

# RT<sup>2</sup> Profiler PCR Array (96-Well Format and 384-Well [4 x 96] Format)

## Human Fatty Acid Metabolism

Cat. no. 330231 PAHS-007ZA

For pathway expression analysis

Format	For use with the following real-time cyclers
RT <sup>2</sup> Profiler PCR Array, Format A	Applied Biosystems <sup>®</sup> models 5700, 7000, 7300, 7500, 7700, 7900HT, ViiA™ 7 (96-well block); Bio-Rad <sup>®</sup> models iCycler <sup>®</sup> , iQ™ 5, MyiQ™, MyiQ2; Bio-Rad/MJ Research Chromo4™; Eppendorf <sup>®</sup> Mastercycler <sup>®</sup> ep realplex models 2, 2s, 4, 4s; Stratagene <sup>®</sup> models Mx3005P <sup>®</sup> , Mx3000P <sup>®</sup> ; Takara TP-800
RT <sup>2</sup> Profiler PCR Array, Format C	Applied Biosystems models 7500 (Fast block), 7900HT (Fast block), StepOnePlus™, ViiA 7 (Fast block)
RT <sup>2</sup> Profiler PCR Array, Format D	Bio-Rad CFX96™; Bio-Rad/MJ Research models DNA Engine Opticon <sup>®</sup> , DNA Engine Opticon 2; Stratagene Mx4000 <sup>®</sup>
RT <sup>2</sup> Profiler PCR Array, Format E	Applied Biosystems models 7900HT (384-well block), ViiA 7 (384-well block); Bio-Rad CFX384™
RT <sup>2</sup> Profiler PCR Array, Format F	Roche <sup>®</sup> LightCycler <sup>®</sup> 480 (96-well block)
RT <sup>2</sup> Profiler PCR Array, Format G	Roche LightCycler 480 (384-well block)
RT <sup>2</sup> Profiler PCR Array, Format H	Fluidigm <sup>®</sup> BioMark™



Sample & Assay Technologies

## Description

The Human Fatty Acid Metabolism RT<sup>2</sup> Profiler PCR Array profiles the expression of 84 key genes involved in the regulation and enzymatic pathways of fatty acid metabolism. Cells, particularly in skeletal muscle and adipose tissue, primarily store energy as triacylglycerols and, when needed, break them down again into glycerol and fatty acids for activation and transport into the mitochondria. The process of  $\alpha$ -oxidation then metabolizes these activated fatty acids yielding acetyl-CoA, the initial metabolite necessary for the TCA cycle and ketogenesis. During resting states, cells store excess energy by re-synthesizing fatty acids in a process tightly regulated by hormones. Alterations in the expression of genes involved in fatty acid metabolism, such as CRAT, often associate with metabolic syndrome and insulin resistance. These two syndromes are risk factors for multiple diseases including diabetes and obesity as well as other prevalent health problems such as cardiovascular disease. Using real-time PCR, you can easily and reliably analyze the expression of a focused panel of genes involved in fatty acid metabolism with this array.

For further details, consult the *RT<sup>2</sup> Profiler PCR Array Handbook*.

## Shipping and storage

RT<sup>2</sup> 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. RT<sup>2</sup> Profiler PCR Arrays in format H are shipped on dry ice or blue ice packs.

For long term storage, keep plates at  $-20^{\circ}\text{C}$ .

**Note:** Ensure that you have the correct RT<sup>2</sup> Profiler PCR Array format for your real-time cycler (see table above).

**Note:** Open the package and store the products appropriately immediately on receipt.

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## Array layout (96-well)

For 384-well 4 x 96 PCR arrays, genes are present in a staggered format. Refer to the *RT<sup>2</sup> Profiler PCR Array Handbook* for layout.

	1	2	3	4	5	6	7	8	9	10	11	12
<b>A</b>	ACAA1	ACAA2	ACAD10	ACAD11	ACAD9	ACADL	ACADM	ACADS	ACADS8	ACADVL	ACAT1	ACAT2
<b>B</b>	ACOT1	ACOT12	ACOT6	ACOT7	ACOT8	ACOT9	ACOX1	ACOX2	ACOX3	ACSBG1	ACSBG2	ACSL1
<b>C</b>	ACSL3	ACSL4	ACSL5	ACSL6	ACSM3	ACSM4	ACSM5	ALDH2	BDH1	BDH2	CPT1A	CPT1B
<b>D</b>	CPT1C	CPT2	CRAT	CROT	DECR1	DECR2	ECHS1	ECI2	EHHADH	FABP1	FABP2	FABP3
<b>E</b>	FABP4	FABP5	FABP6	FABP7	FASN	GCDH	GK	GK2	GPD1	GPD2	HADHA	HMGCL
<b>F</b>	HMGCS1	HMGCS2	LIPE	LPL	MCEE	MUT	OXCT2	PECR	PPA1	PRKAA1	PRKAA2	PRKAB1
<b>G</b>	PRKAB2	PRKACA	PRKACB	PRKAG1	PRKAG2	PRKAG3	SLC27A1	SLC27A2	SLC27A3	SLC27A4	SLC27A5	SLC27A6
<b>H</b>	ACTB	B2M	GAPDH	HPRT1	RPLP0	HGDC	RTC	RTC	RTC	PPC	PPC	PPC

## Gene table: RT<sup>2</sup> Profiler PCR Array

Position	UniGene	GenBank	Symbol	Description
A01	Hs.706758	NM_001607	ACAA1	Acetyl-CoA acyltransferase 1
A02	Hs.200136	NM_006111	ACAA2	Acetyl-CoA acyltransferase 2
A03	Hs.331141	NM_025247	ACAD10	Acyl-CoA dehydrogenase family, member 10
A04	Hs.441378	NM_032169	ACAD11	Acyl-CoA dehydrogenase family, member 11
A05	Hs.567482	NM_014049	ACAD9	Acyl-CoA dehydrogenase family, member 9
A06	Hs.471277	NM_001608	ACADL	Acyl-CoA dehydrogenase, long chain
A07	Hs.445040	NM_000016	ACADM	Acyl-CoA dehydrogenase, C-4 to C-12 straight chain
A08	Hs.507076	NM_000017	ACADS	Acyl-CoA dehydrogenase, C-2 to C-3 short chain
A09	Hs.81934	NM_001609	ACADS8	Acyl-CoA dehydrogenase, short/branched chain
A10	Hs.437178	NM_000018	ACADVL	Acyl-CoA dehydrogenase, very long chain
A11	Hs.232375	NM_000019	ACAT1	Acetyl-CoA acetyltransferase 1
A12	Hs.571037	NM_005891	ACAT2	Acetyl-CoA acetyltransferase 2
B01	Hs.568046	NM_001037161	ACOT1	Acyl-CoA thioesterase 1
B02	Hs.591756	NM_130767	ACOT12	Acyl-CoA thioesterase 12
B03	Hs.122038	NM_001037162	ACOT6	Acyl-CoA thioesterase 6
B04	Hs.126137	NM_181866	ACOT7	Acyl-CoA thioesterase 7
B05	Hs.444776	NM_005469	ACOT8	Acyl-CoA thioesterase 8
B06	Hs.298885	NM_001033583	ACOT9	Acyl-CoA thioesterase 9
B07	Hs.464137	NM_004035	ACOX1	Acyl-CoA oxidase 1, palmitoyl
B08	Hs.444959	NM_003500	ACOX2	Acyl-CoA oxidase 2, branched chain
B09	Hs.479122	NM_003501	ACOX3	Acyl-CoA oxidase 3, pristanoyl
B10	Hs.655760	NM_015162	ACSBG1	Acyl-CoA synthetase bubblegum family member 1
B11	Hs.465720	NM_030924	ACSBG2	Acyl-CoA synthetase bubblegum family member 2
B12	Hs.406678	NM_001995	ACSL1	Acyl-CoA synthetase long-chain family member 1
C01	Hs.655772	NM_004457	ACSL3	Acyl-CoA synthetase long-chain family member 3
C02	Hs.268785	NM_004458	ACSL4	Acyl-CoA synthetase long-chain family member 4
C03	Hs.11638	NM_016234	ACSL5	Acyl-CoA synthetase long-chain family member 5
C04	Hs.14945	NM_001009185	ACSL6	Acyl-CoA synthetase long-chain family member 6
C05	Hs.706754	NM_005622	ACSM3	Acyl-CoA synthetase medium-chain family member 3
C06	Hs.450804	NM_001080454	ACSM4	Acyl-CoA synthetase medium-chain family member 4
C07	Hs.659606	NM_017888	ACSM5	Acyl-CoA synthetase medium-chain family member 5
C08	Hs.632733	NM_000690	ALDH2	Aldehyde dehydrogenase 2 family (mitochondrial)
C09	Hs.274539	NM_004051	BDH1	3-hydroxybutyrate dehydrogenase, type 1
C10	Hs.124696	NM_020139	BDH2	3-hydroxybutyrate dehydrogenase, type 2
C11	Hs.503043	NM_001876	CPT1A	Carnitine palmitoyltransferase 1A (liver)
C12	Hs.439777	NM_004377	CPT1B	Carnitine palmitoyltransferase 1B (muscle)
D01	Hs.112195	NM_152359	CPT1C	Carnitine palmitoyltransferase 1C
D02	Hs.705379	NM_000098	CPT2	Carnitine palmitoyltransferase 2
D03	Hs.12068	NM_000755	CRAT	Carnitine O-acetyltransferase
D04	Hs.125039	NM_021151	CROT	Carnitine O-octanoyltransferase
D05	Hs.492212	NM_001359	DECR1	2,4-dienoyl CoA reductase 1, mitochondrial
D06	Hs.628831	NM_020664	DECR2	2,4-dienoyl CoA reductase 2, peroxisomal
D07	Hs.76394	NM_004092	ECHS1	Enoyl CoA hydratase, short chain, 1, mitochondrial
D08	Hs.15250	NM_006117	ECI2	Enoyl-CoA delta isomerase 2
D09	Hs.429879	NM_001966	EHHADH	Enoyl-CoA, hydratase/3-hydroxyacyl CoA dehydrogenase

Position	UniGene	GenBank	Symbol	Description
D10	Hs.380135	NM_001443	FABP1	Fatty acid binding protein 1, liver
D11	Hs.282265	NM_000134	FABP2	Fatty acid binding protein 2, intestinal
D12	Hs.657242	NM_004102	FABP3	Fatty acid binding protein 3, muscle and heart (mammary-derived growth inhibitor)
E01	Hs.391561	NM_001442	FABP4	Fatty acid binding protein 4, adipocyte
E02	Hs.408061	NM_001444	FABP5	Fatty acid binding protein 5 (psoriasis-associated)
E03	Hs.519719	NM_001445	FABP6	Fatty acid binding protein 6, ileal
E04	Hs.26770	NM_001446	FABP7	Fatty acid binding protein 7, brain
E05	Hs.83190	NM_004104	FASN	Fatty acid synthase
E06	Hs.532699	NM_000159	GCDH	Glutaryl-CoA dehydrogenase
E07	Hs.1466	NM_000167	GK	Glycerol kinase
E08	Hs.98008	NM_033214	GK2	Glycerol kinase 2
E09	Hs.524418	NM_005276	GPD1	Glycerol-3-phosphate dehydrogenase 1 (soluble)
E10	Hs.512382	NM_000408	GPD2	Glycerol-3-phosphate dehydrogenase 2 (mitochondrial)
E11	Hs.516032	NM_000182	HADHA	Hydroxyacyl-CoA dehydrogenase/3-ketoacyl-CoA thiolase/enoyl-CoA hydratase (trifunctional protein), alpha subunit
E12	Hs.533444	NM_000191	HMGCL	3-hydroxymethyl-3-methylglutaryl-CoA lyase
F01	Hs.397729	NM_002130	HMGCS1	3-hydroxy-3-methylglutaryl-CoA synthase 1 (soluble)
F02	Hs.59889	NM_005518	HMGCS2	3-hydroxy-3-methylglutaryl-CoA synthase 2 (mitochondrial)
F03	Hs.656980	NM_005357	LIPE	Lipase, hormone-sensitive
F04	Hs.180878	NM_000237	LPL	Lipoprotein lipase
F05	Hs.94949	NM_032601	MCEE	Methylmalonyl CoA epimerase
F06	Hs.485527	NM_000255	MUT	Methylmalonyl CoA mutase
F07	Hs.472491	NM_022120	OXCT2	3-oxoacid CoA transferase 2
F08	Hs.281680	NM_018441	PECR	Peroxisomal trans-2-enoyl-CoA reductase
F09	Hs.437403	NM_021129	PPA1	Pyrophosphatase (inorganic) 1
F10	Hs.43322	NM_006251	PRKAA1	Protein kinase, AMP-activated, alpha 1 catalytic subunit
F11	Hs.437039	NM_006252	PRKAA2	Protein kinase, AMP-activated, alpha 2 catalytic subunit
F12	Hs.715515	NM_006253	PRKAB1	Protein kinase, AMP-activated, beta 1 non-catalytic subunit
G01	Hs.50732	NM_005399	PRKAB2	Protein kinase, AMP-activated, beta 2 non-catalytic subunit
G02	Hs.631630	NM_002730	PRKACA	Protein kinase, cAMP-dependent, catalytic, alpha
G03	Hs.487325	NM_182948	PRKACB	Protein kinase, cAMP-dependent, catalytic, beta
G04	Hs.530862	NM_002733	PRKAG1	Protein kinase, AMP-activated, gamma 1 non-catalytic subunit
G05	Hs.647072	NM_016203	PRKAG2	Protein kinase, AMP-activated, gamma 2 non-catalytic subunit
G06	Hs.591634	NM_017431	PRKAG3	Protein kinase, AMP-activated, gamma 3 non-catalytic subunit
G07	Hs.363138	NM_198580	SLC27A1	Solute carrier family 27 (fatty acid transporter), member 1
G08	Hs.11729	NM_003645	SLC27A2	Solute carrier family 27 (fatty acid transporter), member 2
G09	Hs.438723	NM_024330	SLC27A3	Solute carrier family 27 (fatty acid transporter), member 3
G10	Hs.656699	NM_005094	SLC27A4	Solute carrier family 27 (fatty acid transporter), member 4
G11	Hs.292177	NM_012254	SLC27A5	Solute carrier family 27 (fatty acid transporter), member 5
G12	Hs.49765	NM_014031	SLC27A6	Solute carrier family 27 (fatty acid transporter), member 6
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, RT<sup>2</sup> Profiler PCR Arrays should be used together with the RT<sup>2</sup> First Strand Kit for cDNA synthesis and RT<sup>2</sup> SYBR<sup>®</sup> Green qPCR Mastermixes for PCR.

Product	Contents	Cat. no.
RT <sup>2</sup> First Strand Kit (12)	Enzymes and reagents for cDNA synthesis	330401
RT <sup>2</sup> 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 <sup>2</sup> 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 <sup>2</sup> 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.

RT<sup>2</sup> 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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