

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

## Human Cancer Stem Cells

Cat. no. 330231 PAHS-176ZA

For pathway expression analysis

Format	For use with the following real-time cyclers
RT <sup>2</sup> Profiler PCR Array, Format A	Applied Biosystems <sup>®</sup> models 5700, 7000, 7300, 7500, 7700, 7900HT, ViiA™ 7 (96-well block); Bio-Rad <sup>®</sup> models iCycler <sup>®</sup> , iQ™ 5, MyiQ™, MyiQ2; Bio-Rad/MJ Research Chromo4™; Eppendorf <sup>®</sup> Mastercycler <sup>®</sup> ep realplex models 2, 2s, 4, 4s; Stratagene <sup>®</sup> models Mx3005P <sup>®</sup> , Mx3000P <sup>®</sup> ; 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 <sup>®</sup> , DNA Engine Opticon 2; Stratagene Mx4000 <sup>®</sup>
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 <sup>®</sup> LightCycler <sup>®</sup> 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 <sup>®</sup> BioMark™



## Description

The Human Cancer Stem Cells RT<sup>2</sup> Profiler PCR array profiles the expression of 84 genes linked to cancer stem cells (CSCs). Cancer researchers have struggled with the vexing problem that although many cancer drugs dramatically reduce the size of the tumors, most cancers eventually relapse. Dynamic changes in cancer cell populations during treatment suggest that a small population of cells resistant to current therapies is ultimately responsible for the re-growth of tumors. Furthermore, studies imply that these cells may provide a reservoir for the generation and propagation of mutant cells providing further resistance to therapy. The cancer-stem-cell hypothesis posits that only a very rare population of cells within tumors has the capacity for limitless self-renewal. This concept has important therapeutic implications, and may explain why many cancers return even after treatment removes any detectable tumor cells. If current treatments do not eliminate cancer stem cells, then they may regenerate the tumor once treatment stops. Recently, advances in technology have allowed the prospective identification and purification of CSCs from various different types of cancers for further characterization. The genes profiled with this array include CSC molecular markers and genes regulating CSC proliferation, self-renewal, and pluripotency to help ensure the stability of CSC isolates in culture. Also included are genes involved in CSC asymmetric cell division, migration and metastasis, and relevant signal transduction pathways to help facilitate CSC characterization as well as the targets of therapeutics currently being tested. A set of controls present on each array enables data analysis using the  $\Delta\Delta\text{CT}$  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 related to cancer stem cells 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>	ABCB5	ABCG2	ALCAM	ALDH1A1	ATM	ATXN1	AXL	BMI1	BMP7	CD24	CD34	CD38
<b>B</b>	CD44	CHEK1	DACH1	DDR1	DKK1	DLL1	DLL4	DNMT1	EGF	ENG	EPCAM	ERBB2
<b>C</b>	ETFA	FGFR2	FLOT2	FOXA2	FOXP1	FZD7	GATA3	GSK3B	HDAC1	ID1	IKBKB	IL8
<b>D</b>	ITGA2	ITGA4	ITGA6	ITGB1	JAG1	JAK2	KIT	KITLG	KLF17	KLF4	LATS1	LIN28A
<b>E</b>	LIN28B	MAML1	MERTK	MS4A1	MUC1	MYC	MYCN	NANOG	NFKB1	NOS2	NOTCH1	NOTCH2
<b>F</b>	PECAM1	PLAT	PLAUR	POU5F1	PROM1	PTCH1	PTPRC	SAV1	SIRT1	SMO	SNAI1	SOX2
<b>G</b>	STAT3	TAZ	TGFBR1	THY1	TWIST1	TWIST2	WEE1	WNT1	WWC1	YAP1	ZEB1	ZEB2
<b>H</b>	ACTB	B2M	GAPDH	HPRT1	RPLP0	HGDC	RTC	RTC	RTC	PPC	PPC	PPC

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

Position	UniGene	GenBank	Symbol	Description
A01	Hs.404102	NM_178559	ABCB5	ATP-binding cassette, sub-family B (MDR/TAP), member 5
A02	Hs.480218	NM_004827	ABCG2	ATP-binding cassette, sub-family G (WHITE), member 2
A03	Hs.740441	NM_001627	ALCAM	Activated leukocyte cell adhesion molecule
A04	Hs.76392	NM_000689	ALDH1A1	Aldehyde dehydrogenase 1 family, member A1
A05	Hs.367437	NM_000051	ATM	Ataxia telangiectasia mutated
A06	Hs.434961	NM_000332	ATXN1	Ataxin 1
A07	Hs.590970	NM_001699	AXL	AXL receptor tyrosine kinase
A08	Hs.731287	NM_005180	BMI1	BMI1 polycomb ring finger oncogene
A09	Hs.473163	NM_001719	BMP7	Bone morphogenetic protein 7
A10	Hs.644105	NM_013230	CD24	CD24 molecule
A11	Hs.374990	NM_001773	CD34	CD34 molecule
A12	Hs.479214	NM_001775	CD38	CD38 molecule
B01	Hs.502328	NM_000610	CD44	CD44 molecule (Indian blood group)
B02	Hs.595920	NM_001274	CHEK1	CHK1 checkpoint homolog ( <i>S. pombe</i> )
B03	Hs.129452	NM_004392	DACH1	Dachshund homolog 1 ( <i>Drosophila</i> )
B04	Hs.631988	NM_001954	DDR1	Discoidin domain receptor tyrosine kinase 1
B05	Hs.40499	NM_012242	DKK1	Dickkopf homolog 1 ( <i>Xenopus laevis</i> )
B06	Hs.379912	NM_005618	DLL1	Delta-like 1 ( <i>Drosophila</i> )
B07	Hs.511076	NM_019074	DLL4	Delta-like 4 ( <i>Drosophila</i> )
B08	Hs.202672	NM_001379	DNMT1	DNA (cytosine-5-)-methyltransferase 1
B09	Hs.419815	NM_001963	EGF	Epidermal growth factor
B10	Hs.76753	NM_000118	ENG	Endoglin
B11	Hs.542050	NM_002354	EPCAM	Epithelial cell adhesion molecule
B12	Hs.446352	NM_004448	ERBB2	V-erb-b2 erythroblastic leukemia viral oncogene homolog 2, neuro/glioblastoma derived oncogene homolog (avian)
C01	Hs.39925	NM_000126	ETFA	Electron-transfer-flavoprotein, alpha polypeptide
C02	Hs.533683	NM_000141	FGFR2	Fibroblast growth factor receptor 2
C03	Hs.514038	NM_004475	FLOT2	Flotillin 2
C04	Hs.155651	NM_021784	FOXA2	Forkhead box A2
C05	Hs.59368	NM_032682	FOXP1	Forkhead box P1
C06	Hs.173859	NM_003507	FZD7	Frizzled family receptor 7
C07	Hs.524134	NM_002051	GATA3	GATA binding protein 3
C08	Hs.445733	NM_002093	GSK3B	Glycogen synthase kinase 3 beta
C09	Hs.88556	NM_004964	HDAC1	Histone deacetylase 1
C10	Hs.504609	NM_002165	ID1	Inhibitor of DNA binding 1, dominant negative helix-loop-helix protein
C11	Hs.597664	NM_001556	IKBKB	Inhibitor of kappa light polypeptide gene enhancer in B-cells, kinase beta
C12	Hs.624	NM_000584	IL8	Interleukin 8
D01	Hs.482077	NM_002203	ITGA2	Integrin, alpha 2 (CD49B, alpha 2 subunit of VLA-2 receptor)
D02	Hs.440955	NM_000885	ITGA4	Integrin, alpha 4 (antigen CD49D, alpha 4 subunit of VLA-4 receptor)
D03	Hs.133397	NM_000210	ITGA6	Integrin, alpha 6
D04	Hs.643813	NM_002211	ITGB1	Integrin, beta 1 (fibronectin receptor, beta polypeptide, antigen CD29 includes MDF2, MSK12)
D05	Hs.626544	NM_000214	JAG1	Jagged 1
D06	Hs.656213	NM_004972	JAK2	Janus kinase 2
D07	Hs.479754	NM_000222	KIT	V-kit Hardy-Zuckerman 4 feline sarcoma viral oncogene homolog

Position	UniGene	GenBank	Symbol	Description
D08	Hs.1048	NM_003994	KITLG	KIT ligand
D09	Hs.567674	NM_173484	KLF17	Kruppel-like factor 17
D10	Hs.376206	NM_004235	KLF4	Kruppel-like factor 4 (gut)
D11	Hs.549084	NM_004690	LATS1	LATS, large tumor suppressor, homolog 1 (Drosophila)
D12	Hs.86154	NM_024674	LIN28A	Lin-28 homolog A (C. elegans)
E01	Hs.23616	NM_001004317	LIN28B	Lin-28 homolog B (C. elegans)
E02	Hs.631951	NM_014757	MAML1	Mastermind-like 1 (Drosophila)
E03	Hs.306178	NM_006343	MERTK	C-mer proto-oncogene tyrosine kinase
E04	Hs.712553	NM_021950	MS4A1	Membrane-spanning 4-domains, subfamily A, member 1
E05	Hs.89603	NM_001018016	MUC1	Mucin 1, cell surface associated
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.618430	NM_003998	NFKB1	Nuclear factor of kappa light polypeptide gene enhancer in B-cells 1
E10	Hs.709191	NM_000625	NOS2	Nitric oxide synthase 2, inducible
E11	Hs.495473	NM_017617	NOTCH1	Notch 1
E12	Hs.487360	NM_024408	NOTCH2	Notch 2
F01	Hs.376675	NM_000442	PECAM1	Platelet/endothelial cell adhesion molecule
F02	Hs.491582	NM_000930	PLAT	Plasminogen activator, tissue
F03	Hs.466871	NM_002659	PLAUR	Plasminogen activator, urokinase receptor
F04	Hs.249184	NM_002701	POU5F1	POU class 5 homeobox 1
F05	Hs.614734	NM_006017	PROM1	Prominin 1
F06	Hs.494538	NM_000264	PTCH1	Patched 1
F07	Hs.654514	NM_002838	PTPRC	Protein tyrosine phosphatase, receptor type, C
F08	Hs.706933	NM_021818	SAV1	Salvador homolog 1 (Drosophila)
F09	Hs.369779	NM_012238	SIRT1	Sirtuin 1
F10	Hs.437846	NM_005631	SMO	Smoothened, frizzled family receptor
F11	Hs.48029	NM_005985	SNAI1	Snail homolog 1 (Drosophila)
F12	Hs.732963	NM_003106	SOX2	SRY (sex determining region Y)-box 2
G01	Hs.463059	NM_003150	STAT3	Signal transducer and activator of transcription 3 (acute-phase response factor)
G02	Hs.409911	NM_000116	TAZ	Tafazzin
G03	Hs.494622	NM_004612	TGFBR1	Transforming growth factor, beta receptor 1
G04	Hs.644697	NM_006288	THY1	Thy-1 cell surface antigen
G05	Hs.644998	NM_000474	TWIST1	Twist homolog 1 (Drosophila)
G06	Hs.422585	NM_057179	TWIST2	Twist homolog 2 (Drosophila)
G07	Hs.249441	NM_003390	WEE1	WEE1 homolog (S. pombe)
G08	Hs.248164	NM_005430	WNT1	Wingless-type MMTV integration site family, member 1
G09	Hs.484047	NM_015238	WWC1	WW and C2 domain containing 1
G10	Hs.503692	NM_006106	YAP1	Yes-associated protein 1
G11	Hs.124503	NM_030751	ZEB1	Zinc finger E-box binding homeobox 1
G12	Hs.34871	NM_014795	ZEB2	Zinc finger E-box binding homeobox 2
H01	Hs.520640	NM_001101	ACTB	Actin, beta
H02	Hs.534255	NM_004048	B2M	Beta-2-microglobulin
H03	Hs.544577	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, 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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