kDa protein 9 (mortalin)
D08	Hs.463045	NM_021078	KAT2A	K(lysine) acetyltransferase 2A
D09	Hs.21907	NM_007067	KAT7	K(lysine) acetyltransferase 7

Position	UniGene	GenBank	Symbol	Description
D10	Hs.533803	NM_032188	KAT8	K(lysine) acetyltransferase 8
D11	Hs.376206	NM_004235	KLF4	Kruppel-like factor 4 (gut)
D12	Hs.654570	NM_002275	KRT15	Keratin 15
E01	Hs.656214	NM_020997	LEFTY1	Left-right determination factor 1
E02	Hs.520187	NM_003240	LEFTY2	Left-right determination factor 2
E03	Hs.86154	NM_024674	LIN28A	Lin-28 homolog A (C. elegans)
E04	Hs.447531	NM_018670	MESP1	Mesoderm posterior 1 homolog (mouse)
E05	Hs.179718	NM_002466	MYBL2	V-myb myeloblastosis viral oncogene homolog (avian)-like 2
E06	Hs.202453	NM_002467	MYC	V-myc myelocytomatosis viral oncogene homolog (avian)
E07	Hs.25960	NM_005378	MYCN	V-myc myelocytomatosis viral related oncogene, neuroblastoma derived (avian)
E08	Hs.635882	NM_024865	NANOG	Nanog homeobox
E09	Hs.591847	NM_000662	NAT1	N-acetyltransferase 1 (arylamine N-acetyltransferase)
E10	Hs.503878	NM_000615	NCAM1	Neural cell adhesion molecule 1
E11	Hs.527971	NM_006617	NES	Nestin
E12	Hs.370414	NM_018055	NODAL	Nodal homolog (mouse)
F01	Hs.33446	NM_003822	NR5A2	Nuclear receptor subfamily 5, group A, member 2
F02	Hs.654609	NM_003744	NUMB	Numb homolog (Drosophila)
F03	Hs.176977	NM_005806	OLIG2	Oligodendrocyte lineage transcription factor 2
F04	Hs.288655	NM_021728	OTX2	Orthodenticle homeobox 2
F05	Hs.112933	NM_016948	PARD6A	Par-6 partitioning defective 6 homolog alpha (C. elegans)
F06	Hs.270303	NM_000280	PAX6	Paired box 6
F07	Hs.514412	NM_000442	PECAM1	Platelet/endothelial cell adhesion molecule
F08	Hs.744213	NM_005397	PODXL	Podocalyxin-like
F09	Hs.249184	NM_002701	POU5F1	POU class 5 homeobox 1
F10	Hs.307836	NM_005612	REST	RE1-silencing transcription factor
F11	Hs.149261	NM_001754	RUNX1	Runt-related transcription factor 1
F12	Hs.535845	NM_004348	RUNX2	Runt-related transcription factor 2
G01	Hs.95582	NM_006942	SOX15	SRY (sex determining region Y)-box 15
G02	Hs.98367	NM_022454	SOX17	SRY (sex determining region Y)-box 17
G03	Hs.518438	NM_003106	SOX2	SRY (sex determining region Y)-box 2
G04	Hs.506504	NM_153694	SYCP3	Synaptonemal complex protein 3
G05	Hs.744016	NM_016569	TBX3	T-box 3
G06	Hs.371282	NM_003200	TCF3	Transcription factor 3 (E2A immunoglobulin enhancer binding factors E12/E47)
G07	Hs.385870	NM_003212	TDGF1	Teratocarcinoma-derived growth factor 1
G08	Hs.492203	NM_198253	TERT	Telomerase reverse transcriptase
G09	Hs.437460	NM_000546	TP53	Tumor protein p53
G10	Hs.511743	NM_006086	TUBB3	Tubulin, beta 3
G11	Hs.458406	NM_003577	UTF1	Undifferentiated embryonic cell transcription factor 1
G12	Hs.335787	NM_174900	ZFP42	Zinc finger protein 42 homolog (mouse)
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, 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.
RT² First Strand Kit (12)	Enzymes and reagents for cDNA synthesis	330401
RT² 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
RT² 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
RT² 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.

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 or can be requested from QIAGEN Technical Services or your local distributor.

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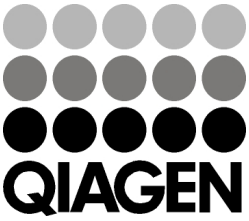

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