RT² Profiler PCR Array (Rotor-Gene® Format)

Human Osmotic Stress

Cat. no. 330231 PAHS-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 Human 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

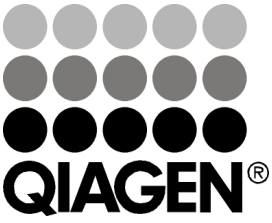
RT² Profiler PCR Arrays in the Rotor-Gene format are shipped at ambient temperature, on

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	Hs.489033	NM_000927	ABCB1	ATP-binding cassette, sub-family B (MDR/TAP), member 1
A02	Hs.441047	NM_001124	ADM	Adrenomedullin
A03	Hs.19383	NM_000029	AGT	Angiotensinogen (serpin peptidase inhibitor, clade A, member 8)
A04	Hs.728754	NM_031850	AGTR1	Angiotensin II receptor, type 1
A05	Hs.521212	NM_001628	AKR1B1	Aldo-keto reductase family 1, member B1 (aldose reductase)
A06	Hs.525622	NM_005163	AKT1	V-akt murine thymoma viral oncogene homolog 1
A07	Hs.76152	NM_198098	AQP1	Aquaporin 1 (Colton blood group)
A08	Hs.130730	NM_000486	AQP2	Aquaporin 2 (collecting duct)
A09	Hs.234642	NM_004925	AQP3	Aquaporin 3 (Gill blood group)
A10	Hs.315369	NM_001650	AQP4	Aquaporin 4
A11	Hs.298023	NM_001651	AQP5	Aquaporin 5
A12	Hs.104624	NM_020980	AQP9	Aquaporin 9
B01	Hs.496487	NM_001675	ATF4	Activating transcription factor 4 (tax-responsive enhancer element B67)
B02	Hs.371889	NM_000701	ATP1A1	ATPase, Na+/K+ transporting, alpha 1 polypeptide
B03	Hs.291196	NM_001677	ATP1B1	ATPase, Na+/K+ transporting, beta 1 polypeptide
B04	Hs.89648	NM_000490	AVP	Arginine vasopressin
B05	Hs.515162	NM_004343	CALR	Calreticulin
B06	Hs.114286	NM_001769	CD9	CD9 molecule
B07	Hs.489786	NM_000492	CFTR	Cystic fibrosis transmembrane conductance regulator (ATP-binding cassette sub-family C, member 7)
B08	Hs.408767	NM_001885	CRYAB	Crystallin, alpha B
B09	Hs.591346	NM_001901	CTGF	Connective tissue growth factor
B10	Hs.728989	NM_004083	DDIT3	DNA-damage-inducible transcript 3
B11	Hs.171695	NM_004417	DUSP1	Dual specificity phosphatase 1
B12	Hs.511899	NM_001955	EDN1	Endothelin 1
C01	Hs.488293	NM_005228	EGFR	Epidermal growth factor receptor
C02	Hs.326035	NM_001964	EGR1	Early growth response 1
C03	Hs.534313	NM_004430	EGR3	Early growth response 3
C04	Hs.728789	NM_005252	FOS	FBJ murine osteosarcoma viral oncogene homolog
C05	Hs.80409	NM_001924	GADD45A	Growth arrest and DNA-damage-inducible, alpha
C06	Hs.110571	NM_015675	GADD45B	Growth arrest and DNA-damage-inducible, beta
C07	Hs.9701	NM_006705	GADD45G	Growth arrest and DNA-damage-inducible, gamma
C08	Hs.778	NM_033553	GUCA2A	Guanylate cyclase activator 2A (guanylin)
C09	Hs.517581	NM_002133	HMOX1	Heme oxygenase (decycling) 1
C10	Hs.525600	NM_001017963	HSP90AA1	Heat shock protein 90kDa alpha (cytosolic), class A member 1
C11	Hs.728810	NM_005345	HSPA1A	Heat shock 70kDa protein 1A
C12	Hs.90093	NM_002154	HSPA4	Heat shock 70kDa protein 4
D01	Hs.135554	NM_014278	HSPA4L	Heat shock 70kDa protein 4-like
D02	Hs.716396	NM_005347	HSPA5	Heat shock 70kDa protein 5 (glucose-regulated protein, 78kDa)
D03	Hs.520973	NM_001540	HSPB1	Heat shock 27kDa protein 1
D04	Hs.126256	NM_000576	IL1B	Interleukin 1, beta
D05	Hs.624	NM_000584	IL8	Interleukin 8
D06	Hs.654579	NM_000207	INS	Insulin
D07	Hs.643813	NM_002211	ITGB1	Integrin, beta 1 (fibronectin receptor, beta polypeptide, antigen CD29 includes MDF2, MSK12)
D08	Hs.714791	NM_002228	JUN	Jun proto-oncogene
D09	Hs.527830	NM_000220	KCNJ1	Potassium inwardly-rectifying channel, subfamily J, member 1
D10	Hs.204238	NM_005564	LCN2	Lipocalin 2
D11	Hs.376208	NM_002341	LTB	Lymphotoxin beta (TNF superfamily, member 3)
D12	Hs.465627	NM_030662	MAP2K2	Mitogen-activated protein kinase kinase 2
E01	Hs.657756	NM_005921	MAP3K1	Mitogen-activated protein kinase kinase kinase 1
E02	Hs.431850	NM_002745	MAPK1	Mitogen-activated protein kinase 1
E03	Hs.138211	NM_002750	MAPK8	Mitogen-activated protein kinase 8
E04	Hs.517729	NM_015166	MLC1	Megalencephalic leukoencephalopathy with subcortical cysts 1
E05	Hs.371987	NM_006599	NFAT5	Nuclear factor of activated T-cells 5, tonicity-responsive
E06	Hs.81328	NM_020529	NFKBIA	Nuclear factor of kappa light polypeptide gene enhancer in B-cells inhibitor, alpha

Position	UniGene	GenBank	Symbol	Description
E07	Hs.707978	NM_000603	NOS3	Nitric oxide synthase 3 (endothelial cell)
E08	Hs.490330	NM_000906	NPR1	Natriuretic peptide receptor A/guanylate cyclase A (atrionatriuretic peptide receptor A)
E09	Hs.467701	NM_002539	ODC1	Ornithine decarboxylase 1
E10	Hs.113216	NM_000915	OXT	Oxytocin, prepropeptide
E11	Hs.518530	NM_002577	PAK2	P21 protein (Cdc42/Rac)-activated kinase 2
E12	Hs.155644	NM_000278	PAX2	Paired box 2
F01	Hs.75812	NM_004563	PCK2	Phosphoenolpyruvate carboxykinase 2 (mitochondrial)
F02	Hs.93659	NM_004911	PDIA4	Protein disulfide isomerase family A, member 4
F03	Hs.491582	NM_000930	PLAT	Plasminogen activator, tissue
F04	Hs.395482	NM_005607	PTK2	PTK2 protein tyrosine kinase 2
F05	Hs.510078	NM_005627	SGK1	Serum/glucocorticoid regulated kinase 1
F06	Hs.710927	NM_007163	SLC14A2	Solute carrier family 14 (urea transporter), member 2
F07	Hs.473721	NM_006516	SLC2A1	Solute carrier family 2 (facilitated glucose transporter), member 1
F08	Hs.221847	NM_018976	SLC38A2	Solute carrier family 38, member 2
F09	Hs.302742	NM_006933	SLC5A3	Solute carrier family 5 (sodium/myo-inositol cotransporter), member 3
F10	Hs.437174	NM_003044	SLC6A12	Solute carrier family 6 (neurotransmitter transporter, betaine/GABA), member 12
F11	Hs.529488	NM_003043	SLC6A6	Solute carrier family 6 (neurotransmitter transporter, taurine), member 6
F12	Hs.250083	NM_003048	SLC9A2	Solute carrier family 9 (sodium/hydrogen exchanger), member 2
G01	Hs.658120	NM_004174	SLC9A3	Solute carrier family 9 (sodium/hydrogen exchanger), member 3
G02	Hs.48029	NM_005985	SNAI1	Snail homolog 1 (Drosophila)
G03	Hs.195659	NM_005417	SRC	V-src sarcoma (Schmidt-Ruppin A-2) viral oncogene homolog (avian)
G04	Hs.161640	NM_000353	TAT	Tyrosine aminotransferase
G05	Hs.170009	NM_003236	TGFA	Transforming growth factor, alpha
G06	Hs.241570	NM_000594	TNF	Tumor necrosis factor
G07	Hs.654481	NM_000546	TP53	Tumor protein p53
G08	Hs.631618	NM_003290	TPM4	Tropomyosin 4
G09	Hs.506713	NM_021625	TRPV4	Transient receptor potential cation channel, subfamily V, member 4
G10	Hs.73793	NM_003376	VEGFA	Vascular endothelial growth factor A
G11	Hs.642813	NM_003380	VIM	Vimentin
G12	Hs.85155	NM_004926	ZFP36L1	Zinc finger protein 36, C3H type-like 1
H01	Hs.520640	NM_001101	ACTB	Actin, beta
H02	Hs.534255	NM_004048	B2M	Beta-2-microglobulin
H03	Hs.592355	NM_002046	GAPDH	Glyceraldehyde-3-phosphate dehydrogenase
H04	Hs.412707	NM_000194	HPRT1	Hypoxanthine phosphoribosyltransferase 1
H05	Hs.546285	NM_001002	RPLP0	Ribosomal protein, large, P0
H06	N/A	SA_00105	HGDC	Human 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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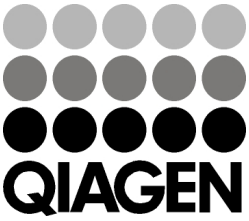

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