Functional groups

Protein name	Functional group
BAD	1
BAK	1
BAX(A_B)	1
BCL-2	1
BCL-W	1
BCL-XL	1
BID	1
BIM(EL)	1
BNIP3	1
NOXA	1
PUMA	1
ACINUS	2
GELSOLIN	2
ICAD-L/S	2
MLC1	2
PARP-1	2
BRUCE(APOLLON)	3
HIAP1(CIAP2)	3
HIAP2(CIAP1)	3
SURVIVIN	3
XIAP	3
C-FLIP	4
CRADD(RAIDD)	4
FADD	4
FAS	4
FASL	4
LRDD(PIDD)	4
RIP1	4
TNF	4
TNFR(P55)	4
TNFRSF10A	4
TNFRSF10B	4
TNFSF10	4
TRADD	4
TRAF1	4
TRAF2	4
CASP10	5
CASPASE2	5
CASPASE3	5
CASPASE4	5
CASPASE7	5
CASPASE8	5
CASPASE9	5
AKT	6
ERK1(MAPK3)	6
ERK2(MAPK1/2)	6
MEK1	6
MEK2	6
RAF1	6
RRAS(RAS)	6
RSK1	6
RSK2	6
OMI/HTRA2	7
SMAC/DIABLO	7

Group ID	Group name
1	The Bcl-2 family
2	Substrates of Caspases
3	IAP (inhibitors of apoptosis)
4	Extrinsic pathway
5	Caspases
6	Signaling kinases
7	IAP inhibitors
8	Apoptosome
9	DAPK family
10	Calpains
11	JNK-related proteins
12	DNA fragmentation
13	Membrane blebbing
14	Cathepsins
15	Membrane blebbing
16	Cathepsins

APAF-1	8
CASPASE9	8
CYTOCHROME-C	8
DAPK	9
DAPK2(DRP-1)	9
DAPK3(ZIPK)	9
DRAK1	9
DRAK2	9
CALPAIN1	10
CALPAIN2	10
ASK1	11
JNK1	11
JNK2	11
CAD	12
ENDOG	12
MLC1	13
DAPK	13
DAPK3(ZIPK)	13
ROCK1	13
CATHEPSIND	14
CTSB	14
ATG5	Not classified
DAP3	Not classified
DRAM	Not classified
EIF2	Not classified
DAP5	Not classified
BIF-1	Not classified
P14ARF	Not classified

Anchor points

We consider a subgroup of six caspase substrates to act as the
anchor points of the apoptosis core machinery. These proteins and the events to which they are responsible and lead to the collapse of the cell are listed below

Protein	Process	Reference (Pubmed ID)
ACINUS	chromatin condensation	10490026
ENDOG	DNA fragmentation	15723341
CAD	DNA fragmentation	15723341
MLC1	Disruption of the cell's cytoskeleton	9456322
GELSOLIN	Disruption of the cell's cytoskeleton	9323209
PARP-1	Inhibition of DNA repair	12101391

Additioal interactions and references

Protein 1	Protein 2	Reference for interaction (Pumed ID)
Bruce (apollon)	caspase7	15200957
Bcl-W	Bax (a,b)	18178565
Bcl-W	Bak	18178565
caspase9	caspase7	17899380, 9922454
caspase7	PARP-1	18511888, 16374543
Bim(EL)	Bax (a,b)	12198137, 15721256
caspase3	PARP-1	15660421
ROCK1	MLC1	11283606
LRDD(PIDD)	RIP1	16360037
caspase2	caspase3	16977332
caspase2	TRAF2	15590671
FADD	Atg5	15778222
DAPK3 (ZIPk)	MLC1	17487247, 15096528
DAPK	MLC1	15002035
DAPK	DAPK3(ZIPk)	15367680
DAPK	PKD	17703233
DAPK	DAPK2(DRP-1)	15367680
DAPK	CAMKKb	15209507
CAMKKb	AMPK(catalytic_sub:a1,a2)	17244528
PKD	ASK1	15755722
Atg7	Atg5	11265251
ERK1(MAPK3)	TSC2	16244323
RSK1	TSC2	16244323
RSK2	TSC2	16244323
RSK1	DAPK	16213824
RSK2	DAPK	16213824
JNK1	PARP-1	17218956
Bif-1	Bax (a,b)	11259440
UVRAG	Bif-1	17891140

Pubmed ID	Details
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17899380	Delineation of the caspase-9 signaling cascade. Guerrero et al, Apoptosis. 2008 Jan;13(1):177-86
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