RT² Profiler PCR Array (Rotor-Gene® Format)

Rat Osmotic Stress

Cat. no. 330231 PARN-151ZR

For pathway expression analysis

Format	For use with the following real-time cyclers
RT² Profiler PCR Array, Format R	Rotor-Gene Q, other Rotor-Gene cyclers

Description

The Rat Osmotic Stress RT² Profiler PCR Array profiles the expression of 84 key genes involved in the cellular response to changes in osmolarity. Under normal physiological conditions, the majority of mammalian cells grow within an isotonic environment. The renal medulla, one exception to this rule, experiences not only high osmolarity during urine concentration (>10-fold normal levels), but also a broad range of potential salt concentrations at any given time. Osmolarity changes affect the expression of hundreds of genes driven by the key transcription factor TonEBP/OREBP (NFAT5). During osmotic stress, expression of water transporters, ion transport genes, and protein chaperones increases. Cells also undergo cytoskeletal rearrangement. Other typical cellular effects include oxidative stress, cell cycle arrest, transcription/translation arrest, and mitochondrial depolarization, all of which can result in DNA damage and apoptosis. In cellular systems other than the kidney medulla, a general electrolyte imbalance can lead to chronic hyponatremia and central pontine myelinolysis, a rare disease occurring in the central nervous system and involving some of the same transporters commonly expressed in the kidney medulla. This array includes molecular transporters, direct NFAT5 targets, and hormones and receptors involved in the hyperosmotic response. Genes whose expression is commonly altered during osmotic stress are also included. Using real-time PCR, research studies can easily and reliably analyze the expression of a focused panel of genes involved in osmotic stress with this array.

For further details, consult the *RT² Profiler PCR Array Handbook*.

Shipping and storage

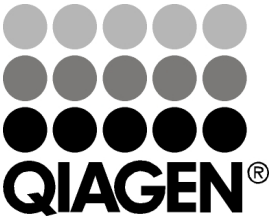
RT² Profiler PCR Arrays in the Rotor-Gene format are shipped at ambient temperature, on

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 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

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: RT² Profiler PCR Array

Position	UniGene	GenBank	Symbol	Description
A01	Rn.154810	NM_133401	Abcb1a	ATP-binding cassette, sub-family B (MDR/TAP), member 1A
A02	Rn.10232	NM_012715	Adm	Adrenomedullin
A03	Rn.6319	NM_134432	Agt	Angiotensinogen (serpin peptidase inhibitor, clade A, member 8)
A04	Rn.9814	NM_030985	Agtr1a	Angiotensin II receptor, type 1a
A05	Rn.11422	NM_033230	Akt1	V-akt murine thymoma viral oncogene homolog 1
A06	Rn.1618	NM_012778	Aqp1	Aquaporin 1
A07	Rn.90076	NM_012909	Aqp2	Aquaporin 2 (collecting duct)
A08	Rn.11109	NM_031703	Aqp3	Aquaporin 3
A09	Rn.90091	NM_012825	Aqp4	Aquaporin 4
A10	Rn.10066	NM_012779	Aqp5	Aquaporin 5
A11	Rn.30018	NM_022960	Aqp9	Aquaporin 9
A12	Rn.2423	NM_024403	Atf4	Activating transcription factor 4 (tax-responsive enhancer element B67)
B01	Rn.2992	NM_012504	Atp1a1	ATPase, Na+/K+ transporting, alpha 1 polypeptide
B02	Rn.8925	NM_013113	Atp1b1	ATPase, Na+/K+ transporting, beta 1 polypeptide
B03	Rn.9976	NM_016992	Avp	Arginine vasopressin
B04	Rn.974	NM_022399	Calr	Calreticulin
B05	Rn.2091	NM_053018	Cd9	CD9 molecule
B06	Rn.124539	NM_031506	Cftr	Cystic fibrosis transmembrane conductance regulator homolog (human)
B07	Rn.98208	NM_012935	Cryab	Crystallin, alpha B
B08	Rn.17145	NM_022266	Ctgf	Connective tissue growth factor
B09	Rn.11183	NM_024134	Ddit3	DNA-damage inducible transcript 3
B10	Rn.98260	NM_053769	Dusp1	Dual specificity phosphatase 1
B11	Rn.10918	NM_012548	Edn1	Endothelin 1
B12	Rn.37227	NM_031507	Egfr	Epidermal growth factor receptor
C01	Rn.9096	NM_012551	Egr1	Early growth response 1
C02	Rn.44371	NM_017086	Egr3	Early growth response 3
C03	Rn.103750	NM_022197	Fos	FBJ osteosarcoma oncogene
C04	Rn.10250	NM_024127	Gadd45a	Growth arrest and DNA-damage-inducible, alpha
C05	Rn.35886	NM_001008321	Gadd45b	Growth arrest and DNA-damage-inducible, beta
C06	Rn.16950	NM_001077640	Gadd45g	Growth arrest and DNA-damage-inducible, gamma
C07	Rn.11388	NM_013118	Guca2a	Guanylate cyclase activator 2a (guanylin)
C08	Rn.3160	NM_012580	Hmox1	Heme oxygenase (decycling) 1
C09	Rn.119867	NM_175761	Hsp90aa1	Heat shock protein 90, alpha (cytosolic), class A member 1
C10	Rn.1950	NM_212504	Hspa1b	Heat shock 70kD protein 1B (mapped)
C11	Rn.163092	NM_153629	Hspa4	Heat shock protein 4
C12	Rn.144829	NM_001106428	Hspa4l	Heat shock protein 4-like
D01	Rn.11088	NM_013083	Hspa5	Heat shock protein 5
D02	Rn.3841	NM_031970	Hspb1	Heat shock protein 1
D03	Rn.9869	NM_031512	Il1b	Interleukin 1 beta
D04	Rn.989	NM_019130	Ins2	Insulin 2
D05	Rn.25733	NM_017022	Itgb1	Integrin, beta 1
D06	Rn.93714	NM_021835	Jun	Jun oncogene
D07	Rn.22609	NM_017023	Kcnj1	Potassium inwardly-rectifying channel, subfamily J, member 1
D08	Rn.11303	NM_130741	Lcn2	Lipocalin 2
D09	Rn.203016	NM_212507	Ltb	Lymphotoxin beta (TNF superfamily, member 3)
D10	Rn.82693	NM_133283	Map2k2	Mitogen activated protein kinase kinase 2
D11	Rn.11081	NM_053887	Map3k1	Mitogen activated protein kinase kinase kinase 1
D12	Rn.34914	NM_053842	Mapk1	Mitogen activated protein kinase 1
E01	Rn.4090	XM_341399	Mapk8	Mitogen-activated protein kinase 8
E02	Rn.219347	NM_001108105	Mlc1	Megalencephalic leukoencephalopathy with subcortical cysts 1 homolog (human)
E03	Rn.22934	NM_001107425	Nfat5	Nuclear factor of activated T-cells 5
E04	Rn.12550	NM_001105720	Nfkbia	Nuclear factor of kappa light polypeptide gene enhancer in B-cells inhibitor, alpha
E05	Rn.44265	NM_021838	Nos3	Nitric oxide synthase 3, endothelial cell
E06	Rn.10463	NM_012613	Npr1	Natriuretic peptide receptor A/guanylate cyclase A (atrionatriuretic peptide receptor A)
E07	Rn.874	NM_012615	Odc1	Ornithine decarboxylase 1

Position	UniGene	GenBank	Symbol	Description
E08	Rn.48915	NM_012996	Oxt	Oxytocin, prepropeptide
E09	Rn.3840	NM_053306	Pak2	P21 protein (Cdc42/Rac)-activated kinase 2
E10	Rn.137112	NM_001106361	Pax2	Paired box 2
E11	Rn.35508	NM_001108377	Pck2	Phosphoenolpyruvate carboxykinase 2 (mitochondrial)
E12	Rn.39305	NM_053849	Pdia4	Protein disulfide isomerase family A, member 4
F01	Rn.107102	NM_013151	Plat	Plasminogen activator, tissue
F02	Rn.2809	NM_013081	Ptk2	PTK2 protein tyrosine kinase 2
F03	Rn.11025	NM_017318	Ptk2b	PTK2B protein tyrosine kinase 2 beta
F04	Rn.4636	NM_019232	Sgk1	Serum/glucocorticoid regulated kinase 1
F05	Rn.11523	NM_031798	Slc12a2	Solute carrier family 12 (sodium/potassium/chloride transporters), member 2
F06	Rn.10157	NM_019347	Slc14a2	Solute carrier family 14 (urea transporter), member 2
F07	Rn.3205	NM_138827	Slc2a1	Solute carrier family 2 (facilitated glucose transporter), member 1
F08	Rn.16393	NM_181090	Slc38a2	Solute carrier family 38, member 2
F09	Rn.208396	NM_053715	Slc5a3	Solute carrier family 5 (sodium/myo-inositol cotransporter), member 3
F10	Rn.11352	NM_017335	Slc6a12	Solute carrier family 6 (neurotransmitter transporter, betaine/GABA), member 12
F11	Rn.9968	NM_017206	Slc6a6	Solute carrier family 6 (neurotransmitter transporter, taurine), member 6
F12	Rn.11047	NM_012653	Slc9a2	Solute carrier family 9 (sodium/hydrogen exchanger), member 2
G01	Rn.9706	NM_012654	Slc9a3	Solute carrier family 9 (sodium/hydrogen exchanger), member 3
G02	Rn.8008	NM_053805	Snai1	Snail homolog 1 (Drosophila)
G03	Rn.112600	NM_031977	Src	V-src sarcoma (Schmidt-Ruppin A-2) viral oncogene homolog (avian)
G04	Rn.9947	NM_012668	Tat	Tyrosine aminotransferase
G05	Rn.9952	NM_012671	Tgfa	Transforming growth factor alpha
G06	Rn.2275	NM_012675	Tnf	Tumor necrosis factor (TNF superfamily, member 2)
G07	Rn.54443	NM_030989	Tp53	Tumor protein p53
G08	Rn.108199	NM_012678	Tpm4	Tropomyosin 4
G09	Rn.64508	NM_023970	Trpv4	Transient receptor potential cation channel, subfamily V, member 4
G10	Rn.1923	NM_031836	Vegfa	Vascular endothelial growth factor A
G11	Rn.2710	NM_031140	Vim	Vimentin
G12	Rn.6142	NM_017172	Zfp36l1	Zinc finger protein 36, C3H type-like 1
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, 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 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.

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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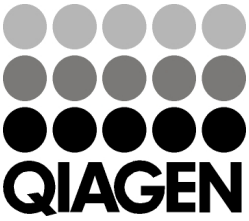

Sample & Assay Technologies