RT² Profiler PCR Array (Rotor-Gene® Format)

Dog Cancer Stem Cells

Cat. no. 330231 PAFD-176ZR

For pathway expression analysis

Format	For use with the following real-time cyclers
RT² Profiler PCR Array, Format R	Rotor-Gene Q, other Rotor-Gene cyclers

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 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 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 the Rotor-Gene format are shipped at ambient temperature, on dry ice, or blue ice packs depending on destination and accompanying products.

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

The 96 real-time assays in the Rotor-Gene format are located in wells 1–96 of the Rotor-Disc™ (plate A1–A12=Rotor-Disc 1–12, plate B1–B12=Rotor-Disc 13–24, etc.). To maintain data analysis compatibility, wells 97–100 do not contain real-time assays but will contain master mix to account for weight balance.

Gene table: RT² Profiler PCR Array

Position	UniGene	GenBank	Symbol	Description
1	N/A	XM_014118880	LOC482344	ATP-binding cassette, sub-family B (MDR/TAP), member 5
2	Cfa.9822	NM_001048021	ABCG2	ATP-binding cassette, sub-family G (WHITE), member 2
3	Cfa.3742	NM_001313804	ALCAM	Activated leukocyte cell adhesion molecule
4	Cfa.1715	NM_001286977	ALDH1A1	Aldehyde dehydrogenase 1 family, member A1
5	Cfa.48507	NM_001130828	ATM	Ataxia telangiectasia mutated
6	N/A	XM_545354	ATXN1	Ataxin 1
7	N/A	XM_005616882	AXL	AXL receptor tyrosine kinase
8	Cfa.47657	NM_001287063	BMI1	BMI1 polycomb ring finger oncogene
9	Cfa.8	NM_001197052	BMP7	Bone morphogenetic protein 7
10	Cfa.3771	NM_001003341	CD34	CD34 molecule
11	Cfa.3619	NM_001003143	CD38	CD38 molecule
12	Cfa.3800	NM_001197022	CD44	CD44 molecule (Indian blood group)
13	N/A	XM_014113312	CHEK1	CHK1 checkpoint homolog (S. pombe)
14	N/A	XM_005633958	DACH1	Dachshund homolog 1 (Drosophila)
15	N/A	XM_852240	DDR1	Discoidin domain receptor tyrosine kinase 1
16	N/A	XM_005636664	DKK1	Dickkopf WNT signaling pathway inhibitor 1
17	N/A	XM_005627795	DLL1	Delta-like 1 (Drosophila)
18	N/A	XM_852991	DLL4	Delta-like 4 (Drosophila)
19	N/A	XM_005632905	DNMT1	DNA (cytosine-5-)-methyltransferase 1
20	Cfa.3524	NM_001003094	EGF	Epidermal growth factor
21	N/A	XM_005625330	ENG	Endoglin
22	N/A	XM_005626238	EPCAM	Epithelial cell adhesion molecule
23	Cfa.3747	NM_001003217	ERBB2	V-erb-b2 erythroblastic leukemia viral oncogene homolog 2, neuro/glioblastoma derived oncogene homolog (avian)
24	N/A	XM_848294	ETFA	Electron-transfer-flavoprotein, alpha polypeptide
25	Cfa.86	NM_001003336	FGFR2	Fibroblast growth factor receptor 2
26	N/A	XM_848559	FLOT2	Flotillin 2
27	N/A	XM_005634712	FOXA2	Forkhead box A2
28	N/A	XM_005632256	FOXP1	Forkhead box P1
29	N/A	XM_545599	FZD7	Frizzled family receptor 7
30	N/A	XM_844060	GATA3	GATA binding protein 3
31	N/A	XM_535751	GSK3B	Glycogen synthase kinase 3 beta
32	N/A	XM_544435	HDAC1	Similar to histone deacetylase 1
33	N/A	XM_847117	ID1	Inhibitor of DNA binding 1, dominant negative helix-loop-helix protein
34	N/A	XM_539954	IKBKB	Inhibitor of kappa light polypeptide gene enhancer in B-cells, kinase beta
35	Cfa.3510	NM_001003200	CXCL8	Interleukin 8
36	N/A	XM_005619334	ITGA2	Integrin, alpha 2 (CD49B, alpha 2 subunit of VLA-2 receptor)
37	N/A	XM_545551	ITGA4	Integrin, alpha 4 (antigen CD49D, alpha 4 subunit of VLA-4 receptor)
38	N/A	XM_535964	ITGA6	Integrin, alpha 6

Position	UniGene	GenBank	Symbol	Description
39	N/A	XM_005616948	ITGB1	Integrin, beta 1 (fibronectin receptor, beta polypeptide, antigen CD29 includes MDF2, MSK12)
40	N/A	XM_005634783	JAG1	Jagged 1
41	N/A	XM_541301	JAK2	Janus kinase 2
42	Cfa.184	NM_001003181	KIT	V-kit Hardy-Zuckerman 4 feline sarcoma viral oncogene homolog
43	Cfa.1	NM_001012735	KITLG	KIT ligand
44	N/A	XM_005629096	KLF17	Kruppel-like factor 17
45	N/A	XM_005626996	KLF4	Kruppel-like factor 4 (gut)
46	N/A	XM_003435551	L1CAM	L1 cell adhesion molecule
47	Cfa.2347	NM_001024635	LATS1	LATS, large tumor suppressor, homolog 1 (Drosophila)
48	N/A	XM_849892	LIN28A	Lin-28 homolog A (C. elegans)
49	N/A	XM_539064	LIN28B	Lin-28 homolog B (C. elegans)
50	N/A	XM_014117640	MAML1	Mastermind-like 1 (Drosophila)
51	N/A	XM_005630437	MERTK	C-mer proto-oncogene tyrosine kinase
52	Cfa.23836	NM_001048028	MS4A1	Membrane-spanning 4-domains, subfamily A, member 1
53	Cfa.7074	NM_001194977	MUC1	Mucin 1, cell surface associated
54	Cfa.3786	NM_001003246	MYC	V-myc myelocytomatosis viral oncogene homolog (avian)
55	N/A	XM_005630146	MYCN	V-myc avian myelocytomatosis viral oncogene neuroblastoma derived homolog
56	N/A	XM_543828	NANOG	Nanog homeobox
57	Cfa.10766	NM_001003344	NFKB1	Nuclear factor of kappa light polypeptide gene enhancer in B-cells 1
58	Cfa.45041	NM_001003186	NOS2	Nitric oxide synthase 2, inducible
59	N/A	XM_005625433	NOTCH1	Notch 1
60	N/A	XM_005630688	NOTCH2	Notch 2
61	N/A	XM_848326	PECAM1	Platelet/endothelial cell adhesion molecule
62	N/A	XM_539955	PLAT	Plasminogen activator, tissue
63	N/A	XM_014119989	PLAUR	Plasminogen activator, urokinase receptor
64	N/A	XM_538830	POU5F1	POU class 5 homeobox 1
65	N/A	XM_005618555	PROM1	Prominin 1
66	Cfa.47431	XM_003638871	PTCH1	Patched 1
67	N/A	XM_005622278	PTPRC	Protein tyrosine phosphatase, receptor type, C
68	N/A	XM_005623385	SAV1	Salvador homolog 1 (Drosophila)
69	N/A	XM_005618933	SIRT1	Sirtuin 1
70	N/A	XM_005628406	SMO	Smoothened, frizzled family receptor
71	N/A	XM_005635167	SNAI1	Snail family zinc finger 1
72	N/A	XM_005639752	SOX2	SRY (sex determining region Y)-box 2
73	N/A	XM_548090	STAT3	Signal transducer and activator of transcription 3 (acute-phase response factor)
74	N/A	XM_005642025	TAZ	Tafazzin
75	N/A	XM_014117881	TGFBR1	Transforming growth factor, beta receptor 1
76	Cfa.21521	NM_001287129	THY1	Thy-1 cell surface antigen
77	N/A	XM_845879	TWIST1	Twist homolog 1 (Drosophila)
78	N/A	XM_005635928	TWIST2	Twist homolog 2 (Drosophila)

Position	UniGene	GenBank	Symbol	Description
79	N/A	XM_005633662	WEE1	WEE1 homolog (S. pombe)
80	N/A	XM_005636889	WNT1	Wingless-type MMTV integration site family, member 1
81	N/A	XM_003434507	WWC1	WW and C2 domain containing 1
82	N/A	XM_536601	YAP1	Yes-associated protein 1
83	N/A	XM_003638879	ZEB1	Zinc finger E-box binding homeobox 1
84	N/A	XM_005631964	ZEB2	Zinc finger E-box binding homeobox 2
85	Cfa.17735	NM_001195845	ACTB	Actin, beta
86	N/A	XM_535458	B2M	Beta-2-microglobulin
87	Cfa.36213	NM_001003142	GAPDH	Glyceraldehyde-3-phosphate dehydrogenase
88	Cfa.4551	NM_001003357	HPRT1	Hypoxanthine phosphoribosyltransferase 1
89	N/A	XM_014109387	RPLP1	Ribosomal protein, large, P1
90	N/A	SA_00130	FGDC	Dog Genomic DNA Contamination
91	N/A	SA_00104	RTC	Reverse Transcription Control
92	N/A	SA_00104	RTC	Reverse Transcription Control
93	N/A	SA_00104	RTC	Reverse Transcription Control
94	N/A	SA_00103	PPC	Positive PCR Control
95	N/A	SA_00103	PPC	Positive PCR Control
96	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 ROX™ FAST Mastermix (2)*	For 2 x 96 assays in 96-well plates; suitable for use with the Rotor-Gene Q and other Rotor-Gene cyclers	330620

* Larger kit sizes available; please inquire.

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