

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

Chicken Mitochondrial Energy Metabolism

Cat. no. 330231 PAGG-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 Chicken 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. It also determines whether mitochondrial energy metabolism activity is repressed or unchanged in experimental samples. Oxidation of NADH and FADH₂, the metabolites from glycolysis and the TCA cycle, occurs via a series of 4 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. It 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 delta-delta 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 mitochondrial energy metabolism activity and 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	ATP4B	ATP5A1	ATP5B	ATP5C1	ATP5D	ATP5E	ATP5F1	ATP5G1	ATP5G3
B	ATP5H	ATP5I	ATP5J	ATP5J2	ATP5L	AP000304.12	ATP6V0A2	ATP6V0D2	ATP6V1C2	ATP6V1G3	BCS1L	COX11
C	COX15	COX4I1	COX5A	COX6A1	COX6C	COX7A2	COX7A2L	COX7C	AP000721.4	CYB561D2	EDN1	GADD45B
D	LHPP	DNAJB1	LOC770919	LOC771947	NDUFA10	AC024592.12	NDUFA2	NDUFA4	NDUFA5	NDUFA6	NDUFA7	NDUFA8
E	RP11-234B24.6	NDUFA81	NDUFB1	NDUFB10	NDUFB2	NDUFB3	NDUFB5	NDUFB6	RP11-411B6.6	NDUFB9	NDUFC2	NDUFS1
F	NDUFS2	NDUFS3	NDUFS4	NDUFS5	NDUFS6	NDUFS7	NDUFS8	NDUFV1	NDUFV2	NDUFV3	PPA1	PPA2
G	SDHA	SDHB	SDHC	AP002884.2	SLC25A25	UCP3	UQCRC10	AC005943.2	UQCRC1	UQCRC2	UQCRCF51	UQCRCR
H	ACTB	H6PD	HMBS	RPL4	UBC	GGDC	RTC	RTC	RTC	PPC	PPC	PPC

Gene table: RT² Profiler PCR Array

Position	UniGene	GenBank	Symbol	Description	Assay
A01	Gga.17050	XM_424699	ARRDC3	Arrestin domain containing 3	PPG09699A
A02	N/A	XM_004942513	ASB1	Ankyrin repeat and SOCS box-containing 1	PPG08316A
A03	Gga.22162	NM_001030909	ATP12A	ATPase, H+/K+ transporting, nongastric, alpha polypeptide	PPG05177A
A04	Gga.884	NM_204418	ATP4B	ATPase, H+/K+ exchanging, beta polypeptide	PPG00415A
A05	Gga.9720	NM_204286	ATP5A1	ATP synthase, H+ transporting, mitochondrial F1 complex, alpha subunit 1, cardiac muscle	PPG00260A
A06	Gga.22609	NM_001031391	ATP5B	ATP synthase, H+ transporting, mitochondrial F1 complex, beta polypeptide	PPG09521A
A07	Gga.48161	NM_001278096	ATP5C1	ATP synthase, H+ transporting, mitochondrial F1 complex, gamma polypeptide 1	PPG04698A
A08	N/A	XM_001234759	ATP5D	Hypothetical protein LOC771478	PPG15838A
A09	N/A	XM_001231374	ATP5E	Similar to H+ transporting F1 ATP synthase epsilon subunit	PPG14455A
A10	Gga.26643	XM_417993	ATP5F1	ATP synthase, H+ transporting, mitochondrial F0 complex, subunit B1	PPG05269A
A11	Gga.1254	XM_001233602	ATP5G1	ATP synthase, H+ transporting, mitochondrial F0 complex, subunit C1 (subunit 9)	PPG05365A
A12	Gga.9188	NM_001277855	ATP5G3	ATP synthase, H+ transporting, mitochondrial Fo complex, subunit C3 (subunit 9)	PPG08406A
B01	Gga.2216	XM_001232598	ATP5H	ATP synthase, H+ transporting, mitochondrial F0 complex, subunit d	PPG06942A
B02	Gga.6091	NM_001097534	ATP5I	ATP synthase, H+ transporting, mitochondrial F0 complex, subunit E	PPG11416A
B03	Gga.6049	XM_001231638	ATP5J	ATP synthase, H+ transporting, mitochondrial F0 complex, subunit F6	PPG04206A
B04	Gga.4567	NM_001257200	ATP5J2	ATP synthase, H+ transporting, mitochondrial Fo complex, subunit F2	PPG02733A
B05	N/A	XM_004948082	ATP5L	ATP synthase, H+ transporting, mitochondrial Fo complex, subunit G	PPG11629A
B06	Gga.5614	XM_416717	AP000304.12	ATP synthase, H+ transporting, mitochondrial F1 complex, O subunit (oligomycin sensitivity conferring protein)	PPG04231A
B07	Gga.259	NM_204723	ATP6V0A2	ATPase, H+ transporting, lysosomal V0 subunit a2	PPG00786A
B08	Gga.22147	NM_001008455	ATP6V0D2	ATPase, H+ transporting, lysosomal 38kDa, V0 subunit d2	PPG05528A
B09	N/A	XM_004935758	ATP6V1C2	ATPase, H+ transporting, lysosomal 42kDa, V1 subunit C2	PPG06821A
B10	Gga.10666	XM_004943119	ATP6V1G3	ATPase, H+ transporting, lysosomal 13kDa, V1 subunit G3	PPG08563A
B11	Gga.22418	NM_001006520	BCS1L	BCS1-like (yeast)	PPG08456A
B12	N/A	XM_001233972	COX11	COX11 homolog, cytochrome c oxidase assembly protein (yeast)	PPG11799A
C01	Gga.39991	NM_001114126	COX15	COX15 homolog, cytochrome c oxidase assembly protein (yeast)	PPG08169A
C02	Gga.4877	NM_001030577	COX4I1	Cytochrome c oxidase subunit IV isoform 1	PPG02249A
C03	Gga.48353	XM_001233020	COX5A	Cytochrome c oxidase subunit Va	PPG11546A
C04	Gga.39155	NM_001277509	COX6A1	Cytochrome c oxidase subunit VIa polypeptide 1	PPG03100A
C05	Gga.5304	NM_001198657	COX6C	Cytochrome c oxidase subunit VIc	PPG05557A
C06	Gga.5531	NM_001198782	COX7A2	Cytochrome c oxidase subunit VIIa polypeptide 2 (liver)	PPG12217A
C07	Gga.5926	NM_001277587	COX7A2L	Cytochrome c oxidase subunit VIIa polypeptide 2 like	PPG06405A

Position	UniGene	GenBank	Symbol	Description	Assay
C08	N/A	XM_429181	COX7C	Cytochrome c oxidase subunit VIIc	PPG11157A
C09	N/A	XM_001235548	AP000721.4	Cytochrome c oxidase subunit 8A (ubiquitous)	PPG12247A
C10	N/A	XM_003641969	CYB561D2	Cytochrome b-561 domain containing 2	PPG17897A
C11	N/A	XM_418943	EDN1	Endothelin 1	PPG06003A
C12	Gga.49623	NM_001044666	GADD45B	Growth arrest and DNA-damage-inducible, beta	PPG10962B
D01	N/A	XM_004942342	LHPP	Phospholysine phosphohistidine inorganic pyrophosphate phosphatase	PPG09445A
D02	N/A	XM_003643562	DNAJB1	DnaJ homolog subfamily B member 1-like	PPG18213A
D03	N/A	XM_001234232	LOC770919	Hypothetical protein LOC770919	PPG15525A
D04	Gga.16111	XM_001235157	LOC771947	Similar to cytochrome c oxidase subunit VIIb	PPG16087A
D05	Gga.17230	NM_001031247	NDUFA10	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 10, 42kDa	PPG08317A
D06	Gga.1735	XM_429731	AC024592.12	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 11, 14, 7kDa	PPG05411A
D07	Gga.39368	XM_001232015	NDUFA2	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 2, 8kDa	PPG11338A
D08	Gga.4526	XM_001234600	NDUFA4	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 4, 9kDa	PPG12187A
D09	Gga.6336	NM_001097637	NDUFA5	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 5, 13kDa	PPG03647A
D10	Gga.2235	NM_001278108	NDUFA6	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 6, 14kDa	PPG10177A
D11	Gga.6088	XM_004948672	NDUFA7	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 7, 14, 5kDa	PPG05415A
D12	Gga.8811	NM_001277655	NDUFA8	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 8, 19kDa	PPG03178A
E01	Gga.1626	NM_001006281	RP11-234B24.6	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 9, 39kDa	PPG04644A
E02	Gga.2627	XM_004945263	NDUFAB1	NADH dehydrogenase (ubiquinone) 1, alpha/beta subcomplex, 1, 8kDa	PPG02797A
E03	Gga.4746	NM_001277785	NDUFB1	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 1, 7kDa	PPG07862A
E04	Gga.11296	XM_414844	NDUFB10	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 10, 22kDa	PPG02772A
E05	Gga.43134	NM_001277896	NDUFB2	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 2, 8kDa	PPG03929A
E06	Gga.7373	XM_001232007	NDUFB3	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 3, 12kDa	PPG08355A
E07	Gga.1524	NM_001006553	NDUFB5	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 5, 16kDa	PPG09041A
E08	Gga.8285	NM_001277525	NDUFB6	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 6, 17kDa	PPG02658A
E09	Gga.8822	NM_001006502	RP11-411B6.6	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 8, 19kDa	PPG08123A
E10	N/A	XM_418444	NDUFB9	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 9, 22kDa	PPG05621A
E11	Gga.5843	NM_213574	NDUFC2	NADH dehydrogenase (ubiquinone) 1, subcomplex unknown, 2, 14.5kDa	PPG01751A
E12	Gga.3251	NM_001006518	NDUFS1	NADH dehydrogenase (ubiquinone) Fe-S protein 1, 75kDa (NADH-coenzyme Q reductase)	PPG08376A
F01	N/A	XM_003643439	NDUFS2	NADH dehydrogenase (ubiquinone) Fe-S protein 2, 49kDa (NADH-coenzyme Q reductase)	PPG17821A
F02	Gga.1290	NM_001146332	NDUFS3	NADH dehydrogenase (ubiquinone) Fe-S protein 3, 30kDa (NADH-coenzyme Q reductase)	PPG07677A
F03	Gga.22180	XM_424788	NDUFS4	NADH dehydrogenase (ubiquinone) Fe-S protein 4, 18kDa (NADH-coenzyme Q reductase)	PPG00231A
F04	N/A	XM_001233574	NDUFS5	NADH dehydrogenase (ubiquinone) Fe-S protein 5, 15kDa (NADH-coenzyme Q reductase)	PPG12023A
F05	Gga.8284	XM_003640767	NDUFS6	NADH dehydrogenase (ubiquinone) Fe-S protein 6, 13kDa (NADH-coenzyme Q reductase)	PPG06099A
F06	N/A	XM_001234053	NDUFS7	Hypothetical protein LOC770724	PPG15432A
F07	Gga.34750	XM_001232779	NDUFS8	NADH dehydrogenase (ubiquinone) Fe-S protein 8, 23kDa (NADH-coenzyme Q reductase)	PPG11497A
F08	Gga.42010	NM_001031583	NDUFV1	NADH dehydrogenase (ubiquinone) flavoprotein 1, 51kDa	PPG10983A
F09	Gga.4778	XM_424129	NDUFV2	NADH dehydrogenase (ubiquinone) flavoprotein 2, 24kDa	PPG09468A
F10	Gga.29746	NM_001199170	NDUFV3	NADH dehydrogenase (ubiquinone) flavoprotein 3, 10kDa	PPG04261A
F11	Gga.4740	XM_001232699	PPA1	Pyrophosphatase (inorganic) 1	PPG11479A
F12	Gga.11869	XM_004941056	PPA2	Pyrophosphatase (inorganic) 2	PPG07222A
G01	Gga.993	NM_001277398	SDHA	Succinate dehydrogenase complex, subunit A, flavoprotein (Fp)	PPG01032A
G02	Gga.4743	NM_001080875	SDHB	Succinate dehydrogenase complex, subunit B, iron sulfur (Ip)	PPG11634A
G03	N/A	XM_003643816	SDHC	Succinate dehydrogenase complex, subunit C, integral membrane protein, 15kDa	PPG18458A
G04	Gga.34318	NM_001006321	AP002884.2	Succinate dehydrogenase complex, subunit D, integral membrane protein	PPG05214A
G05	Gga.35614	XM_001233164	SLC25A25	Solute carrier family 25 (mitochondrial carrier; phosphate carrier), member 25	PPG03269A
G06	Gga.121	NM_204107	UCP3	Uncoupling protein 3 (mitochondrial, proton carrier)	PPG00030A
G07	Gga.4600	XM_001234249	UQCRC1	Similar to ubiquinol-cytochrome c reductase complex (7.2 kD) (ucrc)	PPG15537A
G08	Gga.6097	NM_001190802	AC005943.2	Ubiquinol-cytochrome c reductase, 6.4kDa subunit	PPG11653A
G09	N/A	XM_004944589	UQCRC1	Ubiquinol-cytochrome c reductase core protein I	PPG02384A
G10	N/A	XM_004945471	UQCRC2	Ubiquinol-cytochrome c reductase core protein II	PPG09674A
G11	Gga.5791	NM_001005843	UQCRCF1	Ubiquinol-cytochrome c reductase, Rieske iron-sulfur polypeptide-like 1	PPG02198A

Position	UniGene	GenBank	Symbol	Description	Assay
G12	Gga.4648	NM_001277673	UQCRH	Ubiquinol-cytochrome c reductase hinge protein	PPG12136A
H01	Gga.48207	NM_205518	ACTB	Actin, beta	PPG17308A
H02	Gga.50291	XM_425746	H6PD	Hexose-6-phosphate dehydrogenase (glucose 1-dehydrogenase)	PPG10346A
H03	Gga.8480	XM_417846	HMBS	Hydroxymethylbilane synthase	PPG05149A
H04	Gga.4523	NM_001007479	RPL4	Ribosomal protein L4	PPG02048A
H05	Gga.39142	XM_001234599	UBC	Ubiquitin C	PPG01607A
H06	N/A	SA_00517	GGDC	Chicken Genomic DNA Contamination	PPG17309A
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.

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.

Trademarks: QIAGEN® (QIAGEN Group); Applied Biosystems®, ViiA™, StepOnePlus™, ROX™ (Applied Biosystems Corporation or its subsidiaries); Bio-Rad®, iCycler®, iQ™, MyiQ™, Chromo4™, CFX96™, DNA Engine Opticon®, CFX384™ (Bio-Rad Laboratories, Inc.); Stratagene®, Mx3005P®, Mx3000P®, Mx4000® (Stratagene); Eppendorf®, Mastercycler® (Eppendorf AG); Roche®, LightCycler® (Roche Group); Fluidigm® BioMark™ (Fluidigm Corporation); SYBR® (Molecular Probes, Inc.).

1066029 03/2011 © 2011 QIAGEN, all rights reserved.

www.qiagen.com

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

Australia ■ 1-800-243-800

Austria ■ 0800/281010

Belgium ■ 0800-79612

Brazil ■ 0800-557779



Sample & Assay Technologies