

# RT<sup>2</sup> Profiler PCR Array (Rotor-Gene® Format)

## Rat Insulin Resistance

Cat. no. 330231 PARN-156ZR

For pathway expression analysis

Format	For use with the following real-time cyclers
RT <sup>2</sup> Profiler PCR Array, Format R	Rotor-Gene Q, other Rotor-Gene cyclers

### Description

The Rat Insulin Resistance RT<sup>2</sup> Profiler PCR Array profiles the expression of 84 key genes involved in the mechanisms behind non-insulin dependent diabetes mellitus (NIDDM) in adipose tissue. During food consumption, insulin release activates insulin signaling and cellular uptake of glucose, resulting in synthesis and storage of carbohydrates and lipids. Resistance to insulin can develop late in life, especially after a prolonged high-calorie diet and in association with other risk factors. Insulin-resistant individuals are vulnerable to multiple pathophysiologies as a result of residual blood glucose, including development of NIDDM, or type 2 diabetes. NIDDM is frequently accompanied by obesity and additional related pathologies (i.e., cardiovascular disease), collectively called the metabolic syndrome. Insulin resistance is a key link between obesity and NIDDM, and may be caused by dysregulation of the complex signaling between adipose tissue, pancreatic islets, liver, and skeletal muscle. Adipose tissue modulates food intake, as well as carbohydrate and lipid metabolism, through release of hormones called adipokines. In addition, activation of the innate immune system has been linked to adipose tissue inflammation and the development of insulin resistance via the NLRP3 inflammasome. This tissue is chronically inflamed during obesity, marked by an increase of inflammatory cytokines and infiltrating leukocytes. This array includes adipose genes involved in insulin and adipokine signaling, genes commonly dysregulated in NIDDM, genes involved in innate immunity and inflammatory processes, and enzymes and transporters important for carbohydrate and lipid metabolism. The results of this array can yield insights into the dysregulated mechanisms of insulin resistance using adipose tissue as a model system. Using real-time PCR, research studies can easily and reliably analyze the expression of a focused panel of genes involved in adipose tissue insulin resistance mechanisms with this array.

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

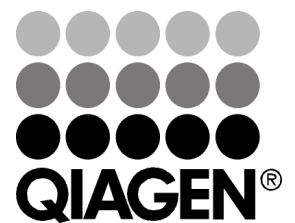
## Shipping and storage

RT<sup>2</sup> Profiler PCR Arrays in the Rotor-Gene format are shipped at ambient temperature, on dry ice, or blue ice packs depending on destination and accompanying products.

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.



## Array layout

The 96 real-time assays in the Rotor-Gene format are located in wells 1–96 of the Rotor-Disc™ (plate A1–A12=Rotor-Disc 1–12, plate B1–B12=Rotor-Disc 13–24, etc.). To maintain data analysis compatibility, wells 97–100 do not contain real-time assays but will contain master mix to account for weight balance.

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

Position	UniGene	GenBank	Symbol	Description
A01	Rn.44372	NM_022193	Acaca	Acetyl-coenzyme A carboxylase alpha
A02	Rn.162151	NM_053922	Acacb	Acetyl-Coenzyme A carboxylase beta
A03	Rn.6215	NM_012820	Acs1	Acyl-CoA synthetase long-chain family member 1
A04	Rn.87821	NM_053623	Acs14	Acyl-CoA synthetase long-chain family member 4
A05	Rn.24299	NM_144744	Adipoq	Adiponectin, C1Q and collagen domain containing
A06	Rn.104556	NM_207587	Adipor1	Adiponectin receptor 1
A07	Rn.101984	NM_001037979	Adipor2	Adiponectin receptor 2
A08	Rn.10506	NM_031575	Akt3	V-akt murine thymoma viral oncogene homolog 3 (protein kinase B, gamma)
A09	Rn.9662	NM_012822	Alox5	Arachidonate 5-lipoxygenase
A10	Rn.32351	NM_138828	ApoE	Apolipoprotein E
A11	Rn.37508	NM_012762	Casp1	Caspase 1
A12	Rn.137780	NM_001105822	Ccl12	Chemokine (C-C motif) ligand 12
B01	Rn.81076	NM_133532	Ccr4	Chemokine (C-C motif) receptor 4
B02	Rn.10736	NM_053960	Ccr5	Chemokine (C-C motif) receptor 5
B03	Rn.161767	NM_001013145	Ccr6	Chemokine (C-C motif) receptor 6
B04	Rn.102418	NM_031561	Cd36	CD36 molecule (thrombospondin receptor)
B05	Rn.96221	NM_001108140	Cd3e	CD3 molecule, epsilon
B06	Rn.204833	NM_012524	Cebpa	CCAAT/enhancer binding protein (C/EBP), alpha
B07	Rn.23019	NM_001107588	Chuk	Conserved helix-loop-helix ubiquitous kinase
B08	Rn.6187	NM_022598	Cnbp	CCHC-type zinc finger, nucleic acid binding protein
B09	Rn.177948	NM_134465	Crlf2	Cytokine receptor-like factor 2
B10	Rn.66581	NM_130755	Cs	Citrate synthase
B11	Rn.24787	NM_053415	Cxcr3	Chemokine (C-X-C motif) receptor 3
B12	Rn.44431	NM_022205	Cxcr4	Chemokine (C-X-C motif) receptor 4
C01	Rn.205884	NM_001007557	Emr1	EGF-like module containing, mucin-like, hormone receptor-like 1
C02	Rn.4258	NM_053365	Fabp4	Fatty acid binding protein 4, adipocyte
C03	Rn.9486	NM_017332	Fasn	Fatty acid synthase
C04	Rn.95278	NM_001109615	Gys1	Glycogen synthase 1, muscle
C05	Rn.91375	NM_012735	Hk2	Hexokinase 2
C06	Rn.10795	NM_138880	Irfng	Interferon gamma
C07	Rn.6282	NM_178866	Igf1	Insulin-like growth factor 1
C08	Rn.10957	NM_052807	Igf1r	Insulin-like growth factor 1 receptor
C09	Rn.19222	NM_053355	Ikbkb	Inhibitor of kappa light polypeptide gene enhancer in B-cells, kinase beta
C10	Rn.149181	NM_001106905	Il18r1	Interleukin 18 receptor 1
C11	Rn.9869	NM_031512	Il1b	Interleukin 1 beta
C12	Rn.9758	NM_013123	Il1r1	Interleukin 1 receptor, type I
D01	Rn.134349	XM_001072576	Il23r	Interleukin 23 receptor
D02	Rn.9873	NM_012589	Il6	Interleukin 6
D03	Rn.9876	NM_017071	Insr	Insulin receptor
D04	Rn.10476	NM_012969	Irs1	Insulin receptor substrate 1
D05	Rn.10718	NM_001168633	Irs2	Insulin receptor substrate 2
D06	Rn.18909	NM_031514	Jak2	Janus kinase 2
D07	Rn.44444	NM_013076	Lep	Leptin
D08	Rn.9891	NM_012596	Lepr	Leptin receptor
D09	Rn.10566	NM_012859	Lipe	Lipase, hormone sensitive
D10	Rn.3834	NM_012598	Lpl	Lipoprotein lipase
D11	Rn.104990	NM_001030031	Lta4h	Leukotriene A4 hydrolase
D12	Rn.5850	NM_031643	Map2k1	Mitogen activated protein kinase kinase 1
E01	Rn.2592	NM_017347	Mapk3	Mitogen activated protein kinase 3
E02	Rn.9910	NM_017322	Mapk9	Mitogen-activated protein kinase 9
E03	Rn.11008	NM_019906	Mtor	Mechanistic target of rapamycin (serine/threonine kinase)
E04	Rn.203508	NM_177928	Nampt	Nicotinamide phosphoribosyltransferase
E05	Rn.12550	NM_001105720	Nfkbia	Nuclear factor of kappa light polypeptide gene enhancer in B-cells inhibitor, alpha
E06	Rn.214177	XM_220513	Nlrp3	NLR family, pyrin domain containing 3
E07	Rn.87449	NM_133306	Olr1	Oxidized low density lipoprotein (lectin-like) receptor 1
E08	Rn.104376	NM_198780	Pck1	Phosphoenolpyruvate carboxykinase 1 (soluble)

Position	UniGene	GenBank	Symbol	Description
E09	Rn.10322	NM_017229	Pde3b	Phosphodiesterase 3B, cGMP-inhibited
E10	Rn.88597	NM_030872	Pdk2	Pyruvate dehydrogenase kinase, isozyme 2
E11	Rn.54603	NM_022852	Pdx1	Pancreatic and duodenal homeobox 1
E12	Rn.44193	NM_133399	Pik3ca	Phosphoinositide-3-kinase, catalytic, alpha polypeptide
F01	Rn.10599	NM_013005	Pik3r1	Phosphoinositide-3-kinase, regulatory subunit 1 (alpha)
F02	Rn.9753	NM_013196	Ppara	Peroxisome proliferator activated receptor alpha
F03	Rn.23443	NM_013124	Pparg	Peroxisome proliferator-activated receptor gamma
F04	Rn.19172	NM_031347	Ppargc1a	Peroxisome proliferator-activated receptor gamma, coactivator 1 alpha
F05	Rn.11317	NM_012637	Plpn1	Protein tyrosine phosphatase, non-receptor type 1
F06	Rn.7817	NM_172322	Pycard	PYD and CARD domain containing
F07	Rn.108214	NM_013162	Rbp4	Retinol binding protein 4, plasma
F08	Rn.19480	NM_199267	Rela	V-rel reticuloendotheliosis viral oncogene homolog A (avian)
F09	Rn.16746	NM_144741	Retn	Resistin
F10	Rn.4042	NM_031985	Rps6kb1	Ribosomal protein S6 kinase, polypeptide 1
F11	Rn.1023	NM_139192	Scd1	Stearoyl-Coenzyme A desaturase 1
F12	Rn.29367	NM_012620	Serpine1	Serpin peptidase inhibitor, clade E (nexin, plasminogen activator inhibitor type 1), member 1
G01	Rn.1047	NM_053580	Slc27a1	Solute carrier family 27 (fatty acid transporter), member 1
G02	Rn.1314	NM_012751	Slc2a4	Solute carrier family 2 (facilitated glucose transporter), member 4
G03	Rn.127801	NM_053565	Socs3	Suppressor of cytokine signaling 3
G04	Rn.221929	XM_213329	Srebf1	Sterol regulatory element binding transcription factor 1
G05	Rn.41063	NM_001033694	Srebf2	Sterol regulatory element binding transcription factor 2
G06	Rn.10247	NM_012747	Stat3	Signal transducer and activator of transcription 3
G07	Rn.14534	NM_019178	Tlr4	Toll-like receptor 4
G08	Rn.2275	NM_012675	Tnf	Tumor necrosis factor (TNF superfamily, member 2)
G09	Rn.11119	NM_013091	Tnfrsf1a	Tumor necrosis factor receptor superfamily, member 1a
G10	Rn.83633	NM_130426	Tnfrsf1b	Tumor necrosis factor receptor superfamily, member 1b
G11	Rn.10281	NM_012682	Ucp1	Uncoupling protein 1 (mitochondrial, proton carrier)
G12	Rn.9975	NM_013155	Vldlr	Very low density lipoprotein receptor
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 ROX™ FAST Mastermix (2)*	For 2 x 96 assays in 96-well plates; suitable for use with the Rotor-Gene Q and other Rotor-Gene cyclers	330620

\* Larger kit sizes available; please inquire.

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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.

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](http://www.qiagen.com) or can be requested from QIAGEN Technical Services or your local distributor.

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