RT² Profiler PCR Array (Rotor-Gene® Format)

Human Stress & Toxicity PathwayFinder

Cat. no. 330231 PAHS-003ZR

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 Stress & Toxicity RT² Profiler PCR Array profiles the expression of 84 key genes regulated during cellular responses to stress and toxic compounds. Cells exposed to stress or toxins, either in vitro or in vivo, respond in a variety of ways depending on the stress and the cell type. Key front-line target organs such as heart, kidney, liver, and skin must be equipped to respond to stress-inducing or toxic environmental insults in an appropriate way. Toxicologists use cultured cells from these organs as model systems to ascertain the effects of test compounds. Reactive oxygen species induce oxidative stress, and elevated temperatures induce heat shock. Imbalances in osmolarity and inhibitors of ion channels cause osmotic stress, while protein synthesis inhibitors activate the unfolded protein response. Stress response pathways often cross-talk, particularly under prolonged exposure conditions or exposure to multiple stresses. For example, inflammation induces stress responses, but specific chronic sources of stress, such as oxidative stress and heat shock, also induce inflammation. These stresses can ultimately cause DNA damage or other types of cellular damage, which can lead to cell death if not repaired. Studying the potential activation of these pathways simultaneously can identify compounds or experimental conditions toxic to cells, evaluate the cell's ability to respond to cellular damage, and identify potential interactions between the stress responses. Using real-time PCR, research studies can easily and reliably analyze the expression of a focused panel of genes involved in cellular stress and toxic insults 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.441047	NM_001124	ADM	Adrenomedullin
A02	Hs.521212	NM_001628	AKR1B1	Aldo-keto reductase family 1, member B1 (aldose reductase)
A03	Hs.76152	NM_198098	AQP1	Aquaporin 1 (Colton blood group)
A04	Hs.130730	NM_000486	AQP2	Aquaporin 2 (collecting duct)
A05	Hs.315369	NM_001650	AQP4	Aquaporin 4
A06	Hs.632446	NM_001668	ARNT	Aryl hydrocarbon receptor nuclear translocator
A07	Hs.496487	NM_001675	ATF4	Activating transcription factor 4 (tax-responsive enhancer element B67)
A08	Hs.492740	NM_007348	ATF6	Activating transcription factor 6
A09	Hs.42853	NM_004381	ATF6B	Activating transcription factor 6 beta
A10	Hs.264482	NM_004707	ATG12	ATG12 autophagy related 12 homolog (S. cerevisiae)
A11	Hs.486063	NM_004849	ATG5	ATG5 autophagy related 5 homolog (S. cerevisiae)
A12	Hs.716466	NM_006395	ATG7	ATG7 autophagy related 7 homolog (S. cerevisiae)
B01	Hs.367437	NM_000051	ATM	Ataxia telangiectasia mutated
B02	Hs.271791	NM_001184	ATR	Ataxia telangiectasia and Rad3 related
B03	Hs.467020	NM_014417	BBC3	BCL2 binding component 3
B04	Hs.12272	NM_003766	BECN1	Beclin 1, autophagy related
B05	Hs.591054	NM_001196	BID	BH3 interacting domain death agonist
B06	Hs.131226	NM_004331	BNIP3L	BCL2/adenovirus E1B 19kDa interacting protein 3-like
B07	Hs.63287	NM_001216	CA9	Carbonic anhydrase IX
B08	Hs.515162	NM_004343	CALR	Calreticulin
B09	Hs.2490	NM_033292	CASP1	Caspase 1, apoptosis-related cysteine peptidase (interleukin 1, beta, convertase)
B10	Hs.303649	NM_002982	CCL2	Chemokine (C-C motif) ligand 2
B11	Hs.592244	NM_000074	CD40LG	CD40 ligand
B12	Hs.370771	NM_000389	CDKN1A	Cyclin-dependent kinase inhibitor 1A (p21, Cip1)
C01	Hs.489786	NM_000492	CFTR	Cystic fibrosis transmembrane conductance regulator (ATP-binding cassette sub-family C, member 7)
C02	Hs.24529	NM_001274	CHEK1	CHK1 checkpoint homolog (S. pombe)
C03	Hs.291363	NM_007194	CHEK2	CHK2 checkpoint homolog (S. pombe)
C04	Hs.709456	NM_000567	CRP	C-reactive protein, pentraxin-related
C05	Hs.700338	NM_000107	DDB2	Damage-specific DNA binding protein 2, 48kDa
C06	Hs.728989	NM_004083	DDIT3	DNA-damage-inducible transcript 3
C07	Hs.59214	NM_006260	DNAJC3	DnaJ (Hsp40) homolog, subfamily C, member 3
C08	Hs.511899	NM_001955	EDN1	Endothelin 1
C09	Hs.2303	NM_000799	EPO	Erythropoietin
C10	Hs.244139	NM_000043	FAS	Fas (TNF receptor superfamily, member 6)
C11	Hs.645560	NM_002032	FTH1	Ferritin, heavy polypeptide 1
C12	Hs.80409	NM_001924	GADD45A	Growth arrest and DNA-damage-inducible, alpha
D01	Hs.9701	NM_006705	GADD45G	Growth arrest and DNA-damage-inducible, gamma
D02	Hs.654465	NM_001498	GCLC	Glutamate-cysteine ligase, catalytic subunit
D03	Hs.315562	NM_002061	GCLM	Glutamate-cysteine ligase, modifier subunit
D04	Hs.444356	NM_002086	GRB2	Growth factor receptor-bound protein 2
D05	Hs.271510	NM_000637	GSR	Glutathione reductase
D06	Hs.523836	NM_000852	GSTP1	Glutathione S-transferase pi 1
D07	Hs.517581	NM_002133	HMOX1	Heme oxygenase (decycling) 1
D08	Hs.525600	NM_001017963	HSP90AA1	Heat shock protein 90kDa alpha (cytosolic), class A member 1
D09	Hs.192374	NM_003299	HSP90B1	Heat shock protein 90kDa beta (Grp94), member 1
D10	Hs.90093	NM_002154	HSPA4	Heat shock 70kDa protein 4
D11	Hs.135554	NM_014278	HSPA4L	Heat shock 70kDa protein 4-like
D12	Hs.716396	NM_005347	HSPA5	Heat shock 70kDa protein 5 (glucose-regulated protein, 78kDa)
E01	Hs.152983	NM_004507	HUS1	HUS1 checkpoint homolog (S. pombe)
E02	Hs.856	NM_000619	IFNG	Interferon, gamma
E03	Hs.1722	NM_000575	IL1A	Interleukin 1, alpha
E04	Hs.126256	NM_000576	IL1B	Interleukin 1, beta
E05	Hs.654458	NM_000600	IL6	Interleukin 6 (interferon, beta 2)
E06	Hs.624	NM_000584	IL8	Interleukin 8
E07	Hs.2795	NM_005566	LDHA	Lactate dehydrogenase A
E08	Hs.632486	NM_021960	MCL1	Myeloid cell leukemia sequence 1 (BCL2-related)

Position	UniGene	GenBank	Symbol	Description
E09	Hs.297413	NM_004994	MMP9	Matrix metallopeptidase 9 (gelatinase B, 92kDa gelatinase, 92kDa type IV collagenase)
E10	Hs.192649	NM_005590	MRE11A	MRE11 meiotic recombination 11 homolog A (S. cerevisiae)
E11	Hs.492208	NM_002485	NBN	Nibrin
E12	Hs.371987	NM_006599	NFAT5	Nuclear factor of activated T-cells 5, tonicity-responsive
F01	Hs.406515	NM_000903	NQO1	NAD(P)H dehydrogenase, quinone 1
F02	Hs.177766	NM_001618	PARP1	Poly (ADP-ribose) polymerase 1
F03	Hs.180909	NM_002574	PRDX1	Peroxiredoxin 1
F04	Hs.171844	NM_006505	PVR	Poliovirus receptor
F05	Hs.16184	NM_002873	RAD17	RAD17 homolog (S. pombe)
F06	Hs.631709	NM_002875	RAD51	RAD51 homolog (S. cerevisiae)
F07	Hs.655354	NM_004584	RAD9A	RAD9 homolog A (S. pombe)
F08	Hs.519842	NM_003804	RIPK1	Receptor (TNFRSF)-interacting serine-threonine kinase 1
F09	Hs.414795	NM_000602	SERPINE1	Serpin peptidase inhibitor, clade E (nexin, plasminogen activator inhibitor type 1), member 1
F10	Hs.473721	NM_006516	SLC2A1	Solute carrier family 2 (facilitated glucose transporter), member 1
F11	Hs.302742	NM_006933	SLC5A3	Solute carrier family 5 (sodium/myo-inositol cotransporter), member 3
F12	Hs.437277	NM_003900	SQSTM1	Sequestosome 1
G01	Hs.174312	NM_138554	TLR4	Toll-like receptor 4
G02	Hs.241570	NM_000594	TNF	Tumor necrosis factor
G03	Hs.591834	NM_003844	TNFRSF10A	Tumor necrosis factor receptor superfamily, member 10a
G04	Hs.521456	NM_003842	TNFRSF10B	Tumor necrosis factor receptor superfamily, member 10b
G05	Hs.279594	NM_001065	TNFRSF1A	Tumor necrosis factor receptor superfamily, member 1A
G06	Hs.654481	NM_000546	TP53	Tumor protein p53
G07	Hs.435136	NM_003329	TXN	Thioredoxin
G08	Hs.134406	NM_017853	TXNL4B	Thioredoxin-like 4B
G09	Hs.728817	NM_003330	TXNRD1	Thioredoxin reductase 1
G10	Hs.47061	NM_003565	ULK1	Unc-51-like kinase 1 (C. elegans)
G11	Hs.73793	NM_003376	VEGFA	Vascular endothelial growth factor A
G12	Hs.475538	NM_004628	XPC	Xeroderma pigmentosum, complementation group C
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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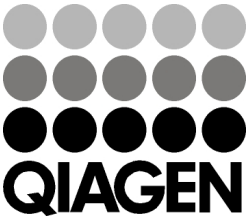

Sample & Assay Technologies