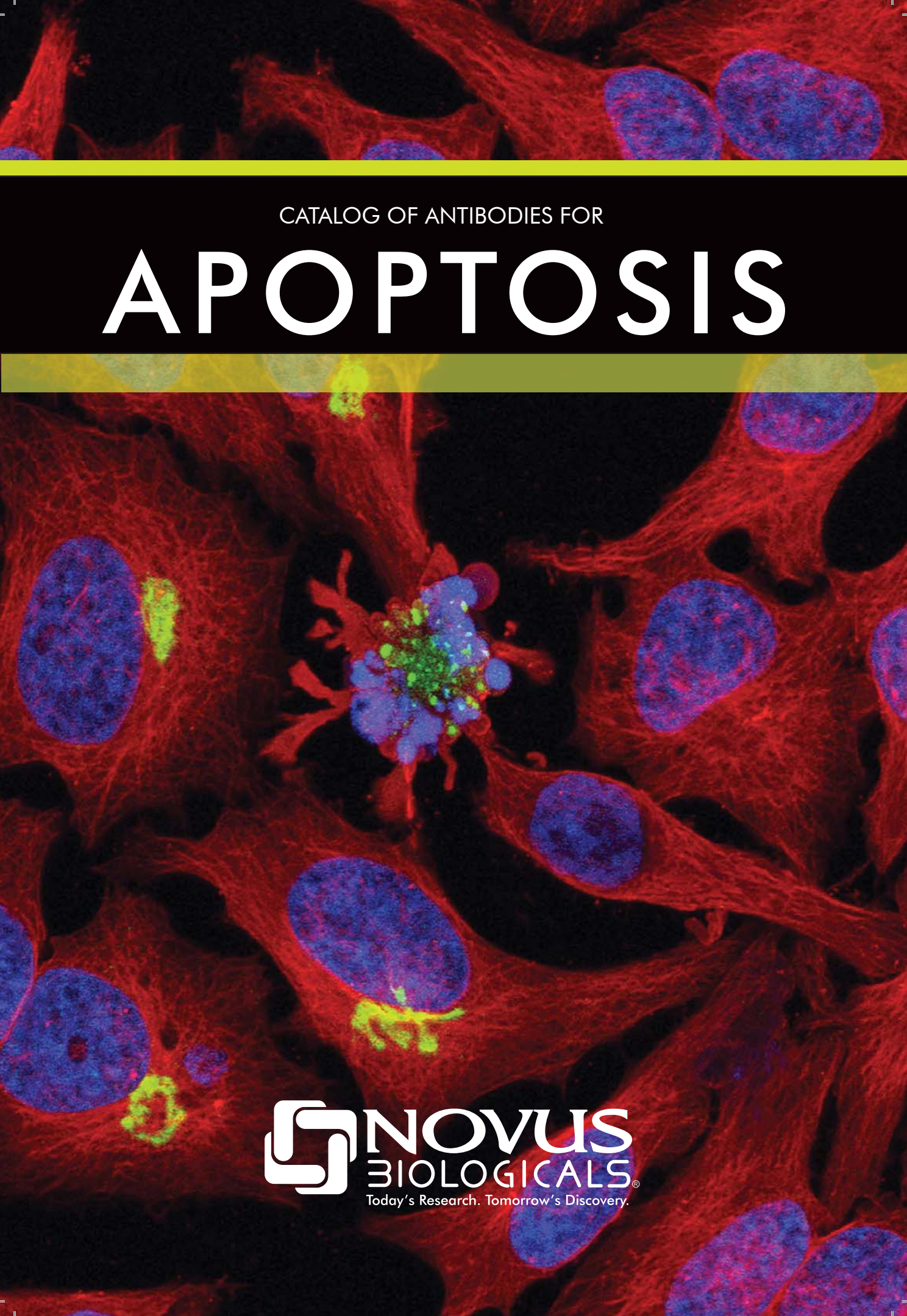


CATALOG OF ANTIBODIES FOR

APOPTOSIS

NOVUS BIOLOGICALS®

Today's Research. Tomorrow's Discovery.

Table of Contents

Application Key

ELISA - Enzyeme-linked Immunosorbent Assay

FACS - Fluorescent Activated Cell Sorting

Func - Functional Assay

ICC - Immunocytochemistry

IF - Immunofluorescence

IHC - Immunohistochemistry

IHC-Fr - Immunohistochemistry Frozen

IHC-P - Immunohistochemistry Paraffin

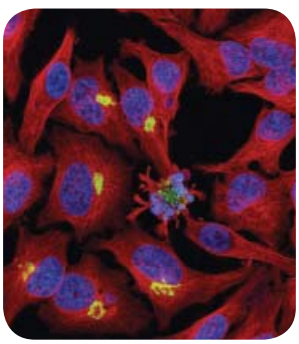
IP - Immunoprecipitation

RIA - Radioimmunoassay

WB - Western Blot

Reactivity Key

Bv - Bovine
Ca - Canine
Ce - C. elegans
Dr - Drosophila
Eq - Equine
Fe - Feline
Ha - Hamster
Hu - Human
Mk - Monkey
Mu - Mouse
Rt - Rat
Sh - Sheep



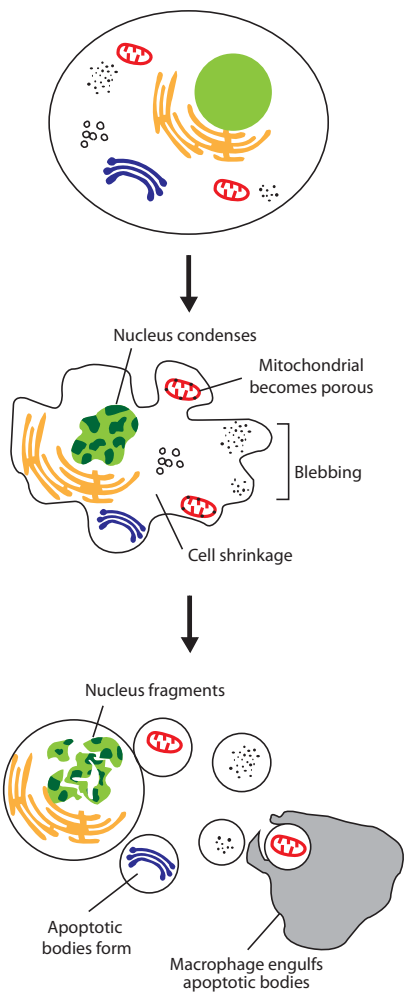
Cover Image: Cultured HeLa cells labeled for tubulin (red) and counter-stained with DAPI (blue) with some cells expressing Golgi-targeted GFP. The center cells have undergone apoptosis.

Apoptosis

Apoptosis, also known as programmed cell death, is a normal process of organismal development. Induction of this process can arise from a variety of stimuli. The extrinsic pathway, often referred to as the Death Receptor Signaling Pathway, is activated via the binding of death activator proteins to the cell surface. The intrinsic pathway, also referred to as Mitochondrial Mediated Apoptosis, is launched via intracellular signals, such as DNA damage, growth factor deprivation and oxidative stress. Despite variance in the types of stimuli that induce apoptosis, both of these mechanisms turn on caspases which act to digest cells from within.

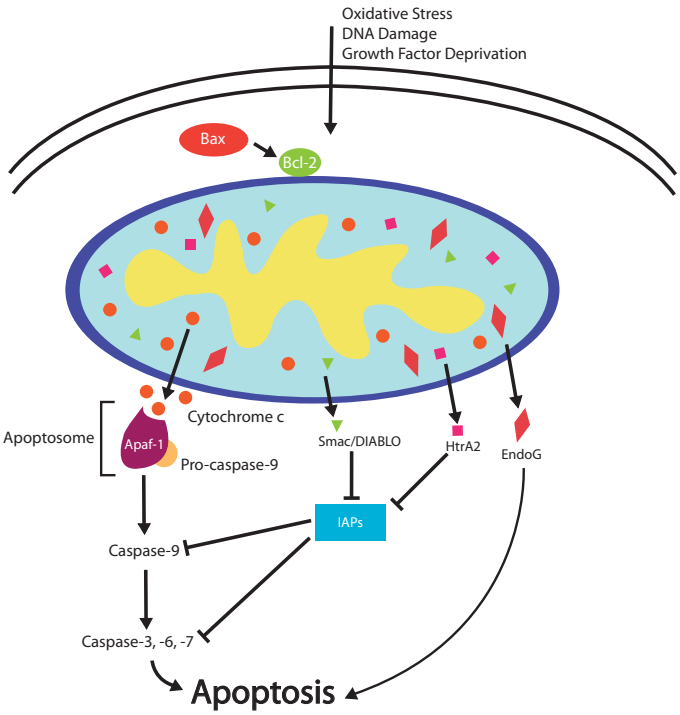
Cells display distinct morphology during programmed cell death. Following the cleavage of lamins and actin filaments in the cytoskeleton, cell shrinkage occurs and nuclear condensation results from the breakdown of chromatin. In order to promote phagocytosis by macrophages, the plasma membrane undergoes changes to trigger the macrophage response; the primary change is the translocation of phosphatidylserine to the cell surface. Lastly, membrane blebbing occurs and apoptotic bodies form.

Apoptosis differs from necrosis because it is a normal and regulated process. Necrosis is an uncontrolled process of traumatic cell death caused by acute injury, which can lead to cellular lysis, inflammation and serious health problems. Despite its controlled nature, excessive apoptosis may cause hypotrophy, whereas insufficient apoptosis may lead to cancer. Research has shown that some oncogenic mutations disrupt the apoptotic process, thus leading to tumor initiation, progression or metastasis.



Mitochondrial Mediated Pathway

Mitochondrial mediated apoptosis, often referred to as the intrinsic pathway, functions in response to intracellular stresses, such as DNA damage, growth factor deprivation, oxidative stress and ischaemia. Under normal conditions the mitochondrial outer membrane displays Bcl-2, an anti-apoptotic molecule that inhibits apoptosis. When internal damage to the cell occurs, Bax, a pro-apoptotic molecule, migrates to the mitochondrial surface where it inhibits Bcl-2's protective effect. This interaction causes permeabilization of the outer membrane, resulting in the release of mitochondrial proteins, including cytochrome c, AIF, endonuclease G, Smac/DIABLO and HtrA2. Upon release, cytochrome c binds Apaf-1 and pro-caspase-9 to form a caspase-activating complex called the apoptosome. This complex then binds and activates caspase-9, which in turn activates other caspases ultimately leading to apoptosis. Upon release into the cytosol, AIF and endonuclease G contribute to DNA fragmentation and chromosomal condensation, whereas Smac/DIABLO and HtrA2 bind IAPs, thus preventing their caspase-inhibitory activity and leading to apoptosis.



Bcl-2

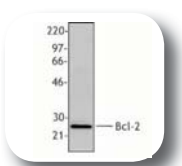
The Bcl-2 family of apoptosis-related genes plays a central role in regulating apoptotic pathways. Bcl-2 suppresses apoptosis by controlling mitochondrial membrane permeability and inhibiting caspase activity. Bcl-2 hinders caspase activity by preventing cytochrome c release from the mitochondria and/or via binding Apaf-1 in the cytosol. It can form homodimers and heterodimers with Bax, Bad, Bak and BclX(L). Furthermore, constitutive expression of Bcl-2 is thought to be the cause of follicular lymphoma. Phosphorylation/dephosphorylation on Ser-70 regulates Bcl-2's anti-apoptotic activity. Growth factor-stimulated phosphorylation on Ser-70 by protein kinase C (PKC) is required for anti-apoptotic activity. In the absence of growth factors, Bcl-2 appears to be phosphorylated by other protein kinases, such as ERKs and stress-activated kinases.

Bcl-2 [Ser70] Antibody
NBP1-02683

Immuno-histochemical analysis of human tonsil using NBP1-02683.

Species: Hu
Applications: IHC-P

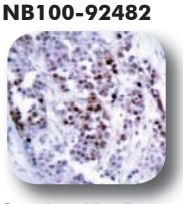
Bcl-2 (BCL/10C4) Antibody
NB100-78543



Western blot analysis of mouse splenocytes using NB100-78543.

Species: Mu, Rt
Applications: FACS, IF, IP, WB, ICC

Bcl-2 [Ser70] Antibody
NB100-92482



Immuno-histochemical analysis of human breast carcinoma tissue using NB100-92482.

Species: Hu, Rt
Applications: ELISA, IHC, IP

Bcl-2 Antibody
NB100-78342

Immunofluorescent microscope analysis of HeLa cells using NB100-78342.

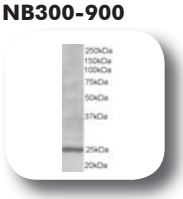
Species: Hu, Mu, Rt
Applications: ICC, IF, WB

Bcl-2 [Thr56] Antibody
NBP1-02865

Immuno-histochemical analysis of human spleen using NBP1-02865.

Species: Hu
Applications: WB, IHC-P

Bcl-2 Antibody
NB300-900



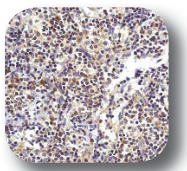
Western blot analysis of human lymph node lysate using NB300-900.

Species: Hu, Mu, Rt
Applications: ELISA, WB

Bax

Bax is a pro-apoptotic member of the Bcl-2 family of proteins. In the mitochondrial mediated apoptosis pathway, Bax promotes cell death by binding Bcl-2 and inhibiting its anti-apoptotic function. Upon stimulation, Bax translocates to the mitochondrial membrane. Through interactions with mitochondrial membrane proteins, Bax increases the membrane's permeability, leading to the release of cytochrome c and initiation of the apoptotic caspase cascade.

Bax (E63) Antibody
NB110-55492



Immunohisto-chemical analysis of human lymph node using NB110-55492.

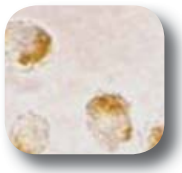
Species: Hu, Mu, Rt
Applications: IHC, IP, WB

Bax Antibody
NB100-78443

Western blot analysis of HeLa cell lysate using NB100-78443.

Species: Hu, Mu, Rt
Applications: IHC, IP, WB

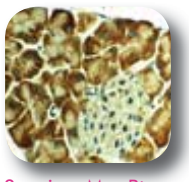
Bax (NT) Antibody
NB100-55941



Immuno-cytochemical analysis of formalin-fixed HL-60 cells using NB100-55941.

Species: Hu
Applications: ICC, IHC, WB

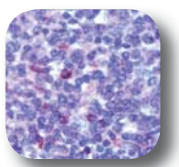
Bax Antibody
NB100-56096



Immuno-histochemical analysis of mouse pancreas using NB100-56096.

Species: Mu, Rt
Applications: IHC, IP, WB, IHC-P

Bax Antibody
NB120-15181



Immunohisto-chemical analysis of Hodgkin's lymphoma using NB120-15181.

Species: Hu
Applications: IHC

Bax Antibody
NBP1-02615

Immuno-histochemical analysis of human tonsil using NBP1-02615.

Species: Hu
Applications: IHC, WB, ICC, IHC-P

Cytochrome c

Cytochrome c is an electron carrier protein found in the mitochondrial intermembrane space. Activation of pro-apoptotic Bcl-2 family members or suppression of anti-apoptotic proteins causes the outer mitochondrial membrane to become permeable, thus resulting in the release of cytochrome c into the cytosol. Upon release, cytochrome c binds Apaf-1, which activates caspase-9, ultimately leading to apoptosis.

Cytochrome C (7H8.2C12) Antibody
NB100-56503

Western blot analysis of of HeLa cell lysate using NB100-56503.

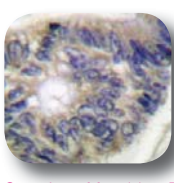
Species: Dr, Ha, Eq, Hu, Mu, Rt
Applications: IF, WB, ICC

Cytochrome C Antibody
NB300-1068

Immuno-histochemical analysis of human heart tissue using NB300-1068.

Species: Hu
Applications: ELISA, WB, IHC-P

Cytochrome C Antibody
NB100-91732



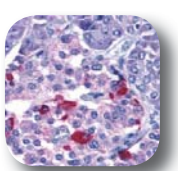
Immuno-histochemical analysis of human colon carcinoma tissue using NB100-91732.

Species: Hu, Mu, Rt
Applications: ELISA, IHC, WB

Endonuclease G

Endonuclease G (EndoG) is a mitochondrion-specific nuclease that translocates to the nucleus and cleaves chromatin into nucleosomal fragments during apoptosis. EndoG achieves this cleavage independently of caspases and is capable of cleaving DNA at double-stranded and single-stranded sites. The homologue of mammalian EndoG was the first mitochondrial protein identified to be involved in apoptosis in C. elegans.

EndoG Antibody
NB600-774



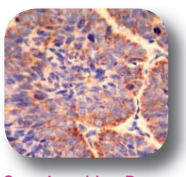
Immuno-histochemical analysis of human pancreas using NB600-774.

Species: Hu, Mu, Rt
Applications: WB, IHC-P

Smac/DIABLO

Smac/DIABLO is a mitochondrial protein that activates various forms of apoptosis. This activation may be due to the neutralization of one or more members of the IAP family. Smac/DIABLO exits the mitochondria and enters the cytosol during certain apoptosis-triggered events. The release of these proteins occurs via different mechanisms. Mitochondrial mediated apoptosis is important in animal development and tissue homeostasis, with alterations resulting in a range of malignant disorders.

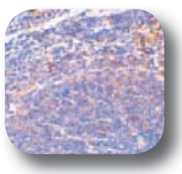
Smac/DIABLO (E12) Antibody
NB110-56936



Immuno-histochemical analysis of human skin cancer tissue using NB110-56936.

Species: Hu, Rt
Applications: FACS, IHC, IP, WB, ICC

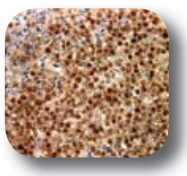
Smac/DIABLO Antibody
NB100-55896



Immuno-histochemical analysis of mouse spleen tissue using NB100-55896.

Species: Hu, Mu, Rt
Applications: IHC, WB

Smac/DIABLO Antibody
NB100-56166



Immuno-histochemical analysis of human plasmacytoma using NB100-56166.

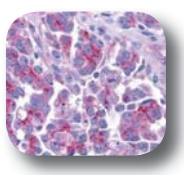
Species: Hu, Mu, Rt
Applications: IHC, IP, WB, IHC-P

Smac/DIABLO Antibody
NB100-56311

Western blot analysis of HeLa cell lysate using NB100-56311.

Species: Hu
Applications: WB

Smac/DIABLO Antibody
NB100-66581



Immuno-histochemical analysis of human ovary tissue using NB100-66581.

Species: Hu
Applications: WB, IHC-P

Smac/DIABLO Antibody
NBP1-03101

Immuno-histochemical analysis of human testis using NBP1-03101.

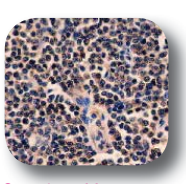
Species: Hu, Mu, Rt
Applications: WB, IHC-P

[NB500-213 Smac] Wang X, Zhu S, Pei Z, et al. Inhibitors of Cytochrome c Release with Therapeutic Potential for Huntington's Disease. J Neurosci 2008;28(38):9473-9485.

HtrA2

HtrA2, also referred to as Omi, is a serine protease that plays a significant role in apoptosis. Localized to the intermembrane space of the mitochondria, HtrA2 exists predominantly as two isoforms. In response to cellular stress signals, HtrA2 is released into the cytosol. One way that HtrA2 induces apoptosis is by binding to IAPs and thereby preventing their caspase-inhibitory activity.

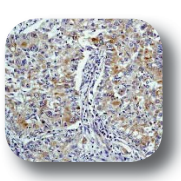
HtrA2 (E56) Antibody
NB110-57067



Immunohisto-chemical analysis of human lymphoma using NB110-57067.

Species: Hu
Applications: FACS, IHC, WB, ICC

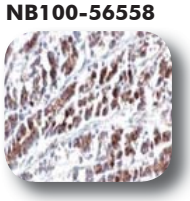
HtrA2 (E55) Antibody
NB110-57068



Immuno-histochemical analysis of human lung adenocarcinoma using NB110-57068.

Species: Hu, Mu, Rt
Applications: IHC, IP, WB

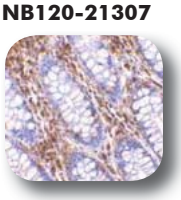
HtrA2 (196C429) Antibody
NB100-56558



Immuno-histochemical analysis of human stomach tumor tissue using NB100-56558.

Species: Hu
Applications: IHC, WB

HtrA2 Antibody
NB120-21307



Immunohisto-chemical analysis of human colon tissue using NB120-21307.

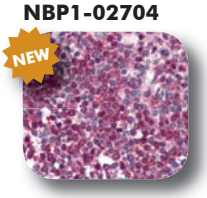
Species: Hu
Applications: IHC, WB

HtrA2 Antibody
NBP1-02703

Immunohisto-chemical analysis of human kidney using NBP1-02703.

Species: Hu
Applications: WB, IHC-P

HtrA2 Antibody
NBP1-02704



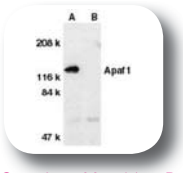
Immunohisto-chemical analysis of human spleen using NBP1-02704.

Species: Hu
Applications: WB, IHC-P

Apaf-1

Apoptosis protease-activating factor 1 (Apaf-1) is ubiquitously expressed in human tissue. It binds cytochrome c and pro-caspase-9 to form apoptosomes, which leads to activation of caspase-9. Activated caspase-9 in turn cleaves and activates caspase-3, one of the key proteases responsible for the proteolytic cleavage of many apoptotic proteins. Apaf-1 can also associate with caspase-4 and caspase-8.

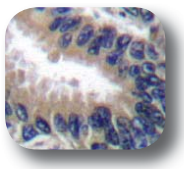
Apaf-1 Antibody
NB100-94207



Western blot analysis of human heart tissue lysate using NB100-94207 in the absence (lane A) or presence (lane B) of blocking peptide.

Species: Hu, Mu, Rt
Applications: WB

Apaf-1 Antibody
NB100-91661



Immuno-histochemical analysis of human lung carcinoma tissue using NB100-91661.

Species: Hu
Applications: ELISA, IHC, WB

Apaf-1 Antibody
NBP1-03209

Immunohisto-chemical analysis of human liver using NBP1-03209.

Species: Hu, Mu, Rt
Applications: WB, IHC-P

Inhibitors of Apoptosis Family

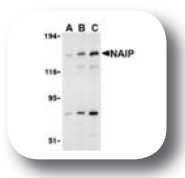
The Inhibitors of Apoptosis (IAPs) are a family of proteins that suppress cell death. Although several IAP relatives have been identified to date, Survivin is the most commonly studied. IAP proteins are characterized by a novel domain of approximately 70 amino acids termed the baculoviral IAP repeat (BIR). Although membership into the IAP family of proteins requires the presence of a BIR domain and the ability to suppress apoptosis, some proteins also have RING and/or CARD domain.

NAIP Antibody
NBP1-02621

Immunohisto-chemical analysis of human placenta using NBP1-02621.

Species: Hu
Applications: WB, ICC, IHC-P

NAIP Antibody
NB100-94288



Western blot analysis of PC-3 cell lysate using NB100-94288.

Species: Hu
Applications: WB

NAIP

Neuronal apoptosis inhibitor protein (NAIP) was the first human IAP protein identified. Unlike other IAPs, NAIP requires ATP to bind caspase-9 and is not inhibited by the IAP-inhibiting molecule Smac/DIABLO, suggesting that NAIP is unique among the IAPs in its regulatory activity.

cIAP

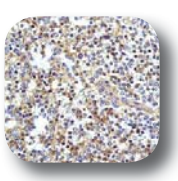
The two isoforms of cIAP (cIAP1 and cIAP2) are apoptotic suppressors that are structurally related to XIAP. cIAP1 and cIAP2 contain three BIR motifs that are essential and sufficient for the binding and inhibition of caspase-3 and caspase-7. The cIAPs can associate with the death receptor TNF-R2, and mediate the ubiquitinization of TRAF2 following the binding of TNF-alpha by its receptor. HtrA2 is a negative regulator of cIAP that inhibits its activity by catalytically cleaving cIAP. Another negative regulator, Smac/DIABLO, acts by enhancing the auto-ubiquitization activity of cIAP.

cIAP1 Antibody
NBP1-02991

Species: Hu, Mu
Applications: WB, IHC-P

Immunohisto-chemical analysis of human prostate using NBP1-02991.

cIAP2 (E40) Antibody
NB110-57030



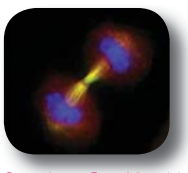
Species: Hu, Rt
Applications: IHC, IP, WB, ICC

Immuno-histochemical analysis of human normal spleen using NB110-57030.

Survivin

Survivin encodes a structurally unique IAP. Survivin expression is high in fetal development and decreases markedly in non-neoplastic adult tissues. Survivin is abundantly re-expressed in transformed cells and in all of the most common cancers of lung, colon, pancreas, breast and prostate *in vivo*. Survivin appears to be situated at the crossroads of cell death and cell division, governing a checkpoint involved in cytokinesis, while also suppressing apoptosis. Survivin is also expressed in brain tissues (astrocytes and some neurons) of adult rats following traumatic brain injury. Survivin has been found co-expressed with NeuN (mature neuronal marker) and PCNA (a cell cycle protein). Survivin may affect regulation of neural cell proliferative responses after brain injury.

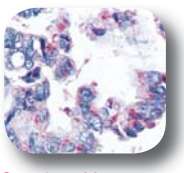
Survivin Antibody
NB500-201



Telophase with accumulation of survivin in the midbodies of two daughter cells. Survivin detection using NB500-201.

Species: Ca, Hu, Mu, Rt, Fe
Applications: IF, IP, WB, ICC, IHC-P

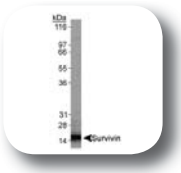
Survivin Antibody
NB500-237



Immunohisto-chemical analysis of human lung cancer using NB500-237.

Species: Hu
Applications: IHC, IF, WB, IHC-P

Survivin Antibody
NB500-238



Western blot analysis of HeLa whole cell lysate using NB500-238.

Species: Hu, Mu, Rt
Applications: IHC, IF, WB, ICC, IHC-P

Survivin Antibody
NB500-205

Western blot analysis of rat aorta smooth muscle cell lysate using NB500-205.

Species: Hu, Mu, Rt
Applications: IP, WB

Survivin [Thr34] Antibody
NB500-236

Western blot analysis of phosphorylated Survivin protein (lane 1) and non-phosphorylated Survivin protein (lane 2).

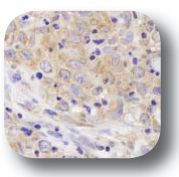
Species: Hu
Applications: WB

Survivin Antibody SuperNovus Pack
NB100-911
Includes:
NB500-201, NB500-237 and NB500-238

BIRC6

BIRC6, also referred to as Apollon, is a member of the IAP family. Research suggests that BIRC6 inhibits apoptosis by interfering with the activation of ICE-like proteases. BIRC6, which contains a single BIR domain and an ubiquitin-conjugating enzyme domain, is expressed in multiple cancer cell lines. Brain cancer cell lines that overexpress BIRC6 demonstrate multi-drug resistance, implying that BIRC6 may protect cancer cells from undergoing apoptosis and may participate in tumorigenesis and drug resistance.

BIRC6 Antibody
NB110-40730



Immuno-histochemical analysis of human metastatic lymph node using NB110-40730.

Species: Hu
Applications: IHC

ILP-2

ILP-2, also referred to as BIRC8, potentially inhibits apoptosis induced by overexpression of Bax or by co-expression of caspase-9 with Apaf-1. A processed form of caspase-9 can be co-precipitated from cells, with ILP-2, suggesting a physical interaction between ILP-2 and caspase-9. Thus, ILP-2 is a novel IAP family member with restricted specificity for caspase-9.

ILP-2 Antibody
NB100-94263

Western blot analysis of human HepG2 (lane 1) and MOLT4 (lane 2) cell lysates using NB100-94263.

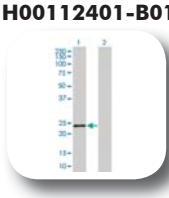
Species: Hu
Applications: WB

ILP-2 Antibody
NBP1-03071

Immunohisto-chemical analysis of human small intestine, Peyer's patch using NBP1-03071.

Species: Hu, Mu, Rt
Applications: WB, ICC, IHC-P

ILP-2 Antibody
H00112401-B01



Western Blot analysis of transfected 293T cell line using(lane 1) and non-transfected lysate (lane 2) using H00112401-B01.

Species: Hu
Applications: ELISA, WB

Livin

Livin is a novel member of the IAP family. It has two isoforms (Livin alpha and Livin beta) that have varying functions and tissue distributions. Livin alpha protects cells from apoptosis induced by staurosporine, whereas Livin beta protects cells from apoptosis induced by etoposide. The protein encoded by this gene contains a single copy of a BIR, as well as a RING-type zinc finger domain. The BIR domain is essential for inhibitory activity and interacts with caspases, while the RING finger domain sometimes enhances anti-apoptotic activity but cannot inhibit apoptosis alone.

Livin Antibody
NB300-941

Western blot analysis of MOLT4 lysate using NB300-941.

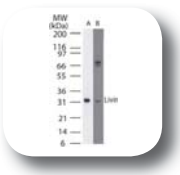
Species: Hu
Applications: ELISA, WB

Livin Antibody
NB100-56145

Immuno-histochemical analysis of human tonsil using NB100-56145.

Species: Hu, Mu, Rt
Applications: IP, WB, IHC-P

Livin (88C570) Antibody
NB100-56548



Western blot analysis of Livin transfected cell lysate (lane 1)and U266 cell lysate (lane 2) using NB100-56548.

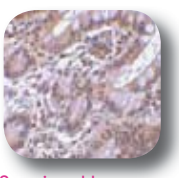
Species: Hu
Applications: IF, WB, ICC

Livin Antibody
NB100-66229

Western blot analysis of Jurkat cell lysate using NB100-66229.

Species: Hu
Applications: ELISA, WB

Livin Antibody
NB120-5393



Immuno-histochemical analysis of human small intestine tissue using NB120-5393.

Species: Hu
Applications: IHC, WB

Livin Antibody
NBP1-02733

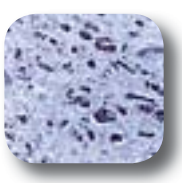
Immuno-histochemical analysis of human brain cerebellum using NBP1-02733.

Species: Hu
Applications: WB, IHC-P

XIAP

The X-linked inhibitor of apoptosis protein (XIAP) is a member of the IAP family. XIAP functions by directly binding caspase-3, caspase-7 and caspase-9, thus causing their inhibition and blockage of the apoptosis signaling pathway. XIAP is specifically cleaved by caspase-3 during apoptosis, and partially loses its function.

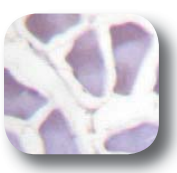
XIAP Antibody
NB100-56183



Immuno-histochemical analysis of human breast carcinoma using NB100-56183.

Species: Hu, Mu, Rt
Applications: IHC, IP, WB, IHC-P

XIAP (G81) Antibody
NB100-92709



Immuno-histochemical analysis of human skeletal muscle tissue using NB100-92709.

Species: Hu, Mu, Rt
Applications: ELISA, IHC, WB

XIAP Antibody
NBP1-02968

Immuno-histochemical analysis of human kidney using NBP1-02968.

Species: Hu, Mu
Applications: IHC, WB, IHC-P

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Death Receptor Signaling Pathway

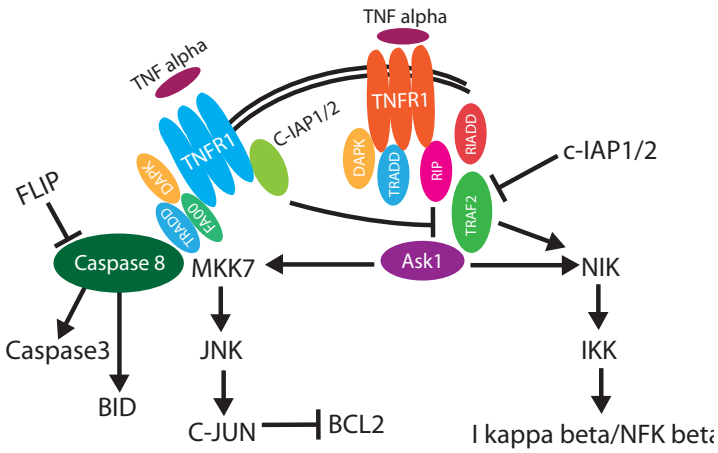
Apoptosis in cells can be affected by external signals which come mainly from activated macrophages. The extrinsic signals are recognized by TNF superfamily proteins, including TNFR-1 and TNFR-2, and Fas-Ligand (CD95) receptors. These receptors conduct the external signal to the interior of the cell thus affecting either gene transcription or the intrinsic apoptotic pathway. Activation of death receptors recruits other effecter proteins that contain death domains.

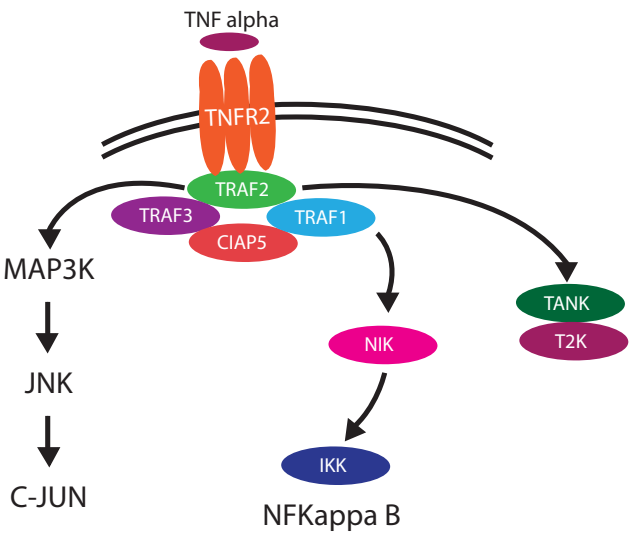
TNF-R1

The TNF-R1 protein is the main regulator of programmed cell death. This receptor can activate numerous pathways either causing inhibition of Bcl-2, which allows for induction of mitochondrial mediated apoptosis, or activating the NFkappaB pathway, which promotes cell survival.

TNF-R1 Antibodies:

NB600-627, NB110-85469, NB110-16295, NB100-65862 and NB110-1966





TNF-R2

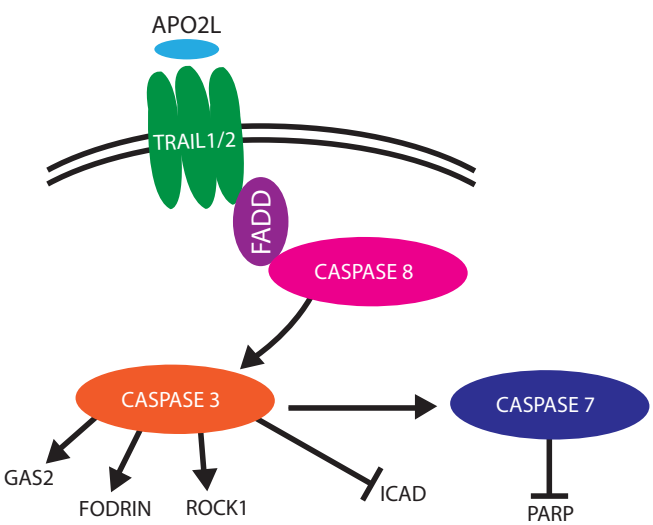
The TNF-R2 protein does not appear to play a direct role in apoptosis. However, it may aid in responding to endogenously produced TNF, thus modulating TNF-R1 signaling. TNF-R2 may also enhance apoptosis by selectively depleting TRAF2 and IAP proteins.

TNF-R2 Antibodies:

NB110-85470, NB100-65024, NB100-65864 NB110-2054, NB600-1106 and NBP1-03130

TRAIL Receptors

TRAIL receptors can induce both apoptosis and the NFkappaB pathway. TRAIL-R1 and TRAIL-R2 both contain a death domain, while TRAIL-R3/DCR1 and TRAIL-R4/DCR2 do not contain a death domain and serve to inhibit the signaling of TRAIL-R1 and TRAIL-R2. This pathway is of particular interest because the receptors can be targeted by monoclonal antibodies and TRAIL ligands which is enough to induce apoptosis in tumor cells; normal cells seem to be resistant to the induction.



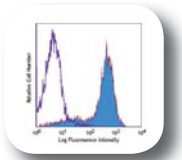
TRAIL-R1

TRAIL-R1 (DR-4-02) Antibody
NB110-81756

Immunofluorescence staining of HeLa human cervix carcinoma cell line transfected with TRAIL-R1 expression plasmid using NB110-81756.

Species: Hu
Applications: FACS, IP, IF, ICC, Func

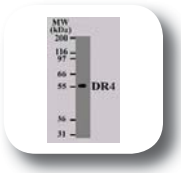
TRAIL-R1 (N2B2) Antibody
NB100-77541



Mouse TRAIL transfected cells stained with biotinylated N2B2.

Species: Mu
Applications: FACS

TRAIL-R1 (32A1380) Antibody
NB100-56747

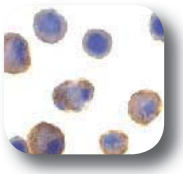


Western blot analysis of total cell lysate from Daudi cells using NB100-56747.

Species: Hu
Applications: FACS, WB

TRAIL-R2

TRAIL-R2 Antibody
NB100-55826



Immuno-cytochemical analysis of HeLa cells using NB100-55826.

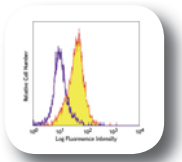
Species: Hu, Mu
Applications: IF, WB, ICC

TRAIL-R2 Antibody
NB100-55744

Western blot analysis of whole cell lysates from HL60 cells using NB100-55744.

Species: Hu
Applications: FACS, IHC, IF, WB, ICC

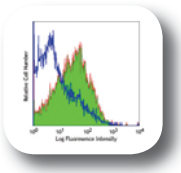
TRAIL-R2 (DJR2-4) Antibody
NB100-77854



Human peripheral blood granulocytes stained with biotinylated DJR2-4.

Species: Hu
Applications: FACS

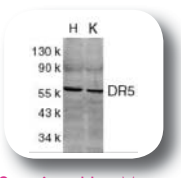
TRAIL-R2 (DJR2-2) Antibody
NB100-77851



Human peripheral blood lymphocytes stained with purified DJR2-2.

Species: Hu
Applications: FACS

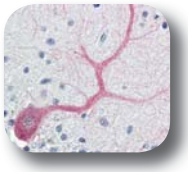
TRAIL-R2 Antibody
NB100-94208



Western blot analysis of DR5 in HeLa (lane H) and K562 (lane K) whole cell lysates using NB100-94208.

Species: Hu, Mu
Applications: WB

TRAIL-R2 Antibody
NBP1-02960

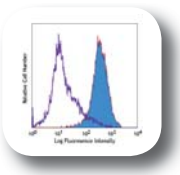


Immuno-histochemical analysis of human prostate using NBP1-02960.

Species: Hu, Mu
Applications: WB, ICC, IHC-P

TRAIL-R3

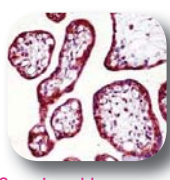
TRAIL-R3 (DJR3) Antibody
NB100-77842



Human peripheral blood granulocytes stained with purified DJR3.

Species: Hu
Applications: FACS

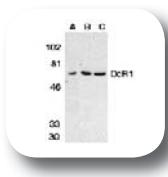
TRAIL-R3 Antibody
NB120-17828



Immuno-histochemical analysis of human placenta using NB120-17828.

Species: Hu
Applications: IHC

TRAIL-R3 Antibody
NB300-1024



Western Blot analysis of HeLa (lane A), mouse liver (lane B) and rat liver (lane C) using NB300-1024.

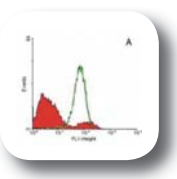
Species: Hu, Mu, Rt
Applications: WB, IHC

[TRAIL-R4]: Liu, X. etal. Decoy receptor 2 (DcR2) is a p53 target gene and regulates chemosensitivity. Cancer Res. Oct 2005; 65: 9169-9175.

CD95 Receptor

The CD95 death receptor belongs to the TNF super-family resulting in a different mechanism than the TNF receptors. Upon binding its corresponding Fas ligand, the CD95 receptor complexes into the death inducing signaling complex, which serves to attract FADD and other proteins that affect apoptotic pathways within the cell.

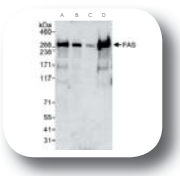
CD95 (UT-1) Antibody
NB120-11881



Induction of apoptosis in hematopoetic cell line using NB120-11881.

Species: Hu
Applications: FACS

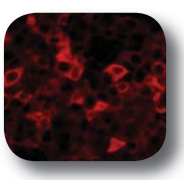
CD95 Antibody
NB100-61046



Western Blot analysis of HeLa cell lysate (lanes A, B, C) and 293T cells (lane D) using NB100-61046.

Species: Hu
Applications: IP, WB

CD95 Antibody
NB100-87029



Immuno-fluorescent analysis of human breast carcinoma using NB100-87029.

Species: Hu, Mu
Applications: IHC-P, IF

CD95/FasR Disease Implications

Mutations in the CD95 system cause many autoimmune disorders. Activation induced cell death plays an important role in the immune response, and it is also important for auto-reactive cells. CD95 has also been implicated in the control of viral progression, such as HIV1 and Hepatitis B. These diseases induce massive apoptosis through the CD95 pathway.

Death Receptor Associating Proteins

A commonality among the death receptor associating proteins is that they each contain a highly conserved set of 80 amino acids, which are known collectively as the death domain. This portion of the protein is capable of affiliating with the corresponding domain of the death receptors. Upon binding the receptor, other proteins are recruited, which are capable of triggering the apoptotic pathways.

DAPK

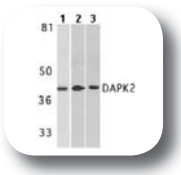
DAPK is a calmodulin-regulated serinine/threonine kinase, with eight ankyrin repeats and two putative P-loop consensus sites. When TNG is bound by TNF-R1, DAPK associates with the activated receptor. Maximal activation of JNK in response to TNF requires DAPK. Cell death mediated by this protein is characterized by the formation of autophagic vesicles and membrane blebbing.

DAPK (EP1633Y) Antibody
NB110-56926

Immuno-histochemical analysis of human liver carcinoma using NB110-56926.

Species: Hu, Mu, Rt
Applications: FACS, IHC, WB

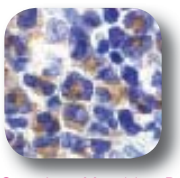
DAPK Antibody
NB300-1022



Western blot analysis of Gc-5scg (lane 1), Gc-6scg (lane 2), and glioma cell line (lane 3) using NB300-1022.

Species: Hu, Mu, Rt
Applications: WB

DAPK Antibody
NB100-55883



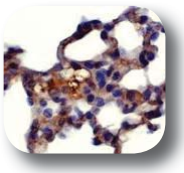
Immuno-histochemical analysis of mouse spleen cells using NB100-55883.

Species: Hu, Mu, Rt
Applications: IHC, WB

FADD

FADD is an adaptor molecule which is implicated in apoptosis. It recruits both caspase-8 and -10 upon activation of either the CD95 receptor or TNF-R1. This group of proteins is called the DISC complex, which triggers apoptotic pathways.

FADD (EP887Y) Antibody
NB110-56985



Immuno-histochemical analysis of human lung using NB110-56985.

Species: Hu, Mu
Applications: IHC, WB

FADD Antibody
NB100-92032

Immuno-histochemistry analysis of human lung carcinoma tissue using NB100-92032.

Species: Hu, Mu
Applications: ELISA, IHC, WB

DAXX

DAXX is a nuclear protein that binds the activated CD95 receptor and, upon subsequent activation, induces the JNK pathway via ASK1. This protein seems to have different actions depending on the stage of development. In embryos, DAXX seems to regulate apoptosis, thus preventing massive cell death.

DAXX Antibody
NB100-61592

Western blot analysis of HeLa whole cell lysate using NB100-61592.

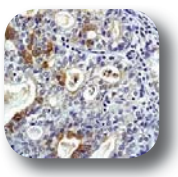
Species: Hu
Applications: WB

DAXX (DAXX-01) Antibody
NB500-491

Immuno-fluorescence staining of transfected HeLa human cervix carcinoma cell line using NB500-491.

Species: Hu
Applications: WB, ICC, IF

DAXX (E94) Antibody
NB110-56930



Immunohisto-chemical analysis of human stomach adenocarcinoma using NB110-56930.

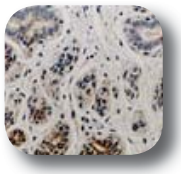
Species: Hu
Applications: FACS, IHC, WB, ICC

RIPK1 Antibody
NB100-75225

Western blot analysis of E. coli-derived fusion protein using NB100-75225.

Species: Hu
Applications: WB

RIPK1 Antibody
NB100-56160



Immuno-histochemical analysis of human breast using NB100-56160.

Species: Hu
Applications: IHC-P, IP, WB

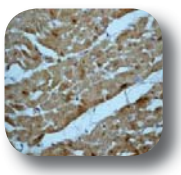
RIPK1

RIPK1 can associate with either CD95R or TNFR and is necessary for activation of NFkappaB. It is specifically recruited by TRADD. Proteolytic cleavage by caspase-8 during TNF induced apoptosis inhibits the NFkappaB pathway causing pro-apoptotic signaling activation.

RAIDD

RAIDD serves multiple purposes in the death receptor signaling pathway. The carboxy terminus contains sequence homology with the death domain of RIPK1, which allows them to interact. The amino-terminus however can interact with both ICH-1 and CED3 providing a direct link to the death protease pathway.

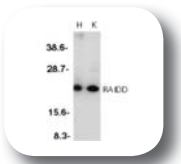
RAIDD (EPR1640Y) Antibody
NB110-57451



Immuno-histochemical analysis of human heart muscle using NB110-57451.

Species: Hu
Applications: FACS, IHC, IP, WB, ICC

RAIDD Antibody
NB100-66308



Western blot analysis of HeLa whole cell lysate (lane H) and K562 cells (lane K) using NB100-66308.

Species: Hu
Applications: WB

RAIDD Antibody
NBP1-02638

Immuno-histochemical analysis of human liver using NBP1-02638

Species: Hu
Applications: WB, ICC, IHC-P

TRAF2

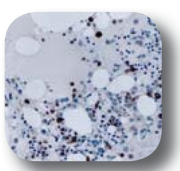
TNF receptor associated factors mediate death receptor signal transduction. This protein associates with TNFRs in a heterodimeric complex with TRAF1. TRAF2 is required for activation of MAP8/JNK and NFkappaB.

TRAF2 Antibody
NB100-58959

Western blot analysis of human ovary lysate using NB100-58959.

Species: Hu
Applications: ELISA, WB

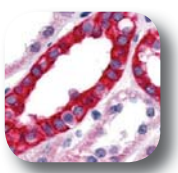
TRAF2 Antibody
NB100-56172



Immuno-histochemical analysis of normal human bone marrow using NB100-56172.

Species: Hu, Mu, Rt
Applications: IP, WB, IHC-P, IHC-Fr

TRAF2 Antibody
NLS7401



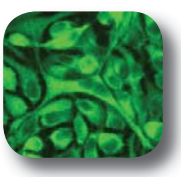
Immuno-histochemical analysis of human kidney using NLS7401.

Species: Hu
Applications: IHC, ICC, IHC-P, IHC-Fr

ASK1

ASK1 is part of the MAPK signaling cascade. Activation of this protein requires the removal of the inhibitory thioredoxin. Upon oxidation, thioredoxin dissociates and ASK1 auto-phosphorylates and becomes an active kinase, thus allowing it to affect the JNK pathway.

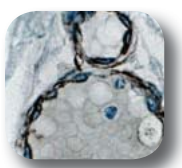
ASK1 (EP553Y) Antibody
NB110-55482



Immunofluorescent staining of HeLa cells using NB110-55482.

Species: Hu, Mu
Applications: FACS, IHC, WB, ICC, IF

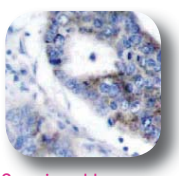
ASK1 Antibody
NB100-56077



Immuno-histochemical analysis of human small venous vessels using NB100-56077.

Species: Hu
Applications: IHC, IP, WB, IHC-P

ASK1 Antibody
NB100-91664



Immuno-histochemical analysis of human breast carcinoma tissue using NB100-91664.

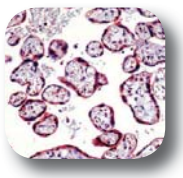
Species: Hu
Applications: ELISA, IHC, WB

Caspases

Caspases are a family of proteins that play a critical role in apoptosis. They belong to a group of enzymes known as cysteine proteases and exist within the cell as inactive pro-caspases. This family can be divided into three classes: initiator caspases, effector caspases and cytokine processors. Initiator caspases (caspase-2, -8, -9, -10) are the first to be activated, which then cleave and activate the effector caspases (caspase-3, -6, -7). Effector caspases cleave, degrade and activate other protein substrates within the cell, such as cytoskeletal proteins, to trigger apoptosis. Some caspases (caspase-1, -4, -5, -11, -12, -13, -14) have a specialized role in inflammation and their activation leads to the processing of pro-inflammatory cytokines. The caspase cascade can be activated by numerous mechanisms, including delivery of granzyme B, apoptosome formation and death cell receptors. Caspase activation leads to characteristic morphological changes of the cell, such as shrinkage, DNA fragmentation, plasma membrane blebbing and chromatin condensation.

Catalog #	Product	Host	Type	Application	Species
NB120-1872	Caspase-1	Rabbit	Polyclonal	IHC-Fr, IHC-P, WB	Hu, Mu, Rt
NB100-56565	Caspase-1 (14F468)	Mouse	Monoclonal	IHC, IHC-P, WB	Hu, Mu
NB110-55655	Caspase-2 (Y61)	Rabbit	Monoclonal	FACS, WB	Hu, Mu
NB100-56686	Caspase-2 (18E809.3)	Mouse	Monoclonal	WB	Hu
NB110-55659	Pro-Caspase-3 (E61)	Rabbit	Monoclonal	FACS, ICC, IHC, IP, WB	Hu, Mu
NB500-210	Caspase-3 (CPP32 4-1-18)	Mouse	Monoclonal	WB	Hu
NB300-901	Caspase-4	Goat	Polyclonal	ELISA, WB	Hu
NB120-10446	Caspase-4 (CAS4)	Mouse	Monoclonal	ELISA, WB	Hu, Mk
NB110-55661	Caspase-5 (EP876Y)	Rabbit	Monoclonal	ICC, IHC, IP, WB	Hu, Mu, Rt
NB100-56309	Caspase-5	Rabbit	Polyclonal	WB	Hu
NB110-55663	Pro-Caspase-6 (EP1325Y)	Rabbit	Monoclonal	FACS, ICC, IHC, IP, WB	Hu, Mu, Rt
NB110-55662	Caspase-6 (E180)	Rabbit	Monoclonal	FACS, ICC, IHC, WB	Hu, Mu
NB100-92675	Caspase-6 [Ser257]	Rabbit	Polyclonal	ELISA, IHC, WB	Hu, Mu, Rt
NB500-206	Caspase-7	Mouse	Monoclonal	WB	Hu, Mu, Rt
NB500-208	Caspase-8 (FLICE 4-1-20)	Mouse	Monoclonal	WB	Hu
NB600-576	Caspase-8	Rabbit	Polyclonal	IHC, IP, WB	Bv, Hu, Mu, Mk, Rt
NB110-55668	Pro-Caspase-9 (E84)	Rabbit	Monoclonal	FACS, IHC, WB	Hu, Mu, Rt
NB500-209	Caspase-9 (LAP6 96-2-22)	Mouse	Monoclonal	WB	Hu
NB100-56119	Caspase-9	Rabbit	Polyclonal	IHC, IHC-P, IP, WB	Ca, Hu, Mu, Rt
NB110-55654	Pro-Caspase-10 (E35)	Rabbit	Monoclonal	FACS, ICC, IHC, IP, WB	Hu
NB100-56307	Caspase-10	Rabbit	Polyclonal	WB	Hu
NB120-10453	Caspase-10 (25C2)	Rat	Monoclonal	WB	Hu
NB120-10454	Caspase-11 (17D9)	Rat	Monoclonal	IHC, IP, WB	Mu
NB100-55768	Caspase-12	Rabbit	Polyclonal	IHC-P, WB	Hu, Mu, Rt
NB100-94239	Caspase-13	Rabbit	Polyclonal	WB	Hu, Mu, Rt
NB100-56126	Caspase-14	Rabbit	Polyclonal	IHC, IHC-P, IP, WB	Ca, Hu, Mu, Rt
NB100-56718	Caspase-14 (70A1426)	Mouse	Monoclonal	WB	Mu

Caspase-1 Antibody
NB120-1872



Immunohistochemical analysis of human placenta using NB120-1872.

Species: Hu, Mu, Rt
Applications: WB, IHC-P, IHC-Fr

Pro-Caspase-3 (E61) Antibody
NB110-55659

Immuno-histochemical analysis of human cervical carcinoma tissue using NB110-55659.

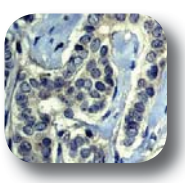
Species: Hu, Mu
Applications: FACS, IHC, IP, WB, ICC

Caspase-3 (CPP32 4-1-18) Antibody
NB500-210

Western blot analysis of HEK293 cell extract using NB500-210. Lanes 1 and 2 contain inactive and active Capsase, respectively.

Species: Hu
Applications: WB

Caspase-5 (EP876Y) Antibody
NB110-55661



Species: Hu, Mu, Rt
Applications: IHC, IP, WB, ICC

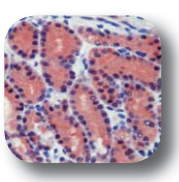
Immunohistochemical analysis of human breast carcinoma using NB110-55661.

Pro-Caspase-6 (EP1325Y) Antibody
NB110-55663

Species: Hu, Mu, Rt
Applications: FACS, IHC, IP, WB, ICC

Immunofluorescent analysis of HeLa cells using NB110-55663.

Caspase-8 Antibody
NB600-576



Species: Bv, Hu, Mu, Mk, Rt
Applications: IHC, IP, WB

Immunohistochemical analysis of human stomach stained using NB600-576. Note cytoplasmic staining of endothelial cells.

Caspase-9 (LAP6 96-2-22) Antibody
NB500-209

Species: Hu
Applications: WB

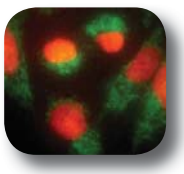
Western blot analysis of 293 cell lysate using NB500-209. Lane 1 and 2 contain inactive and active Caspase, respectively.

Apoptosis Inducing Factor

In addition to the mitochondrial mediated pathway of apoptosis and death receptor signaling pathway of apoptosis, a third mechanism is present. Unlike the intrinsic and extrinsic pathways, this mechanism functions without caspases. Apoptosis-inducing factor (AIF) is a flavoprotein localized to the mitochondrial membrane.

When a cell receives a death signal, often triggered by reactive oxygen species, AIF is released from the mitochondria and translocates to the nucleus where it binds to DNA and triggers apoptosis. Unlike cytochrome c, AIF acts in a caspase-independent fashion.

AIF (E20) Antibody
NB110-55446



Immunofluorescent analysis of HeLa cells using NB110-55446. Green - AIF localized in mitochondria; Red - PI nuclear staining.

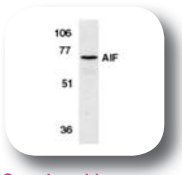
Species: Hu, Mu, Rt
Applications: FACS, IF, IHC, IP, WB, ICC

AIF Antibody
NB100-55774

Immuno-histochemical analysis of human retina using NB100-55774.

Species: Hu, Mu, Rt
Applications: IHC, WB

AIF Antibody
NB100-66028

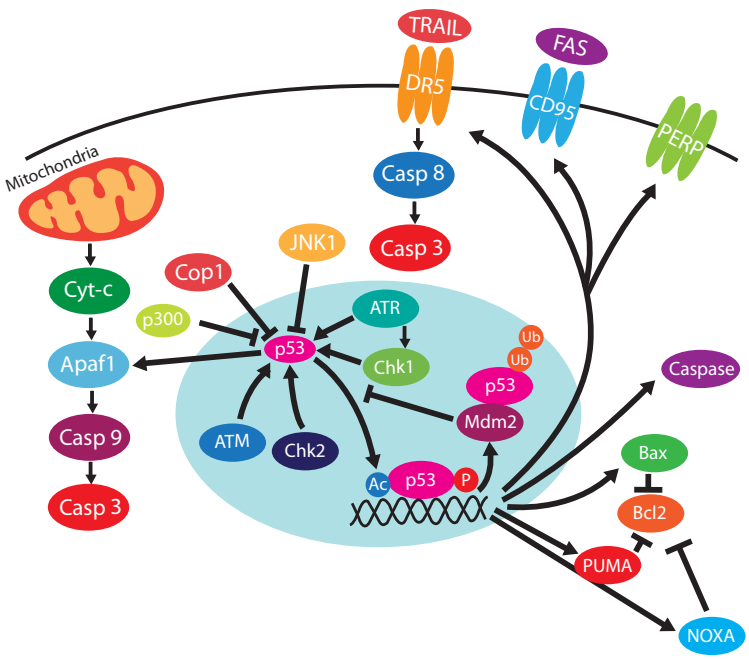


Western blot analysis of K562 cell lysate using NB100-66028.

Species: Hu
Applications: WB

p53 and Apoptosis

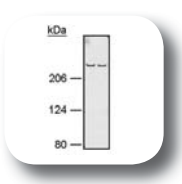
Tumor protein 53, commonly referred to as Tp53 or p53, is an important protein for apoptosis. This master regulator has far reaching effects on apoptosis; it is capable of affecting both the intrinsic and extrinsic pathways. Control of tumor development is highly dependent on p53 monitoring cell proliferation. Because p53 mutations exist in approximately 50% of tumor cells, the importance of this protein is too great to ignore. p53 can be induced by internal and external stress signals, such as DNA damage, oxidative stress, loss of normal cellular contacts, and radiation.



ATR

The serine/threonine protein kinase ATR responds to DNA damage caused by ionizing radiation, UV damage, and replication stalling. This protein causes phosphorylation and activation of Chk1, BRCA1, and p53. Activation of these proteins can lead to apoptosis.

ATR Antibody
NB100-322



Western blot analysis of HeLa and U205 cell lysates using NB100-322.

Species: Hu, Mu
Applications: WB

ATR Antibody
NBP1-04951

Immuno-histochemical analysis of human breast carcinoma tissue using NBP1-04951.

Species: Hu, Mu, Rt
Applications: IHC

ATR (2B5) Antibody
NBP1-02919

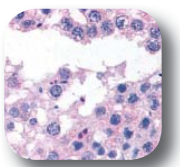
Immuno-histochemical analysis of human liver using NBP1-02919.

Species: Hu
Applications: IF, IP, WB, IHC-P

ATM

The ATM protein is related to the PI3-kinase family of proteins through a C-terminal phoshatidylinositol 3-kinase (PI3-kinase) domain. Members of the family are involved in cell cycle control, DNA replication, recombination and repair. The main role of ATM appears to be induction of a DNA-damage control pathway in response to genotoxic insults, such as ionizing radiation, anti-tumor medications and the programmed DNA breaks of meiosis. ATM has also been linked to apoptosis along with Nbs1 and Chk2 in the E2F1 pathway.

ATM Antibody
NB100-104



Immuno-histochemical analysis of testis, seminiferous tubule using NB100-104.

Species: Hu
Applications: IF, IHC, IP, WB

ATM Antibody
NB100-104

FEATURED PRODUCT

Western blot analysis of HeLa whole cell lysate using NB100-104.

Species: Hu
Applications: IF, IHC, IP, WB

ATM Antibody
NB100-678

Immuno-precipitation of NB100-678 on whole cell lysate from human L-40 cells.

Species: Hu
Applications: IP, WB

ATM (2C1) Antibody
NBP1-02939

NEW

Immuno-histochemical analysis of human testis using NBP1-02939.

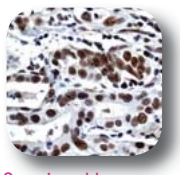
Species: Hu, Mk, Mu, Rt
Applications: IF, IP, WB, IHC-P

ATM [Ser1981] Antibody
NB600-621

Immuno-fluorescence microscopy showing overlay of anti-ATM pS1981 staining.

Species: Hu, Mu
Applications: ELISA, IF, WB

ATM (EP1890Y) Antibody
NB110-66655



Immunohisto-chemical analysis of human gastric carcinoma using NB110-66655.

Species: Hu
Applications: IHC, IP, WB, ICC

Chk1

Chk1 is a cell cycle checkpoint kinase induced in response to cellular stress. This protein is activated upon phosphorylation by ATR. While this most often results in stopping the cell cycle, Chk1 has also been implicated in upregulating the apoptotic response because of caspase dependent cleavage of Chk1. This cleavage results in heightened kinase activity.

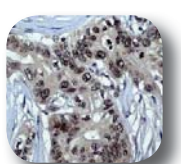
Chk1 (6F5) Antibody
NBP1-02848

NEW

Immuno-histochemical analysis of human spleen using NBP1-02848.

Species: Hu
Applications: WB, IHC-P

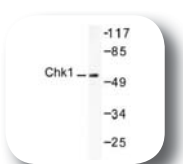
Chk1 (EP691Y) Antibody
NB110-55717



Immuno-histochemical analysis of human breast carcinoma using NB110-55717.

Species: Hu
Applications: FACS, IHC, WB, ICC

Chk1 Antibody
NB100-91695



Western blot analysis of Chk1 (K274) antibody in extracts from HeLa cells using NB100-91695.

Species: Hu
Applications: ELISA, WB

Chk2

Chk2 is a protein kinase that regulates p53 function in response to ionizing radiation damage. Research shows that Chk2 is an integral part of transcription independent activation of apoptosis.

Chk2 Antibody
NBP1-03065

NEW

Immuno-histochemical analysis of human testis using NBP1-03065.

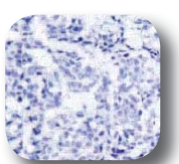
Species: Hu, Mu, Rt
Applications: WB, ICC, IHC-P

Chk2 (NT) Antibody
NB100-55815

Western blot analysis of Chk2 expression in K562 (A), Jurkat (B), and HL-60 (C) whole cell lysates using NB100-55815.

Species: Hu, Mu, Rt
Applications: WB

Chk2 Antibody
NB100-91699



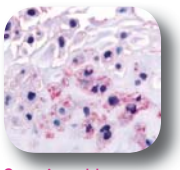
Immuno-histochemical analysis of human breast carcinoma tissue using NB100-91669.

Species: Hu, Mu
Applications: ELISA, IHC, WB

DDR1

Discoidin domain receptor 1 (DDR1) is a tyrosine kinase that is a transcriptional target of p53. This protein is suggested to play an important part in a feed-forward loop, increasing the levels of p53. Specifically, this protein mediates the MAPK cascade through Ras signaling. This oncogene is over-expressed in breast, ovarian, esophageal and pediatric brain tumors.

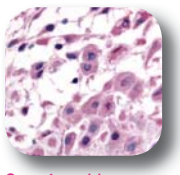
DDR1 Antibody
NB110-39011



Immuno-histochemical analysis of decidual cells using NB110-39011.

Species: Hu
Applications: IHC

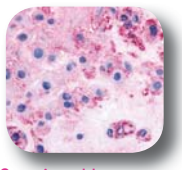
DDR1 Antibody
NB110-55506



Immuno-histochemical analysis of human placenta using NB110-55506.

Species: Hu
Applications: IHC

DDR1 Antibody
NB110-55582



Immuno-histochemical analysis of human placenta using NB110-55582.

Species: Hu
Applications: IHC

PERP

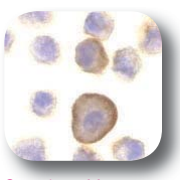
PERP is a p53 target gene that functions to upregulate expression of p53. However, this protein is only found to be regulated by p53 in certain cell types. PERP has sequence similarity to PMP-22/gas3, further indicating its direct role in p53 induced apoptosis.

PERP Antibody
NB100-2912

Western blot analysis of human liver lysate using NB100-2912

Species: Hu
Applications: ELISA, WB

PERP Antibody
NB100-55915



Immuno-cytochemical analysis of A431 cells using NB100-55915.

Species: Hu
Applications: IF, WB, ICC

PERP Antibody
NBP1-02622

Immuno-histochemical analysis of human skin using NBP1-02622.

Species: Hu
Applications: WB, ICC, IHC-P

PIG3

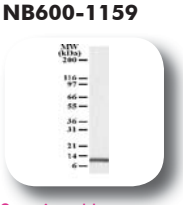
The PIG3 protein, generated by the p53 induced gene, belongs to a family of proteins implicated in redox control of p53. In response to genotoxic stress, PIG3 is activated, but the kinetics are slower than other down-stream proteins. This may indicate the usefulness of this protein for detecting transient activation of p53.

PIG3 Antibody
H00009540-B01

Western Blot analysis of transfected 293T cell line using H00009540-B01. Lane 1 is a TP53I3 transfected lysate and lane 2 is a non-transfected lysate.

Species: Hu
Applications: ELISA, WB

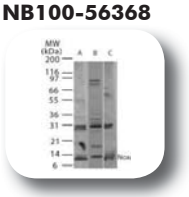
NOXA (114C307) Antibody
NB600-1159



Species: Hu
Applications: WB

Western blot analysis of RL-7 cell (a follicular lymphoma) lysate using NB600-1159.

NOXA Antibody
NB100-56368



Species: Hu, Mu, Rt
Applications: WB

Western blot analysis of human thymus (lane A), mouse thymus (lane B) and rat thymus (lane C) using NB100-56368.

NOXA

The NOXA gene is targeted by p53 and, upon activation, serves to produce a pro-apoptotic protein of the Bcl-2 family. NOXA has been implicated in both dependent and independent p53 apoptotic pathways. For the independent pathway, NOXA induction serves to magnify the apoptotic response.

PUMA

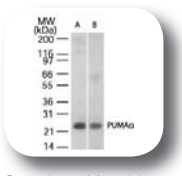
PUMA modulates Bax in response to p53, which in turn regulates the release of cytochrome c. Transcription of PUMA is mediated in the nucleus by p53; the fully functional PUMA protein seeks to free p53 from Bcl-xL in the cytoplasm. Freeing p53 in the cytoplasm allows for mitochondrial induced apoptosis.

PUMA Antibody
NBP1-02952

Immuno-histochemical analysis of human breast using NBP1-02952.

Species: Hu, Mu
Applications: WB, ICC, IHC-P

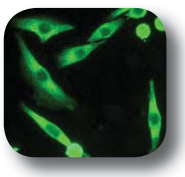
PUMA Antibody
NB100-56370



Western blot analysis of Jurkat (lane A) and NIH 3T3 whole cell lysate (lane B) using NB100-56370.

Species: Hu, Mu
Applications: IHC, WB

PUMA (EP512Y) Antibody
NB110-57443



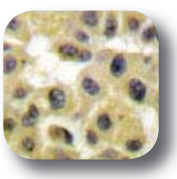
Immuno-fluorescent staining of HeLa cells using NB110-57443.

Species: Hu
Applications: FACS, IF, IHC, IP, WB, ICC

Mdm2

Mdm2 is a cellular proto-oncogene that functions to affect the transcriptional activation by p53. This protein binds p53 and transports it to the cytoplasm, where Mdm2 then signals for degradation by ubiquitination. Activation of Mdm2 is triggered in response to p53 activation and together the proteins act as a negative feedback loop.

Mdm2 Antibody
NB100-91863



Immunohisto-chemical analysis of human breast carcinoma tissue using NB100-91863.

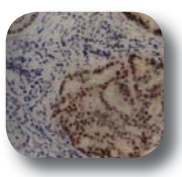
Species: Hu, Mu
Applications: ELISA, IHC, WB

Mdm2 Antibody
NB100-92079

Western blot analysis of COS7 cells using NB100-92079.

Species: Hu, Mu
Applications: ELISA, WB

Mdm2 (SMP14) Antibody
NB100-62269



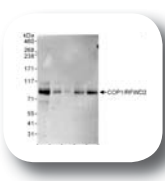
Immunohisto-chemical analysis of human breast carcinoma using NB100-62269.

Species: Hu
Applications: IP, WB, IHC-P, IHC-Fr, RIA

COP1

COP1 is a ring finger containing protein that binds p53 and targets it for degradation by the proteosome via ubiquitination. COP1 is capable of functioning without Mdm2. Stabilization of this protein requires phosphorylation of the protein.

COP1 Antibody
NB110-40496



Western blot analysis of HeLa whole cell lysate, 293T and mouse NIH3T3 cells using NB110-40496.

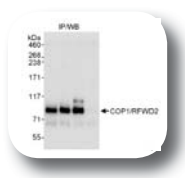
Species: Hu, Mu
Applications: IP, WB

COP1 (1E4) Antibody
H00064326-M01

Immuno-fluorescence of NIH/3T3 cell using H00064326-M01.

Species: Hu, Mu
Applications: ELISA, IF, WB

COP1 Antibody
NB110-40498



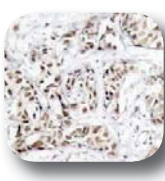
Immuno-precipitation of NB110-40498 on HeLa whole cell lysate.

Species: Hu, Mu
Applications: IP, WB

JNK1

The JNK1 protein modulates the activation of p53. With sustained activation during apoptosis, it serves to downregulate expression of p53.

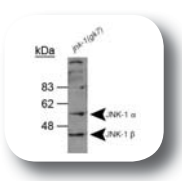
JNK1 [Thr183] Antibody
NB100-82009



Immuno-histochemical analysis of human breast carcinoma tissue using NB100-82009.

Species: Hu, Mu, Rt
Applications: IHC

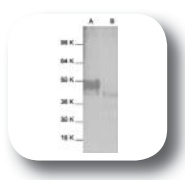
JNK1 Antibody
NB100-1925



Western blot analysis of JNK-1 using NB100-1925.

Species: Ce
Applications: IP, WB

JNK1 Antibody
NB120-7949



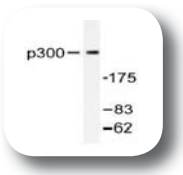
Western blot analysis of JNK1 p46 expression in A431 (lane A) and HeLa (lane B) using NB120-7949.

Species: Hu, Mu, Rt
Applications: IHC, IP, WB

p300

The p300 protein has the ability to activate and inactivate p53. The acetyl transferase domain of this protein adds an acetyl group to p53, which effectively activates and stabilizes the protein. For degradation, p300 may serve as a bridge to the proteosome. p300 also stabilizes p53 and allows it to be targeted for degradation. The p53-p300-Mdm2 complex results in polyubiquitination of p53.

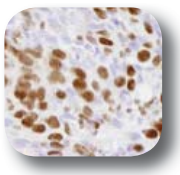
p300 Antibody
NB100-92193



Western blot analysis of 293 cells using NB100-92193.

Species: Hu, Mu
Applications: ELISA, WB

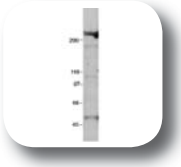
p300 Antibody
NB100-1745



Immuno-histochemical analysis of human breast adenocarcinoma using NB100-1745.

Species: Hu
Applications: IHC

p300 (RW109) Antibody
NB100-617



Western blot analysis of HeLa nuclear extract using NB100-617.

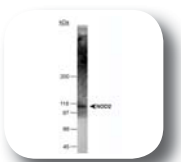
Species: Hu, Mu, Mk, Rt
Applications: IF, IP, WB

Featured Apoptosis Antibodies

NOD2

NOD2 is a member of the apoptosis regulating protein family that includes caspase recruitment-domains, as well as Apaf-1 and NOD1. It contains two N-terminal CARDs, a nucleotide binding domain (NBD), and multiple C-terminal leucine-rich repeats (LRRs). NOD2 is expressed in monocytes (whereas NOD1 is expressed in multiple tissues). NOD2 plays a role in regulating NF-kappaB, acts as an intracellular receptor for bacterial lipopolysaccharides, and contributes to inflammatory bowel disease (IBD) and Crohn's disease.

NOD2 (2D9) Antibody
NB100-524



Western blot analysis of NOD2 transfected 293T cell lysate using NB 100-524.

Species: Hu
Applications: IP, WB, IHC-P

NOD2 Antibody
NB500-253

Western blot analysis of NOD2 transfected 293T cell lysate using NB500-253.

Species: Hu
Applications: WB

NOD2 Antibody SuperNovus Pack
NB100-911
Includes: NB500-201, NB500-237, NB500-238

HRD1

HRD1 is an ubiquitin ligase whose expression is induced by the unfolded protein response following endoplasmic reticulum (ER) stress. Expression of HRD1 protects cells from apoptosis by inducing degradation of abnormally processed proteins that accumulate in the ER. HRD1 is expressed in many tissues, and is strongly expressed in brain, pancreas, liver, kidney and skeletal muscle.

HRD1 Antibody
NB100-2526

Western blot analysis of an endogenous 293T cell lysate using NB100-2526.

Species: Hu, Mu
Applications: WB

TOM70

Nearly all mitochondrial proteins are synthesized as precursors in the cytoplasm. These precursor proteins are transported into the mitochondria with the help of cytosolic chaperones and mitochondrial translocators, such as Translocators of the Outer Membrane (TOMs) and Translocators of the Inner Membrane (TIMs). TOM70 is a receptor that accelerates the import of all mitochondrial precursor proteins.

TOM70 Antibody
NB110-58347

Western blot analysis of TOM70 in MCF7 mitochondrial extracts using NB110-58347.

Species: Hu, Mu, Rt
Applications: WB

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8. [NOD2 NB500-253] Till, A., et al. A role for membrane-bound CD147 in NOD2-mediated recognition of bacterial cytoinvasion. J. Cell. Sci. 2008;121:487-495.

9. [PERP NB500-231] Singaravelu, K., et al. PERP, a p53 proapoptotic target, mediates apoptotic cell death in renal ischemia. Am. J. Physiol. Renal. Physiol. 2009;296:F847-F858 [PMID: 19158346].

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11. [Survivin NB500-203] Ghosh, A.K., et al. Curcumin Inhibits Prosurvival Pathways in Chronic Lym phocytic Leukemia B Cells and May Overcome Their Stromal Protection in Combination with EGCG. Clin. Cancer Res. 2009 Feb 15;15(4):1250-1258 [PMID: 19228728].

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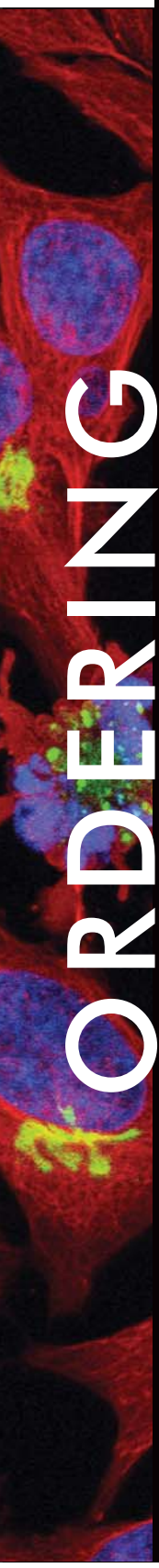
13. [TRAIL NB500-220] Herzer, K., et al. IFN-{alpha}-Induced Apoptosis in Hepatocellular Carcinoma Involves Promyelocytic Leukemia Protein and TRAIL Independently of p53. Cancer Res. 2009 Feb 1;69(3):855-862 [PMID: 19141642].



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