

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

Human Fatty Liver

Cat. no. 330231 PAHS-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 Human 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	ACACA	ACADL	ACLY	ACOX1	ACSL5	ACSM3	ADIPOR1	ADIPOR2	AKT1	APOA1	APOB
B	APOC3	APOE	ATP5C1	CASP3	CD36	CEBPB	CNBP	CPT1A	CPT2	CYP2E1	CYP7A1	DGAT2
C	FABP1	FABP3	FABP5	FAS	FASN	FOXA2	FOXO1	G6PC	G6PD	GCK	GK	GSK3B
D	HMGCR	HNF4A	IFNG	IGF1	IGFBP1	IL10	IL1B	IL6	INSR	IRS1	LDLR	LEPR
E	LPL	MAPK1	MAPK8	MLXPL	MTOR	NDUFB6	NFKB1	NR1H2	NR1H3	NR1H4	PCK2	PKD4
F	PIK3CA	PIK3R1	PKLR	PNPLA3	PPA1	PPARA	PPARG	PPARGC1A	PRKAA1	PTPN1	RBP4	RXRA
G	SCD	SERPINE1	SLC27A5	SLC2A1	SLC2A2	SLC2A4	SOC3	SREBF1	SREBF2	STAT3	TNF	XBP1
H	ACTB	B2M	GAPDH	HRPT1	RPLP0	HGDC	RTC	RTC	RTC	PPC	PPC	PPC

Gene table: RT² Profiler PCR Array

Position	UniGene	GenBank	Symbol	Description
A01	Hs.429294	NM_005502	ABCA1	ATP-binding cassette, sub-family A (ABC1), member 1
A02	Hs.160556	NM_198834	ACACA	Acetyl-CoA carboxylase alpha
A03	Hs.471277	NM_001608	ACADL	Acyl-CoA dehydrogenase, long chain
A04	Hs.387567	NM_001096	ACLY	ATP citrate lyase
A05	Hs.464137	NM_004035	ACOX1	Acyl-CoA oxidase 1, palmitoyl
A06	Hs.11638	NM_016234	ACSL5	Acyl-CoA synthetase long-chain family member 5
A07	Hs.706754	NM_005622	ACSM3	Acyl-CoA synthetase medium-chain family member 3
A08	Hs.5298	NM_015999	ADIPOR1	Adiponectin receptor 1
A09	Hs.371642	NM_024551	ADIPOR2	Adiponectin receptor 2
A10	Hs.525622	NM_005163	AKT1	V-akt murine thymoma viral oncogene homolog 1
A11	Hs.633003	NM_000039	APOA1	Apolipoprotein A-I
A12	Hs.120759	NM_000384	APOB	Apolipoprotein B (including Ag(x) antigen)
B01	Hs.73849	NM_000040	APOC3	Apolipoprotein C-III
B02	Hs.654439	NM_000041	APOE	Apolipoprotein E
B03	Hs.271135	NM_005174	ATP5C1	ATP synthase, H+ transporting, mitochondrial F1 complex, gamma polypeptide 1
B04	Hs.141125	NM_004346	CASP3	Caspase 3, apoptosis-related cysteine peptidase
B05	Hs.120949	NM_000072	CD36	CD36 molecule (thrombospondin receptor)
B06	Hs.517106	NM_005194	CEBPB	CCAAT/enhancer binding protein (C/EBP), beta
B07	Hs.518249	NM_003418	CNBP	CCHC-type zinc finger, nucleic acid binding protein
B08	Hs.503043	NM_001876	CPT1A	Carnitine palmitoyltransferase 1A (liver)
B09	Hs.705379	NM_000098	CPT2	Carnitine palmitoyltransferase 2
B10	Hs.12907	NM_000773	CYP2E1	Cytochrome P450, family 2, subfamily E, polypeptide 1
B11	Hs.1644	NM_000780	CYP7A1	Cytochrome P450, family 7, subfamily A, polypeptide 1
B12	Hs.334305	NM_032564	DGAT2	Diacylglycerol O-acyltransferase 2
C01	Hs.380135	NM_001443	FABP1	Fatty acid binding protein 1, liver
C02	Hs.657242	NM_004102	FABP3	Fatty acid binding protein 3, muscle and heart (mammary-derived growth inhibitor)
C03	Hs.408061	NM_001444	FABP5	Fatty acid binding protein 5 (psoriasis-associated)
C04	Hs.244139	NM_000043	FAS	Fas (TNF receptor superfamily, member 6)
C05	Hs.83190	NM_004104	FASN	Fatty acid synthase
C06	Hs.155651	NM_021784	FOXA2	Forkhead box A2
C07	Hs.370666	NM_002015	FOXO1	Forkhead box O1
C08	Hs.212293	NM_000151	G6PC	Glucose-6-phosphatase, catalytic subunit
C09	Hs.461047	NM_000402	G6PD	Glucose-6-phosphate dehydrogenase
C10	Hs.1270	NM_000162	GCK	Glucokinase (hexokinase 4)
C11	Hs.1466	NM_000167	GK	Glycerol kinase
C12	Hs.445733	NM_002093	GSK3B	Glycogen synthase kinase 3 beta
D01	Hs.643495	NM_000859	HMGCR	3-hydroxy-3-methylglutaryl-CoA reductase
D02	Hs.116462	NM_178849	HNF4A	Hepatocyte nuclear factor 4, alpha
D03	Hs.856	NM_000619	IFNG	Interferon, gamma
D04	Hs.160562	NM_000618	IGF1	Insulin-like growth factor 1 (somatomedin C)
D05	Hs.642938	NM_000596	IGFBP1	Insulin-like growth factor binding protein 1
D06	Hs.193717	NM_000572	IL10	Interleukin 10
D07	Hs.126256	NM_000576	IL1B	Interleukin 1, beta

Position	UniGene	GenBank	Symbol	Description
D08	Hs.654458	NM_000600	IL6	Interleukin 6 (interferon, beta 2)
D09	Hs.465744	NM_000208	INSR	Insulin receptor
D10	Hs.471508	NM_005544	IRS1	Insulin receptor substrate 1
D11	Hs.213289	NM_000527	LDLR	Low density lipoprotein receptor
D12	Hs.705413	NM_002303	LEPR	Leptin receptor
E01	Hs.180878	NM_000237	LPL	Lipoprotein lipase
E02	Hs.431850	NM_002745	MAPK1	Mitogen-activated protein kinase 1
E03	Hs.138211	NM_002750	MAPK8	Mitogen-activated protein kinase 8
E04	Hs.647055	NM_032951	MLXIP1	MLX interacting protein-like
E05	Hs.338207	NM_004958	MTOR	Mechanistic target of rapamycin (serine/threonine kinase)
E06	Hs.493668	NM_182739	NDUFB6	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 6, 17kDa
E07	Hs.654408	NM_003998	NFKB1	Nuclear factor of kappa light polypeptide gene enhancer in B-cells 1
E08	Hs.432976	NM_007121	NR1H2	Nuclear receptor subfamily 1, group H, member 2
E09	Hs.438863	NM_005693	NR1H3	Nuclear receptor subfamily 1, group H, member 3
E10	Hs.282735	NM_005123	NR1H4	Nuclear receptor subfamily 1, group H, member 4
E11	Hs.75812	NM_004563	PCK2	Phosphoenolpyruvate carboxykinase 2 (mitochondrial)
E12	Hs.8364	NM_002612	PK4	Pyruvate dehydrogenase kinase, isozyme 4
F01	Hs.553498	NM_006218	PIK3CA	Phosphoinositide-3-kinase, catalytic, alpha polypeptide
F02	Hs.132225	NM_181504	PIK3R1	Phosphoinositide-3-kinase, regulatory subunit 1 (alpha)
F03	Hs.95990	NM_000298	PKLR	Pyruvate kinase, liver and RBC
F04	Hs.654800	NM_025225	PNPLA3	Patatin-like phospholipase domain containing 3
F05	Hs.437403	NM_021129	PPA1	Pyrophosphatase (inorganic) 1
F06	Hs.103110	NM_005036	PPARA	Peroxisome proliferator-activated receptor alpha
F07	Hs.162646	NM_015869	PPARG	Peroxisome proliferator-activated receptor gamma
F08	Hs.527078	NM_013261	PPARGC1A	Peroxisome proliferator-activated receptor gamma, coactivator 1 alpha
F09	Hs.43322	NM_006251	PRKAA1	Protein kinase, AMP-activated, alpha 1 catalytic subunit
F10	Hs.417549	NM_002827	PTPN1	Protein tyrosine phosphatase, non-receptor type 1
F11	Hs.50223	NM_006744	RBP4	Retinol binding protein 4, plasma
F12	Hs.590886	NM_002957	RXRA	Retinoid X receptor, alpha
G01	Hs.558396	NM_005063	SCD	Arylacetamide deacetylase
G02	Hs.414795	NM_000602	SERPINE1	Serpin peptidase inhibitor, clade E (nexin, plasminogen activator inhibitor type 1), member 1
G03	Hs.292177	NM_012254	SLC27A5	Solute carrier family 27 (fatty acid transporter), member 5
G04	Hs.473721	NM_006516	SLC2A1	Solute carrier family 2 (facilitated glucose transporter), member 1
G05	Hs.167584	NM_000340	SLC2A2	Solute carrier family 2 (facilitated glucose transporter), member 2
G06	Hs.380691	NM_001042	SLC2A4	Solute carrier family 2 (facilitated glucose transporter), member 4
G07	Hs.527973	NM_003955	SOCS3	Suppressor of cytokine signaling 3
G08	Hs.592123	NM_004176	SREBF1	Sterol regulatory element binding transcription factor 1
G09	Hs.443258	NM_004599	SREBF2	Sterol regulatory element binding transcription factor 2
G10	Hs.463059	NM_003150	STAT3	Signal transducer and activator of transcription 3 (acute-phase response factor)
G11	Hs.241570	NM_000594	TNF	Tumor necrosis factor
G12	Hs.437638	NM_005080	XBP1	X-box binding protein 1
H01	Hs.520640	NM_001101	ACTB	Actin, beta
H02	Hs.534255	NM_004048	B2M	Beta-2-microglobulin
H03	Hs.592355	NM_002046	GAPDH	Glyceraldehyde-3-phosphate dehydrogenase
H04	Hs.412707	NM_000194	HPRT1	Hypoxanthine phosphoribosyltransferase 1
H05	Hs.546285	NM_001002	RPLP0	Ribosomal protein, large, P0
H06	N/A	SA_00105	HGDC	Human 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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