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

Human Cell Death PathwayFinder

Cat. no. 330231 PAHS-212ZA

For pathway expression analysis

Format	For use with the following real-time cyclers
RT² 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
RT² Profiler PCR Array, Format C	Applied Biosystems models 7500 (Fast block), 7900HT (Fast block), StepOnePlus™, ViiA 7 (Fast block)
RT² Profiler PCR Array, Format D	Bio-Rad CFX96™; Bio-Rad/MJ Research models DNA Engine Opticon®, DNA Engine Opticon 2; Stratagene Mx4000®
RT² Profiler PCR Array, Format E	Applied Biosystems models 7900HT (384-well block), ViiA 7 (384-well block); Bio-Rad CFX384™
RT² Profiler PCR Array, Format F	Roche® LightCycler® 480 (96-well block)
RT² Profiler PCR Array, Format G	Roche LightCycler 480 (384-well block)
RT² Profiler PCR Array, Format H	Fluidigm® BioMark™

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Description

The Human Cell Death PathwayFinder RT² Profiler PCR Array profiles the expression of 84 key genes important for the central mechanisms of cellular death: apoptosis, autophagy, and necrosis. Apoptosis, or programmed cell death, results in controlled cell shrinkage and fragmentation via the action of caspases, as well as an anti-inflammatory cytokine release. In contrast, necrosis signals via RIPK1 (RIP1), leading to cell swelling, lysis, and a pro-inflammatory cytokine release. Autophagy destroys the cell's damaged proteins and organelles via an intracellular catabolic process in the lysosome. Multiple cellular processes require the removal of specific cells by a controlled cell-death program. For example, tissue remodeling activates apoptosis, whereas energy metabolism and growth regulation responses rely on autophagy. Developmental processes often activate apoptosis, while bodily injuries or infection more commonly induce necrosis. The molecular mechanisms behind these cell death pathways overlap and more than one form of cell death occur simultaneously during some cellular functions. Apoptosis and necrosis both signal through the death domain receptors FAS, TNFRSF1A (TNFR1), and TNFRSF10A (TRAIL-R), while autophagy and apoptosis share BCL2 family members as key players. The results of this array can yield insights into which central cell death mechanism(s) drive normal biological or pathophysiological processes. Using real-time PCR, research studies can easily and reliably analyze the expression of a focused panel of genes involved in cellular death pathways 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	ABL1	AKT1	APAF1	APP	ATG12	ATG16L1	ATG3	ATG5	ATG7	ATP6V1G2	BAX	BCL2
B	BCL2A1	BCL2L1	BCL2L11	BECN1	BIRC2	BIRC3	BMF	C1orf159	CASP1	CASP2	CASP3	CASP6
C	CASP7	CASP9	CCDC103	CD40	CD40LG	CFLAR	COMMD4	CTSB	CTSS	CYLD	DEFB1	DENND4A
D	DFFA	DPYSL4	EIF5B	ESR1	FAS	FASLG	FOXI1	GAA	GADD45A	GALNT5	GRB2	HSPBAP1
E	HTT	IFNG	IGF1	IGF1R	INS	IRGM	JPH3	KCNIP1	MAG	MAP1LC3A	MAPK8	MCL1
F	NFKB1	NOL3	OR10J3	PARP1	PARP2	PIK3C3	PVR	RAB25	RPS6KB1	S100A7A	SNCA	SPATA2
G	SQSTM1	SYCP2	TMEM57	TNF	TNFRSF10A	TNFRSF11B	TNFRSF1A	TP53	TRAF2	TXNL4B	ULK1	XIAP
H	ACTB	B2M	GAPDH	HPRT1	RPLP0	HGDC	RTC	RTC	RTC	PPC	PPC	PPC

Gene table: RT² Profiler PCR Array

Position	UniGene	GenBank	Symbol	Description
A01	Hs.431048	NM_005157	ABL1	C-abl oncogene 1, non-receptor tyrosine kinase
A02	Hs.525622	NM_005163	AKT1	V-akt murine thymoma viral oncogene homolog 1
A03	Hs.728891	NM_001160	APAF1	Apoptotic peptidase activating factor 1
A04	Hs.434980	NM_000484	APP	Amyloid beta (A4) precursor protein
A05	Hs.264482	NM_004707	ATG12	ATG12 autophagy related 12 homolog (S. cerevisiae)
A06	Hs.529322	NM_017974	ATG16L1	ATG16 autophagy related 16-like 1 (S. cerevisiae)
A07	Hs.477126	NM_022488	ATG3	ATG3 autophagy related 3 homolog (S. cerevisiae)
A08	Hs.486063	NM_004849	ATG5	ATG5 autophagy related 5 homolog (S. cerevisiae)
A09	Hs.716466	NM_006395	ATG7	ATG7 autophagy related 7 homolog (S. cerevisiae)
A10	Hs.249227	NM_130463	ATP6V1G2	ATPase, H+ transporting, lysosomal 13kDa, V1 subunit G2
A11	Hs.624291	NM_004324	BAX	BCL2-associated X protein
A12	Hs.150749	NM_000633	BCL2	B-cell CLL/lymphoma 2
B01	Hs.227817	NM_004049	BCL2A1	BCL2-related protein A1
B02	Hs.516966	NM_138578	BCL2L1	BCL2-like 1
B03	Hs.469658	NM_006538	BCL2L11	BCL2-like 11 (apoptosis facilitator)
B04	Hs.12272	NM_003766	BECN1	Beclin 1, autophagy related
B05	Hs.696238	NM_001166	BIRC2	Baculoviral IAP repeat containing 2
B06	Hs.127799	NM_001165	BIRC3	Baculoviral IAP repeat containing 3
B07	Hs.591104	NM_033503	BMF	Bcl2 modifying factor
B08	Hs.235095	NM_017891	C1orf159	Chromosome 1 open reading frame 159
B09	Hs.2490	NM_033292	CASP1	Caspase 1, apoptosis-related cysteine peptidase (interleukin 1, beta, convertase)
B10	Hs.368982	NM_032982	CASP2	Caspase 2, apoptosis-related cysteine peptidase
B11	Hs.141125	NM_004346	CASP3	Caspase 3, apoptosis-related cysteine peptidase
B12	Hs.654616	NM_032992	CASP6	Caspase 6, apoptosis-related cysteine peptidase
C01	Hs.9216	NM_001227	CASP7	Caspase 7, apoptosis-related cysteine peptidase
C02	Hs.329502	NM_001229	CASP9	Caspase 9, apoptosis-related cysteine peptidase
C03	Hs.514222	NM_213607	CCDC103	Coiled-coil domain containing 103
C04	Hs.472860	NM_001250	CD40	CD40 molecule, TNF receptor superfamily member 5
C05	Hs.592244	NM_000074	CD40LG	CD40 ligand
C06	Hs.390736	NM_003879	CFLAR	CASP8 and FADD-like apoptosis regulator
C07	Hs.351327	NM_017828	COMMD4	COMM domain containing 4
C08	Hs.520898	NM_001908	CTSB	Cathepsin B
C09	Hs.181301	NM_004079	CTSS	Cathepsin S
C10	Hs.578973	NM_015247	CYLD	Cylindromatosis (turban tumor syndrome)
C11	Hs.32949	NM_005218	DEFB1	Defensin, beta 1
C12	Hs.654567	NM_005848	DENND4A	DENN/MADD domain containing 4A
D01	Hs.484782	NM_004401	DFFA	DNA fragmentation factor, 45kDa, alpha polypeptide
D02	Hs.100058	NM_006426	DPYSL4	Dihydropyrimidinase-like 4
D03	Hs.158688	NM_015904	EIF5B	Eukaryotic translation initiation factor 5B
D04	Hs.208124	NM_000125	ESR1	Estrogen receptor 1
D05	Hs.244139	NM_000043	FAS	Fas (TNF receptor superfamily, member 6)
D06	Hs.2007	NM_000639	FASLG	Fas ligand (TNF superfamily, member 6)
D07	Hs.87236	NM_012188	FOXI1	Forkhead box I1
D08	Hs.1437	NM_000152	GAA	Glucosidase, alpha; acid
D09	Hs.80409	NM_001924	GADD45A	Growth arrest and DNA-damage-inducible, alpha

Position	UniGene	GenBank	Symbol	Description
D10	Hs.269027	NM_014568	GALNT5	UDP-N-acetyl-alpha-D-galactosamine:polypeptide N-acetylgalactosaminyltransferase 5 (GalNAc-T5)
D11	Hs.444356	NM_002086	GRB2	Growth factor receptor-bound protein 2
D12	Hs.29169	NM_024610	HSPBAP1	HSPB (heat shock 27kDa) associated protein 1
E01	Hs.518450	NM_002111	HTT	Huntingtin
E02	Hs.856	NM_000619	IFNG	Interferon, gamma
E03	Hs.160562	NM_000618	IGF1	Insulin-like growth factor 1 (somatomedin C)
E04	Hs.643120	NM_000875	IGF1R	Insulin-like growth factor 1 receptor
E05	Hs.654579	NM_000207	INS	Insulin
E06	Hs.519680	NM_001145805	IRGM	Immunity-related GTPase family, M
E07	Hs.592068	NM_020655	JPH3	Junctophilin 3
E08	Hs.484111	NM_014592	KCNIP1	Kv channel interacting protein 1
E09	Hs.643440	NM_002361	MAG	Myelin associated glycoprotein
E10	Hs.632273	NM_181509	MAP1LC3A	Microtubule-associated protein 1 light chain 3 alpha
E11	Hs.138211	NM_002750	MAPK8	Mitogen-activated protein kinase 8
E12	Hs.632486	NM_021960	MCL1	Myeloid cell leukemia sequence 1 (BCL2-related)
F01	Hs.654408	NM_003998	NFKB1	Nuclear factor of kappa light polypeptide gene enhancer in B-cells 1
F02	Hs.513667	NM_003946	NOL3	Nucleolar protein 3 (apoptosis repressor with CARD domain)
F03	Hs.553833	NM_001004467	OR10J3	Olfactory receptor, family 10, subfamily J, member 3
F04	Hs.177766	NM_001618	PARP1	Poly (ADP-ribose) polymerase 1
F05	Hs.409412	NM_005484	PARP2	Poly (ADP-ribose) polymerase 2
F06	Hs.464971	NM_002647	PIK3C3	Phosphoinositide-3-kinase, class 3
F07	Hs.171844	NM_006505	PVR	Poliovirus receptor
F08	Hs.632469	NM_020387	RAB25	RAB25, member RAS oncogene family
F09	Hs.463642	NM_003161	RPS6KB1	Ribosomal protein S6 kinase, 70kDa, polypeptide 1
F10	Hs.442337	NM_176823	S100A7A	S100 calcium binding protein A7A
F11	Hs.271771	NM_000345	SNCA	Synuclein, alpha (non A4 component of amyloid precursor)
F12	Hs.48513	NM_006038	SPATA2	Spermatogenesis associated 2
G01	Hs.437277	NM_003900	SQSTM1	Sequestosome 1
G02	Hs.202676	NM_014258	SYCP2	Synaptonemal complex protein 2
G03	Hs.189782	NM_018202	TMEM57	Transmembrane protein 57
G04	Hs.241570	NM_000594	TNF	Tumor necrosis factor
G05	Hs.591834	NM_003844	TNFRSF10A	Tumor necrosis factor receptor superfamily, member 10a
G06	Hs.81791	NM_002546	TNFRSF11B	Tumor necrosis factor receptor superfamily, member 11b
G07	Hs.279594	NM_001065	TNFRSF1A	Tumor necrosis factor receptor superfamily, member 1A
G08	Hs.654481	NM_000546	TP53	Tumor protein p53
G09	Hs.522506	NM_021138	TRAF2	TNF receptor-associated factor 2
G10	Hs.134406	NM_017853	TXNL4B	Thioredoxin-like 4B
G11	Hs.47061	NM_003565	ULK1	Unc-51-like kinase 1 (C. elegans)
G12	Hs.356076	NM_001167	XIAP	X-linked inhibitor of apoptosis
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 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
RT² 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
RT² 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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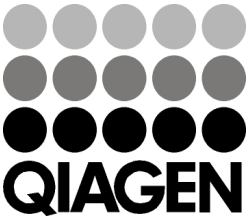

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