

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

## Rat Fatty Acid Metabolism

Cat. no. 330231 PARN-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® 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 <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®, DNA Engine Opticon 2; Stratagene Mx4000®                                                                                                                                                                              |
| 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® LightCycler® 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® BioMark™                                                                                                                                                                                                                                                                    |



Sample & Assay Technologies

## Description

The Rat 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> | Acaa1a | Acaa2  | Acad10 | Acad11 | Acad9  | Acadl  | Acadm   | Acads   | Acadslb | Acadvl  | Acat1   | Acat3   |
| <b>B</b> | Acat12 | Acat2  | Acat3  | Acat7  | Acat8  | Acat9  | Acox1   | Acox2   | Acox3   | Acsbg1  | Acsbg2  | Acs1    |
| <b>C</b> | Acs13  | Acs14  | Acs15  | Acs16  | Acsm2  | Acsm3  | Acsm4   | Acsm5   | Aldh2   | Bdh1    | Bdh2    | Cpt1a   |
| <b>D</b> | Cpt1b  | Cpt1c  | Cpt2   | Crat   | Crot   | Decr1  | Decr2   | Echs1   | Eci2    | Ehhadh  | Fabp1   | Fabp2   |
| <b>E</b> | Fabp3  | Fabp4  | Fabp5  | Fabp6  | Fabp7  | Gcdh   | Gk      | Gk2     | Gpd1    | Gpd2    | Hadha   | Hmgcl   |
| <b>F</b> | Hmgcs1 | Hmgcs2 | Lipe   | Lpl    | Mcee   | Mut    | Oxct2a  | 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    | Hprt1  | Ldha   | Rplp1  | RGDC   | RTC     | RTC     | RTC     | PPC     | PPC     | PPC     |

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

| Position | UniGene   | GenBank      | Symbol  | Description                                               |
|----------|-----------|--------------|---------|-----------------------------------------------------------|
| A01      | Rn.8913   | NM_012489    | Acaa1a  | Acetyl-Coenzyme A acyltransferase 1A                      |
| A02      | Rn.3786   | NM_130433    | Acaa2   | Acetyl-Coenzyme A acyltransferase 2                       |
| A03      | Rn.13452  | NM_001134537 | Acad10  | Acyl-Coenzyme A dehydrogenase family, member 10           |
| A04      | Rn.8651   | NM_001108181 | Acad11  | Acyl-Coenzyme A dehydrogenase family, member 11           |
| A05      | Rn.13649  | NM_181768    | Acad9   | Acyl-Coenzyme A dehydrogenase family, member 9            |
| A06      | Rn.174    | NM_012819    | Acadl   | Acyl-Coenzyme A dehydrogenase, long-chain                 |
| A07      | Rn.6302   | NM_016986    | Acadm   | Acyl-Coenzyme A dehydrogenase, C-4 to C-12 straight chain |
| A08      | Rn.1167   | NM_022512    | Acads   | Acyl-Coenzyme A dehydrogenase, C-2 to C-3 short chain     |
| A09      | Rn.44423  | NM_013084    | Acadslb | Acyl-Coenzyme A dehydrogenase, short/branched chain       |
| A10      | Rn.33319  | NM_012891    | Acadvl  | Acyl-Coenzyme A dehydrogenase, very long chain            |
| A11      | Rn.4054   | NM_017075    | Acat1   | Acetyl-coenzyme A acetyltransferase 1                     |
| A12      | Rn.203063 | NM_001006995 | Acat3   | Acetyl-Coenzyme A acetyltransferase 3                     |
| B01      | Rn.212205 | NM_130747    | Acat12  | Acyl-CoA thioesterase 12                                  |
| B02      | Rn.37524  | NM_138907    | Acat2   | Acyl-CoA thioesterase 2                                   |
| B03      | Rn.145093 | NM_001108041 | Acat3   | Acyl-CoA thioesterase 3                                   |
| B04      | Rn.6024   | NM_013214    | Acat7   | Acyl-CoA thioesterase 7                                   |
| B05      | Rn.161868 | NM_130756    | Acat8   | Acyl-CoA thioesterase 8                                   |
| B06      | Rn.8792   | NM_001013960 | Acat9   | Acyl-CoA thioesterase 9                                   |
| B07      | Rn.31796  | NM_017340    | Acox1   | Acyl-Coenzyme A oxidase 1, palmitoyl                      |
| B08      | Rn.10622  | NM_145770    | Acox2   | Acyl-Coenzyme A oxidase 2, branched chain                 |
| B09      | Rn.10546  | NM_053339    | Acox3   | Acyl-Coenzyme A oxidase 3, pristanoyl                     |
| B10      | Rn.17672  | NM_134389    | Acsbg1  | Acyl-CoA synthetase bubblegum family member 1             |
| B11      | Rn.109833 | NM_001080096 | Acsbg2  | Acyl-CoA synthetase bubblegum family member 2             |
| B12      | Rn.6215   | NM_012820    | Acs1    | Acyl-CoA synthetase long-chain family member 1            |
| C01      | Rn.54820  | NM_057107    | Acs13   | Acyl-CoA synthetase long-chain family member 3            |
| C02      | Rn.87821  | NM_053623    | Acs14   | Acyl-CoA synthetase long-chain family member 4            |
| C03      | Rn.105862 | NM_053607    | Acs15   | Acyl-CoA synthetase long-chain family member 5            |
| C04      | Rn.33697  | NM_130739    | Acs16   | Acyl-CoA synthetase long-chain family member 6            |
| C05      | Rn.14875  | NM_144748    | Acsm2   | Acyl-CoA synthetase medium-chain family member 2          |
| C06      | Rn.88644  | NM_033231    | Acsm3   | Acyl-CoA synthetase medium-chain family member 3          |
| C07      | Rn.162462 | NM_181695    | Acsm4   | Acyl-CoA synthetase medium-chain family member 4          |
| C08      | Rn.35367  | NM_001014162 | Acsm5   | Acyl-CoA synthetase medium-chain family member 5          |
| C09      | Rn.101781 | NM_032416    | Aldh2   | Aldehyde dehydrogenase 2 family (mitochondrial)           |
| C10      | Rn.36635  | NM_053995    | Bdh1    | 3-hydroxybutyrate dehydrogenase, type 1                   |
| C11      | Rn.3651   | NM_001106473 | Bdh2    | 3-hydroxybutyrate dehydrogenase, type 2                   |
| C12      | Rn.2856   | NM_031559    | Cpt1a   | Carnitine palmitoyltransferase 1a, liver                  |
| D01      | Rn.6028   | NM_013200    | Cpt1b   | Carnitine palmitoyltransferase 1b, muscle                 |
| D02      | Rn.43113  | NM_001034925 | Cpt1c   | Carnitine palmitoyltransferase 1c                         |
| D03      | Rn.11389  | NM_012930    | Cpt2    | Carnitine palmitoyltransferase 2                          |
| D04      | Rn.6249   | NM_001004085 | Crat    | Carnitine acetyltransferase                               |
| D05      | Rn.4896   | NM_031987    | Crot    | Carnitine O-octanoyltransferase                           |
| D06      | Rn.2854   | NM_057197    | Decr1   | 2,4-dienoyl CoA reductase 1, mitochondrial                |
| D07      | Rn.144598 | NM_171996    | Decr2   | 2,4-dienoyl CoA reductase 2, peroxisomal                  |
| D08      | Rn.6847   | NM_078623    | Echs1   | Enoyl Coenzyme A hydratase, short chain, 1, mitochondrial |
| D09      | Rn.108029 | NM_001006966 | Eci2    | Enoyl-Coenzyme A delta isomerase 2                        |

| Position | UniGene   | GenBank      | Symbol  | Description                                                                                                                           |
|----------|-----------|--------------|---------|---------------------------------------------------------------------------------------------------------------------------------------|
| D10      | Rn.3671   | NM_133606    | Ehhadh  | Enoyl-Coenzyme A, hydratase/3-hydroxyacyl Coenzyme A dehydrogenase                                                                    |
| D11      | Rn.36412  | NM_012556    | Fabp1   | Fatty acid binding protein 1, liver                                                                                                   |
| D12      | Rn.91358  | NM_013068    | Fabp2   | Fatty acid binding protein 2, intestinal                                                                                              |
| E01      | Rn.32566  | NM_024162    | Fabp3   | Fatty acid binding protein 3, muscle and heart                                                                                        |
| E02      | Rn.4258   | NM_053365    | Fabp4   | Fatty acid binding protein 4, adipocyte                                                                                               |
| E03      | Rn.98269  | NM_145878    | Fabp5   | Fatty acid binding protein 5, epidermal                                                                                               |
| E04      | Rn.10008  | NM_017098    | Fabp6   | Fatty acid binding protein 6, ileal                                                                                                   |
| E05      | Rn.10014  | NM_030832    | Fabp7   | Fatty acid binding protein 7, brain                                                                                                   |
| E06      | Rn.99039  | NM_001108896 | Gcdh    | Glutaryl-Coenzyme A dehydrogenase                                                                                                     |
| E07      | Rn.153497 | NM_024381    | Gk      | Glycerol kinase                                                                                                                       |
| E08      | Rn.108510 | NM_001004077 | Gk2     | Glycerol kinase 2                                                                                                                     |
| E09      | Rn.44452  | NM_022215    | Gpd1    | Glycerol-3-phosphate dehydrogenase 1 (soluble)                                                                                        |
| E10      | Rn.89705  | NM_012736    | Gpd2    | Glycerol-3-phosphate dehydrogenase 2, mitochondrial                                                                                   |
| E11      | Rn.3340   | NM_130826    | Hadha   | Hydroxyacyl-Coenzyme A dehydrogenase/3-ketoacyl-Coenzyme A thiolase/enoyl-Coenzyme A hydratase (trifunctional protein), alpha subunit |
| E12      | Rn.12297  | NM_024386    | Hmgcl   | 3-hydroxymethyl-3-methylglutaryl-Coenzyme A lyase                                                                                     |
| F01      | Rn.5106   | NM_017268    | Hmgcs1  | 3-hydroxy-3-methylglutaryl-Coenzyme A synthase 1 (soluble)                                                                            |
| F02      | Rn.29594  | NM_173094    | Hmgcs2  | 3-hydroxy-3-methylglutaryl-Coenzyme A synthase 2 (mitochondrial)                                                                      |
| F03      | Rn.10566  | NM_012859    | Lipe    | Lipase, hormone sensitive                                                                                                             |
| F04      | Rn.3834   | NM_012598    | Lpl     | Lipoprotein lipase                                                                                                                    |
| F05      | Rn.3420   | NM_001106341 | Mcee    | Methylmalonyl CoA epimerase                                                                                                           |
| F06      | Rn.54738  | XM_001067239 | Mut     | Methylmalonyl-Coenzyme A mutase                                                                                                       |
| F07      | Rn.110620 | NM_001012221 | Oxcl2a  | 3-oxoacid CoA transferase 2A                                                                                                          |
| F08      | Rn.163081 | NM_133299    | Pecr    | Peroxisomal trans-2-enoyl-CoA reductase                                                                                               |
| F09      | Rn.106916 | NM_001100834 | Ppa1    | Pyrophosphatase (inorganic) 1                                                                                                         |
| F10      | Rn.87789  | NM_019142    | Prkaa1  | Protein kinase, AMP-activated, alpha 1 catalytic subunit                                                                              |
| F11      | Rn.64583  | NM_023991    | Prkaa2  | Protein kinase, AMP-activated, alpha 2 catalytic subunit                                                                              |
| F12      | Rn.3619   | NM_031976    | Prkab1  | Protein kinase, AMP-activated, beta 1 non-catalytic subunit                                                                           |
| G01      | Rn.207202 | NM_022627    | Prkab2  | Protein kinase, AMP-activated, beta 2 non-catalytic subunit                                                                           |
| G02      | Rn.20     | NM_001100922 | Prkaca  | Protein kinase, cAMP-dependent, catalytic, alpha                                                                                      |
| G03      | Rn.202491 | NM_001077645 | Prkacb  | Protein kinase, cAMP dependent, catalytic, beta                                                                                       |
| G04      | Rn.11089  | NM_013010    | Prkag1  | Protein kinase, AMP-activated, gamma 1 non-catalytic subunit                                                                          |
| G05      | Rn.51208  | NM_184051    | Prkag2  | Protein kinase, AMP-activated, gamma 2 non-catalytic subunit                                                                          |
| G06      | Rn.149163 | NM_001106921 | Prkag3  | Protein kinase, AMP-activated, gamma 3 non-catalytic subunit                                                                          |
| G07      | Rn.1047   | NM_053580    | Slc27a1 | Solute carrier family 27 (fatty acid transporter), member 1                                                                           |
| G08      | Rn.3608   | NM_031736    | Slc27a2 | Solute carrier family 27 (fatty acid transporter), member 2                                                                           |
| G09      | Rn.22977  | NM_001106439 | Slc27a3 | Solute carrier family 27 (fatty acid transporter), member 3                                                                           |
| G10      | Rn.145068 | XM_231115    | Slc27a4 | Solute carrier family 27 (fatty acid transporter), member 4                                                                           |
| G11      | Rn.207896 | NM_024143    | Slc27a5 | Solute carrier family 27 (fatty acid transporter), member 5                                                                           |
| G12      | Rn.53815  | NM_001106145 | Slc27a6 | Solute carrier family 27 (fatty acid transporter), member 6                                                                           |
| 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, 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 <sup>™</sup> 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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