

RT² Profiler PCR Array (Rotor-Gene® Format)

Pig Hypoxia Signaling

Cat. no. 330231 PASS-032ZR

For pathway expression analysis

Format	For use with the following real-time cyclers
RT ² Profiler PCR Array, Format R	Rotor-Gene Q, other Rotor-Gene cyclers

Description

The Pig 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 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	Ssc.314	NM_214107	ADM	Adrenomedullin
2	Ssc.29413	XM_005658145	ADORA2B	A2b adenosine receptor
3	Ssc.1187	NM_001243928	ALDOC	Aldolase C, fructose-bisphosphate
4	Ssc.17345	NM_001038644	ANGPTL4	Angiotensin-like 4
5	Ssc.44000	XM_013984052	ANKRD37	Ankyrin repeat domain-containing protein 37-like
6	Ssc.12241	NM_001005726	ANXA2	Annexin A2
7	Ssc.7943	NM_001139471	APEX1	APEX nuclease (multifunctional DNA repair enzyme) 1
8	Ssc.97255	XM_001929670	ARNT	Aryl hydrocarbon receptor nuclear translocator
9	Ssc.98279	XM_003132459	ATR	Serine/threonine-protein kinase ATR-like
10	Ssc.8861	NM_001245010	BHLHE40	Basic helix-loop-helix family, member e40
11	Ssc.71006	NM_001123084	BLM	Bloom syndrome, RecQ helicase-like
12	N/A	XM_003359404	BNIP3	BCL2/adenovirus E1B 19 kDa protein-interacting protein 3-like
13	Ssc.7152	XM_001927592	BNIP3L	BCL2/adenovirus E1B 19kDa interacting protein 3-like
14	Ssc.6833	NM_001099936	BTG1	B-cell translocation gene 1, anti-proliferative
15	Ssc.11149	XM_001925520	CA9	Carbonic anhydrase IX
16	Ssc.14386	XM_003129099	CCNG2	Cyclin-G2-like
17	Ssc.17285	NM_001105300	COP55	COP9 constitutive photomorphogenic homolog subunit 5 (Arabidopsis)
18	Ssc.896	NM_001243629	CTSA	Cathepsin A
19	Ssc.96319	NM_001243452	DDIT4	DNA-damage-inducible transcript 4
20	Ssc.43328	XM_013992249	DNAJC5	DnaJ (Hsp40) homolog, subfamily C, member 5
21	Ssc.9364	NM_213882	EDN1	Endothelin 1
22	Ssc.33171	XM_003133025	EGLN1	Egl nine homolog 1 (C. elegans)
23	Ssc.31705	XM_005655854	EGLN2	Egl nine homolog 2 (C. elegans)
24	Ssc.5974	XM_003123974	EGR1	Early growth response 1
25	Ssc.102096	NM_001244225	EIF4EBP1	Eukaryotic translation initiation factor 4E binding protein 1
26	Ssc.42590	XM_005664974	ENO1	Enolase 1, (alpha)
27	Ssc.15896	NM_214134	EPO	Erythropoietin
28	Ssc.9399	NM_001137627	ERO1A	ERO1-like (S. cerevisiae)
29	Ssc.32637	NM_001044592	F10	Coagulation factor X protein
30	Ssc.19907	NM_213785	F3	Tissue factor
31	Ssc.53695	NM_001243573	FAM162A	Family with sequence similarity 162, member A
32	Ssc.1555	NM_001123113	FOS	FBJ murine osteosarcoma viral oncogene homolog
33	Ssc.25323	XM_013982511	GBE1	Glucan (1,4-alpha-), branching enzyme 1
34	Ssc.2375	NM_214330	GPI	Glucose-6-phosphate isomerase
35	Ssc.2291	NM_001195508	GYS1	Glycogen synthase 1 (muscle)
36	Ssc.42713	NM_001123124	HIF1A	Hypoxia inducible factor 1, alpha subunit (basic helix-loop-helix transcription factor)
37	N/A	XM_013998515	HIF3A	Hypoxia inducible factor 3, alpha subunit
38	Ssc.42680	NM_001122987	HK2	Hexokinase 2

Position	UniGene	GenBank	Symbol	Description
39	Ssc.115	NM_001004027	HMOX1	Heme oxygenase (decycling) 1
40	Ssc.19208	NM_001044571	HNF4A	Hepatocyte nuclear factor 4, alpha
41	Ssc.5182	XM_001927551	IER3	Radiation-inducible immediate-early gene IEX-1-like
42	Ssc.42774	NM_001005156	IGFBP3	Insulin-like growth factor binding protein 3
43	Ssc.5409	XM_013989853	JMJD6	Bifunctional arginine demethylase and lysyl-hydroxylase JMJD6-like
44	Ssc.50275	NM_001172363	LDHA	Lactate dehydrogenase A
45	Ssc.48519	NM_001097501	LGALS3	Lectin, galactoside-binding, soluble, 3
46	Ssc.19163	XM_003133181	LOC100154269	Max-interacting protein 1-like
47	Ssc.10386	NM_001206403	LOX	Lysyl oxidase
48	Ssc.19729	XM_003133973	MAP3K1	Mitogen-activated protein kinase kinase kinase 1
49	Ssc.9275	NM_001038008	MET	Met proto-oncogene (hepatocyte growth factor receptor)
50	Ssc.551	NM_001077213	MIF	Macrophage migration inhibitory factor (glycosylation-inhibiting factor)
51	Ssc.4086	NM_001038004	MMP9	Matrix metalloproteinase 9 (gelatinase B, 92kDa gelatinase, 92kDa type IV collagenase)
52	Ssc.22083	NM_001031793	NAMPT	Nicotinamide phosphoribosyltransferase
53	Ssc.24299	NM_001025228	NCOA1	Nuclear receptor coactivator 1
54	Ssc.30964	XM_005662839	NDRG1	N-myc downstream regulated 1
55	Ssc.17816	NM_001048232	NFKB1	Nuclear factor of kappa light polypeptide gene enhancer in B-cells 1
56	Ssc.16364	NM_214295	NOS3	Nitric oxide synthase 3 (endothelial cell)
57	Ssc.6356	NM_001122983	ODC1	Ornithine decarboxylase
58	Ssc.97027	NM_001097435	P4HA1	Prolyl 4-hydroxylase, alpha polypeptide I
59	Ssc.94488	NM_001159608	PDK1	Pyruvate dehydrogenase kinase, isozyme 1
60	Ssc.46086	XM_005657040	PER1	Period circadian clock 1
61	N/A	XM_013980318	PFKFB3	6-phosphofructo-2-kinase/fructose-2,6-bisphosphatase 3-like
62	Ssc.2219	XM_001926168	PFKFB4	6-phosphofructo-2-kinase/fructose-2,6-bisphosphatase 4
63	Ssc.2759	XM_013990207	PFKL	Phosphofructokinase, liver
64	Ssc.862	XM_005656825	PFKP	Phosphofructokinase, platelet
65	Ssc.55891	XM_003483535	PGAM1	Phosphoglycerate mutase 1 (brain)
66	Ssc.49068	XM_001925764	PGF	Placental growth factor
67	Ssc.23800	NM_001099932	PGK1	Phosphoglycerate kinase 1
68	Ssc.41548	XM_005665927	PIM1	Pim-1 oncogene
69	Ssc.93839	XM_001929069	PKM	Pyruvate kinase, muscle
70	Ssc.11194	NM_213945	PLAU	Plasminogen activator, urokinase
71	Ssc.41484	XM_003128890	RBPJ	Recombination signal binding protein for immunoglobulin kappa J region
72	Ssc.2036	NM_001243867	RUVBL2	RuvB-like 2 (E. coli)
73	Ssc.9781	NM_213910	SERPINE1	Serpin peptidase inhibitor, clade E (nexin, plasminogen activator inhibitor type 1), member 1
74	Ssc.22067	XM_013989834	SLC16A3	Solute carrier family 16, member 3 (monocarboxylic acid transporter 4)
75	Ssc.96919	XM_013977359	SLC2A1	Solute carrier family 2 (facilitated glucose transporter), member 1
76	Ssc.26564	NM_001097417	SLC2A2	Solute carrier family 2 (facilitated glucose transporter), member 2
77	Ssc.58600	XM_013988404	SLC2A3	Solute carrier family 2 (facilitated glucose transporter), member 3
78	Ssc.38	NM_214001	TFRC	Transferrin receptor (p90, CD71)

Position	UniGene	GenBank	Symbol	Description
79	Ssc.15917	NM_213824	TP53	Tumor protein p53
80	Ssc.102258	NM_001037151	TPI1	Triosephosphate isomerase 1
81	Ssc.16648	NM_001044614	TXNIP	Thioredoxin interacting protein
82	Ssc.20441	XM_003127041	USF2	Upstream transcription factor 2, c-fos interacting
83	Ssc.16732	NM_213960	VDAC1	Voltage-dependent anion channel 1
84	Ssc.57541	NM_214084	VEGFA	Vascular endothelial growth factor A
85	Ssc.10316	XM_003124280	ACTB	Actin, beta
86	Ssc.73773	NM_213978	B2M	Beta-2-microglobulin
87	Ssc.16135	NM_001206359	GAPDH	Glyceraldehyde-3-phosphate dehydrogenase
88	Ssc.4158	NM_001032376	HPRT1	Hypoxanthine phosphoribosyltransferase 1
89	Ssc.27927	NM_001244068	RPL13A	Ribosomal protein L13a
90	N/A	SA_00133	SGDC	Pig 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.
RT ² First Strand Kit (12)	Enzymes and reagents for cDNA synthesis	330401
RT ² 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.

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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