

RT² Profiler™ PCR Array:

Human Apoptosis

Catalog Number

PAHS-012A

PAHS-012C

PAHS-012D

PAHS-012E

PAHS-012F

PAHS-012G

For Real-Time Instruments:

ABI Standard Blocks; Bio-Rad iCycler, MyiQ, and (MJ Research) Chromo 4 and Stratagene Mx3005p, Mx3000p

ABI 7500 and 7900HT FAST 96-Well Blocks, ABI StepOnePlus

Bio-Rad (MJ Research) Opticon and Opticon 2, Stratagene Mx4000

ABI 7900HT 384-Well Block

Roche LightCycler 480 96-well Block

Roche LightCycler 480 384-well Block

Description

The Human Apoptosis RT² Profiler PCR Array profiles the expression of 84 key genes involved in apoptosis, or programmed cell death. The array includes the TNF ligands and their receptors; members of the bcl-2, caspase, IAP, TRAF, CARD, death domain, death effector domain, and CIDE families; as well as genes involved in the p53 and ATM pathways. Using real-time PCR, you can easily and reliably analyze expression of a focused panel of genes related to apoptosis with this array.

Functional Gene Groupings

TNF Ligand Family: CD40LG (TNFSF5), FASLG (TNFSF6), LTA, TNF, TNFSF10, CD70, TNFSF8.

TNF Receptor Family: CD40 (TNFRSF5), FAS (TNFRSF6), LTBR, TNFRSF10A, TNFRSF10B, TNFRSF11B, TNFRSF1A, TNFRSF1B, TNFRSF21, TNFRSF25, CD27, TNFRSF9.

Bcl-2 Family: BAD, BAG1, BAG3, BAG4, BAK1, BAX, BCL2, BCL2A1, BCL2L1, BCL2L10, BCL2L11, BCL2L2, BCLAF1, BID, BIK, BNIP1, BNIP2, BNIP3, BNIP3L, HRK, MCL1.

Caspase Family: CASP1, CASP10, CASP14, CASP2, CASP3, CASP4, CASP5, CASP6, CASP7, CASP8, CASP9.

IAP Family: NAIP, BIRC2, BIRC3, BIRC4, BIRC6, BIRC8.

TRAF Family: TRAF2, TRAF3, TRAF4.

CARD Family: APAF1, BCL10, BIRC2, BIRC3, NOD1, CARD6, CARD8, CASP1, CASP2, CASP4, CASP5, CASP9, CRADD, NOL3, PYCARD, RIPK2.

Death Domain Family: CRADD, DAPK1, FADD, FAS (TNFRSF6), TNFRSF10A, TNFRSF10B, TNFRSF11B, TNFRSF1A, TNFRSF21, TNFRSF25, TRADD.

Death Effector Domain Family: CASP8, CASP10, CFLAR, FADD.

CIDE Domain Family: CIDEA, CIDEB, DFFA.

p53 and DNA Damage Response: ABL1, AKT1, APAF1, BAD, BAX, BCL2, BCL2L1, BID, CASP3, CASP6, CASP7, CASP9, GADD45A, TP53, TP53BP2, TP73.

Anti-apoptosis: AKT1, BAG1, BAG3, BCL2, BCL2A1, BCL2L1, BCL2L10, BCL2L2, BFAR, NAIP, BIRC2, BIRC3, BIRC4, BIRC6, BIRC8, BNIP1, BNIP2, BNIP3, BRAF, CASP2, CFLAR, FAS (TNFRSF6), IGF1R, MCL1, TNF, CD27.

Product Specification Sheet

Storage Conditions

Please check the kit components immediately after you receive this package. We are only responsible for missing items reported within two (2) business days of receipt.

Storage Conditions: PCR Arrays are shipped at ambient temperature. Keep plates at -20 °C for long-term storage.

NOTE: Be sure that you have the correct PCR Array format for your instrument before starting the experiment.

References

1. Green, DR. (2000) Apoptotic Pathways: Paper Wraps Stone Blunts Scissors. *Cell* **102**: 1-4.
2. Salvesen GS, Dixit VM. (1999) Caspase Activation: The Induced-Proximity Model. *PNAS* **96**: 10964-7.
3. Nagata S (1999) Fas Ligand-Induced Apoptosis. *Annu Rev Genet* **33**: 29-55.
4. Budihardjo I, Oliver H, Lutter M, Luo X, Wang X. (1999) Biochemical Pathways Of Caspase Activation During Apoptosis. *Annu Rev Cell Dev Biol* **15**: 269-90.
5. Ekert PG, Silke J, Vaux DL (1999) Caspase Inhibitors. *Cell Death Differ* **6**(11): 1081-6
6. Lutz RJ (2000) Role Of The BH3 (Bcl-2 Homology 3) Domain In The Regulation Of Apoptosis And Bcl-2-Related Proteins. *Biochem Soc Trans* **28** (2): 51-6.
7. Inoue Ji, Ishida T, Tsukamoto N, Kobayashi N, Naito A, Azuma S, Yamamoto T. (2000) Tumor Necrosis Factor Receptor-Associated Factor (TRAF) Family: Adapter Proteins That Mediate Cytokine Signaling. *Exp Cell Res* **254**(1): 14-24.
8. Deveraux QL, Stennicke HR, Salvesen GS, Reed JC (1999) Endogenous Inhibitors Of Caspases. *J Clin Immunol* **19**(6): 388-98.
9. Orlinick JR, Chao MV. (1998) TNF-Related Ligands And Their Receptors. *Cell Signal* **10**(8): 543-51.
10. Schulze-Osthoff K, Ferrari D, Los M, Wesselborg S, Peter ME (1998) Apoptosis Signaling By Death Receptors. *Eur J Biochem* **254**(3): 439-59.
11. Singh A, Ni J, Aggarwal BB (1998) Death Domain Receptors And Their Role In Cell Demise. *J Interferon Cytokine Res* **18**(7): 439-50.

Product Specification Sheet

Array Layout: Human Apoptosis PCR Array

	1	2	3	4	5	6	7	8	9	10	11	12
A	ABL1	AKT1	APAF1	BAD	BAG1	BAG3	BAG4	BAK1	BAX	BCL10	BCL2	BCL2A1
B	BCL2L1	BCL2L10	BCL2L11	BCL2L2	BCLAF1	BFAR	BID	BIK	NAIP	BIRC2	BIRC3	BIRC4
C	BIRC6	BIRC8	BNIP1	BNIP2	BNIP3	BNIP3L	BRAF	NOD1	CARD6	CARD8	CASP1	CASP10
D	CASP14	CASP2	CASP3	CASP4	CASP5	CASP6	CASP7	CASP8	CASP9	CD40	CD40LG	CFLAR
E	CIDEA	CIDEB	CRADD	DAPK1	DFFA	FADD	FAS	FASLG	GADD45A	HRK	IGF1R	LTA
F	LTBR	MCL1	NOL3	PYCARD	RIPK2	TNF	TNFRSF10A	TNFRSF10B	TNFRSF11B	TNFRSF1A	TNFRSF21	TNFRSF25
G	CD27	TNFRSF9	TNFSF10	CD70	TNFSF8	TP53	TP53BP2	TP73	TRADD	TRAF2	TRAF3	TRAF4
H	B2M	HPRT1	RPL13A	GAPDH	ACTB	HGDC	RTC	RTC	RTC	PPC	PPC	PPC

Gene Table

Position	UniGene	GenBank	Symbol	Description
A01	Hs.431048	NM_005157	ABL1	V-abl Abelson murine leukemia viral oncogene homolog 1
A02	Hs.525622	NM_005163	AKT1	V-akt murine thymoma viral oncogene homolog 1
A03	Hs.552567	NM_001160	APAF1	Apoptotic peptidase activating factor 1
A04	Hs.370254	NM_004322	BAD	BCL2-antagonist of cell death
A05	Hs.377484	NM_004323	BAG1	BCL2-associated athanogene
A06	Hs.523309	NM_004281	BAG3	BCL2-associated athanogene 3
A07	Hs.194726	NM_004874	BAG4	BCL2-associated athanogene 4
A08	Hs.485139	NM_001188	BAK1	BCL2-antagonist/killer 1
A09	Hs.159428	NM_004324	BAX	BCL2-associated X protein
A10	Hs.193516	NM_003921	BCL10	B-cell CLL/lymphoma 10
A11	Hs.150749	NM_000633	BCL2	B-cell CLL/lymphoma 2
A12	Hs.227817	NM_004049	BCL2A1	BCL2-related protein A1
B01	Hs.516966	NM_138578	BCL2L1	BCL2-like 1
B02	Hs.283672	NM_020396	BCL2L10	BCL2-like 10 (apoptosis facilitator)
B03	Hs.469658	NM_006538	BCL2L11	BCL2-like 11 (apoptosis facilitator)
B04	Hs.410026	NM_004050	BCL2L2	BCL2-like 2
B05	Hs.486542	NM_014739	BCLAF1	BCL2-associated transcription factor 1
B06	Hs.435556	NM_016561	BFAR	Bifunctional apoptosis regulator
B07	Hs.591054	NM_001196	BID	BH3 interacting domain death agonist
B08	Hs.475055	NM_001197	BIK	BCL2-interacting killer (apoptosis-inducing)
B09	Hs.558359	NM_004536	NAIP	NLR family, apoptosis inhibitory protein
B10	Hs.503704	NM_001166	BIRC2	Baculoviral IAP repeat-containing 2
B11	Hs.127799	NM_001165	BIRC3	Baculoviral IAP repeat-containing 3
B12	Hs.356076	NM_001167	BIRC4	Baculoviral IAP repeat-containing 4
C01	Hs.150107	NM_016252	BIRC6	Baculoviral IAP repeat-containing 6 (apollon)
C02	Hs.348263	NM_033341	BIRC8	Baculoviral IAP repeat-containing 8
C03	Hs.145726	NM_001205	BNIP1	BCL2/adenovirus E1B 19kDa interacting protein 1
C04	Hs.646490	NM_004330	BNIP2	BCL2/adenovirus E1B 19kDa interacting protein 2
C05	Hs.144873	NM_004052	BNIP3	BCL2/adenovirus E1B 19kDa interacting protein 3
C06	Hs.131226	NM_004331	BNIP3L	BCL2/adenovirus E1B 19kDa interacting protein 3-like
C07	Hs.550061	NM_004333	BRAF	V-raf murine sarcoma viral oncogene homolog B1
C08	Hs.405153	NM_006092	NOD1	Nucleotide-binding oligomerization domain containing 1
C09	Hs.200242	NM_032587	CARD6	Caspase recruitment domain family, member 6
C10	Hs.446146	NM_014959	CARD8	Caspase recruitment domain family, member 8
C11	Hs.2490	NM_033292	CASP1	Caspase 1, apoptosis-related cysteine peptidase (interleukin 1, beta, convertase)
C12	Hs.5353	NM_001230	CASP10	Caspase 10, apoptosis-related cysteine peptidase
D01	Hs.466057	NM_012114	CASP14	Caspase 14, apoptosis-related cysteine peptidase
D02	Hs.368982	NM_032982	CASP2	Caspase 2, apoptosis-related cysteine peptidase (neural precursor cell expressed, developmentally down-regulated 2)
D03	Hs.141125	NM_004346	CASP3	Caspase 3, apoptosis-related cysteine peptidase
D04	Hs.138378	NM_001225	CASP4	Caspase 4, apoptosis-related cysteine peptidase
D05	Hs.213327	NM_004347	CASP5	Caspase 5, apoptosis-related cysteine peptidase
D06	Hs.389452	NM_032992	CASP6	Caspase 6, apoptosis-related cysteine peptidase

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Position	UniGene	GenBank	Symbol	Description
D07	Hs.9216	NM_001227	CASP7	Caspase 7, apoptosis-related cysteine peptidase
D08	Hs.591630	NM_001228	CASP8	Caspase 8, apoptosis-related cysteine peptidase
D09	Hs.329502	NM_001229	CASP9	Caspase 9, apoptosis-related cysteine peptidase
D10	Hs.472860	NM_001250	CD40	CD40 molecule, TNF receptor superfamily member 5
D11	Hs.592244	NM_000074	CD40LG	CD40 ligand (TNF superfamily, member 5, hyper-IgM syndrome)
D12	Hs.390736	NM_003879	CFLAR	CASP8 and FADD-like apoptosis regulator
E01	Hs.249129	NM_001279	CIDEA	Cell death-inducing DFFA-like effector a
E02	Hs.642693	NM_014430	CIDEB	Cell death-inducing DFFA-like effector b
E03	Hs.38533	NM_003805	CRADD	CASP2 and RIPK1 domain containing adaptor with death domain
E04	Hs.380277	NM_004938	DAPK1	Death-associated protein kinase 1
E05	Hs.484782	NM_004401	DFFA	DNA fragmentation factor, 45kDa, alpha polypeptide
E06	Hs.86131	NM_003824	FADD	Fas (TNFRSF6)-associated via death domain
E07	Hs.244139	NM_000043	FAS	Fas (TNF receptor superfamily, member 6)
E08	Hs.2007	NM_000639	FASLG	Fas ligand (TNF superfamily, member 6)
E09	Hs.80409	NM_001924	GADD45A	Growth arrest and DNA-damage-inducible, alpha
E10	Hs.87247	NM_003806	HRK	Harakiri, BCL2 interacting protein (contains only BH3 domain)
E11	Hs.643120	NM_000875	IGF1R	Insulin-like growth factor 1 receptor
E12	Hs.36	NM_000595	LTA	Lymphotoxin alpha (TNF superfamily, member 1)
F01	Hs.1116	NM_002342	LTBR	Lymphotoxin beta receptor (TNFR superfamily, member 3)
F02	Hs.632486	NM_021960	MCL1	Myeloid cell leukemia sequence 1 (BCL2-related)
F03	Hs.513667	NM_003946	NOL3	Nucleolar protein 3 (apoptosis repressor with CARD domain)
F04	Hs.499094	NM_013258	PYCARD	PYD and CARD domain containing
F05	Hs.103755	NM_003821	RIPK2	Receptor-interacting serine-threonine kinase 2
F06	Hs.241570	NM_000594	TNF	Tumor necrosis factor (TNF superfamily, member 2)
F07	Hs.591834	NM_003844	TNFRSF10A	Tumor necrosis factor receptor superfamily, member 10a
F08	Hs.521456	NM_003842	TNFRSF10B	Tumor necrosis factor receptor superfamily, member 10b
F09	Hs.81791	NM_002546	TNFRSF11B	Tumor necrosis factor receptor superfamily, member 11b (osteoprotegerin)
F10	Hs.279594	NM_001065	TNFRSF1A	Tumor necrosis factor receptor superfamily, member 1A
F11	Hs.443577	NM_014452	TNFRSF21	Tumor necrosis factor receptor superfamily, member 21
F12	Hs.462529	NM_003790	TNFRSF25	Tumor necrosis factor receptor superfamily, member 25
G01	Hs.355307	NM_001242	CD27	CD27 molecule
G02	Hs.193418	NM_001561	TNFRSF9	Tumor necrosis factor receptor superfamily, member 9
G03	Hs.478275	NM_003810	TNFSF10	Tumor necrosis factor (ligand) superfamily, member 10
G04	Hs.501497	NM_001252	CD70	CD70 molecule
G05	Hs.494901	NM_001244	TNFSF8	Tumor necrosis factor (ligand) superfamily, member 8
G06	Hs.408312	NM_000546	TP53	Tumor protein p53 (Li-Fraumeni syndrome)
G07	Hs.523968	NM_005426	TP53BP2	Tumor protein p53 binding protein, 2
G08	Hs.192132	NM_005427	TP73	Tumor protein p73
G09	Hs.460996	NM_003789	TRADD	TNFRSF1A-associated via death domain
G10	Hs.522506	NM_021138	TRAF2	TNF receptor-associated factor 2
G11	Hs.510528	NM_003300	TRAF3	TNF receptor-associated factor 3
G12	Hs.8375	NM_004295	TRAF4	TNF receptor-associated factor 4
H01	Hs.534255	NM_004048	B2M	Beta-2-microglobulin
H02	Hs.412707	NM_000194	HPRT1	Hypoxanthine phosphoribosyltransferase 1 (Lesch-Nyhan syndrome)
H03	Hs.546356	NM_012423	RPL13A	Ribosomal protein L13a
H04	Hs.544577	NM_002046	GAPDH	Glyceraldehyde-3-phosphate dehydrogenase
H05	Hs.520640	NM_001101	ACTB	Actin, beta
H06	N/A	N/A	HGDC	Human Genomic DNA Contamination
H07	N/A	N/A	RTC	Reverse Transcription Control
H08	N/A	N/A	RTC	Reverse Transcription Control
H09	N/A	N/A	RTC	Reverse Transcription Control
H10	N/A	N/A	PPC	Positive PCR Control
H11	N/A	N/A	PPC	Positive PCR Control
H12	N/A	N/A	PPC	Positive PCR Control