

RT² Profiler PCR Array (Rotor-Gene[®] Format)

Human Unfolded Protein Response Plus

Cat. no. 330231 PAHS-089YR

For pathway expression analysis

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

Description

The Human Unfolded Protein Response Plus RT² Profiler PCR Array profiles the expression of 84 key genes recognizing and responding to misfolded protein accumulation in the endoplasmic reticulum (ER). It also determines whether unfolded protein response pathway activity is increased or unchanged in experimental samples. Chaperones bound to unfolded proteins in the ER initiate protein kinase cascades that immediately inhibit ER translation, reverse ER translocation, activate ER-specific ubiquitination enzymes, and even induce apoptosis under extreme stress. The signaling event also activates endonucleases to process specific mature cytosolic mRNA into variants that now translate into active transcription factors that increase the expression of heat shock proteins, protein disulfide isomerases, and even more chaperones. The pathway also includes protein glycosylation enzymes mediating ER protein folding quality control and the sensors recognizing, and the transcription factors responding to, stress from cholesterol biosynthesis dysregulation in the ER. The array also includes 16 experimentally derived Signature Biomarker Genes which, along with classification algorithms, are used to generate the activity score. A set of controls present on each array enables data analysis using the $\Delta\Delta\text{CT}$ method of relative quantification, assessment of reverse transcription performance, genomic DNA contamination, and PCR performance. Using real-time PCR, research studies can easily and reliably determine unfolded protein response pathway activity and analyze the expression of a focused panel of genes responding to unfolded protein and other ER stresses 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.295137	NM_001144	AMFR	Autocrine motility factor receptor
A02	Hs.496487	NM_001675	ATF4	Activating transcription factor 4 (tax-responsive enhancer element B67)
A03	Hs.617868	NM_007348	ATF6	Activating transcription factor 6
A04	Hs.42853	NM_004381	ATF6B	Activating transcription factor 6 beta
A05	Hs.532632	NM_004993	ATXN3	Ataxin 3
A06	Hs.624291	NM_004324	BAX	BCL2-associated X protein
A07	Hs.515162	NM_004343	CALR	Calreticulin
A08	Hs.567968	NM_001746	CANX	Calnexin
A09	Hs.421509	NM_006430	CCT4	Chaperonin containing TCP1, subunit 4 (delta)
A10	Hs.719041	NM_005194	CEBPB	CCAAT/enhancer binding protein (C/EBP), beta
A11	Hs.522110	NM_006368	CREB3	CAMP responsive element binding protein 3
A12	Hs.247744	NM_032607	CREB3L3	CAMP responsive element binding protein 3-like 3
B01	Hs.241576	NM_024295	DERL1	Der1-like domain family, member 1
B02	Hs.744512	NM_018981	DNAJC10	DnaJ (Hsp40) homolog, subfamily C, member 10
B03	Hs.59214	NM_006260	DNAJC3	DnaJ (Hsp40) homolog, subfamily C, member 3
B04	Hs.224616	NM_014674	EDEM1	ER degradation enhancer, mannosidase alpha-like 1
B05	Hs.655782	NM_032025	EIF2A	Eukaryotic translation initiation factor 2A, 65kDa
B06	Hs.591589	NM_004836	EIF2AK3	Eukaryotic translation initiation factor 2-alpha kinase 3
B07	Hs.700027	NM_001433	ERN1	Endoplasmic reticulum to nucleus signaling 1
B08	Hs.592041	NM_033266	ERN2	Endoplasmic reticulum to nucleus signaling 2
B09	Hs.592304	NM_014584	ERO1L	ERO1-like (S. cerevisiae)
B10	Hs.558519	NM_019891	ERO1LB	ERO1-like beta (S. cerevisiae)
B11	Hs.154023	NM_015051	ERP44	Endoplasmic reticulum protein 44
B12	Hs.464419	NM_018438	FBXO6	F-box protein 6
C01	Hs.595071	NM_198334	GANAB	Glucosidase, alpha; neutral AB
C02	Hs.730806	NM_198141	GANC	Glucosidase, alpha; neutral C
C03	Hs.719966	NM_005346	HSPA1B	Heat shock 70kDa protein 1B
C04	Hs.432648	NM_021979	HSPA2	Heat shock 70kDa protein 2
C05	Hs.90093	NM_002154	HSPA4	Heat shock 70kDa protein 4
C06	Hs.135554	NM_014278	HSPA4L	Heat shock 70kDa protein 4-like
C07	Hs.743241	NM_005347	HSPA5	Heat shock 70kDa protein 5 (glucose-regulated protein, 78kDa)
C08	Hs.743267	NM_006644	HSPH1	Heat shock 105kDa/110kDa protein 1
C09	Hs.744841	NM_013247	HTRA2	HtrA serine peptidase 2
C10	Hs.661014	NM_153692	HTRA4	HtrA serine peptidase 4
C11	Hs.7089	NM_016133	INSIG2	Insulin induced gene 2
C12	Hs.436446	NM_006010	MANF	Mesencephalic astrocyte-derived neurotrophic factor
D01	Hs.522924	NM_002750	MAPK8	Mitogen-activated protein kinase 8
D02	Hs.484371	NM_002752	MAPK9	Mitogen-activated protein kinase 9
D03	Hs.75890	NM_003791	MBTPS1	Membrane-bound transcription factor peptidase, site 1
D04	Hs.443490	NM_015884	MBTPS2	Membrane-bound transcription factor peptidase, site 2
D05	Hs.464333	NM_017921	NPLOC4	Nuclear protein localization 4 homolog (S. cerevisiae)
D06	Hs.631602	NM_006184	NUCB1	Nucleobindin 1
D07	Hs.527861	NM_006812	OS9	Osteosarcoma amplified 9, endoplasmic reticulum lectin
D08	Hs.591095	NM_005313	PDIA3	Protein disulfide isomerase family A, member 3
D09	Hs.655327	NM_002624	PFDN5	Prefoldin subunit 5
D10	Hs.356331	NM_021130	PPIA	Peptidylprolyl isomerase A (cyclophilin A)
D11	Hs.631593	NM_014330	PPP1R15A	Protein phosphatase 1, regulatory (inhibitor) subunit 15A
D12	Hs.610830	NM_002743	PRKCSH	Protein kinase C substrate 80K-H
E01	Hs.731774	NM_006913	RNF5	Ring finger protein 5
E02	Hs.603636	NM_002950	RPN1	Ribophorin I
E03	Hs.531789	NM_012235	SCAP	SREBF chaperone
E04	Hs.744859	NM_003262	SEC62	SEC62 homolog (S. cerevisiae)
E05	Hs.26904	NM_007214	SEC63	SEC63 homolog (S. cerevisiae)
E06	Hs.181300	NM_005065	SEL1L	Sel-1 suppressor of lin-12-like (C. elegans)
E07	Hs.32148	NM_203472	VIMP	Selenoprotein S
E08	Hs.713956	NM_014445	SERP1	Stress-associated endoplasmic reticulum protein 1
E09	Hs.483521	NM_022464	SIL1	SIL1 homolog, endoplasmic reticulum chaperone (S. cerevisiae)

Position	UniGene	GenBank	Symbol	Description
E10	Hs.733635	NM_004176	SREBF1	Sterol regulatory element binding transcription factor 1
E11	Hs.75859	NM_172230	SYVN1	Synovial apoptosis inhibitor 1, synoviolin
E12	Hs.363137	NM_030752	TCP1	T-complex 1
F01	Hs.534312	NM_000113	TOR1A	Torsin family 1, member A (torsin A)
F02	Hs.701398	NM_182688	UBE2G2	Ubiquitin-conjugating enzyme E2G 2
F03	Hs.591242	NM_014607	UBXN4	UBX domain protein 4
F04	Hs.474213	NM_005659	UFD1L	Ubiquitin fusion degradation 1 like (yeast)
F05	Hs.743306	NM_020120	UGGT1	UDP-glucose glycoprotein glucosyltransferase 1
F06	Hs.707058	NM_005151	USP14	Ubiquitin specific peptidase 14 (tRNA-guanine transglycosylase)
F07	Hs.529782	NM_007126	VCP	Valosin containing protein
F08	Hs.437638	NM_005080	XPB1	X-box binding protein 1
F09	Hs.743540	NM_024866	ADM2	Adrenomedullin 2
F10	Hs.489207	NM_183356	ASNS	Asparagine synthetase (glutamine-hydrolyzing)
F11	Hs.398989	NM_032621	BEX2	Brain expressed X-linked 2
F12	Hs.505777	NM_004083	DDIT3	DNA-damage-inducible transcript 3
G01	Hs.741182	NM_012328	DNAJB9	DnaJ (Hsp40) homolog, subfamily B, member 9
G02	Hs.433180	NM_016095	GINS2	GINS complex subunit 2 (Psf2 homolog)
G03	Hs.146393	NM_014685	HERPUD1	Homocysteine-inducible, endoplasmic reticulum stress-inducible, ubiquitin-like domain member 1
G04	Hs.632713	NM_031479	INHBE	inhibin, beta E
G05	Hs.591285	NM_014407	KCNMB3	Potassium large conductance calcium-activated channel, subfamily M beta member 3
G06	Hs.460184	NM_005914	MCM4	Minichromosome maintenance complex component 4
G07	Hs.744934	NM_182649	PCNA	Proliferating cell nuclear antigen
G08	Hs.226390	NM_001034	RRM2	Ribonucleotide reductase M2
G09	Hs.591802	NM_005835	SLC17A2	Solute carrier family 17 (sodium phosphate), member 2
G10	Hs.516826	NM_021158	TRIB3	Tribbles homolog 3 (Drosophila)
G11	Hs.732707	NM_001071	TYMS	Thymidylate synthetase
G12	Hs.108106	NM_013282	UHRF1	Ubiquitin-like with PHD and ring finger domains 1
H01	Hs.520640	NM_001101	ACTB	Actin, beta
H02	Hs.534255	NM_004048	B2M	Beta-2-microglobulin
H03	Hs.544577	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.
RT ² First Strand Kit (12)	Enzymes and reagents for cDNA synthesis	330401
RT ² 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.

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