

Oligo GEMArray[®] DNA Microarray: Human Apoptosis

Catalog Number

OHS-012
EHS-012

Format:

HybTube (Standard protocol)
HybPlate (Higher throughput protocol)

Description

The Oligo GEMArray[®] Human Apoptosis Microarray profiles the expression of 112 genes involved in apoptosis. This array includes TNF ligands and their receptors, members of the bcl-2 gene family and caspases. Also represented are members of the IAP, TRAF, CARD, and death domain gene families. Death effector domain family members, CIDE domain family members, and genes involved in the p53 and DNA damage response pathways are included. The array also represents genes involved in anti-apoptosis. Through a simple side-by-side hybridization experiment you can determine differential gene expression between your samples.

Functional Gene Groupings

TNF Ligand Family: LTA (TNF- β), TNF (TNF- α), TNFSF5 (CD40 Ligand), TNFSF6 (FasL), TNFSF7 (CD27 Ligand), TNFSF8 (CD30 Ligand), TNFSF9 (4-1BB Ligand), TNFSF10 (TRAIL), TNFSF14 (HVEM-L), TNFSF18.

TNF Receptor Family: LTBR, TNFRSF1A (TNFR1), TNFRSF1B (TNFR2), TNFRSF5 (CD40), TNFRSF6 (Fas), TNFRSF6B, TNFRSF7 (CD27), TNFRSF9 (4-1BB), TNFRSF10A (DR4), TNFRSF10B (DR5), TNFRSF10C (DcR1), TNFRSF10D (DcR2), TNFRSF11B, TNFRSF12A, TNFRSF14 (HVEM), TNFRSF19, TNFRSF21, TNFRSF25.

Bcl-2 Family: BAD, BAG1, BAG3, BAG4, BAK1, BAX, BCL2, BCL2A1 (bfl-1), BCL2L1 (bcl-x), BCL2L2 (bcl-w), BCL2L10, BCL2L11 (bim-like protein), BCL2L12, BCL2L13, BCLAF1, BID, BIK, BNIP1, BNIP2, BNIP3 (nip3), BNIP3L, BOK (Mtd), HRK, MCL1

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

IAP Family: BIRC1 (NIAP), BIRC2 (IAP2), BIRC3 (IAP1), BIRC4 (XIAP), BIRC5 (Survivin), BIRC6 (Bruce), BIRC7, BIRC8.

TRAF Family: TRAF1, TRAF2, TRAF3 (CRAF1), TRAF4, TRAF5.

CARD Family: APAF1, BCL10 (HuE10), BIRC2, BIRC3, CARD4 (NOD1), CARD6, CARD8, CARD9, CARD10, CARD11, CARD12, CARD14, CARD15, CASP1, CASP2, CASP4, CASP5, CASP9, CRADD, NOL3 (Nop30), PYCARD, RIPK2 (CARDIAC).

Death Domain Family: CRADD, DAPK1, DAPK2, FADD, RIPK1, TNFRSF10A, TNFRSF10B, TNFRSF11B, TNFRSF1A, TNFRSF21, TNFRSF25, TNFRSF6, TRADD.

Death Effector Domain Family: CASP8, CASP10, CFLAR (CASPER), FADD.

CIDE Domain Family: CIDEA, CIDEB, DFFA, DFFB.

p53 and DNA Damage Response: ABL1, AKT1, APAF1, BAD, BAX, BCL2, BCL2L1, BID, CASP3, CASP6, CASP7, CASP9, GADD45A, TP53 (p53), TP53BP2, TP73, TP73L.

Product Specification Sheet

Anti-apoptosis: AKT1, BAG1, BAG3, BAG4, BCL2, BCL2A1, BCL2L1, BCL2L10, BCL2L2, BFAR, BIRC1, BIRC2, BIRC3, BIRC4, BIRC5, BIRC6, BIRC7, BIRC8, BNIP1, BNIP2, BNIP3, BRAF, CASP2, CFLAR, GDNF, IGF1R, MCL1, TNF (TNF- α), TNFRSF6, TNFRSF6B, TNFRSF7, TNFSF18, TNFSF5.

Storage Conditions

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

GEArray microarrays are shipped at ambient temperature enclosed in either a HybTube or ExpressPak Storage Box. They should be stored at -20°C upon receipt.

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.

Oligo GEArray[®] Human Apoptosis Microarray

Array Layout:

RPS27A 1	ABL1 2	AKT1 3	APAF1 4	BAD 5	BAG1 6	BAG3 7	BAG4 8
BAK1 9	BAX 10	BCL10 11	BCL2 12	BCL2A1 13	BCL2L1 14	BCL2L10 15	BCL2L11 16
BCL2L12 17	BCL2L13 18	BCL2L2 19	BCLAF1 20	BFAR 21	BID 22	BIK 23	BIRC1 24
BIRC2 25	BIRC3 26	BIRC4 27	BIRC5 28	BIRC6 29	BIRC7 30	BIRC8 31	BNIP1 32
BNIP2 33	BNIP3 34	BNIP3L 35	BOK 36	BRAF 37	CARD10 38	CARD11 39	CARD12 40
CARD14 41	CARD15 42	CARD4 43	CARD6 44	CARD8 45	CARD9 46	CASP1 47	CASP10 48
CASP14 49	CASP2 50	CASP3 51	CASP4 52	CASP5 53	CASP6 54	CASP7 55	CASP8 56
CASP9 57	CFLAR 58	CIDEA 59	CIDEB 60	CRADD 61	DAPK1 62	DAPK2 63	DFFA 64
DFFB 65	FADD 66	GADD45A 67	GDNF 68	HRK 69	IGF1R 70	LTA 71	LTBR 72
MCL1 73	NOL3 74	PYCARD 75	RIPK1 76	RIPK2 77	TNF 78	TNFRSF10A 79	TNFRSF10B 80
TNFRSF10C 81	TNFRSF10D 82	TNFRSF11B 83	TNFRSF12A 84	TNFRSF14 85	TNFRSF19 86	TNFRSF1A 87	TNFRSF1B 88
TNFRSF21 89	TNFRSF25 90	CD40 91	FAS 92	TNFRSF6B 93	TNFRSF7 94	TNFRSF9 95	TNFSF10 96
TNFSF14 97	TNFSF18 98	CD40LG 99	FASLG 100	TNFSF7 101	TNFSF8 102	TNFSF9 103	TP53 104
TP53BP2 105	TP73 106	TP73L 107	TRADD 108	TRAF1 109	TRAF2 110	TRAF3 111	TRAF4 112
TRAF5 113	Blank 114	PUC18 115	Blank 116	Blank 117	AS1R2 118	AS1R1 119	AS1 120
GAPD 121	B2M 122	HSPCB 123	HSPCB 124	ACTB 125	ACTB 126	BAS2C 127	BAS2C 128

Gene Table

Position	UniGene	GenBank	Symbol	Description	Gene Name
1	Hs.546292	NM_002954	RPS27A	Ribosomal protein S27a	CEP80/HUBCEP80
2	Hs.431048	NM_005157	ABL1	V-abl Abelson murine leukemia viral oncogene homolog 1	ABL/C-ABL
3	Hs.525622	NM_005163	AKT1	V-akt murine thymoma viral oncogene homolog 1	PKB/PRKBA
4	Hs.552567	NM_001160	APAF1	Apoptotic protease activating factor	CED4
5	Hs.370254	NM_004322	BAD	BCL2-antagonist of cell death	BBC2/BCL2L8
6	Hs.377484	NM_004323	BAG1	BCL2-associated athanogene	BAG-1
7	Hs.523309	NM_004281	BAG3	BCL2-associated athanogene 3	BAG-3/BIS
8	Hs.194726	NM_004874	BAG4	BCL2-associated athanogene 4	BAG-4/SODD
9	Hs.485139	NM_001188	BAK1	BCL2-antagonist/killer 1	BAK/BCL2L7
10	Hs.159428	NM_004324	BAX	BCL2-associated X protein	BAX ZETA
11	Hs.549082	NM_003921	BCL10	B-cell CLL/lymphoma 10	C-E10/CARMEN
12	Hs.150749	NM_000633	BCL2	B-cell CLL/lymphoma 2	BCL-2
13	Hs.227817	NM_004049	BCL2A1	BCL2-related protein A1	BCL2L5/BFL1
14	Hs.516966	NM_138578	BCL2L1	BCL2-like 1	BCL-X/BCL-XL
15	Hs.283672	NM_020396	BCL2L10	BCL2-like 10 (apoptosis facilitator)	BCL-B/BOO
16	Hs.469658	NM_006538	BCL2L11	BCL2-like 11 (apoptosis facilitator)	BAM/BIM
17	Hs.289052	NM_052842	BCL2L12	BCL2-like 12 (proline rich)	BCL2L12
18	Hs.546359	NM_015367	BCL2L13	BCL2-like 13 (apoptosis facilitator)	BCL-RAMBO/MIL1
19	Hs.410026	NM_004050	BCL2L2	BCL2-like 2	BCL-W/BCLW
20	Hs.486542	NM_014739	BCLAF1	BCL2-associated transcription factor 1	BTF
21	Hs.435556	NM_016561	BFAR	Bifunctional apoptosis regulator	BAR/RNF47
22	Hs.474150	NM_001196	BID	BH3 interacting domain death agonist	MGC15319
23	Hs.475055	NM_001197	BIK	BCL2-interacting killer (apoptosis-inducing)	BBC1/BIP1
24	Hs.519374	NM_004536	BIRC1	Baculoviral IAP repeat-containing 1	SMA5/NAIP
25	Hs.503704	NM_001166	BIRC2	Baculoviral IAP repeat-containing 2	API1/CIAP1
26	Hs.127799	NM_001165	BIRC3	Baculoviral IAP repeat-containing 3	AIP1/AIP2
27	Hs.356076	NM_001167	BIRC4	Baculoviral IAP repeat-containing 4	API3/ILP1
28	Hs.514527	NM_001168	BIRC5	Baculoviral IAP repeat-containing 5 (survivin)	API4/EPR-1
29	Hs.150107	NM_016252	BIRC6	Baculoviral IAP repeat-containing 6 (apollon)	APOLLON/BRUCE
30	Hs.256126	NM_022161	BIRC7	Baculoviral IAP repeat-containing 7 (livin)	KIAP/LIVIN
31	Hs.348263	NM_033341	BIRC8	Baculoviral IAP repeat-containing 8	HILP2/ILP-2
32	Hs.145726	NM_001205	BNIP1	BCL2/adenovirus E1B 19kDa interacting protein 1	NIP1/TRG-8
33	Hs.283454	NM_004330	BNIP2	BCL2/adenovirus E1B 19kDa interacting protein 2	BNIP-2/NIP2
34	Hs.79428	NM_004052	BNIP3	BCL2/adenovirus E1B 19kDa interacting protein 3	Nip3
35	Hs.131226	NM_004331	BNIP3L	BCL2/adenovirus E1B 19kDa interacting protein 3-like	BNIP3A/NIX
36	Hs.293753	NM_032515	BOK	BCL2-related ovarian killer	BCL2L9/BOKL
37	Hs.490366	NM_004333	BRAF	V-raf murine sarcoma viral oncogene homolog B1	B-RAF 1/BRAF1
38	Hs.57973	NM_014550	CARD10	Caspase recruitment domain family, member 10	BIMP1/CARMA3
39	Hs.300355	NM_032415	CARD11	Caspase recruitment domain family, member 11	BIMP3/CARMA1
40	Hs.23248	NM_021209	CARD12	Caspase recruitment domain family, member 12	CLAN/CLAN1

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Position	UniGene	GenBank	Symbol	Description	Gene Name
41	Hs.550529	NM_024110	CARD14	Caspase recruitment domain family, member 14	BIMP2/CARMA2
42	Hs.135201	NM_022162	CARD15	Caspase recruitment domain family, member 15	ACUG/BLAU
43	Hs.405153	NM_006092	CARD4	Caspase recruitment domain family, member 4	NOD1
44	Hs.200242	NM_032587	CARD6	Caspase recruitment domain family, member 6	CINCIN1
45	Hs.446146	NM_014959	CARD8	Caspase recruitment domain family, member 8	CARDINAL/DACAR
46	Hs.528581	NM_022352	CARD9	Caspase recruitment domain family, member 9	hCARD9
47	Hs.2490	NM_033292	CASP1	Caspase 1, apoptosis-related cysteine protease (interleukin 1, beta, convertase)	ICE/IL1BC
48	Hs.5353	NM_001230	CASP10	Caspase 10, apoptosis-related cysteine protease	ALPS2/FLICE2
49	Hs.248226	NM_012114	CASP14	Caspase 14, apoptosis-related cysteine protease	MICE
50	Hs.368982	NM_001224	CASP2	Caspase 2, apoptosis-related cysteine protease (neural precursor cell expressed, developmentally down-regulated 2)	CASP-2/ICH-1L
51	Hs.141125	NM_004346	CASP3	Caspase 3, apoptosis-related cysteine protease	APOPAIN/PPP32
52	Hs.138378	NM_001225	CASP4	Caspase 4, apoptosis-related cysteine protease	ICEREL-II
53	Hs.213327	NM_004347	CASP5	Caspase 5, apoptosis-related cysteine protease	ICEREL-III
54	Hs.3280	NM_001226	CASP6	Caspase 6, apoptosis-related cysteine protease	MCH2
55	Hs.9216	NM_001227	CASP7	Caspase 7, apoptosis-related cysteine protease	CMH-1/ICE-LAP3
56	Hs.369736	NM_001228	CASP8	Caspase 8, apoptosis-related cysteine protease	CASPASE 8
57	Hs.329502	NM_001229	CASP9	Caspase 9, apoptosis-related cysteine protease	APAF-3/APAF3
58	Hs.390736	NM_003879	CFLAR	CASP8 and FADD-like apoptosis regulator	CASH/CASP8AP1
59	Hs.249129	NM_001279	CIDEA	Cell death-inducing DFFA-like effector a	CIDE-A
60	Hs.448590	NM_014430	CIDEB	Cell death-inducing DFFA-like effector b	CIDE-B
61	Hs.38533	NM_003805	CRADD	CASP2 and RIPK1 domain containing adaptor with death domain	RAIDD
62	Hs.380277	NM_004938	DAPK1	Death-associated protein kinase 1	DAPK
63	Hs.237886	NM_014326	DAPK2	Death-associated protein kinase 2	DRP-1
64	Hs.484782	NM_004401	DFFA	DNA fragmentation factor, 45kDa, alpha polypeptide	DFF-45/ICAD
65	Hs.133089	NM_004402	DFFB	DNA fragmentation factor, 40kDa, beta polypeptide (caspase-activated DNase)	40 KD/CAD
66	Hs.86131	NM_003824	FADD	Fas (TNFRSF6)-associated via death domain	GIG3/MORT1
67	Hs.80409	NM_001924	GADD45A	Growth arrest and DNA-damage-inducible, alpha	DDIT1/GADD45
68	Hs.248114	NM_000514	GDNF	Glial cell derived neurotrophic factor	ATF1/ATF
69	Hs.87247	NM_003806	HRK	Harakiri, BCL2 interacting protein (contains only BH3 domain)	DP5/HARAKIRI
70	Hs.20573	NM_000875	IGF1R	Insulin-like growth factor 1 receptor	JTK13
71	Hs.36	NM_000595	LTA	Lymphotoxin alpha (TNF superfamily, member 1)	CYTOKINE/LT
72	Hs.1116	NM_002342	LTBR	Lymphotoxin beta receptor (TNFR superfamily, member 3)	CD18/12S370
73	Hs.532826	NM_021960	MCL1	Myeloid cell leukemia sequence 1 (BCL2-related)	EAT/MCL1L
74	Hs.513667	NM_003946	NOL3	Nucleolar protein 3 (apoptosis repressor with CARD domain)	ARC/MYC
75	Hs.499094	NM_013258	PYCARD	PYD and CARD domain containing	ASC/CARD5
76	Hs.519842	NM_003804	RIPK1	Receptor (TNFRSF)-interacting serine-threonine kinase 1	RIP
77	Hs.103755	NM_003821	RIPK2	Receptor-interacting serine-threonine kinase 2	CARD3/CARDIAK
78	Hs.241570	NM_000594	TNF	Tumor necrosis factor (TNF superfamily, member 2)	DIF/TNF-ALPHA
79	Hs.401745	NM_003844	TNFRSF10A	Tumor necrosis factor receptor superfamily, member 10a	APO2/DR4
80	Hs.521456	NM_003842	TNFRSF10B	Tumor necrosis factor receptor superfamily, member 10b	DR5/KILLER
81	Hs.119684	NM_003841	TNFRSF10C	Tumor necrosis factor receptor superfamily, member 10c, decoy without an intracellular domain	DCR1/LIT
82	Hs.213467	NM_003840	TNFRSF10D	Tumor necrosis factor receptor superfamily, member 10d, decoy with truncated death domain	DCR2/TRAILR4
83	Hs.81791	NM_002546	TNFRSF11B	Tumor necrosis factor receptor superfamily, member 11b (osteoprotegerin)	OCIF/OPG
84	Hs.355899	NM_016639	TNFRSF12A	Tumor necrosis factor receptor superfamily, member 12A	FN14/TWEAKR
85	Hs.512898	NM_003820	TNFRSF14	Tumor necrosis factor receptor superfamily, member 14 (herpesvirus entry mediator)	ATAR/HVEA
86	Hs.149168	NM_018647	TNFRSF19	Tumor necrosis factor receptor superfamily, member 19	TAJ/TAJ-ALPHA
87	Hs.279594	NM_001065	TNFRSF1A	Tumor necrosis factor receptor superfamily, member 1A	CD120A/PPF
88	Hs.256278	NM_001066	TNFRSF1B	Tumor necrosis factor receptor superfamily, member 1B	CD120B/P75
89	Hs.443577	NM_014452	TNFRSF21	Tumor necrosis factor receptor superfamily, member 21	BM-018/DR6
90	Hs.462529	NM_003790	TNFRSF25	Tumor necrosis factor receptor superfamily, member 25	APO-3/DDR3
91	Hs.472860	NM_001250	CD40	CD40 antigen (TNF receptor superfamily member 5)	BP50/CDW40
92	Hs.244139	NM_152877	FAS	Fas (TNF receptor superfamily, member 6)	ALPS1A/APO-1
93	Hs.554786	NM_003823	TNFRSF6B	Tumor necrosis factor receptor superfamily, member 6b, decoy	DCR3/M68
94	Hs.355307	NM_001242	TNFRSF7	Tumor necrosis factor receptor superfamily, member 7	CD27/S152
95	Hs.193418	NM_001561	TNFRSF9	Tumor necrosis factor receptor superfamily, member 9	4-1BB/CD137
96	Hs.478275	NM_003810	TNFSF10	Tumor necrosis factor (ligand) superfamily, member 10	APO-2/LAPO2L
97	Hs.129708	NM_003807	TNFSF14	Tumor necrosis factor (ligand) superfamily, member 14	HVELM/LIGHT
98	Hs.248197	NM_005092	TNFSF18	Tumor necrosis factor (ligand) superfamily, member 18	AITRL/GITRL
99	Hs.652	NM_000074	CD40LG	CD40 ligand (TNF superfamily, member 5, hyper-IgM syndrome)	CD154/CD40L
100	Hs.2007	NM_000639	FASLG	Fas ligand (TNF superfamily, member 6)	APT1LG1/CD178
101	Hs.501497	NM_001252	TNFSF7	Tumor necrosis factor (ligand) superfamily, member 7	CD27L/CD27LG
102	Hs.494901	NM_001244	TNFSF8	Tumor necrosis factor (ligand) superfamily, member 8	CD153/CD30L
103	Hs.1524	NM_003811	TNFSF9	Tumor necrosis factor (ligand) superfamily, member 9	4-1BB-L
104	Hs.408312	NM_000546	TP53	Tumor protein p53 (Li-Fraumeni syndrome)	CYS51STOP/P53
105	Hs.523968	NM_005426	TP53BP2	Tumor protein p53 binding protein, 2	2/53BP2
106	Hs.192132	NM_005427	TP73	Tumor protein p73	P73
107	Hs.137569	NM_003722	TP73L	Tumor protein p73-like	B(P51A)/B(P51B)
108	Hs.460996	NM_003789	TRADD	TNFRSF1A-associated via death domain	HS_89862
109	Hs.531251	NM_005658	TRAF1	TNF receptor-associated factor 1	EBI6/MGC:10353
110	Hs.522506	NM_021138	TRAF2	TNF receptor-associated factor 2	MGC:45012/TRAP
111	Hs.510528	NM_003300	TRAF3	TNF receptor-associated factor 3	CAP-1/CD40BP
112	Hs.8375	NM_004295	TRAF4	TNF receptor-associated factor 4	CART1/MLN62
113	Hs.523930	NM_004619	TRAF5	TNF receptor-associated factor 5	MGC:39780/RNF84
114	Blank	Blank	Blank	Blank	
115	N/A	L08752	PUC18	PUC18 Plasmid DNA	pUC18
116	Blank	Blank	Blank	Blank	
117	Blank	Blank	Blank	Blank	
118	N/A	N/A	AS1R2	Artificial Sequence 1 Related 2 (80% identity)(48/60)	N/A
119	N/A	N/A	AS1R1	Artificial Sequence 1 Related 1 (90% identity)(56/60)	N/A
120	N/A	N/A	AS1	Artificial Sequence 1	N/A
121	Hs.544577	NM_002046	GAPDH	Glyceraldehyde-3-phosphate dehydrogenase	G3PD/GAPD
122	Hs.534255	NM_004048	B2M	Beta-2-microglobulin	B2M
123	Hs.509736	NM_007355	HSPCB	Heat shock 90kDa protein 1, beta	BETA/D6S182
124	Hs.509736	NM_007355	HSPCB	Heat shock 90kDa protein 1, beta	BETA/D6S182
125	Hs.520640	NM_001101	ACTB	Actin, beta	b-Actin
126	Hs.520640	NM_001101	ACTB	Actin, beta	b-Actin
127	N/A	N/A	BAS2C	Biotinylated Artificial Sequence 2 Complementary sequence	N/A
128	N/A	N/A	BAS2C	Biotinylated Artificial Sequence 2 Complementary sequence	N/A