

RT² Profiler PCR Array (96-Well Format and 384-Well [4 x 96] Format)

Rat Ubiquitination (Ubiquitinylation)

Cat. no. 330231 PARN-079ZA

For pathway expression analysis

Format	For use with the following real-time cyclers
RT ² 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 ² Profiler PCR Array, Format C	Applied Biosystems models 7500 (Fast block), 7900HT (Fast block), StepOnePlus™, ViiA 7 (Fast block)
RT ² Profiler PCR Array, Format D	Bio-Rad CFX96™; Bio-Rad/MJ Research models DNA Engine Opticon®, DNA Engine Opticon 2; Stratagene Mx4000®
RT ² Profiler PCR Array, Format E	Applied Biosystems models 7900HT (384-well block), ViiA 7 (384-well block); Bio-Rad CFX384™
RT ² Profiler PCR Array, Format F	Roche® LightCycler® 480 (96-well block)
RT ² Profiler PCR Array, Format G	Roche LightCycler 480 (384-well block)
RT ² Profiler PCR Array, Format H	Fluidigm® BioMark™



Sample & Assay Technologies

Description

The Rat Ubiquitination or Ubiquitylation Pathway RT² Profiler PCR Array profiles the expression of 84 key genes involved in the regulated degradation of cellular proteins by the ubiquitin-proteasome system. Disruption of the proteasomal degradation pathway has been implicated in a wide range of Rat diseases, such as cancer, diabetes and cardiovascular and neurodegenerative diseases. The array includes ubiquitin-activating enzymes (E1), ubiquitin-conjugating enzymes (E2), and ubiquitin ligases (E3). These enzymes have also been sub-categorized as regulators of key cellular processes, such as apoptosis, the cell cycle and transcription. Using real-time PCR, you can easily and reliably analyze expression of a focused panel of genes involved in ubiquitin degradation pathway with this array.

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

Shipping and storage

RT² 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. RT² 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 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 (96-well)

For 384-well 4 x 96 PCR arrays, genes are present in a staggered format. Refer to the *RT² Profiler PCR Array Handbook* for layout.

	1	2	3	4	5	6	7	8	9	10	11	12
A	Anapc2	Arih1	Atg7	Bard1	Brca1	Brcc3	Btrc	Cbl	Cdc34	Cul1	Cul2	Cul3
B	Cul4b	Cul5	Ddb1	Fbxo11	Fbxo32	Fbxo4	Fbxo6	Fbxw9	Hecw2	Itch	March5	Mdm2
C	Mib1	Mocs3	Mul1	Nae1	Nedd8	Park2	Rfwd2	Rlim	Rnf144b	Rnf167	Rnf180	Rnf2
D	Rnf20	Rnf34	Rnf40	Rnf6	Rnf8	Sae1	Skp1	Skp2	Smurf2	Stub1	Sym1	Tmem189
E	Tp53	Uba1	Uba3	Uba5	Uba6	Ube2a	Ube2b	Ube2c	Ube2d1	Ube2d3	Ube2e2	Ube2e3
F	Ube2g1	Ube2g2	Ube2i	Ube2j1	Ube2j2	Ube2k	Ube2l3	Ube2l6	Ube2m	Ube2n	Ube2q1	Ube2q2
G	Ube2q2l	Ube2s	Ube2t	Ube2v1	Ube2v2	Ube2z	Ube4a	Uchl1	Uchl3	Uchl5	Vhl	Wwp1
H	Actb	B2m	Hprt1	Ldha	Rplp1	RGDC	RTC	RTC	RTC	PPC	PPC	PPC

Gene table: RT² Profiler PCR Array

Position	UniGene	GenBank	Symbol	Description
A01	Rn.20099	NM_001100532	Anapc2	Anaphase promoting complex subunit 2
A02	Rn.29865	NM_001013108	Arih1	Ariadne ubiquitin-conjugating enzyme E2 binding protein homolog 1 (Drosophila)
A03	Rn.162765	NM_001012097	Atg7	ATG7 autophagy related 7 homolog (S. cerevisiae)
A04	Rn.48735	NM_022622	Bard1	BRCA1 associated RING domain 1
A05	Rn.48840	NM_012514	Brca1	Breast cancer 1
A06	Rn.52727	NM_001127300	Brcc3	BRCA1/BRCA2-containing complex, subunit 3
A07	Rn.21800	NM_001007148	Btrc	Beta-transducin repeat containing
A08	Rn.35589	XM_576396	Cbl	Cas-Br-M (murine) ecotropic retroviral transforming sequence
A09	Rn.2427	NM_001013103	Cdc34	Cell division cycle 34 homolog (S. cerevisiae)
A10	Rn.68078	NM_001108627	Cul1	Cullin 1
A11	Rn.2970	NM_001108417	Cul2	Cullin 2
A12	Rn.101949	NM_001106923	Cul3	Cullin 3
B01	Rn.21178	NM_001106951	Cul4b	Cullin 4B
B02	Rn.163001	NM_022683	Cul5	Cullin 5
B03	Rn.8402	XM_002725785	Ddb1	Damage-specific DNA binding protein 1
B04	Rn.36585	NM_181631	Fbxo11	F-box protein 11
B05	Rn.72619	NM_133521	Fbxo32	F-box protein 32
B06	Rn.45165	NM_001107672	Fbxo4	F-box protein 4
B07	Rn.57325	NM_138917	Fbxo6	F-box protein 6
B08	Rn.29201	NM_001081634	Fbxw9	F-box and WD repeat domain containing 9
B09	Rn.198842	NM_001108218	Hecw2	HECT, C2 and WW domain containing E3 ubiquitin protein ligase 2
B10	Rn.20718	NM_001005887	Itch	Itchy E3 ubiquitin protein ligase homolog (mouse)
B11	Rn.218003	NM_001106372	March5	Membrane-associated ring finger (C3HC4) 5
B12	Rn.91829	NM_001108099	Mdm2	Mdm2 p53 binding protein homolog (mouse)
C01	Rn.218158	NM_001107405	Mib1	Mindbomb homolog 1 (Drosophila)
C02	Rn.35140	NM_001107804	Mocs3	Molybdenum cofactor synthesis 3
C03	Rn.152339	NM_001106695	Mul1	Mitochondrial ubiquitin ligase activator of NFKB 1
C04	Rn.4279	NM_032072	Nae1	NEDD8 activating enzyme E1 subunit 1
C05	Rn.216415	NM_138878	Nedd8	Neural precursor cell expressed, developmentally down-regulated 8
C06	Rn.207194	NM_020093	Park2	Parkinson disease (autosomal recessive, juvenile) 2, parkin
C07	Rn.108036	NM_001025126	Rfwd2	Ring finger and WD repeat domain 2
C08	Rn.85539	NM_001024892	Rlim	Ring finger protein, LIM domain interacting
C09	Rn.178363	NM_001108881	Rnf144b	Ring finger protein 144B
C10	Rn.26488	NM_001008361	Rnf167	Ring finger protein 167
C11	Rn.109186	NM_001134986	Rnf180	Ring finger protein 180
C12	Rn.19719	NM_001025667	Rnf2	Ring finger protein 2
D01	Rn.15969	NM_001107929	Rnf20	Ring finger protein 20
D02	Rn.14904	NM_001004075	Rnf34	Ring finger protein 34
D03	Rn.162466	NM_153471	Rnf40	Ring finger protein 40
D04	Rn.53030	NM_001107118	Rnf6	Ring finger protein (C3H2C3 type) 6
D05	Rn.12463	NM_001025727	Rnf8	Ring finger protein 8
D06	Rn.9014	NM_001012063	Sae1	SUMO1 activating enzyme subunit 1
D07	Rn.3477	NM_001007608	Skp1	S-phase kinase-associated protein 1
D08	Rn.154278	NM_001106416	Skp2	S-phase kinase-associated protein 2 (p45)

Position	UniGene	GenBank	Symbol	Description
D09	Rn.92843	NM_001107061	Smurf2	SMAD specific E3 ubiquitin protein ligase 2
D10	Rn.6504	NM_001025625	Stub1	STIP1 homology and U-Box containing protein 1
D11	Rn.162486	NM_001100739	Synv1	Synovial apoptosis inhibitor 1, synoviolin
D12	Rn.101810	NM_001113752	Tmem189	Transmembrane protein 189
E01	Rn.54443	NM_030989	Tp53	Tumor protein p53
E02	Rn.11800	NM_001014080	Uba1	Ubiquitin-like modifier activating enzyme 1
E03	Rn.162761	NM_057205	Uba3	Ubiquitin-like modifier activating enzyme 3
E04	Rn.18210	NM_001009669	Uba5	Ubiquitin-like modifier activating enzyme 5
E05	Rn.94245	NM_001107213	Uba6	Ubiquitin-like modifier activating enzyme 6
E06	Rn.8585	NM_001013933	Ube2a	Ubiquitin-conjugating enzyme E2A (RAD6 homolog)
E07	Rn.20766	NM_031138	Ube2b	Ubiquitin-conjugating enzyme E2B (RAD6 homolog, <i>S. cerevisiae</i>)
E08	Rn.3102	NM_001106542	Ube2c	Ubiquitin-conjugating enzyme E2C
E09	Rn.24937	NM_001108530	Ube2d1	Ubiquitin-conjugating enzyme E2D 1, UBC4/5 homolog (yeast)
E10	Rn.2778	NM_031237	Ube2d3	Ubiquitin-conjugating enzyme E2D 3 (UBC4/5 homolog, yeast)
E11	Rn.15203	NM_001108371	Ube2e2	Ubiquitin-conjugating enzyme E2E 2 (UBC4/5 homolog, yeast)
E12	Rn.2784	NM_001047857	Ube2e3	Ubiquitin-conjugating enzyme E2E 3, UBC4/5 homolog (yeast)
F01	Rn.163149	NM_022690	Ube2g1	Ubiquitin-conjugating enzyme E2G 1 (UBC7 homolog, yeast)
F02	Rn.139603	NM_001106380	Ube2g2	Ubiquitin-conjugating enzyme E2G 2 (UBC7 homolog, yeast)
F03	Rn.2274	NM_013050	Ube2i	Ubiquitin-conjugating enzyme E2I (UBC9 homolog, yeast)
F04	Rn.18843	NM_001106642	Ube2j1	Ubiquitin-conjugating enzyme E2, J1 (UBC6 homolog, yeast)
F05	Rn.106299	NM_001007655	Ube2j2	Ubiquitin-conjugating enzyme E2, J2 (UBC6 homolog, yeast)
F06	Rn.203330	NM_001106006	Ube2k	Ubiquitin-conjugating enzyme E2K (UBC1 homolog, yeast)
F07	Rn.163186	NM_001108847	Ube2l3	Ubiquitin-conjugating enzyme E2L 3
F08	Rn.8609	NM_001024755	Ube2l6	Ubiquitin-conjugating enzyme E2L 6
F09	Rn.15135	NM_001108471	Ube2m	Ubiquitin-conjugating enzyme E2M (UBC12 homolog, yeast)
F10	Rn.165094	NM_053928	Ube2n	Ubiquitin-conjugating enzyme E2N (UBC13 homolog, yeast)
F11	Rn.19034	NM_001106448	Ube2q1	Ubiquitin-conjugating enzyme E2Q family member 1
F12	Rn.19628	XM_001072896	Ube2q2	Ubiquitin-conjugating enzyme E2Q family member 2
G01	Rn.106891	NM_001135997	Ube2q2l	Ubiquitin-conjugating enzyme E2Q family member 2-like
G02	Rn.120398	NM_001106224	Ube2s	Ubiquitin-conjugating enzyme E2S
G03	Rn.18835	NM_001108344	Ube2t	Ubiquitin-conjugating enzyme E2T (putative)
G04	Rn.133763	NM_001110345	Ube2v1	Ubiquitin-conjugating enzyme E2 variant 1
G05	Rn.3933	NM_183052	Ube2v2	Ubiquitin-conjugating enzyme E2 variant 2
G06	Rn.16992	NM_001037643	Ube2z	Ubiquitin-conjugating enzyme E2Z
G07	Rn.102204	NM_207610	Ube4a	Ubiquitination factor E4A (UFD2 homolog, yeast)
G08	Rn.107213	NM_017237	Uchl1	Ubiquitin carboxyl-terminal esterase L1 (ubiquitin thiolesterase)
G09	Rn.46952	NM_001110165	Uchl3	Ubiquitin carboxyl-terminal esterase L3 (ubiquitin thiolesterase)
G10	Rn.40424	NM_001012149	Uchl5	Ubiquitin carboxyl-terminal hydrolase L5
G11	Rn.11059	NM_052801	Vhl	Von Hippel-Lindau tumor suppressor
G12	Rn.144867	NM_001024757	Wwp1	WW domain containing E3 ubiquitin protein ligase 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.
RT ² First Strand Kit (12)	Enzymes and reagents for cDNA synthesis	330401
RT ² 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 ² 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 ² 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.

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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