

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

Rat Fatty Liver

Cat. no. 330231 PARN-157ZA

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 Rat Fatty Liver RT² Profiler PCR Array profiles the expression of 84 key genes involved in the mechanisms of nonalcoholic fatty liver disease (NAFLD) and hepatic insulin resistance. NAFLD is caused by excessive uptake of lipids by the liver and, if left untreated, can result in chronic inflammation and eventually steatohepatitis (NASH). This progressive hepatic disease often accompanies obesity, and has a complex set of causes that include insulin resistance as well as signaling effects from adipose tissue, pancreatic islets, and skeletal muscle. Insulin resistance is the primary symptom of non-insulin dependent diabetes mellitus (NIDDM), or type 2 diabetes. During food consumption, insulin release activates insulin signaling and cellular uptake of glucose, resulting in synthesis and storage of carbohydrates and lipids. Insulin-resistant individuals are vulnerable to multiple pathophysiologies as a result of residual blood glucose, including development of NIDDM. Individuals with NIDDM are often obese, and many have additional related pathologies (i.e., cardiovascular disease), collectively called the metabolic syndrome. Obesity upregulates adipokine secretion from adipose tissue, activating hepatic adipokine signaling while inhibiting hepatic insulin signaling. These 2 signaling pathways control the expression of many enzymes and transporters necessary for carbohydrate and lipid metabolism. In addition, hepatic oxidative phosphorylation is often disrupted during NAFLD and insulin resistance. This array includes hepatic genes involved in adipokine and insulin signaling, metabolic enzymes and transporters, genes commonly dysregulated in NIDDM, and genes involved in inflammation and apoptosis. The results of this array can yield insights into the mechanisms of insulin resistance and metabolic dysregulation in the liver. Using real-time PCR, researchers can easily and reliably analyze the expression of a focused panel of genes involved in NAFLD mechanisms 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	Abca1	Abcg1	Acaca	Acadl	Acly	Acox1	Acsf5	Acsm3	Adipor1	Adipor2	Akt1	Apoa1
B	Apob	Apoc3	ApoE	Atf5c1	Casp3	Cd36	Cebpb	Cnbp	Cpt1a	Cpt2	Cyp2e1	Cyp7a1
C	Dgat2	Fabp1	Fabp3	Fabp5	Fas	Fasn	Foxa2	G6pc	G6pd	Gck	Gk	Gsk3b
D	Hmgcr	Hnf4a	Ifng	Igf1	Igf1bp1	Il10	Il1b	Il6	Insr	Ins1	Ldlr	Lepr
E	Lpl	Mapk1	Mapk8	Mlxip1	Mtor	Ndufb6	Nfkb1	Nr1h2	Nr1h3	Nr1h4	Pck2	Pdk4
F	Pik3ca	Pik3r1	Pikr	Ppa1	Ppara	Ppard	Pparg	Ppargc1a	Prkaa1	Ptpn1	Rbp4	Rara
G	Scd1	Serpine1	Slc27a5	Slc2a1	Slc2a2	Slc2a4	Socs3	Srebf1	Srebf2	Stat3	Tnf	Xbp1
H	Actb	B2m	Hprt1	Ldha	Rplp1	RGDC	RTC	RTC	RTC	PPC	PPC	PPC

Gene table: RT² Profiler PCR Array

Position	UniGene	GenBank	Symbol	Description
A01	Rn.148916	NM_178095	Abca1	ATP-binding cassette, subfamily A (ABC1), member 1
A02	Rn.8398	NM_053502	Abcg1	ATP-binding cassette, subfamily G (WHITE), member 1
A03	Rn.44372	NM_022193	Acaca	Acetyl-coenzyme A carboxylase alpha
A04	Rn.174	NM_012819	Acadl	Acyl-Coenzyme A dehydrogenase, long-chain
A05	Rn.29771	NM_016987	Acly	ATP citrate lyase
A06	Rn.31796	NM_017340	Acox1	Acyl-Coenzyme A oxidase 1, palmitoyl
A07	Rn.105862	NM_053607	Acsf5	Acyl-CoA synthetase long-chain family member 5
A08	Rn.88644	NM_033231	Acsm3	Acyl-CoA synthetase medium-chain family member 3
A09	Rn.104556	NM_207587	Adipor1	Adiponectin receptor 1
A10	Rn.101984	NM_001037979	Adipor2	Adiponectin receptor 2
A11	Rn.11422	NM_033230	Akt1	V-akt murine thymoma viral oncogene homolog 1
A12	Rn.10308	NM_012738	Apoa1	Apolipoprotein A-I
B01	Rn.33815	NM_019287	Apob	Apolipoprotein B
B02	Rn.195323	NM_012501	Apoc3	Apolipoprotein C-III
B03	Rn.32351	NM_138828	ApoE	Apolipoprotein E
B04	Rn.63959	NM_053825	Atf5c1	ATP synthase, H+ transporting, mitochondrial F1 complex, gamma polypeptide 1
B05	Rn.10562	NM_012922	Casp3	Caspase 3
B06	Rn.102418	NM_031561	Cd36	CD36 molecule (thrombospondin receptor)
B07	Rn.6479	NM_024125	Cebpb	CCAAT/enhancer binding protein (C/EBP), beta
B08	Rn.6187	NM_022598	Cnbp	CCHC-type zinc finger, nucleic acid binding protein
B09	Rn.2856	NM_031559	Cpt1a	Carnitine palmitoyltransferase 1a, liver
B10	Rn.11389	NM_012930	Cpt2	Carnitine palmitoyltransferase 2
B11	Rn.1372	NM_031543	Cyp2e1	Cytochrome P450, family 2, subfamily e, polypeptide 1
B12	Rn.10737	NM_012942	Cyp7a1	Cytochrome P450, family 7, subfamily a, polypeptide 1
C01	Rn.9523	NM_001012345	Dgat2	Diacylglycerol O-acyltransferase homolog 2 (mouse)
C02	Rn.36412	NM_012556	Fabp1	Fatty acid binding protein 1, liver
C03	Rn.32566	NM_024162	Fabp3	Fatty acid binding protein 3, muscle and heart
C04	Rn.98269	NM_145878	Fabp5	Fatty acid binding protein 5, epidermal
C05	Rn.162521	NM_139194	Fas	Fas (TNF receptor superfamily, member 6)
C06	Rn.9486	NM_017332	Fasn	Fatty acid synthase
C07	Rn.10948	NM_012743	Foxa2	Forkhead box A2
C08	Rn.10992	NM_013098	G6pc	Glucose-6-phosphatase, catalytic subunit
C09	Rn.11040	NM_017006	G6pd	Glucose-6-phosphate dehydrogenase
C10	Rn.10447	NM_012565	Gck	Glucokinase
C11	Rn.153497	NM_024381	Gk	Glycerol kinase
C12	Rn.10426	NM_032080	Gsk3b	Glycogen synthase kinase 3 beta
D01	Rn.9437	NM_013134	Hmgcr	3-hydroxy-3-methylglutaryl-Coenzyme A reductase
D02	Rn.44442	NM_022180	Hnf4a	Hepatocyte nuclear factor 4, alpha
D03	Rn.10795	NM_138880	Ifng	Interferon gamma
D04	Rn.6282	NM_178866	Igf1	Insulin-like growth factor 1
D05	Rn.34026	NM_013144	Igf1bp1	Insulin-like growth factor binding protein 1
D06	Rn.9868	NM_012854	Il10	Interleukin 10
D07	Rn.9869	NM_031512	Il1b	Interleukin 1 beta
D08	Rn.9873	NM_012589	Il6	Interleukin 6

Position	UniGene	GenBank	Symbol	Description
D09	Rn.9876	NM_017071	Insr	Insulin receptor
D10	Rn.10476	NM_012969	Irs1	Insulin receptor substrate 1
D11	Rn.10483	NM_175762	Ldlr	Low density lipoprotein receptor
D12	Rn.9891	NM_012596	Lepr	Leptin receptor
E01	Rn.3834	NM_012598	Lpl	Lipoprotein lipase
E02	Rn.34914	NM_053842	Mapk1	Mitogen activated protein kinase 1
E03	Rn.4090	XM_341399	Mapk8	Mitogen-activated protein kinase 8
E04	Rn.144656	NM_133552	Mlxip1	MLX interacting protein-like
E05	Rn.11008	NM_019906	Mtor	Mechanistic target of rapamycin (serine/threonine kinase)
E06	Rn.104528	NM_001106646	Ndufb6	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 6
E07	Rn.2411	XM_342346	Nfkb1	Nuclear factor of kappa light polypeptide gene enhancer in B-cells 1
E08	Rn.786	NM_031626	Nr1h2	Nuclear receptor subfamily 1, group H, member 2
E09	Rn.11209	NM_031627	Nr1h3	Nuclear receptor subfamily 1, group H, member 3
E10	Rn.42943	NM_021745	Nr1h4	Nuclear receptor subfamily 1, group H, member 4
E11	Rn.35508	NM_001108377	Pck2	Phosphoenolpyruvate carboxykinase 2 (mitochondrial)
E12	Rn.30070	NM_053551	Pdk4	Pyruvate dehydrogenase kinase, isozyme 4
F01	Rn.44193	NM_133399	Pik3ca	Phosphoinositide-3-kinase, catalytic, alpha polypeptide
F02	Rn.10599	NM_013005	Pik3r1	Phosphoinositide-3-kinase, regulatory subunit 1 (alpha)
F03	Rn.48821	NM_012624	Pklr	Pyruvate kinase, liver and RBC
F04	Rn.106916	NM_001100834	Ppa1	Pyrophosphatase (inorganic) 1
F05	Rn.9753	NM_013196	Ppara	Peroxisome proliferator activated receptor alpha
F06	Rn.96181	NM_013141	Ppard	Peroxisome proliferator-activated receptor delta
F07	Rn.23443	NM_013124	Pparg	Peroxisome proliferator-activated receptor gamma
F08	Rn.19172	NM_031347	Ppargc1a	Peroxisome proliferator-activated receptor gamma, coactivator 1 alpha
F09	Rn.87789	NM_019142	Prkaa1	Protein kinase, AMP-activated, alpha 1 catalytic subunit
F10	Rn.11317	NM_012637	Plpn1	Protein tyrosine phosphatase, non-receptor type 1
F11	Rn.108214	NM_013162	Rbp4	Retinol binding protein 4, plasma
F12	Rn.108206	NM_012805	Rxra	Retinoid X receptor alpha
G01	Rn.1023	NM_139192	Scd1	Stearoyl-Coenzyme A desaturase 1
G02	Rn.29367	NM_012620	Serpine1	Serpin peptidase inhibitor, clade E (nexin, plasminogen activator inhibitor type 1), member 1
G03	Rn.207896	NM_024143	Slc27a5	Solute carrier family 27 (fatty acid transporter), member 5
G04	Rn.3205	NM_138827	Slc2a1	Solute carrier family 2 (facilitated glucose transporter), member 1
G05	Rn.89295	NM_012879	Slc2a2	Solute carrier family 2 (facilitated glucose transporter), member 2
G06	Rn.1314	NM_012751	Slc2a4	Solute carrier family 2 (facilitated glucose transporter), member 4
G07	Rn.127801	NM_053565	Socs3	Suppressor of cytokine signaling 3
G08	Rn.221929	XM_213329	Srebf1	Sterol regulatory element binding transcription factor 1
G09	Rn.41063	NM_001033694	Srebf2	Sterol regulatory element binding transcription factor 2
G10	Rn.10247	NM_012747	Stat3	Signal transducer and activator of transcription 3
G11	Rn.2275	NM_012675	Tnf	Tumor necrosis factor (TNF superfamily, member 2)
G12	Rn.101044	NM_001004210	Xbp1	X-box binding protein 1
H01	Rn.94978	NM_031144	Actb	Actin, beta
H02	Rn.1868	NM_012512	B2m	Beta-2 microglobulin
H03	Rn.47	NM_012583	Hprt1	Hypoxanthine phosphoribosyltransferase 1
H04	Rn.107896	NM_017025	Ldha	Lactate dehydrogenase A
H05	Rn.973	NM_001007604	Rplp1	Ribosomal protein, large, P1
H06	N/A	U26919	RGDC	Rat 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.
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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