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

Human Hypoxia Signaling Pathway Plus

Cat. no. 330231 PAHS-032YA

For pathway expression analysis

Format	For use with the following real-time cyclers
RT² 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
RT² Profiler PCR Array, Format C	Applied Biosystems models 7500 (Fast block), 7900HT (Fast block), StepOnePlus™, ViiA 7 (Fast block)
RT² Profiler PCR Array, Format D	Bio-Rad CFX96™; Bio-Rad/MJ Research models DNA Engine Opticon®, DNA Engine Opticon 2; Stratagene Mx4000®
RT² Profiler PCR Array, Format E	Applied Biosystems models 7900HT (384-well block), ViiA 7 (384-well block); Bio-Rad CFX384™
RT² Profiler PCR Array, Format F	Roche® LightCycler® 480 (96-well block)
RT² Profiler PCR Array, Format G	Roche LightCycler 480 (384-well block)
RT² Profiler PCR Array, Format H	Fluidigm® BioMark™

QIAGEN®

Sample & Assay Technologies

Description

The Human Hypoxia Signaling Pathway Plus RT² Profiler PCR Array profiles the expression of 84 genes that respond to low oxygen levels. It also determines whether hypoxia pathway activity is increased or unchanged in experimental samples. 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. The array also includes 16 experimentally derived Signature Biomarker Genes which, along with classification algorithms, are used to generate the activity score. A set of controls present on each array enables data analysis using the ??CT method of relative quantification, assessment of reverse transcription performance, genomic DNA contamination, and PCR performance. Using real-time PCR, research studies can easily and reliably determine hypoxia signaling pathway activity and 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	ANXA2	APEX1	ARNT	ATR	BLM	CCNG2	COPS5	CTSA	DDIT4
B	DNAJC5	EDN1	EGLN1	EGLN2	EGR1	EIF4EBP1	ENO1	EPO	ERO1L	F10	F3	FOS
C	GBE1	GPI	GYS1	HIF1A	HIF1AN	HIF3A	HMOX1	HNF4A	IER3	IGFBP3	JMJD6	LGALS3
D	LOX	MAP3K1	MET	MIF	MMP9	MXI1	NAMPT	NCOA1	NFKB1	NOS3	ODC1	P4HB
E	PDK1	PER1	PFKFB3	PFKL	PFKP	PGF	PIM1	PKM	PLAU	RBPJ	RUVBL2	SERPINE1
F	SLC16A3	SLC2A1	TFRC	TP53	TPI1	TXNIP	USF2	VDAC1	ALDOC	ANGPTL4	ANKRD37	BHLHE40
G	BNIP3	BNIP3L	CA9	FAM162A	HK2	LDHA	NDRG1	P4HA1	PFKFB4	PGK1	SLC2A3	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.732822	NM_000034	ALDOA	Aldolase A, fructose-bisphosphate
A04	Hs.511605	NM_004039	ANXA2	Annexin A2
A05	Hs.73722	NM_080649	APEX1	APEX nuclease (multifunctional DNA repair enzyme) 1
A06	Hs.632446	NM_001668	ARNT	Aryl hydrocarbon receptor nuclear translocator
A07	Hs.271791	NM_001184	ATR	Ataxia telangiectasia and Rad3 related
A08	Hs.725208	NM_000057	BLM	Bloom syndrome, RecQ helicase-like
A09	Hs.740456	NM_004354	CCNG2	Cyclin G2
A10	Hs.491912	NM_006837	COPS5	COP9 constitutive photomorphogenic homolog subunit 5 (Arabidopsis)
A11	Hs.609336	NM_000308	CTSA	Cathepsin A
A12	Hs.744875	NM_019058	DDIT4	DNA-damage-inducible transcript 4
B01	Hs.164419	NM_025219	DNAJC5	DnaJ (Hsp40) homolog, subfamily C, member 5
B02	Hs.713645	NM_001955	EDN1	Endothelin 1
B03	Hs.444450	NM_022051	EGLN1	Egl nine homolog 1 (C. elegans)
B04	Hs.730737	NM_053046	EGLN2	Egl nine homolog 2 (C. elegans)
B05	Hs.708393	NM_001964	EGR1	Early growth response 1
B06	Hs.411641	NM_004095	EIF4EBP1	Eukaryotic translation initiation factor 4E binding protein 1
B07	Hs.517145	NM_001428	ENO1	Enolase 1, (alpha)
B08	Hs.2303	NM_000799	EPO	Erythropoietin
B09	Hs.592304	NM_014584	ERO1L	ERO1-like (S. cerevisiae)
B10	Hs.361463	NM_000504	F10	Coagulation factor X
B11	Hs.62192	NM_001993	F3	Coagulation factor III (thromboplastin, tissue factor)
B12	Hs.25647	NM_005252	FOS	FBJ murine osteosarcoma viral oncogene homolog
C01	Hs.436062	NM_000158	GBE1	Glucan (1,4-alpha-), branching enzyme 1
C02	Hs.466471	NM_000175	GPI	Glucose-6-phosphate isomerase
C03	Hs.386225	NM_002103	GYS1	Glycogen synthase 1 (muscle)
C04	Hs.719495	NM_001530	HIF1A	Hypoxia inducible factor 1, alpha subunit (basic helix-loop-helix transcription factor)
C05	Hs.500788	NM_017902	HIF1AN	Hypoxia inducible factor 1, alpha subunit inhibitor
C06	Hs.420830	NM_152794	HIF3A	Hypoxia inducible factor 3, alpha subunit
C07	Hs.517581	NM_002133	HMOX1	Heme oxygenase (decycling) 1
C08	Hs.116462	NM_178849	HNF4A	Hepatocyte nuclear factor 4, alpha
C09	Hs.76095	NM_003897	IER3	Immediate early response 3
C10	Hs.450230	NM_000598	IGFBP3	Insulin-like growth factor binding protein 3
C11	Hs.514505	NM_015167	JMJD6	Jumonji domain containing 6
C12	Hs.531081	NM_002306	LGALS3	Lectin, galactoside-binding, soluble, 3
D01	Hs.102267	NM_002317	LOX	Lysyl oxidase
D02	Hs.653654	NM_005921	MAP3K1	Mitogen-activated protein kinase kinase kinase 1
D03	Hs.132966	NM_000245	MET	Met proto-oncogene (hepatocyte growth factor receptor)
D04	Hs.407995	NM_002415	MIF	Macrophage migration inhibitory factor (glycosylation-inhibiting factor)
D05	Hs.297413	NM_004994	MMP9	Matrix metallopeptidase 9 (gelatinase B, 92kDa gelatinase, 92kDa type IV collagenase)
D06	Hs.728542	NM_005962	MXI1	MAX interactor 1
D07	Hs.489615	NM_005746	NAMPT	Nicotinamide phosphoribosyltransferase

Position	UniGene	GenBank	Symbol	Description
D08	Hs.596314	NM_003743	NCOA1	Nuclear receptor coactivator 1
D09	Hs.618430	NM_003998	NFKB1	Nuclear factor of kappa light polypeptide gene enhancer in B-cells 1
D10	Hs.647092	NM_000603	NOS3	Nitric oxide synthase 3 (endothelial cell)
D11	Hs.467701	NM_002539	ODC1	Ornithine decarboxylase 1
D12	Hs.464336	NM_000918	P4HB	Prolyl 4-hydroxylase, beta polypeptide
E01	Hs.733780	NM_002610	PDK1	Pyruvate dehydrogenase kinase, isozyme 1
E02	Hs.445534	NM_002616	PER1	Period homolog 1 (Drosophila)
E03	Hs.195471	NM_004566	PFKFB3	6-phosphofructo-2-kinase/fructose-2,6-biphosphatase 3
E04	Hs.255093	NM_002626	PFKL	Phosphofructokinase, liver
E05	Hs.26010	NM_002627	PFKP	Phosphofructokinase, platelet
E06	Hs.252820	NM_002632	PGF	Placental growth factor
E07	Hs.81170	NM_002648	PIM1	Pim-1 oncogene
E08	Hs.534770	NM_002654	PKM	Pyruvate kinase, muscle
E09	Hs.77274	NM_002658	PLAU	Plasminogen activator, urokinase
E10	Hs.479396	NM_005349	RBPJ	Recombination signal binding protein for immunoglobulin kappa J region
E11	Hs.515846	NM_006666	RUVBL2	RuvB-like 2 (E. coli)
E12	Hs.713079	NM_000602	SERPINE1	Serpin peptidase inhibitor, clade E (nexin, plasminogen activator inhibitor type 1), member 1
F01	Hs.500761	NM_004207	SLC16A3	Solute carrier family 16, member 3 (monocarboxylic acid transporter 4)
F02	Hs.473721	NM_006516	SLC2A1	Solute carrier family 2 (facilitated glucose transporter), member 1
F03	Hs.529618	NM_003234	TFRC	Transferrin receptor (p90, CD71)
F04	Hs.740601	NM_000546	TP53	Tumor protein p53
F05	Hs.524219	NM_000365	TPI1	Triosephosphate isomerase 1
F06	Hs.709057	NM_006472	TXNIP	Thioredoxin interacting protein
F07	Hs.454534	NM_003367	USF2	Upstream transcription factor 2, c-fos interacting
F08	Hs.519320	NM_003374	VDAC1	Voltage-dependent anion channel 1
F09	Hs.155247	NM_005165	ALDOC	Aldolase C, fructose-bisphosphate
F10	Hs.9613	NM_001039667	ANGPTL4	Angiopoietin-like 4
F11	Hs.508154	NM_181726	ANKRD37	Ankyrin repeat domain 37
F12	Hs.744856	NM_003670	BHLHE40	Basic helix-loop-helix family, member e40
G01	Hs.144873	NM_004052	BNIP3	BCL2/adenovirus E1B 19kDa interacting protein 3
G02	Hs.131226	NM_004331	BNIP3L	BCL2/adenovirus E1B 19kDa interacting protein 3-like
G03	Hs.63287	NM_001216	CA9	Carbonic anhydrase IX
G04	Hs.584881	NM_014367	FAM162A	Family with sequence similarity 162, member A
G05	Hs.591588	NM_000189	HK2	Hexokinase 2
G06	Hs.2795	NM_005566	LDHA	Lactate dehydrogenase A
G07	Hs.618002	NM_006096	NDRG1	N-myc downstream regulated 1
G08	Hs.593005	NM_000917	P4HA1	Prolyl 4-hydroxylase, alpha polypeptide I
G09	Hs.476217	NM_004567	PFKFB4	6-phosphofructo-2-kinase/fructose-2,6-biphosphatase 4
G10	Hs.78771	NM_000291	PGK1	Phosphoglycerate kinase 1
G11	Hs.419240	NM_006931	SLC2A3	Solute carrier family 2 (facilitated glucose transporter), member 3
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.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, 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 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
RT² 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
RT² 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

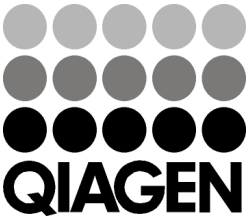
* Larger kit sizes available; please inquire.

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.

For up-to-date licensing information and product-specific disclaimers, see the respective QIAGEN kit handbook or user manual. QIAGEN kit handbooks and user manuals are available at www.qiagen.com or can be requested from QIAGEN Technical Services or your local distributor.

www.qiagen.com

Australia ▪ 1-800-243-800
Austria ▪ 0800/281010
Belgium ▪ 0800-79612
Brazil ▪ 0800-557779
Canada ▪ 800-572-9613
China ▪ 8621-3865-3865
Denmark ▪ 80-885945
Finland ▪ 0800-914416
France ▪ 01-60-920-930
Germany ▪ 02103-29-12000
Hong Kong ▪ 800 933 965
Ireland ▪ 1800 555 049
Italy ▪ 800-787980
Japan ▪ 03-6890-7300
Korea (South) ▪ 080-000-7145
Luxembourg ▪ 8002 2076
Mexico ▪ 01-800-7742-436
The Netherlands ▪ 0800 0229592
Norway ▪ 800-18859
Singapore ▪ 1800-742-4368
Spain ▪ 91-630-7050
Sweden ▪ 020-790282
Switzerland ▪ 055-254-22-11
UK ▪ 01293-422-911
USA ▪ 800-426-8157



Sample & Assay Technologies