

# RT<sup>2</sup> Profiler PCR Array (96-Well Format and 384-Well [4 x 96] Format)

## Chinese hamster ovary (CHO) cell Unfolded Protein Response

Cat. no. 330231 PAJJ-089ZA

For pathway expression analysis

Format	For use with the following real-time cyclers
RT <sup>2</sup> Profiler PCR Array, Format A	Applied Biosystems® models 5700, 7000, 7300, 7500, 7700, 7900HT, ViiA™ 7 (96-well block); Bio-Rad® models iCycler®, iQ™ 5, MyiQ™, MyiQ2; Bio-Rad/MJ Research Chromo4™; Eppendorf® Mastercycler® ep realplex models 2, 2s, 4, 4s; Stratagene® models Mx3005P®, Mx3000P®; Takara TP-800
RT <sup>2</sup> Profiler PCR Array, Format C	Applied Biosystems models 7500 (Fast block), 7900HT (Fast block), StepOnePlus™, ViiA 7 (Fast block)
RT <sup>2</sup> Profiler PCR Array, Format D	Bio-Rad CFX96™; Bio-Rad/MJ Research models DNA Engine Opticon®, DNA Engine Opticon 2; Stratagene Mx4000®
RT <sup>2</sup> Profiler PCR Array, Format E	Applied Biosystems models 7900HT (384-well block), ViiA 7 (384-well block); Bio-Rad CFX384™
RT <sup>2</sup> Profiler PCR Array, Format F	Roche® LightCycler® 480 (96-well block)
RT <sup>2</sup> Profiler PCR Array, Format G	Roche LightCycler 480 (384-well block)
RT <sup>2</sup> Profiler PCR Array, Format H	Fluidigm® BioMark™



Sample & Assay Technologies

## Description

The Chinese Hamster Ovary (CHO) Cell Unfolded Protein Response RT<sup>2</sup> Profiler PCR Array profiles the expression of 84 key genes recognizing and responding to misfolded protein accumulation in the endoplasmic reticulum (ER). 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. Using real-time PCR, research studies can easily and reliably 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 *RT<sup>2</sup> Profiler PCR Array Handbook*.

## Shipping and storage

RT<sup>2</sup> Profiler PCR Arrays in formats A, C, D, E, F, and G are shipped at ambient temperature, on dry ice, or blue ice packs depending on destination and accompanying products. RT<sup>2</sup> Profiler PCR Arrays in format H are shipped on dry ice or blue ice packs.

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.

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## Array layout (96-well)

For 384-well 4 x 96 PCR arrays, genes are present in a staggered format. Refer to the *RT<sup>2</sup> Profiler PCR Array Handbook* for layout.

	1	2	3	4	5	6	7	8	9	10	11	12
<b>A</b>	Amfr	Aff4	Aff6b	Bax	Calr	Calr3	Canx	Cct4	Cct6a	Cct6b	Creb3l2	Creb3l3
<b>B</b>	Derlin-1	Dnajc10	Dnajc3	Edem	Edem3	Eif2a	Eif2ak4	Ern1	Ero1l	Ero1lb	Erp44	Ganab
<b>C</b>	Ganc	Herpud1	Hsp90b1	Hspa1l	Hspa4l	Hspa5	Hspa9	Hspd1	Htra2	Htra3	Insig1	Insig2
<b>D</b>	LOC1006894	LOC1007506	LOC1007538	LOC1007543	LOC1007543	LOC1007548	LOC1007555	LOC1007563	LOC1007568	LOC1007621	LOC1007622	LOC1007625
	17	07	01	32	61	63	26	74	70	74	73	05
<b>E</b>	LOC1007629	LOC1007635	LOC1007636	LOC1007646	LOC1007653	LOC1007659	LOC1007660	LOC1007681	LOC1007685	LOC1007688	LOC1007690	LOC1007722
	38	14	48	28	43	97	28	72	47	48	81	55
<b>F</b>	LOC1007732	LOC1007734	LOC1007739	Mapk8	Mapk9	Mbtps2	Pdia3	Ppil2	Ppil4	Ppp1r15b	Rpn1	Scap
	27	38	68									
<b>G</b>	Sec63	Sel1l	Sels	Sil1	Sreb1f	Sreb2	Synn1	Tcp1	Tor1a	Ubxn4	Usp14	Xbp-1
<b>H</b>	Actb	Actr5	B2m	Gapdh	LOC1007697	JGDC	RTC	RTC	RTC	PPC	PPC	PPC
					68							

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

Position	UniGene	GenBank	Symbol	Description
A01	N/A	XM_003503625	Amfr	Autocrine motility factor receptor
A02	N/A	NM_001246812	Aff4	Activating transcription factor 4
A03	N/A	XM_003508493	Aff6b	Activating transcription factor 6 beta
A04	N/A	NM_001244020	Bax	BCL2-associated X protein
A05	N/A	NM_001244122	Calr	Calreticulin
A06	N/A	XM_003499080	Calr3	Calreticulin 3
A07	N/A	NM_001246776	Canx	Calnexin
A08	N/A	XM_003502149	Cct4	Chaperonin containing Tcp1, subunit 4 (delta)
A09	N/A	XM_003509484	Cct6a	Chaperonin containing Tcp1, subunit 6a (zeta)
A10	N/A	XM_003495794	Cct6b	Chaperonin containing Tcp1, subunit 6b (zeta)
A11	N/A	XM_003500972	Creb3l2	CAMP responsive element binding protein 3-like 2
A12	N/A	XM_003506477	Creb3l3	CAMP responsive element binding protein 3-like 3
B01	N/A	XM_003515901	Derlin-1	Derlin-1-like
B02	N/A	XM_003500418	Dnajc10	DnaJ (Hsp40) homolog, subfamily C, member 10
B03	N/A	XM_003495240	Dnajc3	DnaJ (Hsp40) homolog, subfamily C, member 3
B04	N/A	NM_001246715	Edem	ER degradation enhancer, mannosidase alpha-like 1
B05	N/A	XM_003500854	Edem3	ER degradation enhancer, mannosidase alpha-like 3
B06	N/A	XM_003502872	Eif2a	Eukaryotic translation initiation factor 2A
B07	N/A	XM_003503421	Eif2ak4	Eukaryotic translation initiation factor 2 alpha kinase 4
B08	N/A	XM_003501879	Ern1	Endoplasmic reticulum (ER) to nucleus signalling 1
B09	N/A	XM_003510730	Ero1l	ERO1-like (S. cerevisiae)
B10	N/A	XM_003507583	Ero1lb	ERO1-like beta (S. cerevisiae)
B11	N/A	XM_003506141	Erp44	Endoplasmic reticulum protein 44
B12	N/A	XM_003508735	Ganab	Alpha glucosidase 2 alpha neutral subunit
C01	N/A	XM_003498084	Ganc	Glucosidase, alpha; neutral C
C02	N/A	XM_003503612	Herpud1	Homocysteine-inducible, endoplasmic reticulum stress-inducible, ubiquitin-like domain member 1
C03	N/A	XM_003505850	Hsp90b1	Heat shock protein 90, beta (Grp94), member 1
C04	N/A	XM_003508474	Hspa1l	Heat shock protein 1-like
C05	N/A	XM_003504857	Hspa4l	Heat shock protein 4 like
C06	N/A	NM_001246739	Hspa5	Heat shock protein 5
C07	N/A	NM_001246829	Hspa9	Heat shock protein 9
C08	N/A	XM_003504341	Hspd1	Heat shock protein 1 (chaperonin)
C09	N/A	XM_003511129	Htra2	Htra serine peptidase 2
C10	N/A	XM_003496633	Htra3	Htra serine peptidase 3
C11	N/A	NM_001244079	Insig1	Insulin induced gene 1
C12	N/A	NM_001244078	Insig2	Insulin induced gene 2
			LOC100689	

Position	UniGene	GenBank	Symbol	Description
D01	N/A	NM_001246682	417	Site-1 protease of sterol regulatory element binding proteins
D02	N/A	XM_003510832	LOC100750607	Prefoldin subunit 6-like
D03	N/A	XM_003501134	LOC100753801	ER degradation-enhancing alpha-mannosidase-like 2-like
D04	N/A	XM_003509139	LOC100754332	Ataxin-3-like
D05	N/A	XM_003513867	LOC100754361	Mitogen-activated protein kinase 10-like
D06	N/A	XM_003496933	LOC100754863	Nuclear protein localization protein 4 homolog
D07	N/A	XM_003497160	LOC100755526	Derlin-2-like
D08	N/A	XM_003511320	LOC100756374	Activator of 90 kDa heat shock protein ATPase homolog 2-like
D09	N/A	XM_003511268	LOC100756870	DnaJ homolog subfamily C member 4-like
D10	N/A	XM_003512603	LOC100762174	Cation transport regulator-like protein 1-like
D11	N/A	XM_003495228	LOC100762273	UDP-glucose:glycoprotein glucosyltransferase 2-like
D12	N/A	XM_003515952	LOC100762505	E3 ubiquitin-protein ligase RNF139-like
E01	N/A	XM_003507047	LOC100762938	F-box only protein 6-like
E02	N/A	XM_003507523	LOC100763514	DNA damage-inducible transcript 3 protein-like
E03	N/A	XM_003497996	LOC100763648	DnaJ homolog subfamily B member 9-like
E04	N/A	XM_003498506	LOC100764628	Heat shock 70 kDa protein 4-like
E05	N/A	XM_003503902	LOC100765343	Eukaryotic translation initiation factor 2-alpha kinase 3-like
E06	N/A	XM_003500596	LOC100765997	Ubiquitin-conjugating enzyme E2 G2-like
E07	N/A	XM_003506857	LOC100766028	Prefoldin subunit 2-like
E08	N/A	XM_003509962	LOC100768172	Ubiquitin-conjugating enzyme E2 J2-like
E09	N/A	XM_003507205	LOC100768547	Prefoldin subunit 5-like
E10	N/A	XM_003508106	LOC100768848	Derlin-3-like
E11	N/A	XM_003498968	LOC100769081	Polycomb group RING finger protein 5-like
E12	N/A	XM_003502888	LOC100772255	Stress-associated endoplasmic reticulum protein 1-like
F01	N/A	XM_003502447	LOC100773227	Ubiquitin fusion degradation protein 1 homolog
F02	N/A	XM_003507613	LOC100773438	DnaJ homolog subfamily B member 2-like
F03	N/A	XM_003498309	LOC100773968	UDP-glucose:glycoprotein glucosyltransferase 1-like
F04	N/A	XM_003495315	Mapk8	Mitogen-activated protein kinase 8
F05	N/A	XM_003505367	Mapk9	Mitogen-activated protein kinase 9
F06	N/A	NM_001244089	Mbtps2	Membrane-bound transcription factor peptidase, site 2
F07	N/A	NM_001246774	Pdia3	Protein disulfide isomerase associated 3
F08	N/A	XM_003502848	Ppil2	Peptidylprolyl isomerase (cyclophilin)-like 2
F09	N/A	XM_003498944	Ppil4	Peptidylprolyl isomerase (cyclophilin)-like 4
F10	N/A	XM_003505757	Ppp1r15b	Protein phosphatase 1, regulatory (inhibitor) subunit 15b
F11	N/A	XM_003503554	Rpn1	Ribophorin I
F12	N/A	NM_001244036	Scap	SREBF chaperone
G01	N/A	XM_003496998	Sec63	SEC63-like ( <i>S. cerevisiae</i> )
G02	N/A	XM_003500981	Sel11	Sel-1 suppressor of lin-12-like ( <i>C. elegans</i> )
G03	N/A	NM_001256848	Sels	Selenoprotein S
G04	N/A	XM_003502527	Sil1	Endoplasmic reticulum chaperone SIL1 homolog ( <i>S. cerevisiae</i> )
G05	N/A	NM_001244003	Sreb1	Sterol regulatory element binding transcription factor 1
G06	N/A	NM_001244004	Sreb2	Sterol regulatory element binding factor 2
G07	N/A	XM_003514586	Syvn1	Synovial apoptosis inhibitor 1, synoviolin
G08	N/A	NM_001246733	Tcp1	T-complex protein 1
G09	N/A	XM_003513974	Tor1a	Torsin family 1, member A (torsin A)

Position	UniGene	GenBank	Symbol	Description
G10	N/A	XM_003497713	Ubxn4	UBX domain protein 4
G11	N/A	XM_003507134	Usp14	Ubiquitin specific peptidase 14
G12	N/A	NM_001244047	Xbp-1	X-box binding protein 1
H01	N/A	NM_001244575	Actb	Actin, beta
H02	N/A	XM_003497123	Acr5	ARP5 actin-related protein 5 homolog (yeast)
H03	N/A	NM_001246674	B2m	Beta-2 microglobulin
H04	N/A	NM_001244854	Gapdh	Glyceraldehyde-3-phosphate dehydrogenase
H05	N/A	XM_003503017	LOC100769 768	Hypoxanthine-guanine phosphoribosyltransferase-like
H06	N/A	SA_00519	JGDC	Hamster 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 qPCR Mastermix (2)*	For 2 x 96 assays in 96-well plates; suitable for use with real-time cyclers that do not require a reference dye, including: Bio-Rad models CFX96, CFX384, DNA Engine Opticon 2; Bio-Rad/MJ Research Chromo4; Roche LightCycler 480 (96-well and 384-well); all other cyclers	330500
RT <sup>2</sup> SYBR Green ROX™ qPCR Mastermix (2)*	For 2 x 96 assays in 96-well plates; suitable for use with the following real-time cyclers: Applied Biosystems models 5700, 7000, 7300, 7500 [Standard and FAST], 7700, 7900HT 96-well block [Standard and FAST] and 384-well block, StepOnePlus; Eppendorf Mastercycler ep realplex models 2, 2S, 4, 4S; Stratagene models Mx3000P, Mx3005P, Mx4000; Takara TP-800	330520
RT <sup>2</sup> SYBR Green Fluor qPCR Mastermix (2)*	For 2 x 96 assays in 96-well plates; suitable for use with the following real-time cyclers: Bio-Rad models iCycler, iQ5, MyiQ, MyiQ2	330510

\* Larger kit sizes available; please inquire.

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.

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