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

# *Mouse Glucose Metabolism*

### Cat. no. 330231 PAMM-006ZA

### For pathway expression analysis

| Format | For use with the following real-time cyclers |
|---|---|
| RT² 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 |
| RT² Profiler PCR Array, Format C | Applied Biosystems models 7500 (Fast block), 7900HT (Fast block), StepOnePlus™, ViiA 7 (Fast block) |
| RT² Profiler PCR Array, Format D | Bio-Rad CFX96™; Bio-Rad/MJ Research models DNA Engine Opticon®, DNA Engine Opticon 2; Stratagene Mx4000® |
| RT² Profiler PCR Array, Format E | Applied Biosystems models 7900HT (384-well block), ViiA 7 (384-well block); Bio-Rad CFX384™ |
| RT² Profiler PCR Array, Format F | Roche® LightCycler® 480 (96-well block) |
| RT² Profiler PCR Array, Format G | Roche LightCycler 480 (384-well block) |
| RT² Profiler PCR Array, Format H | Fluidigm® BioMark™ |

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## Description

The Mouse 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. Using real-time PCR, you 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 | Agl | Aldoa | Aldob | Aldoc | Bpgm | Cs | Dlat | Dld | Dlst |
| B | Eno1 | Eno2 | Eno3 | Fbp1 | Fbp2 | Fh1 | G6pc | G6pc3 | G6pdx | Galm | Gapdhs | Gbe1 |
| C | Gck | Gpi1 | Gsk3a | Gsk3b | Gys1 | Gys2 | H6pd | Hk2 | Hk3 | Idh1 | Idh2 | Idh3a |
| D | Idh3b | Idh3g | Mdh1 | Mdh1b | Mdh2 | Ogdh | Pck1 | Pck2 | Pcx | Pdha1 | Pdhb | Pdk1 |
| E | Pdk2 | Pdk3 | Pdk4 | Pdp2 | Pdpr | Pfkl | Pgam2 | Pgk1 | Pgk2 | Pgm1 | Pgm2 | Pgm3 |
| F | Phka1 | Phkb | Phkg1 | Phkg2 | Pklr | Prps1 | Prps111 | Prps2 | Pygl | Pygm | Rbks | Rpe |
| G | Rpia | Sdha | Sdhb | Sdhc | Sdhd | Sucla2 | Suclg1 | Suclg2 | Taldo1 | Tkt | Tpi1 | Ugp2 |
| H | Actb | B2m | Gapdh | Gusb | Hsp90ab1 | MGDC | RTC | RTC | RTC | PPC | PPC | PPC |

## Gene table: RT² Profiler PCR Array

| Position | UniGene | GenBank | Symbol | Description |
|---|---|---|---|---|
| A01 | Mm.282039 | NM_134037 | Acly | ATP citrate lyase |
| A02 | Mm.331547 | NM_007386 | Aco1 | Aconitase 1 |
| A03 | Mm.154581 | NM_080633 | Aco2 | Aconitase 2, mitochondrial |
| A04 | Mm.237099 | NM_001081326 | Agl | Amylo-1,6-glucosidase, 4-alpha-glucanotransferase |
| A05 | Mm.275831 | NM_007438 | Aldoa | Aldolase A, fructose-bisphosphate |
| A06 | Mm.482116 | NM_144903 | Aldob | Aldolase B, fructose-bisphosphate |
| A07 | Mm.7729 | NM_009657 | Aldoc | Aldolase C, fructose-bisphosphate |
| A08 | Mm.282863 | NM_007563 | Bpgm | 2,3-bisphosphoglycerate mutase |
| A09 | Mm.58836 | NM_026444 | Cs | Citrate synthase |
| A10 | Mm.285076 | NM_145614 | Dlat | Dihydrolipoamide S-acetyltransferase (E2 component of pyruvate dehydrogenase complex) |
| A11 | Mm.3131 | NM_007861 | Dld | Dihydrolipoamide dehydrogenase |
| A12 | Mm.296221 | NM_030225 | Dlst | Dihydrolipoamide S-succinyltransferase (E2 component of 2-oxo-glutarate complex) |
| B01 | Mm.70666 | NM_023119 | Eno1 | Enolase 1, alpha non-neuron |
| B02 | Mm.3913 | NM_013509 | Eno2 | Enolase 2, gamma neuronal |
| B03 | Mm.251322 | NM_007933 | Eno3 | Enolase 3, beta muscle |
| B04 | Mm.423078 | NM_019395 | Fbp1 | Fructose bisphosphatase 1 |
| B05 | Mm.391871 | NM_007994 | Fbp2 | Fructose bisphosphatase 2 |
| B06 | Mm.41502 | NM_010209 | Fh1 | Fumarate hydratase 1 |
| B07 | Mm.18064 | NM_008061 | G6pc | Glucose-6-phosphatase, catalytic |
| B08 | Mm.22385 | NM_175935 | G6pc3 | Glucose 6 phosphatase, catalytic, 3 |
| B09 | Mm.27210 | NM_008062 | G6pdx | Glucose-6-phosphate dehydrogenase X-linked |
| B10 | Mm.29098 | NM_176963 | Galm | Galactose mutarotase |
| B11 | Mm.436562 | NM_008085 | Gapdhs | Glyceraldehyde-3-phosphate dehydrogenase, spermatogenic |
| B12 | Mm.396102 | NM_028803 | Gbe1 | Glucan (1,4-alpha-), branching enzyme 1 |
| C01 | Mm.220358 | NM_010292 | Gck | Glucokinase |
| C02 | Mm.589 | NM_008155 | Gpi1 | Glucose phosphate isomerase 1 |
| C03 | Mm.476745 | NM_001031667 | Gsk3a | Glycogen synthase kinase 3 alpha |
| C04 | Mm.394930 | NM_019827 | Gsk3b | Glycogen synthase kinase 3 beta |
| C05 | Mm.275654 | NM_030678 | Gys1 | Glycogen synthase 1, muscle |
| C06 | Mm.275975 | NM_145572 | Gys2 | Glycogen synthase 2 |
| C07 | Mm.22183 | NM_173371 | H6pd | Hexose-6-phosphate dehydrogenase (glucose 1-dehydrogenase) |
| C08 | Mm.255848 | NM_013820 | Hk2 | Hexokinase 2 |
| C09 | Mm.267479 | NM_001033245 | Hk3 | Hexokinase 3 |
| C10 | Mm.9925 | NM_010497 | Idh1 | Isocitrate dehydrogenase 1 (NADP+), soluble |
| C11 | Mm.246432 | NM_173011 | Idh2 | Isocitrate dehydrogenase 2 (NADP+), mitochondrial |
| C12 | Mm.279195 | NM_029573 | Idh3a | Isocitrate dehydrogenase 3 (NAD+) alpha |
| D01 | Mm.29590 | NM_130884 | Idh3b | Isocitrate dehydrogenase 3 (NAD+) beta |
| D02 | Mm.14825 | NM_008323 | Idh3g | Isocitrate dehydrogenase 3 (NAD+), gamma |
| D03 | Mm.212703 | NM_008618 | Mdh1 | Malate dehydrogenase 1, NAD (soluble) |
| D04 | Mm.30494 | NM_029696 | Mdh1b | Malate dehydrogenase 1B, NAD (soluble) |
| D05 | Mm.297096 | NM_008617 | Mdh2 | Malate dehydrogenase 2, NAD (mitochondrial) |
| D06 | Mm.276348 | NM_010956 | Ogdh | Oxoglutarate dehydrogenase (lipoamide) |
| D07 | Mm.266867 | NM_011044 | Pck1 | Phosphoenolpyruvate carboxykinase 1, cytosolic |

| Position | UniGene | GenBank | Symbol | Description |
|---|---|---|---|---|
| D08 | Mm.29856 | NM_028994 | Pck2 | Phosphoenolpyruvate carboxykinase 2 (mitochondrial) |
| D09 | Mm.1845 | NM_008797 | Pcx | Pyruvate carboxylase |
| D10 | Mm.34775 | NM_008810 | Pdha1 | Pyruvate dehydrogenase E1 alpha 1 |
| D11 | Mm.301527 | NM_024221 | Pdhb | Pyruvate dehydrogenase (lipoamide) beta |
| D12 | Mm.34411 | NM_172665 | Pdk1 | Pyruvate dehydrogenase kinase, isoenzyme 1 |
| E01 | Mm.29768 | NM_133667 | Pdk2 | Pyruvate dehydrogenase kinase, isoenzyme 2 |
| E02 | Mm.12775 | NM_145630 | Pdk3 | Pyruvate dehydrogenase kinase, isoenzyme 3 |
| E03 | Mm.235547 | NM_013743 | Pdk4 | Pyruvate dehydrogenase kinase, isoenzyme 4 |
| E04 | Mm.290750 | NM_001024606 | Pdp2 | Pyruvate dehyrogenase phosphatase catalytic subunit 2 |
| E05 | Mm.370024 | NM_198308 | Pdpr | Pyruvate dehydrogenase phosphatase regulatory subunit |
| E06 | Mm.269649 | NM_008826 | Pfkl | Phosphofructokinase, liver, B-type |
| E07 | Mm.219627 | NM_018870 | Pgam2 | Phosphoglycerate mutase 2 |
| E08 | Mm.336205 | NM_008828 | Pgk1 | Phosphoglycerate kinase 1 |
| E09 | Mm.717 | NM_031190 | Pgk2 | Phosphoglycerate kinase 2 |
| E10 | Mm.2325 | NM_025700 | Pgm1 | Phosphoglucomutase 1 |
| E11 | Mm.217764 | NM_028132 | Pgm2 | Phosphoglucomutase 2 |
| E12 | Mm.390201 | NM_028352 | Pgm3 | Phosphoglucomutase 3 |
| F01 | Mm.212889 | NM_173021 | Phka1 | Phosphorylase kinase alpha 1 |
| F02 | Mm.237296 | NM_199446 | Phkb | Phosphorylase kinase beta |
| F03 | Mm.3159 | NM_011079 | Phkg1 | Phosphorylase kinase gamma 1 |
| F04 | Mm.274473 | NM_026888 | Phkg2 | Phosphorylase kinase, gamma 2 (testis) |
| F05 | Mm.383180 | NM_013631 | Pklr | Pyruvate kinase liver and red blood cell |
| F06 | Mm.287178 | NM_021463 | Prps1 | Phosphoribosyl pyrophosphate synthetase 1 |
| F07 | Mm.79179 | NM_029294 | Prps1l1 | Phosphoribosyl pyrophosphate synthetase 1-like 1 |
| F08 | Mm.272955 | NM_026662 | Prps2 | Phosphoribosyl pyrophosphate synthetase 2 |
| F09 | Mm.256926 | NM_133198 | Pygl | Liver glycogen phosphorylase |
| F10 | Mm.27806 | NM_011224 | Pygm | Muscle glycogen phosphorylase |
| F11 | Mm.22519 | NM_153196 | Rbks | Ribokinase |
| F12 | Mm.240912 | NM_025683 | Rpe | Ribulose-5-phosphate-3-epimerase |
| G01 | Mm.17905 | NM_009075 | Rpia | Ribose 5-phosphate isomerase A |
| G02 | Mm.158231 | NM_023281 | Sdha | Succinate dehydrogenase complex, subunit A, flavoprotein (Fp) |
| G03 | Mm.246965 | NM_023374 | Sdhb | Succinate dehydrogenase complex, subunit B, iron sulfur (Ip) |
| G04 | Mm.198138 | NM_025321 | Sdhc | Succinate dehydrogenase complex, subunit C, integral membrane protein |
| G05 | Mm.10406 | NM_025848 | Sdhd | Succinate dehydrogenase complex, subunit D, integral membrane protein |
| G06 | Mm.38951 | NM_011506 | Sucla2 | Succinate-Coenzyme A ligase, ADP-forming, beta subunit |
| G07 | Mm.29845 | NM_019879 | Suclg1 | Succinate-CoA ligase, GDP-forming, alpha subunit |
| G08 | Mm.371585 | NM_011507 | Suclg2 | Succinate-Coenzyme A ligase, GDP-forming, beta subunit |
| G09 | Mm.29182 | NM_011528 | Taldo1 | Transaldolase 1 |
| G10 | Mm.290692 | NM_009388 | Tkt | Transketolase |
| G11 | Mm.4222 | NM_009415 | Tpi1 | Triosephosphate isomerase 1 |
| G12 | Mm.28877 | NM_139297 | Ugp2 | UDP-glucose pyrophosphorylase 2 |
| H01 | Mm.328431 | NM_007393 | Actb | Actin, beta |
| H02 | Mm.163 | NM_009735 | B2m | Beta-2 microglobulin |
| H03 | Mm.343110 | NM_008084 | Gapdh | Glyceraldehyde-3-phosphate dehydrogenase |
| H04 | Mm.3317 | NM_010368 | Gusb | Glucuronidase, beta |
| H05 | Mm.2180 | NM_008302 | Hsp90ab1 | Heat shock protein 90 alpha (cytosolic), class B member 1 |
| H06 | N/A | SA_00106 | MGDC | Mouse 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. |
|---|---|---|
| RT² First Strand Kit (12) | Enzymes and reagents for cDNA synthesis | 330401 |
| RT² 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 |
| RT² 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 |
| RT² 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.

For up-to-date licensing information and product-specific disclaimers, see the respective QIAGEN kit handbook or user manual. QIAGEN kit handbooks and user manuals are available at www.qiagen.com or can be requested from QIAGEN Technical Services or your local distributor.



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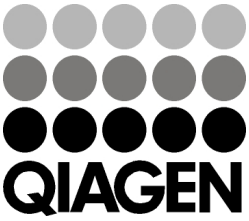


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