

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

Zebrafish Glucose Metabolism

Cat. no. 330231 PAZF-006ZA

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 Zebrafish Glucose Metabolism RT² Profiler™ PCR Array profiles the expression of 84 key genes involved in the regulation and enzymatic pathways of glucose and glycogen metabolism. Glycolysis, the TCA cycle and the pentose phosphate pathways break down glucose from carbohydrates into the metabolites necessary for energy production, and gluconeogenesis stores excess energy as glucose. Cells, particularly in skeletal muscle and the liver, store excess glucose as the polysaccharide glycogen, and quickly metabolize it again when necessary. Changes in glucose metabolism gene expression are common in cancerous tissues. Specifically, tumors often show decreased oxidative phosphorylation, even in the presence of sufficient oxygen, due to enhanced transcription of glycolytic genes and/or reduced transcription of TCA cycle genes. In addition, the pathological consequences of diabetes and obesity involve gene expression changes in glucose metabolic pathways. In one notable example, PCK1 overexpression in mice leads to obesity. A set of controls present on each array enables data analysis using the $\Delta\Delta\text{CT}$ method of relative quantification and 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 glucose 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	acly	aco1	aco2	agla	aldoaa	aldoab	aldob	aldoca	bpgm	dlat	dldh	dlst
B	eno1a	eno2	eno3	eno4	fbp1a	fbp1b	fbp2	fh	g6pc3	g6pca.1	g6pd	galm
C	gapdh	gck	gpia	gpib	gsk3ab	gsk3b	gys1	gys2	hk1	hk2	idh1	idh2
D	idh3a	idh3b	h6pd	phkb	pfkla	mdh1aa	mdh2	ogdha	ogdhb	pcxb	pck1	pck2
E	pdha1a	pdhb	pdk1	pdk2b	pdk3a	pdk4	pdp2	pdpr	pgam2	pgk1	pgls	pgm1
F	pgm2	pgm3	phka1a	phkg1a	phkg1b	phkg2	pktr	prps1b	pygma	rbks	rpe	rpia
G	sdha	sdhb	sdhc	sdhda	gbe1a	suc1a2	suc1g1	suc1g2	taldo1	tkdb	tpi1b	zgc113076
H	acta1b	b2m	hprt1	nono	rpl13a	ZGDC	RTC	RTC	RTC	PPC	PPC	PPC

Gene table: RT² Profiler PCR Array

Position	UniGene	GenBank	Symbol	Description	Assay
A01	Dr.79934	NM_001002649	acly	ATP citrate lyase a	PPZ05891A
A02	Dr.83706	NM_001034983	aco1	Aconitase 1, soluble	PPZ12401A
A03	Dr.2353	NM_198908	aco2	Aconitase 2, mitochondrial	PPZ01486A
A04	Dr.79295	NM_001172653	agla	Amylo-1, 6-glucosidase, 4-alpha-glucanotransferase	PPZ12219A
A05	Dr.61171	NM_194377	aldoaa	Aldolase a, fructose-bisphosphate, a	PPZ02547A
A06	Dr.76452	NM_213215	aldoab	Aldolase a, fructose-bisphosphate, b	PPZ04983A
A07	Dr.76309	NM_194367	aldob	Aldolase b, fructose-bisphosphate	PPZ01312A
A08	Dr.118183	NM_001029952	aldoca	Aldolase C, fructose-bisphosphate, a	PPZ14577A
A09	Dr.31465	NM_001002630	bpgm	2,3-bisphosphoglycerate mutase	PPZ05872A
A10	Dr.31625	NM_212667	dlat	Dihydrolipoamide S-acetyltransferase (E2 component of pyruvate dehydrogenase complex)	PPZ01696A
A11	Dr.76179	NM_201506	dldh	Dihydrolipoamide dehydrogenase	PPZ04289A
A12	Dr.78638	NM_201487	dlst	Dihydrolipoamide S-succinyltransferase	PPZ02893A
B01	Dr.4724	NM_212722	eno1a	Enolase 1a, (alpha)	PPZ02199A
B02	Dr.78412	NM_001003848	eno2	Enolase 2	PPZ04370A
B03	Dr.76129	NM_214723	eno3	Enolase 3, (beta, muscle)	PPZ03177A
B04	Dr.150750	NM_001077547	eno4	Enolase family member 4	PPZ09644A
B05	Dr.10070	NM_199942	fbp1a	Fructose-1,6-bisphosphatase 1a	PPZ02373A
B06	Dr.26703	NM_213132	fbp1b	Fructose-1,6-bisphosphatase 1b	PPZ01147A
B07	Dr.34240	NM_001004008	fbp2	Fructose-1,6-bisphosphatase 2	PPZ06333A
B08	Dr.104452	NM_200963	fh	Fumarate hydratase	PPZ04046A
B09	Dr.117104	NM_001080066	g6pc3	Glucose 6 phosphatase, catalytic, 3	PPZ14320A
B10	Dr.88762	NM_001003512	g6pca.1	Glucose-6-phosphatase a, catalytic, tandem duplicate 1	PPZ06084A
B11	Dr.156225	XM_694076	g6pd	Glucose-6-phosphate dehydrogenase	PPZ12949A
B12	Dr.85466	NM_001002373	galm	Galactose mutarotase	PPZ05633A
C01	Dr.35640	NM_001115114	gapdh	Glyceraldehyde-3-phosphate dehydrogenase	PPZ01193A
C02	Dr.77034	NM_001045385	gck	Glucokinase (hexokinase 4, maturity onset diabetes of the young 2)	PPZ13868A
C03	Dr.11244	NM_144763	gpia	Glucose phosphate isomerase a	PPZ01045A
C04	Dr.17726	NM_144764	gpib	Glucose phosphate isomerase b	PPZ01046A
C05	Dr.75529	NM_131390	gsk3ab	Glycogen synthase kinase 3 alpha	PPZ00428A
C06	Dr.107139	NM_131381	gsk3b	Glycogen synthase kinase 3 beta	PPZ00419A
C07	Dr.26674	NM_201180	gys1	Glycogen synthase 1 (muscle)	PPZ04240A
C08	Dr.33913	NM_001018679	gys2	Glycogen synthase 2	PPZ03072A
C09	Dr.9278	NM_213252	hk1	Hexokinase 1	PPZ05204A
C10	Dr.80401	NM_213066	hk2	Hexokinase 2	PPZ04862A
C11	Dr.75844	NM_201499	idh1	Isocitrate dehydrogenase 1 (NADP+), soluble	PPZ16017A
C12	Dr.150283	NM_199564	idh2	Isocitrate dehydrogenase 2 (NADP+), mitochondrial	PPZ03262A
D01	Dr.13580	NM_200951	idh3a	Isocitrate dehydrogenase 3 (NAD+) alpha	PPZ04034A
D02	Dr.119750	NM_001002157	idh3b	Isocitrate dehydrogenase 3 (NAD+) beta	PPZ05496A
D03	N/A	XM_692728	h6pd	GDH/6PGL endoplasmic bifunctional protein-like	PPZ19282A
D04	N/A	XM_693105	phkb	Phosphorylase b kinase regulatory subunit beta-like	PPZ19324A
D05	Dr.97035	XM_693543	pfkla	6-phosphofructokinase, liver type-like	PPZ19368A
D06	Dr.4960	NM_199947	mdh1aa	Malate dehydrogenase 1a, NAD (soluble)	PPZ04303A
D07	Dr.25868	NM_213131	mdh2	Malate dehydrogenase 2, NAD (mitochondrial)	PPZ04912A
D08	Dr.104542	NM_200779	ogdha	Oxoglutarate (alpha-ketoglutarate) dehydrogenase a (lipoamide)	PPZ11333A

Position	UniGene	GenBank	Symbol	Description	Assay
D09	Dr.129996	XM_001338145	ogdhb	Oxoglutarate (alpha-ketoglutarate) dehydrogenase b (lipoamide)	PPZ15111A
D10	Dr.5998	NM_131550	pcxb	Pyruvate carboxylase	PPZ00576A
D11	Dr.37928	NM_214751	pck1	Phosphoenolpyruvate carboxykinase 1 (soluble)	PPZ03150A
D12	Dr.132490	NM_213192	pck2	Phosphoenolpyruvate carboxykinase 2 (mitochondrial)	PPZ04966A
E01	Dr.75566	NM_213393	pdha1a	Pyruvate dehydrogenase (lipoamide) alpha 1a	PPZ05127A
E02	Dr.3570	NM_213154	pdhb	Pyruvate dehydrogenase (lipoamide) beta	PPZ04930A
E03	N/A	XM_678484	pdk1	Pyruvate dehydrogenase kinase, isozyme 1	PPZ08897A
E04	Dr.151875	NM_200996	pdk2b	Pyruvate dehydrogenase kinase, isoenzyme 2	PPZ04078A
E05	Dr.120586	XM_683459	pdk3a	Pyruvate dehydrogenase kinase, isozyme 3a	PPZ10084A
E06	Dr.78407	NM_001128704	pdk4	Pyruvate dehydrogenase kinase, isozyme 4	PPZ10330A
E07	Dr.78741	NM_131625	pdp2	Putative pyruvate dehydrogenase phosphatase isoenzyme 2	PPZ00644A
E08	N/A	XM_002665429	pdpr	Pyruvate dehydrogenase phosphatase regulatory subunit	PPZ17369A
E09	Dr.76100	NM_201024	pgam2	Phosphoglycerate mutase 2 (muscle)	PPZ13333A
E10	Dr.76033	NM_213387	pgk1	Phosphoglycerate kinase 1	PPZ05123A
E11	Dr.15803	NM_001004117	pgls	6-phosphogluconolactonase	PPZ06323A
E12	Dr.76039	NM_201025	pgm1	Phosphoglucomutase 1	PPZ04103A
F01	Dr.87100	NM_212886	pgm2	Phosphoglucomutase 2	PPZ04696A
F02	Dr.37649	NM_001007053	pgm3	Phosphoglucomutase 3	PPZ06756A
F03	Dr.77435	XM_005166519	phka1a	Phosphorylase kinase, alpha 1 (muscle)	PPZ13271A
F04	Dr.118084	NM_001077612	phkg1a	Phosphorylase kinase, gamma 1a (muscle)	PPZ11557A
F05	Dr.90219	NM_001023574	phkg1b	Phosphorylase kinase, gamma 1b (muscle)	PPZ08543A
F06	Dr.82569	NM_200962	phkg2	Phosphorylase kinase, gamma 2 (testis)	PPZ04045A
F07	Dr.77543	NM_201289	pklr	Pyruvate kinase, liver and RBC	PPZ00878A
F08	Dr.73699	NM_001076568	prps1b	Phosphoribosyl pyrophosphate synthetase 1B	PPZ10280A
F09	Dr.83004	NM_001020628	pygma	Phosphorylase, glycogen (muscle) A	PPZ08325A
F10	Dr.31094	NM_001002117	rbks	Ribokinase	PPZ05462A
F11	Dr.75331	NM_201312	rpe	Ribulose-5-phosphate-3-epimerase	PPZ02335A
F12	Dr.30388	NM_001007289	rpia	Ribose 5-phosphate isomerase A (ribose 5-phosphate epimerase)	PPZ05306A
G01	Dr.105233	NM_200910	sdha	Succinate dehydrogenase complex, subunit A, flavoprotein (Fp)	PPZ04000A
G02	Dr.75182	NM_001098740	sdhb	Succinate dehydrogenase complex, subunit B, iron sulfur (Ip)	PPZ10654A
G03	Dr.1362	NM_001003523	sdhc	Succinate dehydrogenase complex, subunit C, integral membrane protein	PPZ06095A
G04	Dr.90484	NM_001002489	sdhda	Succinate dehydrogenase complex, subunit D, integral membrane protein a	PPZ05740A
G05	N/A	XM_002663560	gbe1a	St:ch211-213e17.1	PPZ24730A
G06	Dr.76796	NM_213026	suc1a2	Succinate-CoA ligase, ADP-forming, beta subunit	PPZ04832A
G07	Dr.76262	NM_001002577	suc1g1	Succinate-CoA ligase, GDP-forming, alpha subunit	PPZ05823A
G08	Dr.102495	XM_001923786	suc1g2	Succinate-CoA ligase, GDP-forming, beta subunit	PPZ01196A
G09	Dr.105598	NM_199687	taldo1	Transaldolase 1	PPZ01751A
G10	Dr.75247	NM_198070	tktb	Transketolase	PPZ03140A
G11	Dr.4157	NM_153668	tpi1b	Triosephosphate isomerase 1b	PPZ10259A
G12	Dr.150503	NM_001243172	zgc:113076	Zgc:113076	PPZ07891A
H01	Dr.47173	NM_214784	acta1b	Actin, alpha 1b, skeletal muscle	PPZ05295A
H02	Dr.51646	NM_001159768	b2m	Beta-2-microglobulin	PPZ00226A
H03	Dr.77915	NM_212986	hprt1	Hypoxanthine phosphoribosyltransferase 1	PPZ04796A
H04	Dr.150274	NM_201579	nono	Non-POU domain containing, octamer-binding	PPZ01381A
H05	Dr.32450	NM_212784	rpl13a	Ribosomal protein L13a	PPZ10281A
H06	N/A zebrafish	SA_00143	ZGDC	Zebrafish Genomic DNA Contamination	PPZ24726A
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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