

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

Dog Cancer Stem Cells

Cat. no. 330231 PAFD-176Z

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 Dog Cancer Stem Cells RT² 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 $\Delta\Delta CT$ 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 *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 *R² Profiler PCR Array Handbook* for layout.

	1	2	3	4	5	6	7	8	9	10	11	12
A	LOC482344	ABCG2	ALCAM	ALDH1A1	ATM	ATXN1	AXL	BMI1	BMP7	CD34	CD38	CD44
B	CHEK1	DACH1	DDR1	DKK1	DLL1	DLL4	DNMT1	EGF	ENG	EPCAM	ERBB2	ETFA
C	FGFR2	FLOT2	FOXA2	FOXP1	FZD7	GATA3	GSK3B	HDAC1	ID1	IKKB	CXCL8	ITGA2
D	ITGA4	ITGA6	ITGB1	JAG1	JAK2	KIT	KITLG	KLF17	KLF4	L1CAM	LATS1	LIN28A
E	LIN28B	MAML1	MERTK	MS4A1	MUC1	MYC	MYCN	NANOG	NFKB1	NOS2	NOTCH1	NOTCH2
F	PECAM1	PLAT	PLAUR	POU5F1	PROM1	PTCH1	PTPRC	SAV1	SIRT1	SMO	SNAI1	SOX2
G	STAT3	TAZ	TGFB1	THY1	TWIST1	TWIST2	WEE1	WNT1	WWC1	YAP1	ZEB1	ZEB2
H	ACTB	B2M	GAPDH	HPRT1	RPLP1	FGDC	RTC	RTC	RTC	PPC	PPC	PPC

Gene table: RT² Profiler PCR Array

Position	UniGene	GenBank	Symbol	Description	Assay
A01	N/A	XM_014118880	LOC482344	ATP-binding cassette, sub-family B (MDR/TAP), member 5	PPF05735A
A02	Cfa.9822	NM_001048021	ABCG2	ATP-binding cassette, sub-family G (WHITE), member 2	PPF03377A
A03	Cfa.3742	NM_001313804	ALCAM	Activated leukocyte cell adhesion molecule	PPF03427A
A04	Cfa.1715	NM_001286977	ALDH1A1	Aldehyde dehydrogenase 1 family, member A1	PPF01977A
A05	Cfa.48507	NM_001130828	ATM	Ataxia telangiectasia mutated	PPF04009A
A06	N/A	XM_545354	ATXN1	Ataxin 1	PPF09022A
A07	N/A	XM_005616882	AXL	AXL receptor tyrosine kinase	PPF06893A
A08	Cfa.47657	NM_001287063	BMI1	BMI1 polycomb ring finger oncogene	PPF08380A
A09	Cfa.8	NM_001197052	BMP7	Bone morphogenetic protein 7	PPF02615A
A10	Cfa.3771	NM_001003341	CD34	CD34 molecule	PPF00586A
A11	Cfa.3619	NM_001003143	CD38	CD38 molecule	PPF00329A
A12	Cfa.3800	NM_001197022	CD44	CD44 molecule (Indian blood group)	PPF00491A
B01	N/A	XM_014113312	CHEK1	CHK1 checkpoint homolog (S. pombe)	PPF12459A
B02	N/A	XM_005633958	DACH1	Dachshund homolog 1 (Drosophila)	PPF07469A
B03	N/A	XM_852240	DDR1	Discoidin domain receptor tyrosine kinase 1	PPF01002A
B04	N/A	XM_005636664	DKK1	Dickkopf WNT signaling pathway inhibitor 1	PPF12382A
B05	N/A	XM_005627795	DLL1	Delta-like 1 (Drosophila)	PPF18195A
B06	N/A	XM_852991	DLL4	Delta-like 4 (Drosophila)	PPF11528A
B07	N/A	XM_005632905	DNMT1	DNA (cytosine-5)-methyltransferase 1	PPF02243A
B08	Cfa.3524	NM_001003094	EGF	Epidermal growth factor	PPF00236A
B09	N/A	XM_005625330	ENG	Endoglin	PPF12205A
B10	N/A	XM_005626238	EPCAM	Epithelial cell adhesion molecule	PPF05201A
B11	Cfa.3747	NM_001003217	ERBB2	V-erb-b2 erythroblastic leukemia viral oncogene homolog 2, neuro/glioblastoma derived oncogene homolog (avian)	PPF00444B
B12	N/A	XM_848294	ETFA	Electron-transfer-flavoprotein, alpha polypeptide	PPF12611A
C01	Cfa.86	NM_001003336	FGFR2	Fibroblast growth factor receptor 2	PPF00581A
C02	N/A	XM_848559	FLOT2	Flotillin 2	PPF12954A
C03	N/A	XM_005634712	FOXA2	Forkhead box A2	PPF07607A
C04	N/A	XM_005632256	FOXP1	Forkhead box P1	PPF07013A
C05	N/A	XM_545599	FZD7	Frizzled family receptor 7	PPF09117A
C06	N/A	XM_844060	GATA3	GATA binding protein 3	PPF08397A
C07	N/A	XM_535751	GSK3B	Glycogen synthase kinase 3 beta	PPF03443A
C08	N/A	XM_544435	HDAC1	Similar to histone deacetylase 1	PPF15483A
C09	N/A	XM_847117	ID1	Inhibitor of DNA binding 1, dominant negative helix-loop-helix protein	PPF12464A
C10	N/A	XM_539954	IKKB	Inhibitor of kappa light polypeptide gene enhancer in B-cells, kinase beta	PPF05984A
C11	Cfa.3510	NM_001003200	CXCL8	Interleukin 8	PPF00414A
C12	N/A	XM_005619334	ITGA2	Integrin, alpha 2 (CD49B, alpha 2 subunit of VLA-2 receptor)	PPF09547A
D01	N/A	XM_545551	ITGA4	Integrin, alpha 4 (antigen CD49D, alpha 4 subunit of VLA-4 receptor)	PPF09092A
D02	N/A	XM_535964	ITGA6	Integrin, alpha 6	PPF03586A
D03	N/A	XM_005616948	ITGB1	Integrin, beta 1 (fibronectin receptor, beta polypeptide, antigen CD29 includes MDF2, MSK12)	PPF03043A
D04	N/A	XM_005634783	JAG1	Jagged 1	PPF07621A

Position	UniGene	GenBank	Symbol	Description	Assay
D05	N/A	XM_541301	JAK2	Janus kinase 2	PPF06726A
D06	Cfa.184	NM_001003181	KIT	V-kit Hardy-Zuckerman 4 feline sarcoma viral oncogene homolog	PPF00378A
D07	Cfa.1	NM_001012735	KITLG	KIT ligand	PPF00105A
D08	N/A	XM_005629096	KLF17	Kruppel-like factor 17	PPF18196A
D09	N/A	XM_005626996	KLF4	Kruppel-like factor 4 (gut)	PPF14810A
D10	N/A	XM_003435551	L1CAM	L1 cell adhesion molecule	PPF11175A
D11	Cfa.2347	NM_001024635	LATS1	LATS, large tumor suppressor, homolog 1 (Drosophila)	PPF01929A
D12	N/A	XM_849892	LIN28A	Lin-28 homolog A (C. elegans)	PPF13488A
E01	N/A	XM_539064	LIN28B	Lin-28 homolog B (C. elegans)	PPF05532A
E02	N/A	XM_014117640	MAML1	Mastermind-like 1 (Drosophila)	PPF05245A
E03	N/A	XM_005630437	MERTK	C-mer proto-oncogene tyrosine kinase	PPF06091A
E04	Cfa.23836	NM_001048028	MS4A1	Membrane-spanning 4-domains, subfamily A, member 1	PPF07447A
E05	Cfa.7074	NM_001194977	MUC1	Mucin 1, cell surface associated	PPF00665A
E06	Cfa.3786	NM_001003246	MYC	V-myc myelocytomatosis viral oncogene homolog (avian)	PPF00478A
E07	N/A	XM_005630146	MYCN	V-myc avian myelocytomatosis viral oncogene neuroblastoma derived homolog	PPF06034A
E08	N/A	XM_543828	NANOG	Nanog homeobox	PPF08157A
E09	Cfa.10766	NM_001003344	NFKB1	Nuclear factor of kappa light polypeptide gene enhancer in B-cells 1	PPF00590A
E10	Cfa.45041	NM_001003186	NOS2	Nitric oxide synthase 2, inducible	PPF00389A
E11	N/A	XM_005625433	NOTCH1	Notch 1	PPF04820A
E12	N/A	XM_005630688	NOTCH2	Notch 2	PPF06146A
F01	N/A	XM_848326	PECAM1	Platelet/endothelial cell adhesion molecule	PPF12874A
F02	N/A	XM_539955	PLAT	Plasminogen activator, tissue	PPF05985A
F03	N/A	XM_014119989	PLAUR	Plasminogen activator, urokinase receptor	PPF02057A
F04	N/A	XM_538830	POU5F1	POU class 5 homeobox 1	PPF05382A
F05	N/A	XM_005618555	PROM1	Prominin 1	PPF09319A
F06	Cfa.47431	XM_003638871	PTCH1	Patched 1	PPF06704A
F07	N/A	XM_005622278	PTPRC	Protein tyrosine phosphatase, receptor type, C	PPF10210A
F08	N/A	XM_005623385	SAV1	Salvador homolog 1 (Drosophila)	PPF04588A
F09	N/A	XM_005618933	SIRT1	Sirtuin 1	PPF09420A
F10	N/A	XM_005628406	SMO	Smoothened, frizzled family receptor	PPF05694A
F11	N/A	XM_005635167	SNAI1	Snail family zinc finger 1	PPF07725A
F12	N/A	XM_005639752	SOX2	SRY (sex determining region Y)-box 2	PPF08946B
G01	N/A	XM_548090	STAT3	Signal transducer and activator of transcription 3 (acute-phase response factor)	PPF10603A
G02	N/A	XM_005642025	TAZ	Tafazzin	PPF13868A
G03	N/A	XM_014117881	TGFBR1	Transforming growth factor, beta receptor 1	PPF05340A
G04	Cfa.21521	NM_001287129	THY1	Thy-1 cell surface antigen	PPF09626A
G05	N/A	XM_845879	TWIST1	Twist homolog 1 (Drosophila)	PPF12198A
G06	N/A	XM_005635928	TWIST2	Twist homolog 2 (Drosophila)	PPF07876A
G07	N/A	XM_005633662	WEE1	WEE1 homolog (S. pombe)	PPF02336A
G08	N/A	XM_005636889	WNT1	Wingless-type MMTV integration site family, member 1	PPF08080A
G09	N/A	XM_003434507	WWC1	WW and C2 domain containing 1	PPF03909A
G10	N/A	XM_536601	YAP1	Yes-associated protein 1	PPF04016A
G11	N/A	XM_003638879	ZEB1	Zinc finger E-box binding homeobox 1	PPF03049A
G12	N/A	XM_005631964	ZEB2	Zinc finger E-box binding homeobox 2	PPF06596A
H01	Cfa.17735	NM_001195845	ACTB	Actin, beta	PPF12880A
H02	N/A	XM_535458	B2M	Beta-2-microglobulin	PPF03253A
H03	Cfa.36213	NM_001003142	GAPDH	Glyceraldehyde-3-phosphate dehydrogenase	PPF00328A
H04	Cfa.4551	NM_001003357	HPRT1	Hypoxanthine phosphoribosyltransferase 1	PPF00602A
H05	N/A	XM_014109387	RPLP1	Ribosomal protein, large, P1	PPF03305A
H06	N/A	SA_00130	FGDC	Dog Genomic DNA Contamination	PPF68934A
H07	N/A	SA_00104	RTC	Reverse Transcription Control	PPX63340A
H08	N/A	SA_00104	RTC	Reverse Transcription Control	PPX63340A
H09	N/A	SA_00104	RTC	Reverse Transcription Control	PPX63340A
H10	N/A	SA_00103	PPC	Positive PCR Control	PPX63339A
H11	N/A	SA_00103	PPC	Positive PCR Control	PPX63339A
H12	N/A	SA_00103	PPC	Positive PCR Control	PPX63339A

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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