

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

## Rat Amino Acid Metabolism I

Cat. no. 330231 PARN-129ZA

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 Amino Acid Metabolism I RT<sup>2</sup> Profiler PCR Array profiles the expression of 84 key genes important in biosynthesis and degradation of functional amino acids. Of the 20 amino acids required for protein synthesis, six of them (arginine, cysteine, glutamine, leucine, proline, and tryptophan), collectively known as the functional amino acids, regulate key metabolic pathways involved in cellular growth, and development, as well as other important biological processes such as immunity and reproduction. For example, leucine activates mTOR signaling and increases protein synthesis, leading to lymphocyte proliferation. Therefore, a lack of leucine can compromise immune function. Metabolic pathways interrelated with the biosynthesis and degradation of these amino acids include vitamin and cofactor biosynthesis (such as SAM or S-Adenosyl Methionine) as well as neurotransmitter metabolism (such as glutamate). This array includes genes for mammalian functional amino acid metabolism as well as genes involved in methionine metabolism, important also for nutrient sensing and sulfur metabolism. Using realtime PCR, you can easily and reliably analyze the expression of a focused panel of genes involved in functional amino 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°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>	Aadat	Aanat	Abp1	Acadm	Acat1	Acmsd	Acy1	Adi1	Agmat	Ahcy	Aldh18a1	Aldh9a1
<b>B</b>	Amd1	Aox1	Apip	Arg2	Asl	Ass1	Auh	Bcat2	Bckdha	Bhmt	Cad	Cat
<b>C</b>	Cbs	Cdo1	Ckb	Cps1	Cth	Cyp1b1	Dao	Dbt	Ddc	Dld	Dnmt1	Ehhadh
<b>D</b>	Enoph1	Gamt	Gatm	Gcdh	Gfp1	Gls	Glud1	Gof2	Hao	Hmgcl	Hmgcs1	Ido1
<b>E</b>	Inmt	Ivd	Kmo	Kynu	Lap3	Lars	Ldha	Maob	Mat1a	Mccc2	Mpst	Mtap
<b>F</b>	Mtr	Nags	Nit2	Nos2	Oat	Odc1	Ogdhl	Otc	Oxct2a	P4ha1	P4ha2	Pdhb
<b>G</b>	Ppat	Prodh	Prodh2	Pycr1	Pycr1	Sat1	Sds	Srm	Tat	Tdo2	Tph2	Wars
<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.11133	NM_017193	Aadat	Aminoacidase aminotransferase
A02	Rn.88180	NM_012818	Aanat	Arylalkylamine N-acetyltransferase
A03	Rn.54493	NM_022935	Abp1	Amiloride binding protein 1 (amine oxidase, copper-containing)
A04	Rn.6302	NM_016986	Acadm	Acyl-Coenzyme A dehydrogenase, C-4 to C-12 straight chain
A05	Rn.4054	NM_017075	Acat1	Acetyl-coenzyme A acetyltransferase 1
A06	Rn.162389	NM_134372	Acmsd	Aminocarboxymuconate semialdehyde decarboxylase
A07	Rn.3679	NM_001005383	Acy1	Aminoacylase 1
A08	Rn.12694	NM_199097	Adi1	Acireductone dioxygenase 1
A09	Rn.7880	NM_001048185	Agmat	Agmatine ureohydrolase (agmatinase)
A10	Rn.5878	NM_017201	Ahcy	Adenosylhomocysteinase
A11	Rn.3148	NM_001108524	Aldh18a1	Aldehyde dehydrogenase 18 family, member A1
A12	Rn.98155	NM_022273	Aldh9a1	Aldehyde dehydrogenase 9 family, member A1
B01	Rn.56270	NM_031011	Amd1	Adenosylmethionine decarboxylase 1
B02	Rn.15681	NM_019363	Aox1	Aldehyde oxidase 1
B03	Rn.15452	NM_001106492	Apip	APAF1 interacting protein
B04	Rn.11055	NM_019168	Arg2	Arginase type II
B05	Rn.64591	NM_021577	Asl	Argininosuccinate lyase
B06	Rn.5078	NM_013157	Ass1	Argininosuccinate synthetase 1
B07	Rn.50	NM_001108407	Auh	AU RNA binding protein/enoyl-coenzyme A hydratase
B08	Rn.981	NM_022400	Bcat2	Branched chain aminotransferase 2, mitochondrial
B09	Rn.49145	NM_012782	Bckdha	Branched chain ketoacid dehydrogenase E1, alpha polypeptide
B10	Rn.11406	NM_030850	Bhmt	Betaine-homocysteine methyltransferase
B11	Rn.19416	NM_001105710	Cad	Carbamoyl-phosphate synthetase 2, aspartate transcarbamylase, and dihydroorotase
B12	Rn.3001	NM_012520	Cat	Catalase
C01	Rn.87853	NM_012522	Cbs	Cystathionine beta synthase
C02	Rn.2589	NM_052809	Cdo1	Cysteine dioxygenase, type I
C03	Rn.1472	NM_012529	Ckb	Creatine kinase, brain
C04	Rn.53968	NM_017072	Cps1	Carbamoyl-phosphate synthetase 1
C05	Rn.3881	NM_017074	Cth	Cystathionase (cystathionine gamma-lyase)
C06	Rn.10125	NM_012940	Cyp1b1	Cytochrome P450, family 1, subfamily b, polypeptide 1
C07	Rn.81058	NM_053626	Dao	D-amino-acid oxidase
C08	Rn.198610	NM_053312	Dbt	Dihydroipoamide branched chain transacylase E2
C09	Rn.11064	NM_012545	Ddc	Dopa decarboxylase (aromatic L-amino acid decarboxylase)
C10	Rn.86962	NM_199385	Dld	Dihydroipoamide dehydrogenase
C11	Rn.6955	NM_053354	Dnmt1	DNA (cytosine-5-)-methyltransferase 1
C12	Rn.3671	NM_133606	Ehhadh	Enoyl-Coenzyme A, hydratase/3-hydroxyacyl Coenzyme A dehydrogenase
D01	Rn.98105	NM_001009391	Enoph1	Enolase-phosphatase 1
D02	Rn.33890	NM_012793	Gamt	Guanidinoacetate N-methyltransferase
D03	Rn.17661	NM_031031	Gatm	Glycine amidinotransferase (L-arginine:glycine amidinotransferase)
D04	Rn.99039	NM_001108896	Gcdh	Glutaryl-Coenzyme A dehydrogenase
D05	Rn.161844	NM_001005879	Gfp1	Glutamine fructose-6-phosphate transaminase 1
D06	Rn.5762	NM_012569	Gls	Glutaminase
D07	Rn.55106	NM_012570	Glud1	Glutamate dehydrogenase 1
				Glutamic-oxaloacetic transaminase 2, mitochondrial (aspartate aminotransferase)

Position	UniGene	GenBank	Symbol	Description
D08	Rn.98650	NM_013177	Gat2	2)
D09	Rn.48675	NM_020076	Haa0	3-hydroxyanthranilate 3,4-dioxygenase
D10	Rn.12297	NM_024386	Hmgcl	3-hydroxymethyl-3-methylglutaryl-Coenzyme A lyase
D11	Rn.5106	NM_017268	Hmgcs1	3-hydroxy-3-methylglutaryl-Coenzyme A synthase 1 (soluble)
D12	Rn.64513	NM_023973	Ido1	Indoleamine 2,3-dioxygenase 1
E01	Rn.19133	NM_001109022	Inmt	Indolethylamine N-methyltransferase
E02	Rn.147	NM_012592	Ivd	Isovaleryl coenzyme A dehydrogenase
E03	Rn.35029	NM_021593	Kmo	Kynurenine 3-monooxygenase (kynurenine 3-hydroxylase)
E04	Rn.10575	NM_053902	Kynu	Kynureninase (L-kynurenine hydrolase)
E05	Rn.99790	NM_001011910	Lap3	Leucine aminopeptidase 3
E06	Rn.7687	NM_001009637	Lars	Leucyl-tRNA synthetase
E07	Rn.107896	NM_017025	Ldha	Lactate dehydrogenase A
E08	Rn.6656	NM_013198	Maob	Monoamine oxidase B
E09	Rn.10418	NM_012860	Mat1a	Methionine adenosyltransferase I, alpha
E10	Rn.33635	NM_001012177	Mccc2	Methylcrotonoyl-Coenzyme A carboxylase 2 (beta)
E11	Rn.32263	NM_138843	Mpst	Mercaptopyruvate sulfurtransferase
E12	Rn.202751	NM_001047867	Mtap	Methylthioadenosine phosphorylase
F01	Rn.205061	NM_030864	Mir	5-methyltetrahydrofolate-homocysteine methyltransferase
F02	Rn.23912	NM_001107053	Nags	N-acetylglutamate synthase
F03	Rn.42859	NM_001034126	Nit2	Nitrilase family, member 2
F04	Rn.10400	NM_012611	Nos2	Nitric oxide synthase 2, inducible
F05	Rn.1430	NM_022521	Oat	Ornithine aminotransferase (gyrate atrophy)
F06	Rn.874	NM_012615	Odc1	Ornithine decarboxylase 1
F07	Rn.38202	NM_001106062	Ogdhl	Oxoglutarate dehydrogenase-like
F08	Rn.2391	NM_013078	Otc	Ornithine carbamoyltransferase
F09	Rn.110620	NM_001012221	Oxct2a	3-oxoacid CoA transferase 2A
F10	Rn.8531	NM_172062	P4ha1	Prolyl 4-hydroxylase, alpha polypeptide I
F11	Rn.79891	NM_001108275	P4ha2	Prolyl 4-hydroxylase, alpha polypeptide II
F12	Rn.102424	NM_001007620	Pdhb	Pyruvate dehydrogenase (lipoamide) beta
G01	Rn.176412	NM_057198	Ppat	Phosphoribosyl pyrophosphate amidotransferase
G02	Rn.153570	NM_001135778	Prodh	Proline dehydrogenase
G03	Rn.4247	NM_001038588	Prodh2	Proline dehydrogenase (oxidase) 2
G04	Rn.99704	NM_001105857	Pycr1	Pyrraline-5-carboxylate reductase 1
G05	Rn.40859	NM_001011993	Pycr1	Pyrraline-5-carboxylate reductase-like
G06	Rn.107986	NM_001007667	Sat1	Spermidine/spermine N1-acetyl transferase 1
G07	Rn.9918	NM_053962	Sds	Serine dehydratase
G08	Rn.22258	NM_053464	Srm	Spermidine synthase
G09	Rn.9947	NM_012668	Tat	Tyrosine aminotransferase
G10	Rn.1029	NM_022403	Tdo2	Tryptophan 2,3-dioxygenase
G11	Rn.28510	NM_173839	Tph2	Tryptophan hydroxylase 2
G12	Rn.14939	NM_001013170	Wars	Tryptophanyl-tRNA synthetase
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™ 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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