RT² Profiler PCR Array (Rotor-Gene® Format)

Chinese Hamster Ovary (CHO) Cell Mitochondrial Energy Metabolism

Cat. no. 330231 PAJJ-008ZR

For pathway expression analysis

Format	For use with the following real-time cyclers
RT² Profiler PCR Array, Format R	Rotor-Gene Q, other Rotor-Gene cyclers

Description

The Chinese Hamster Ovary (CHO) Cell 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. A set of controls present on each array enables data analysis using the ΔΔCT 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 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 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
A01	N/A	XM_003509326	Asb1	Ankyrin repeat and SOCS box-containing 1
A02	N/A	XM_003512282	Atp6ap1	ATPase, H+ transporting, lysosomal accessory protein 1
A03	N/A	XM_003504649	Atp6v0a1	ATPase, H+ transporting, lysosomal V0 subunit A1
A04	N/A	XM_003507812	Atp6v0a2	ATPase, H+ transporting, lysosomal V0 subunit A2
A05	N/A	XM_003503225	Atp6v0a4	ATPase, H+ transporting, lysosomal V0 subunit A4
A06	N/A	XM_003508550	Atp6v0d1	ATPase, H+ transporting, lysosomal V0 subunit D1
A07	N/A	XM_003497862	Atp6v1a	ATPase, H+ transporting, lysosomal V1 subunit A
A08	N/A	XM_003509829	Atp6v1c1	ATPase, H+ transporting, lysosomal V1 subunit C1
A09	N/A	XM_003501230	Atp6v1c2	ATPase, H+ transporting, lysosomal V1 subunit C2
A10	N/A	XM_003506558	Atp6v1h	ATPase, H+ transporting, lysosomal V1 subunit H
A11	N/A	XM_003507606	Bcs1l	BCS1-like (yeast)
A12	N/A	XM_003496373	Cox10	COX10 homolog, cytochrome c oxidase assembly protein, heme A: farnesyltransferase (yeast)
B01	N/A	XM_003512385	Cox15	COX15 homolog, cytochrome c oxidase assembly protein (yeast)
B02	N/A	XM_003508474	Hspa1l	Heat shock protein 1-like
B03	N/A	NM_001246826	LOC100689402	Integral membrane protein CII-3
B04	N/A	XM_003508802	LOC100750797	NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 6-like
B05	N/A	XM_003508450	LOC100752642	NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 8, mitochondrial-like
B06	N/A	XM_003501888	LOC100753924	DnaJ homolog subfamily B member 1-like
B07	N/A	XM_003501889	LOC100754222	NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 7-like
B08	N/A	XM_003510354	LOC100754444	NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 2-like
B09	N/A	XM_003501500	LOC100754681	NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 10-like
B10	N/A	XM_003510131	LOC100754916	Cytochrome c oxidase subunit 7B, mitochondrial-like
B11	N/A	XM_003507493	LOC100755007	NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 4-like 2-like
B12	N/A	XM_003511262	LOC100755207	Cytochrome c oxidase subunit 8A, mitochondrial-like
C01	N/A	XM_003510506	LOC100755602	NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 7-like
C02	N/A	XM_003508458	LOC100755882	Arrestin domain-containing protein 3-like
C03	N/A	XM_003514971	LOC100756118	Cytochrome c oxidase subunit 7A-related protein, mitochondrial-like
C04	N/A	XM_003503192	LOC100756540	Cytochrome c oxidase subunit 7A2, mitochondrial-like
C05	N/A	XM_003502329	LOC100757022	Cytochrome c oxidase subunit 4 isoform 2, mitochondrial-like
C06	N/A	XM_003516063	LOC100757101	Cytochrome c oxidase subunit 6A2, mitochondrial-like
C07	N/A	XM_003508395	LOC100757242	NADH dehydrogenase [ubiquinone] flavoprotein 2, mitochondrial-like
C08	N/A	XM_003501427	LOC100757306	NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 12-like
C09	N/A	XM_003507028	LOC100757431	NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 3-like
C10	N/A	XM_003504506	LOC100757610	ATP synthase subunit f, mitochondrial-like
C11	N/A	XM_003509081	LOC100757916	NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 5, mitochondrial-like

Position	UniGene	GenBank	Symbol	Description
C12	N/A	XM_003496793	LOC100759002	Cytochrome b-c1 complex subunit Rieske, mitochondrial-like
D01	N/A	XM_003516009	LOC100759795	NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 9-like
D02	N/A	XM_003508685	LOC100760422	Cytochrome b5 type B-like
D03	N/A	XM_003508473	LOC100760510	Heat shock 70 kDa protein 1A/1B-like
D04	N/A	XM_003494923	LOC100760824	ATP synthase subunit gamma, mitochondrial-like
D05	N/A	XM_003502132	LOC100760870	NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 5-like
D06	N/A	XM_003504441	LOC100761076	NADH dehydrogenase [ubiquinone] flavoprotein 3, mitochondrial-like
D07	N/A	XM_003501085	LOC100762129	NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 4-like
D08	N/A	XM_003497700	LOC100762406	ATP synthase subunit epsilon, mitochondrial-like
D09	N/A	XM_003515383	LOC100762701	Cytochrome c oxidase subunit 8B, mitochondrial-like
D10	N/A	XM_003506176	LOC100763024	ATP synthase subunit beta, mitochondrial-like
D11	N/A	XM_003498198	LOC100763079	Cytochrome c oxidase assembly protein COX11, mitochondrial-like
D12	N/A	XM_003498504	LOC100763175	Cytochrome b-c1 complex subunit 8-like
E01	N/A	XM_003510381	LOC100763334	NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 3-like
E02	N/A	XM_003510795	LOC100764001	Cytochrome c oxidase subunit 6A1, mitochondrial-like
E03	N/A	XM_003505967	LOC100765445	NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 6-like
E04	N/A	XM_003511219	LOC100765757	Cytochrome c oxidase subunit 5A, mitochondrial-like
E05	N/A	XM_003507673	LOC100766032	Cytochrome c1, heme protein, mitochondrial-like
E06	N/A	XM_003502566	LOC100766108	ATP synthase subunit delta, mitochondrial-like
E07	N/A	XM_003506457	Gadd45b	Growth arrest and DNA-damage-inducible, beta
E08	N/A	XM_003502359	LOC100766302	ATP synthase subunit e, mitochondrial-like
E09	N/A	XM_003505971	LOC100766611	NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 4-like
E10	N/A	XM_003505555	LOC100766809	Cytochrome c oxidase subunit 6B1-like
E11	N/A	XM_003506938	LOC100767292	Cytochrome c oxidase subunit 8C, mitochondrial-like
E12	N/A	XM_003499244	LOC100767451	NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 10, mitochondrial-like
F01	N/A	XM_003511591	LOC100768179	ATP synthase subunit s, mitochondrial-like
F02	N/A	XM_003498291	LOC100768321	Cytochrome c oxidase subunit 5B, mitochondrial-like
F03	N/A	XM_003497941	Edn1	Endothelin 1
F04	N/A	XM_003499904	LOC100769185	Inorganic pyrophosphatase-like
F05	N/A	XM_003495590	LOC100770018	ATP synthase subunit O, mitochondrial-like
F06	N/A	XM_003501034	LOC100770431	ATP synthase subunit alpha, mitochondrial-like
F07	N/A	XM_003507755	LOC100770644	NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 8-like
F08	N/A	XM_003495107	LOC100770670	Cytochrome c oxidase subunit 4 isoform 1, mitochondrial-like
F09	N/A	XM_003514731	LOC100770782	NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 11, mitochondrial-like
F10	N/A	XM_003513339	LOC100771246	Succinate dehydrogenase [ubiquinone] iron-sulfur subunit, mitochondrial-like
F11	N/A	XM_003495664	LOC100771541	ATP synthase subunit d, mitochondrial-like
F12	N/A	XM_003501801	LOC100772	NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 11-like

Position	UniGene	GenBank	Symbol	Description
			543	
G01	N/A	XM_003510962	LOC100773256	Cytochrome b561 domain-containing protein 1-like
G02	N/A	XM_003496033	LOC100773563	NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 9, mitochondrial-like
G03	N/A	XM_003514355	LOC100774535	ATP synthase subunit b, mitochondrial-like
G04	N/A	XM_003498535	LOC100774657	Succinate dehydrogenase [ubiquinone] cytochrome b small subunit, mitochondrial-like
G05	N/A	XM_003510380	Lrp5	Low density lipoprotein receptor-related protein 5
G06	N/A	NM_001246761	Ndufa1	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 1
G07	N/A	NM_001246789	Ndufb11	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 11
G08	N/A	XM_003506864	Ndufs2	NADH dehydrogenase (ubiquinone) Fe-S protein 2
G09	N/A	XM_003509924	Ndufv1	NADH dehydrogenase (ubiquinone) flavoprotein 1
G10	N/A	XM_003513635	Sdha	Succinate dehydrogenase complex, subunit A, flavoprotein (Fp)
G11	N/A	XM_003504256	Uqcrc1	Ubiquinol-cytochrome c reductase core protein 1
G12	N/A	XM_003513759	Uqcrc2	Ubiquinol cytochrome c reductase core protein 2
H01	N/A	NM_001244575	Actb	Actin, beta
H02	N/A	XM_003497123	Actr5	ARP5 actin-related protein 5 homolog (yeast)
H03	N/A	NM_001246674	B2m	Beta-2 microglobulin
H04	N/A	NM_001244854	Gapdh	Glyceraldehyde-3-phosphate dehydrogenase
H05	N/A	XM_003503017	LOC100769768	Hypoxanthine-guanine phosphoribosyltransferase-like
H06	N/A	SA_00519	JGDC	Hamster 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 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.

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.

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