

RT² Profiler PCR Array (Rotor-Gene® Format)

Chicken Mitochondrial Energy Metabolism

Cat. no. 330231 PAGG-008ZR

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 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. 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 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 cyclers (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	Gga.17050	XM_424699	ARRDC3	Arrestin domain containing 3
2	N/A	XM_004942513	ASB1	Ankyrin repeat and SOCS box-containing 1
3	Gga.22162	NM_001030909	ATP12A	ATPase, H+/K+ transporting, nongastric, alpha polypeptide
4	Gga.884	NM_204418	ATP4B	ATPase, H+/K+ exchanging, beta polypeptide
5	Gga.9720	NM_204286	ATP5A1	ATP synthase, H+ transporting, mitochondrial F1 complex, alpha subunit 1, cardiac muscle
6	Gga.22609	NM_001031391	ATP5B	ATP synthase, H+ transporting, mitochondrial F1 complex, beta polypeptide
7	Gga.48161	NM_001278096	ATP5C1	ATP synthase, H+ transporting, mitochondrial F1 complex, gamma polypeptide 1
8	N/A	XM_001234759	ATP5D	Hypothetical protein LOC771478
9	N/A	XM_001231374	ATP5E	Similar to H+ transporting F1 ATP synthase epsilon subunit
10	Gga.26643	XM_417993	ATP5F1	ATP synthase, H+ transporting, mitochondrial F0 complex, subunit B1
11	Gga.1254	XM_001233602	ATP5G1	ATP synthase, H+ transporting, mitochondrial F0 complex, subunit C1 (subunit 9)
12	Gga.9188	NM_001277855	ATP5G3	ATP synthase, H+ transporting, mitochondrial Fo complex, subunit C3 (subunit 9)
13	Gga.2216	XM_001232598	ATP5H	ATP synthase, H+ transporting, mitochondrial F0 complex, subunit d
14	Gga.6091	NM_001097534	ATP5I	ATP synthase, H+ transporting, mitochondrial F0 complex, subunit E
15	Gga.6049	XM_001231638	ATP5J	ATP synthase, H+ transporting, mitochondrial F0 complex, subunit F6
16	Gga.4567	NM_001257200	ATP5J2	ATP synthase, H+ transporting, mitochondrial Fo complex, subunit F2
17	N/A	XM_004948082	ATP5L	ATP synthase, H+ transporting, mitochondrial Fo complex, subunit G
18	Gga.5614	XM_416717	AP000304.12	ATP synthase, H+ transporting, mitochondrial F1 complex, O subunit (oligomycin sensitivity conferring protein)
19	Gga.259	NM_204723	ATP6V0A2	ATPase, H+ transporting, lysosomal V0 subunit a2
20	Gga.22147	NM_001008455	ATP6V0D2	ATPase, H+ transporting, lysosomal 38kDa, V0 subunit d2
21	N/A	XM_004935758	ATP6VIC2	ATPase, H+ transporting, lysosomal 42kDa, VI subunit C2
22	Gga.10666	XM_004943119	ATP6VIG3	ATPase, H+ transporting, lysosomal 13kDa, VI subunit G3
23	Gga.22418	NM_001006520	BCS1L	BCS1-like (yeast)
24	N/A	XM_001233972	COX11	COX11 homolog, cytochrome c oxidase assembly protein (yeast)
25	Gga.39991	NM_001114126	COX15	COX15 homolog, cytochrome c oxidase assembly protein (yeast)
26	Gga.4877	NM_001030577	COX4I1	Cytochrome c oxidase subunit IV isoform 1
27	Gga.48353	XM_001233020	COX5A	Cytochrome c oxidase subunit Va
28	Gga.39155	NM_001277509	COX6A1	Cytochrome c oxidase subunit VIa polypeptide 1
29	Gga.5304	NM_001198657	COX6C	Cytochrome c oxidase subunit VIc
30	Gga.5531	NM_001198782	COX7A2	Cytochrome c oxidase subunit VIIa polypeptide 2 (liver)
31	Gga.5926	NM_001277587	COX7A2L	Cytochrome c oxidase subunit VIIa polypeptide 2 like
32	N/A	XM_429181	COX7C	Cytochrome c oxidase subunit VIIC
33	N/A	XM_001235548	AP000721.4	Cytochrome c oxidase subunit 8A (ubiquitous)
34	N/A	XM_003641969	CYB561D2	Cytochrome b-561 domain containing 2
35	N/A	XM_418943	EDN1	Endothelin 1
36	Gga.49623	NM_001044666	GADD45B	Growth arrest and DNA-damage-inducible, beta
37	N/A	XM_004942342	LHPP	Phospholysine phosphohistidine inorganic pyrophosphate phosphatase

Position	UniGene	GenBank	Symbol	Description
38	N/A	XM_003643562	DNAJB1	DnaJ homolog subfamily B member 1-like
39	N/A	XM_001234232	LOC770919	Hypothetical protein LOC770919
40	Gga.16111	XM_001235157	LOC771947	Similar to cytochrome c oxidase subunit VIIb
41	Gga.17230	NM_001031247	NDUFA10	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 10, 42kDa
42	Gga.1735	XM_429731	AC024592.12	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 11, 14.7kDa
43	Gga.39368	XM_001232015	NDUFA2	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 2, 8kDa
44	Gga.4526	XM_001234600	NDUFA4	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 4, 9kDa
45	Gga.6336	NM_001097637	NDUFA5	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 5, 13kDa
46	Gga.2235	NM_001278108	NDUFA6	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 6, 14kDa
47	Gga.6088	XM_004948672	NDUFA7	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 7, 14.5kDa
48	Gga.8811	NM_001277655	NDUFA8	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 8, 19kDa
49	Gga.1626	NM_001006281	RP11-234B24.6	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 9, 39kDa
50	Gga.2627	XM_004945263	NDUFAB1	NADH dehydrogenase (ubiquinone) 1, alpha/beta subcomplex, 1, 8kDa
51	Gga.4746	NM_001277785	NDUFB1	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 1, 7kDa
52	Gga.11296	XM_414844	NDUFB10	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 10, 22kDa
53	Gga.43134	NM_001277896	NDUFB2	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 2, 8kDa
54	Gga.7373	XM_001232007	NDUFB3	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 3, 12kDa
55	Gga.1524	NM_001006553	NDUFB5	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 5, 16kDa
56	Gga.8285	NM_001277525	NDUFB6	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 6, 17kDa
57	Gga.8822	NM_001006502	RP11-411B6.6	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 8, 19kDa
58	N/A	XM_418444	NDUFB9	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 9, 22kDa
59	Gga.5843	NM_213574	NDUFC2	NADH dehydrogenase (ubiquinone) 1, subcomplex unknown, 2, 14.5kDa
60	Gga.3251	NM_001006518	NDUFS1	NADH dehydrogenase (ubiquinone) Fe-S protein 1, 75kDa (NADH-coenzyme Q reductase)
61	N/A	XM_003643439	NDUFS2	NADH dehydrogenase (ubiquinone) Fe-S protein 2, 49kDa (NADH-coenzyme Q reductase)
62	Gga.1290	NM_001146332	NDUFS3	NADH dehydrogenase (ubiquinone) Fe-S protein 3, 30kDa (NADH-coenzyme Q reductase)
63	Gga.22180	XM_424788	NDUFS4	NADH dehydrogenase (ubiquinone) Fe-S protein 4, 18kDa (NADH-coenzyme Q reductase)
64	N/A	XM_001233574	NDUFS5	NADH dehydrogenase (ubiquinone) Fe-S protein 5, 15kDa (NADH-coenzyme Q reductase)
65	Gga.8284	XM_003640767	NDUFS6	NADH dehydrogenase (ubiquinone) Fe-S protein 6, 13kDa (NADH-coenzyme Q reductase)
66	N/A	XM_001234053	NDUFS7	Hypothetical protein LOC770724
67	Gga.34750	XM_001232779	NDUFS8	NADH dehydrogenase (ubiquinone) Fe-S protein 8, 23kDa (NADH-coenzyme Q reductase)
68	Gga.42010	NM_001031583	NDUFV1	NADH dehydrogenase (ubiquinone) flavoprotein 1, 51kDa
69	Gga.4778	XM_424129	NDUFV2	NADH dehydrogenase (ubiquinone) flavoprotein 2, 24kDa
70	Gga.29746	NM_001199170	NDUFV3	NADH dehydrogenase (ubiquinone) flavoprotein 3, 10kDa
71	Gga.4740	XM_001232699	PPA1	Pyrophosphatase (inorganic) 1
72	Gga.11869	XM_004941056	PPA2	Pyrophosphatase (inorganic) 2
73	Gga.993	NM_001277398	SDHA	Succinate dehydrogenase complex, subunit A, flavoprotein (Fp)
74	Gga.4743	NM_001080875	SDHB	Succinate dehydrogenase complex, subunit B, iron sulfur (Ip)
75	N/A	XM_003643816	SDHC	Succinate dehydrogenase complex, subunit C, integral membrane protein, 15kDa

Position	UniGene	GenBank	Symbol	Description
76	Gga.34318	NM_001006321	AP002884.2	Succinate dehydrogenase complex, subunit D, integral membrane protein
77	Gga.35614	XM_001233164	SLC25A25	Solute carrier family 25 (mitochondrial carrier; phosphate carrier), member 25
78	Gga.121	NM_204107	UCP3	Uncoupling protein 3 (mitochondrial, proton carrier)
79	Gga.4600	XM_001234249	UQCR10	Similar to ubiquinol-cytochrome c reductase complex (7.2 kD) (ucrc)
80	Gga.6097	NM_001190802	AC005943.2	Ubiquinol-cytochrome c reductase, 6.4kDa subunit
81	N/A	XM_004944589	UQCRC1	Ubiquinol-cytochrome c reductase core protein I
82	N/A	XM_004945471	UQCRC2	Ubiquinol-cytochrome c reductase core protein II
83	Gga.5791	NM_001005843	UQCRCF51	Ubiquinol-cytochrome c reductase, Rieske iron-sulfur polypeptide-like 1
84	Gga.4648	NM_001277673	UQCRH	Ubiquinol-cytochrome c reductase hinge protein
85	Gga.48207	NM_205518	ACTB	Actin, beta
86	Gga.50291	XM_425746	H6PD	Hexose-6-phosphate dehydrogenase (glucose 1-dehydrogenase)
87	Gga.8480	XM_417846	HMBS	Hydroxymethylbilane synthase
88	Gga.4523	NM_001007479	RPL4	Ribosomal protein L4
89	Gga.39142	XM_001234599	UBC	Ubiquitin C
90	N/A	SA_00517	GGDC	Chicken 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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