

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

Pig Mitochondrial Energy Metabolism

Cat. no. 330231 PASS-008Z

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 Pig Mitochondrial Energy Metabolism RT² Profiler™ PCR Array profiles the expression of 84 key genes involved in mitochondrial respiration, including genes encoding components of the electron transport chain and oxidative phosphorylation complexes. Oxidation of NADH and FADH₂, the metabolites from glycolysis and the TCA cycle, occurs via a series of four protein complexes embedded in the inner mitochondrial membrane: NADH-coenzyme Q reductase, succinate-coenzyme Q reductase, coenzyme Q-cytochrome c reductase, and cytochrome c oxidase. The free energy generated from these processes drives oxidative phosphorylation and ATP synthesis via a fifth protein complex (ATP Synthase). Dysregulation of these processes is a major pathological consequence of cancer progression. Many tumors contain decreased amounts of mitochondrial respiratory chain components, although the exact mechanism for this repression is unclear. However, recent studies demonstrate that the important tumor suppressor p53 induces the expression of COX2, an essential component for cytochrome c oxidase function. Mitochondrial dysfunction also contributes to metabolic syndrome and obesity, where excess β -oxidation overloads oxidative phosphorylation by generating excessive amounts of NADH. Using real-time PCR, you can easily and reliably analyze the expression of a focused panel of genes involved in mitochondrial energy metabolism 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	ARRDC3	ASB1	ATP12A	ATP4A	ATP4B	ATP5A1	ATP5B	ATP5E	ATP5F1	ATP5G1	LOC100037988	ATP5G3
B	ATP5H	ATP5I	ATP5L	ATP6V0A2	ATP6V0D2	ATP6V1C2	ATP6V1E2	ATP6V1G3	BCS1L	Cox5b	COX6A1	COX6C
C	COX7A2	DNAJB1	EDN1	GADD45B	HSP70.2	LHPP	LOC100154992	LOC100156375	LOC100156879	LOC100156967	LOC100157935	LOC100511690
D	LOC100517408	LOC100519366	LOC100519594	LOC100522725	LOC100624067	LOC100624950	LOC100739238	NDUFB6	ATP5O	NDUFA1	NDUFA10	NDUFA11
E	NDUFA2	NDUFA3	NDUFA4	NDUFA5	NDUFA6	NDUFA7	NDUFA8	NDUFA9	NDUFAB1	NDUFB10	NDUFB2	NDUFB3
F	NDUFB4	NDUFB5	NDUFB7	NDUFB8	NDUFB9	NDUFC1	NDUFS1	NDUFS2	NDUFS3	NDUFS4	NDUFS5	NDUFS6
G	NDUFS7	NDUFS8	NDUFV1	PPA1	PPA2	SDHA	SDHB	SDHC	SDHD	SLC25A25	UCP2	UQCRL10
H	ACTB	B2M	GAPDH	HPRT1	RPL13A	SGDC	RTC	RTC	RTC	PPC	PPC	PPC

Gene table: RT² Profiler PCR Array

Position	UniGene	GenBank	Symbol	Description	Assay
A01	Ssc.4550	XM_003123783	ARRDC3	Arrestin domain containing 3	PPS06290A
A02	Ssc.99365	XM_003359698	ASB1	Ankyrin repeat and SOCS box protein 1-like	PPS17342A
A03	N/A	XM_005653851	ATP12A	ATPase, H+/K+ transporting, nongastric, alpha polypeptide	PPS06547A
A04	Ssc.80980	NM_214291	ATP4A	ATPase, H+/K+ exchanging, alpha polypeptide	PPS00859A
A05	Ssc.227	NM_001001258	ATP4B	ATPase, H+/K+ exchanging, beta polypeptide	PPS00470A
A06	Ssc.44378	NM_001185142	ATP5A1	ATP synthase, H+ transporting, mitochondrial F1 complex, alpha subunit 1, cardiac muscle	PPS04194A
A07	Ssc.279	XM_001929410	ATP5B	ATP synthase, H+ transporting, mitochondrial F1 complex, beta polypeptide	PPS03952A
A08	Ssc.6947	NM_001113448	ATP5E	ATP synthase, H+ transporting, mitochondrial F1 complex, epsilon subunit	PPS01938A
A09	Ssc.54804	XM_003355244	ATP5F1	ATP synthase, H+ transporting, mitochondrial Fo complex, subunit B1	PPS03208A
A10	Ssc.61396	NM_001025218	ATP5G1	ATP synthase, H+ transporting, mitochondrial Fo complex, subunit C1 (subunit 9)	PPS01334A
A11	Ssc.78700	XM_005652575	LOC100037988	ATP synthase, H+ transporting, mitochondrial Fo complex, subunit C2 (subunit 9)	PPS01646A
A12	Ssc.53775	NM_001244862	ATP5G3	ATP synthase, H+ transporting, mitochondrial Fo complex, subunit C3 (subunit 9)	PPS10611A
B01	Ssc.54114	NM_001244684	ATP5H	ATP synthase, H+ transporting, mitochondrial Fo complex, subunit d	PPS10188A
B02	Ssc.23936	NM_213915	ATP5I	ATP synthase, H+ transporting, mitochondrial Fo complex, subunit E	PPS00295A
B03	Ssc.29411	NM_001244137	ATP5L	ATP synthase, H+ transporting, mitochondrial Fo complex, subunit G	PPS00301A
B04	N/A	XM_013982778	ATP6V0A2	ATPase, H+ transporting, lysosomal V0 subunit a2	PPS03096A
B05	Ssc.22164	XM_003125581	ATP6V0D2	ATPase, H+ transporting, lysosomal 38kDa, V0 subunit d2	PPS06476A
B06	Ssc.14999	XM_003125387	ATP6V1C2	ATPase, H+ transporting, lysosomal 42kDa, V1 subunit C2	PPS05077A
B07	N/A	XM_005662578	ATP6V1E2	ATPase, H+ transporting, lysosomal 31kDa, V1 subunit E2	PPS71671A
B08	N/A	XM_003130597	ATP6V1G3	V-type proton ATPase subunit G 3-like	PPS14244A
B09	Ssc.25213	NM_001243676	BCS1L	BCS1-like (S. cerevisiae)	PPS07635A
B10	Ssc.49980	NM_001007517	Cox5b	Mitochondrial cytochrome c oxidase subunit Vb	PPS01261A
B11	Ssc.16681	NM_001190221	COX6A1	Cytochrome c oxidase subunit VIa polypeptide 1	PPS02328A
B12	Ssc.8238	NM_001097473	COX6C	COX6C protein	PPS01647A
C01	Ssc.3546	NM_001097484	COX7A2	COX7A2 protein	PPS01658A
C02	Ssc.3502	NM_001244430	DNAJB1	DnaJ (Hsp40) homolog, subfamily B, member 1	PPS00147A
C03	Ssc.9364	NM_213882	EDN1	Endothelin 1	PPS00261A
C04	Ssc.9380	XM_005654701	GADD45B	Growth arrest and DNA-damage-inducible, beta	PPS16090A
C05	Ssc.5145	NM_213766	HSP70.2	Heat shock protein 70.2	PPS00074A
				Phosphotyrosine phosphohistidine inorganic pyrophosphate	

Position	UniGene	GenBank	Symbol	Description	Assay
C06	Ssc.2457	NM_001243608	LHPP	phosphatase	PPS03608A
C07	Ssc.8785	XM_013978229	LOC100154992	Mitochondrial inner membrane protein OXA1L-like	PPS71676A
C08	Ssc.22105	XM_001929331	LOC100156375	COX15 homolog, cytochrome c oxidase assembly protein	PPS09041A
C09	Ssc.54260	XM_001926629	LOC100156879	Ubiquinol--cytochrome c reductase	PPS09153A
C10	Ssc.9742	XM_005666147	LOC100156967	Cytochrome c oxidase subunit 5A, mitochondrial-like	PPS08987A
C11	N/A	XM_001927411	LOC100157935	Cytochrome c oxidase subunit 8C, mitochondrial-like	PPS09394A
C12	N/A	XM_003125450	LOC100511690	Cytochrome c1, heme protein, mitochondrial-like	PPS09806A
D01	N/A	XM_005666630	LOC100517408	Cytochrome c oxidase subunit 7B2, mitochondrial-like	PPS12149A
D02	N/A	XM_005655797	LOC100519366	Cytochrome c oxidase subunit 6B1-like	PPS12904A
D03	N/A	XM_003124455	LOC100519594	Cytochrome c oxidase subunit 6A2, mitochondrial-like	PPS12998A
D04	Ssc.953	XM_003122583	LOC100522725	Cytochrome c oxidase subunit 8A, mitochondrial-like	PPS14205A
D05	N/A	XM_013998142	LOC100624067	Cytochrome c oxidase subunit 4 isoform 1, mitochondrial-like	PPS17573A
D06	Ssc.45369	XM_003355263	LOC100624950	Cytochrome b561 domain-containing protein 1-like	PPS17996A
D07	N/A	XM_005660624	LOC100739238	Low-density lipoprotein receptor-related protein 5-like	PPS71672A
D08	Ssc.19862	NM_001044554	NDUFB6	NADH dehydrogenase 1 beta subcomplex 6	PPS07931A
D09	Ssc.6723	NM_001044606	ATP5O	ATP synthase H+-transporting mitochondrial F1 complex O subunit	PPS07950A
D10	Ssc.57056	XM_003135339	NDUFA1	NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 1-like	PPS11198A
D11	Ssc.3948	XM_003133785	NDUFA10	NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 10, mitochondrial-like	PPS13714A
D12	Ssc.24943	NM_001244924	NDUFA11	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 11, 14.7kDa	PPS10782A
E01	Ssc.7522	XM_003124046	NDUFA2	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 2, 8kDa	PPS71673A
E02	Ssc.20956	XM_003127410	NDUFA3	NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 3-like	PPS13282A
E03	Ssc.7315	NM_001097468	NDUFA4	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 4, 9kDa	PPS07192A
E04	Ssc.22386	XM_003134727	NDUFA5	NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 5-like	PPS15222A
E05	Ssc.54860	NM_001185178	NDUFA6	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 6, 14kDa	PPS04047A
E06	Ssc.54699	XM_003123185	NDUFA7	NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 7-like	PPS12236A
E07	Ssc.1108	NM_001190197	NDUFA8	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 8, 19kDa	PPS03064A
E08	Ssc.79288	XM_003126560	NDUFA9	NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 9, mitochondrial-like	PPS14927A
E09	Ssc.24368	NM_001167652	NDUFAB1	NADH dehydrogenase (ubiquinone) 1, alpha/beta subcomplex, 1, 8kDa	PPS04662A
E10	Ssc.1687	XM_003362210	NDUFB10	NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 10-like	PPS17490A
E11	Ssc.1311	NM_001244885	NDUFB2	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 2, 8kDa	PPS10717A
E12	Ssc.20297	XM_003133578	NDUFB3	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 3, 12kDa	PPS71674A
F01	Ssc.55071	XM_003361882	NDUFB4	NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 4-like	PPS17693A
F02	Ssc.1155	XM_003132546	NDUFB5	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 5, 16kDa	PPS14595A
F03	Ssc.26100	XM_003480775	NDUFB7	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 7, 18kDa	PPS71675A
F04	Ssc.11515	NM_001144842	NDUFB8	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 8, 19kDa	PPS01232A
F05	Ssc.1287	XM_013996497	NDUFB9	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 9, 22kDa	PPS02961A
F06	Ssc.3869	NM_001097470	NDUFC1	NADH dehydrogenase (ubiquinone) 1, subcomplex unknown, 1, 6kDa	PPS01643A
F07	Ssc.10953	XM_003133603	NDUFS1	NADH dehydrogenase (ubiquinone) Fe-S protein 1, 75kDa (NADH-coenzyme Q reductase)	PPS05670A
F08	Ssc.7201	XM_005663166	NDUFS2	NADH dehydrogenase (ubiquinone) Fe-S protein 2, 49kDa (NADH-coenzyme Q reductase)	PPS03620A
F09	Ssc.27097	NM_001243796	NDUFS3	NADH dehydrogenase (ubiquinone) Fe-S protein 3, 30kDa (NADH-coenzyme Q reductase)	PPS09492A
F10	Ssc.78617	XM_005672445	NDUFS4	NADH dehydrogenase (ubiquinone) Fe-S protein 4, 18kDa (NADH-coenzyme Q reductase)	PPS11668A
F11	Ssc.19191	NM_001244988	NDUFS5	NADH dehydrogenase (ubiquinone) Fe-S protein 5, 15kDa (NADH-coenzyme Q reductase)	PPS11035A

Position	UniGene	GenBank	Symbol	Description	Assay
F12	Ssc.55130	XM_003134167	NDUFS6	NADH dehydrogenase [ubiquinone] iron-sulfur protein 6, mitochondrial-like	PPS13210A
G01	Ssc.51924	XM_003353971	NDUFS7	NADH dehydrogenase [ubiquinone] iron-sulfur protein 7, mitochondrial-like	PPS17895A
G02	Ssc.2312	XM_003122434	NDUFS8	NADH dehydrogenase [ubiquinone] iron-sulfur protein 8, mitochondrial-like	PPS13899A
G03	Ssc.1547	XM_003122438	NDUFV1	NADH dehydrogenase [ubiquinone] flavoprotein 1, mitochondrial-like	PPS14229A
G04	Ssc.2572	XM_001925080	PPA1	Pyrophosphatase 1	PPS08801A
G05	Ssc.98357	XM_013978991	PPA2	Inorganic pyrophosphatase 2, mitochondrial-like	PPS13574A
G06	Ssc.24988	XM_021076930	SDHA	Succinate dehydrogenase [ubiquinone] flavoprotein subunit, mitochondrial	PPS01575A
G07	Ssc.55804	NM_001104953	SDHB	Succinate dehydrogenase complex, subunit B, iron sulfur (lp)	PPS01130A
G08	Ssc.23817	XM_003125659	SDHC	Succinate dehydrogenase cytochrome b560 subunit, mitochondrial-like	PPS14950A
G09	Ssc.48868	NM_001097516	SDHD	Succinate dehydrogenase complex, subunit D, integral membrane protein	PPS01695A
G10	Ssc.2879	NM_001164510	SLC25A25	Solute carrier family 25 (mitochondrial carrier; phosphate carrier), member 25	PPS03694A
G11	Ssc.16350	NM_214289	UCP2	Uncoupling protein 2 (mitochondrial, proton carrier)	PPS00857B
G12	Ssc.55223	NM_001129978	UQCR10	Ubiquinol-cytochrome c reductase complex 7.2 kDa protein	PPS03481A
H01	Ssc.10316	XM_003124280	ACTB	Actin, beta	PPS71698A
H02	Ssc.73773	NM_213978	B2M	Beta-2-microglobulin	PPS00376A
H03	Ssc.16135	NM_001206359	GAPDH	Glyceraldehyde-3-phosphate dehydrogenase	PPS00192A
H04	Ssc.4158	NM_001032376	HPRT1	Hypoxanthine phosphoribosyltransferase 1	PPS00668B
H05	Ssc.27927	NM_001244068	RPL13A	Ribosomal protein L13a	PPS01574A
H06	N/A	SA_00133	SGDC	Pig Genomic DNA Contamination	PPS71596A
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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