

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

Human Hypoxia Signaling Pathway

Cat. no. 330231 PAHS-032ZA

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 Human Hypoxia Signaling Pathway RT² Profiler PCR Array profiles the expression of 84 genes that respond to low oxygen levels. Oxygen is required for aerobic energy metabolism processes such as oxidative phosphorylation. Low oxygen conditions activate the hypoxia signaling pathway in eukaryotic cells, primarily via the hypoxia inducible factor (HIF) transcription factor. HIF heterodimers consist of a constitutively-expressed beta subunit and one of 3 alpha subunit isoforms whose expression is tightly regulated. The presence of oxygen activates prolyl hydroxylases to hydroxylate HIF, leading to its polyubiquitination and degradation. Under low oxygen conditions, prolyl hydroxylase inactivity allows HIF to accumulate, initiating target gene expression. Hypoxia-inducible target genes mediate multiple biological functions, such as angiogenesis, hematopoiesis, and the maintenance of vascular tone to provide or replenish tissues with blood and oxygen. Hypoxia signaling dysregulation commonly occurs in diseases such as tumor angiogenesis and chronic inflammation. Hundreds of HIF target genes have been identified using experimental techniques such as expression studies and chromatin immunoprecipitation (ChIP) as well as bioinformatic analysis of predicted transcription factor binding sites. This array includes HIF signaling transcription factors, HIF interacting proteins, and highly relevant target genes identified by multiple studies. Results obtained with this array can be used to analyze activation or inhibition of hypoxia signaling. Using real-time PCR, research studies can easily and reliably analyze the expression of a focused panel of genes related to the hypoxia signaling pathway 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	ADM	ADORA2B	ALDOA	ANGPTL4	ANKRD37	ANXA2	APEX1	ARNT	ATR	BHLHE40	BLM	BNIP3
B	BNIP3L	BTG1	CA9	CCNG2	COP55	CTSA	DDIT4	DNAJC5	EDN1	EGLN1	EGLN2	EGR1
C	EIF4EBP1	ENO1	EPO	ERO1L	F10	F3	FOS	GBE1	GPI	GYS1	HIF1A	HIF1AN
D	HIF3A	HK2	HMOX1	HNF4A	IER3	IGFBP3	JMJD6	LDHA	LGALS3	LOX	MAP3K1	MET
E	MIF	MMP9	MX1	NAMPT	NCOA1	NDRG1	NFKB1	NOS3	ODC1	P4HA1	P4HB	PDK1
F	PER1	PFKFB3	PFKFB4	PFKL	PFKP	PGAM1	PGF	PGK1	PLM1	PKM2	PLAU	RBPJ
G	RUVBL2	SERPINE1	SLC16A3	SLC2A1	SLC2A3	TFR3	TP53	TP11	TXNIP	USF2	VDAC1	VEGFA
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.441047	NM_001124	ADM	Adrenomedullin
A02	Hs.167046	NM_000676	ADORA2B	Adenosine A2b receptor
A03	Hs.513490	NM_000034	ALDOA	Aldolase A, fructose-bisphosphate
A04	Hs.9613	NM_001039667	ANGPTL4	Angiopietin-like 4
A05	Hs.508154	NM_181726	ANKRD37	Ankyrin repeat domain 37
A06	Hs.511605	NM_004039	ANXA2	Annexin A2
A07	Hs.73722	NM_080649	APEX1	APEX nuclease (multifunctional DNA repair enzyme) 1
A08	Hs.632446	NM_001668	ARNT	Aryl hydrocarbon receptor nuclear translocator
A09	Hs.271791	NM_001184	ATR	Ataxia telangiectasia and Rad3 related
A10	Hs.728782	NM_003670	BHLHE40	Basic helix-loop-helix family, member e40
A11	Hs.716515	NM_000057	BLM	Bloom syndrome, RecQ helicase-like
A12	Hs.144873	NM_004052	BNIP3	BCL2/adenovirus E1B 19kDa interacting protein 3
B01	Hs.131226	NM_004331	BNIP3L	BCL2/adenovirus E1B 19kDa interacting protein 3-like
B02	Hs.255935	NM_001731	BTG1	B-cell translocation gene 1, anti-proliferative
B03	Hs.63287	NM_001216	CA9	Carbonic anhydrase IX
B04	Hs.13291	NM_004354	CCNG2	Cyclin G2
B05	Hs.491912	NM_006837	COP55	COP9 constitutive photomorphogenic homolog subunit 5 (Arabidopsis)
B06	Hs.517076	NM_000308	CTSA	Cathepsin A
B07	Hs.523012	NM_019058	DDIT4	DNA-damage-inducible transcript 4
B08	Hs.164419	NM_025219	DNAJC5	DnaJ (Hsp40) homolog, subfamily C, member 5
B09	Hs.511899	NM_001955	EDN1	Endothelin 1
B10	Hs.444450	NM_022051	EGLN1	Egl nine homolog 1 (C. elegans)
B11	Hs.515417	NM_053046	EGLN2	Egl nine homolog 2 (C. elegans)
B12	Hs.326035	NM_001964	EGR1	Early growth response 1
C01	Hs.411641	NM_004095	EIF4EBP1	Eukaryotic translation initiation factor 4E binding protein 1
C02	Hs.517145	NM_001428	ENO1	Enolase 1, (alpha)
C03	Hs.2303	NM_000799	EPO	Erythropoietin
C04	Hs.592304	NM_014584	ERO1L	ERO1-like (S. cerevisiae)
C05	Hs.361463	NM_000504	F10	Coagulation factor X
C06	Hs.62192	NM_001993	F3	Coagulation factor III (thromboplastin, tissue factor)
C07	Hs.728789	NM_005252	FOS	FBJ murine osteosarcoma viral oncogene homolog
C08	Hs.436062	NM_000158	GBE1	Glucan (1,4-alpha-), branching enzyme 1
C09	Hs.466471	NM_000175	GPI	Glucose-6-phosphate isomerase
C10	Hs.386225	NM_002103	GYS1	Glycogen synthase 1 (muscle)
C11	Hs.597216	NM_001530	HIF1A	Hypoxia inducible factor 1, alpha subunit (basic helix-loop-helix transcription factor)
C12	Hs.500788	NM_017902	HIF1AN	Hypoxia inducible factor 1, alpha subunit inhibitor
D01	Hs.420830	NM_152794	HIF3A	Hypoxia inducible factor 3, alpha subunit
D02	Hs.406266	NM_000189	HK2	Hexokinase 2
D03	Hs.517581	NM_002133	HMOX1	Heme oxygenase (decycling) 1
D04	Hs.116462	NM_178849	HNF4A	Hepatocyte nuclear factor 4, alpha
D05	Hs.591785	NM_003897	IER3	Immediate early response 3
D06	Hs.450230	NM_000598	IGFBP3	Insulin-like growth factor binding protein 3
D07	Hs.514505	NM_015167	JMJD6	Jumonji domain containing 6
D08	Hs.2795	NM_005566	LDHA	Lactate dehydrogenase A

Position	UniGene	GenBank	Symbol	Description
D09	Hs.531081	NM_002306	LGALS3	Lectin, galactoside-binding, soluble, 3
D10	Hs.102267	NM_002317	LOX	Lysyl oxidase
D11	Hs.657756	NM_005921	MAP3K1	Mitogen-activated protein kinase kinase kinase 1
D12	Hs.132966	NM_000245	MET	Met proto-oncogene (hepatocyte growth factor receptor)
E01	Hs.407995	NM_002415	MIF	Macrophage migration inhibitory factor (glycosylation-inhibiting factor)
E02	Hs.297413	NM_004994	MMP9	Matrix metalloproteinase 9 (gelatinase B, 92kDa gelatinase, 92kDa type IV collagenase)
E03	Hs.501023	NM_005962	MXI1	MAX interactor 1
E04	Hs.489615	NM_005746	NAMPT	Nicotinamide phosphoribosyltransferase
E05	Hs.596314	NM_003743	NCOA1	Nuclear receptor coactivator 1
E06	Hs.372914	NM_006096	NDRG1	N-myc downstream regulated 1
E07	Hs.654408	NM_003998	NFKB1	Nuclear factor of kappa light polypeptide gene enhancer in B-cells 1
E08	Hs.707978	NM_000603	NOS3	Nitric oxide synthase 3 (endothelial cell)
E09	Hs.467701	NM_002539	ODC1	Ornithine decarboxylase 1
E10	Hs.500047	NM_000917	P4HA1	Prolyl 4-hydroxylase, alpha polypeptide I
E11	Hs.464336	NM_000918	P4HB	Prolyl 4-hydroxylase, beta polypeptide
E12	Hs.470633	NM_002610	PK1	Pyruvate dehydrogenase kinase, isozyme 1
F01	Hs.445534	NM_002616	PER1	Period homolog 1 (Drosophila)
F02	Hs.195471	NM_004566	PFKFB3	6-phosphofructo-2-kinase/fructose-2,6-biphosphatase 3
F03	Hs.476217	NM_004567	PFKFB4	6-phosphofructo-2-kinase/fructose-2,6-biphosphatase 4
F04	Hs.255093	NM_002626	PFKL	Phosphofructokinase, liver
F05	Hs.26010	NM_002627	PFKP	Phosphofructokinase, platelet
F06	Hs.592599	NM_002629	PGAM1	Phosphoglycerate mutase 1 (brain)
F07	Hs.252820	NM_002632	PGF	Placental growth factor
F08	Hs.78771	NM_000291	PGK1	Phosphoglycerate kinase 1
F09	Hs.81170	NM_002648	PIM1	Pim-1 oncogene
F10	Hs.534770	NM_002654	PKM2	Pyruvate kinase, muscle
F11	Hs.77274	NM_002658	PLAU	Plasminogen activator, urokinase
F12	Hs.479396	NM_005349	RBPJ	Recombination signal binding protein for immunoglobulin kappa J region
G01	Hs.515846	NM_006666	RUVBL2	RuvB-like 2 (E. coli)
G02	Hs.414795	NM_000602	SERPINE1	Serpin peptidase inhibitor, clade E (nexin, plasminogen activator inhibitor type 1), member 1
G03	Hs.500761	NM_004207	SLC16A3	Solute carrier family 16, member 3 (monocarboxylic acid transporter 4)
G04	Hs.473721	NM_006516	SLC2A1	Solute carrier family 2 (facilitated glucose transporter), member 1
G05	Hs.419240	NM_006931	SLC2A3	Solute carrier family 2 (facilitated glucose transporter), member 3
G06	Hs.529618	NM_003234	TFRC	Transferrin receptor (p90, CD71)
G07	Hs.654481	NM_000546	TP53	Tumor protein p53
G08	Hs.524219	NM_000365	TPI1	Triosephosphate isomerase 1
G09	Hs.533977	NM_006472	TXNIP	Thioredoxin interacting protein
G10	Hs.454534	NM_003367	USF2	Upstream transcription factor 2, c-fos interacting
G11	Hs.519320	NM_003374	VDAC1	Voltage-dependent anion channel 1
G12	Hs.73793	NM_003376	VEGFA	Vascular endothelial growth factor A
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.
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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