

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

Zebrafish Mesenchymal Stem Cell

Cat. no. 330231 PAZF-082ZA

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 Zebrafish Mesenchymal Stem Cell RT² Profiler PCR Array profiles the expression of 84 key genes involved in maintaining pluripotency and self-renewal status. Mesenchymal stem cells (MSC) are multipotent adult stem cells able to differentiate into a variety of cell types such as osteoblasts, chondrocytes, myocytes, adipocytes, and beta-pancreatic islets cells. Because MSC can easily be isolated from a variety of tissues and expanded in vitro, they may serve as a valuable resource for regenerative medicine. However, diverse MSC isolation protocols make it difficult to compare results between laboratories. Examining gene expression profiles with this PCR Array may help you better interpret the nature of the initial MSC isolates and their behavior afterwards. The array includes genes that define the "stemness" of these cells and that maintain their pluripotency and self-renewal characteristics. The array has a collection of genes shown to be MSC-specific markers that distinguish them from embryonic stem cells (ESC). The array also includes differentiation markers that can be used to monitor early MSC differentiation events. 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 involved in mesenchymal stem cell 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	alcama	alcamb	anpepb	anxa5b	bdnf	bglapl	bmp2b	bmp4	bmp6	bmp7b	casp3a
B	col1a1a	csf3	ctnnb1	egf	erbb2	fgf10a	fgf2	mospd1	fzd9	gdf5	gdf6a	gdf6b
C	gdf7	gdf3aa	hat1	hdac1	hgfa	hnf1a	ifng1-2	igf1	il10	il1b	il6	ins
D	itga6a	itgav	itgb1a	itgb1b	jag1b	kat2b	kdr	kitlga	kitlgb	LOC100330801	LOC101882965	LOC101886665
E	mcamb	mmp2	nes	ngfrb	notch1a	notch1b	nt5e	nudt6	pdgfrb	pigs	pou5f3	pparg
F	prom1a	ptk2.1	plprc	rhoab	runx2a	slc17a5	smurf1	smurf2	sox11a	sox11b	sox2	sox9a
G	tbx5a	tert	tgfb1a	tgfb3	thy1	tnfa	tnfb	vcam1	vegfaa	vim	vwf	wnt3a
H	acta1b	b2m	hprt1	nono	rpl13a	ZGDC	RTC	RTC	RTC	PPC	PPC	PPC

Gene table: RT² Profiler PCR Array

Position	UniGene	GenBank	Symbol	Description
A01	Dr.20277	NM_212620	acta2	Actin, alpha 2, smooth muscle, aorta
A02	Dr.20912	NM_131000	alcama	Activated leukocyte cell adhesion molecule a
A03	Dr.105054	NM_212634	alcamb	Activated leukocyte cell adhesion molecule b
A04	Dr.40386	NM_001089325	anpepb	Alanyl (membrane) aminopeptidase b
A05	Dr.75805	NM_181757	anxa5b	Annexin A5b
A06	Dr.132862	NM_131595	bdnf	Brain-derived neurotrophic factor
A07	N/A	XM_003198735	bglapl	Hm:zehn0597
A08	Dr.568	NM_131360	bmp2b	Bone morphogenetic protein 2b
A09	Dr.567	NM_131342	bmp4	Bone morphogenetic protein 4
A10	Dr.85164	NM_001013339	bmp6	Bone morphogenetic protein 6
A11	Dr.82018	NM_001077146	bmp7b	Bone morphogenetic protein 7b
A12	Dr.11726	NM_131877	casp3a	Caspase 3, apoptosis-related cysteine protease a
B01	Dr.20097	NM_199214	col1a1a	Collagen, type I, alpha 1a
B02	Dr.112272	NM_001143754	csf3	CSF3 protein
B03	Dr.120367	NM_131059	ctnnb1	Catenin (cadherin-associated protein), beta 1
B04	Dr.89719	NM_205731	egf	Epidermal growth factor
B05	Dr.52559	NM_200119	erbb2	V-erb-b2 erythroblastic leukemia viral oncogene homolog 2, neuro/glioblastoma derived oncogene homolog
B06	Dr.79709	NM_182870	fgf10a	Fibroblast growth factor 10a
B07	Dr.88830	NM_212823	fgf2	Fibroblast growth factor 2
B08	Dr.1753	NM_213369	mospd1	Motile sperm domain containing 1
B09	N/A	XM_003198686	fzd9	Frizzled homolog 9 (Drosophila)
B10	N/A	XM_002662541	gdf5	Growth/differentiation factor 5-like
B11	Dr.16432	NM_001159994	gdf6a	Growth differentiation factor 6a
B12	Dr.75756	NM_130987	gdf6b	Growth differentiation factor 6b
C01	Dr.88610	XM_689471	gdf7	Growth/differentiation factor 7
C02	Dr.78835	NM_001003866	gdf3aa	General transcription factor IIIAa
C03	Dr.104658	NM_001004572	hat1	Histone acetyltransferase 1
C04	Dr.31752	NM_173236	hdac1	Histone deacetylase 1
C05	Dr.91265	NM_001013274	hgfa	Hepatocyte growth factor a
C06	Dr.85278	NM_170764	hnf1a	HNF1 homeobox a
C07	Dr.90633	NM_212864	ifng1-2	Interferon, gamma 1-2
C08	Dr.82556	NM_131825	igf1	Insulin-like growth factor 1
C09	Dr.135567	NM_001020785	il10	Interleukin 10
C10	Dr.30443	NM_212844	il1b	Interleukin 1, beta
C11	Dr.162566	NM_001261449	il6	Interleukin 6 (interferon, beta 2)
C12	Dr.75811	NM_131056	ins	Preproinsulin
D01	Dr.117274	XM_005167409	itga6a	Integrin, alpha 6a
D02	Dr.133012	NM_001033721	itgav	Integrin, alpha V
D03	Dr.134213	NM_001034971	itgb1a	Integrin, beta 1a
D04	Dr.142266	NM_001034987	itgb1b	Integrin, beta 1b
D05	Dr.12589	NM_131863	jag1b	Jagged 1b
D06	Dr.97337	NM_001045034	kat2b	K(lysine) acetyltransferase 2B

Position	UniGene	GenBank	Symbol	Description
D07	Dr.91385	NM_001024653	kdr	Kinase insert domain receptor (a type III receptor tyrosine kinase)
D08	Dr.84231	NM_001018123	kitlga	Kit ligand a
D09	Dr.92686	NM_001018127	kitlgb	Kit ligand b
D10	N/A	XM_002666970	LOC100330801	Hypothetical protein LOC100330801
D11	N/A	XM_005164240	LOC101882965	Intercellular adhesion molecule 1-like
D12	N/A	XM_005171256	LOC101886665	Growth/differentiation factor 15-like
E01	Dr.83306	NM_001012367	mcamb	Melanoma cell adhesion molecule b
E02	Dr.76397	NM_198067	mmp2	Matrix metalloproteinase 2
E03	Dr.151468	XM_001919887	nes	Nestin
E04	Dr.159370	NM_001198660	ngfrb	Nerve growth factor receptor (TNFR superfamily, member 16) like
E05	Dr.75753	NM_131441	notch1a	Notch homolog 1a
E06	Dr.75825	NM_131302	notch1b	Notch homolog 1b
E07	Dr.78152	NM_200932	nt5e	5'-nucleotidase, ecto (CD73)
E08	Dr.90780	NM_001089522	nudt6	Zgc:162229
E09	Dr.159213	NM_001190933	pdgfrb	Platelet-derived growth factor receptor beta
E10	Dr.80765	NM_001076614	pigs	Zgc:152927
E11	Dr.258	NM_131112	pou5f3	POU domain, class 5, transcription factor 1
E12	Dr.159153	NM_131467	pparg	Peroxisome proliferator activated receptor gamma
F01	Dr.27185	NM_001115143	prom1a	Prominin 1a
F02	Dr.692	NM_131796	ptk2.1	Protein tyrosine kinase 2a
F03	Dr.157325	XM_005161749	ptprc	Protein tyrosine phosphatase, receptor type, C
F04	Dr.25812	NM_212749	rhoab	Ras homolog gene family, member Ab
F05	Dr.89714	NM_212858	runx2a	Runx-related transcription factor 2a
F06	Dr.85160	NM_001076727	slc17a5	Solute carrier family 17 (anion/sugar transporter), member 5
F07	Dr.76814	NM_001001943	smurf1	WW domain containing E3 ubiquitin protein ligase 1
F08	Dr.77630	NM_001114426	smurf2	SMAD specific E3 ubiquitin protein ligase 2
F09	Dr.4763	NM_131336	sox11a	SRY-box containing gene 11a
F10	Dr.77148	NM_131337	sox11b	SRY-box containing gene 11b
F11	Dr.5379	NM_213118	sox2	SRY-box containing gene 2
F12	Dr.80814	NM_131643	sox9a	SRY-box containing gene 9a
G01	Dr.81302	NM_130915	tbx5a	T-box 5a
G02	Dr.87388	NM_001083866	tert	Telomerase reverse transcriptase
G03	Dr.76626	NM_182873	tgfb1a	Transforming growth factor, beta 1a
G04	Dr.116110	NM_194386	tgfb3	Transforming growth factor, beta 3
G05	Dr.159432	NM_198065	thy1	Thy-1 cell surface antigen
G06	Dr.89727	NM_212859	tnfa	Tumor necrosis factor a (TNF superfamily, member 2)
G07	Dr.94015	NM_001024447	tnfb	Tumor necrosis factor b (TNF superfamily, member 2)
G08	Dr.81382	NM_001083835	vcam1	Vascular cell adhesion molecule 1
G09	Dr.597	NM_001110349	vegfaa	Vascular endothelial growth factor Aa
G10	Dr.161731	NM_131872	vim	Vimentin
G11	N/A	NM_001281989	vwf	Von Willebrand factor
G12	Dr.92208	NM_001007185	wnt3a	Wingless-type MMTV integration site family, member 3A
H01	Dr.47173	NM_214784	acta1b	Actin, alpha 1b, skeletal muscle
H02	Dr.51646	NM_001159768	b2m	Beta-2-microglobulin
H03	Dr.77915	NM_212986	hprt1	Hypoxanthine phosphoribosyltransferase 1
H04	Dr.150274	NM_201579	nono	Non-POU domain containing, octamer-binding
H05	Dr.32450	NM_212784	rpl13a	Ribosomal protein L13a
H06	N/A zebrafish	SA_00143	ZGDC	Zebrafish 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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