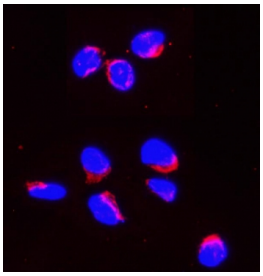
Smac Antibody / Diablo (R32332)

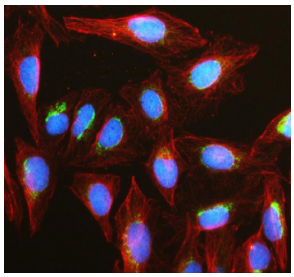
Catalog No.	Formulation	Size
R32332	0.5mg/ml if reconstituted with 0.2ml sterile DI water	100 ug

Bulk quote request

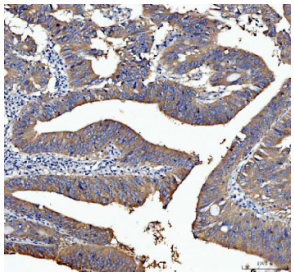
Availability	1-3 business days
Species Reactivity	Human, Mouse, Rat
Format	Antigen affinity purified
Host	Rabbit
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit IgG
Purity	Antigen affinity
Buffer	Lyophilized from 1X PBS with 2% Trehalose
UniProt	Q9NR28
Localization	Cytoplasmic
Applications	Western blot: 0.5-1ug/ml Immunohistochemistry (FFPE): 2-5ug/ml Immunofluorescence (FFPE): 5ug/ml Flow cytometry: 1-3ug/million cells Immunoprecipitation: 2ug per 500ug of lysate ELISA: 0.1-0.5ug/ml (human protein tested); request BSA-free format for coating
Limitations	This Smac antibody is available for research use only.



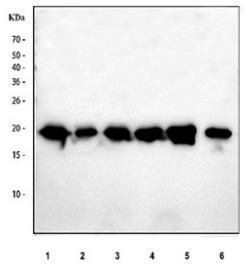
Immunofluorescent staining of FFPE human U-2 OS cells with Smac antibody (red) and DAPI nuclear stain (blue). HIER: steam section in pH6 citrate buffer for 20 min.



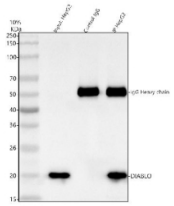
Immunofluorescent staining of FFPE human U-2 OS cells with Smac antibody (green), Alpha Tubulin mAb (red) and DAPI nuclear stain (blue). HIER: steam section in pH6 citrate buffer for 20 min.



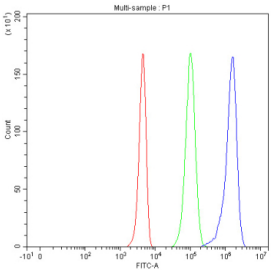
Immunohistochemical staining of FFPE human rectal cancer tissue with Smac antibody, HRP-secondary and DAB substrate. HIER: boil tissue sections in pH8 EDTA for 20 min and allow to cool before testing.



Western blot analysis using Smac antibody. Lane 1: human 293T whole cell lysates; Lane 2: human HeLa whole cell lysates; Lane 3: human HepG2 whole cell lysates; Lane 4: human Jurkat whole cell lysates; Lane 5: rat testis tissue lysates; Lane 6: mouse testis tissue lysates. The predicted molecular weight of DIABLO is ~27 kDa. A predominant band is observed at ~20 kDa, consistent with the commonly observed mature, mitochondrially processed form of Smac on SDS-PAGE.



Immunoprecipitation of Smac protein from 500ug of human HepG2 whole cell lysate with 2ug of Smac antibody.



Flow cytometry testing of human 293T cells with Smac antibody at 1ug/million cells (blocked with goat sera); Red=cells alone, Green=isotype control, Blue= Smac antibody.

Description

Smac antibody targets Second mitochondria-derived activator of caspases, commonly known as Smac or Diablo, encoded by the DIABLO gene. Smac is a mitochondrial protein that plays a critical role in the intrinsic apoptotic pathway by promoting caspase activation. Under normal conditions, Smac is localized within the mitochondrial intermembrane space. Upon apoptotic stimulation, it is released into the cytosol, where it functions as a pro-apoptotic regulator by counteracting inhibitor of apoptosis proteins (IAPs).

Functionally, Smac enhances apoptosis by binding to IAP family members such as XIAP, cIAP1, and cIAP2, thereby preventing these proteins from suppressing caspase activity. Through this mechanism, Smac facilitates the activation of

effector caspases and promotes efficient execution of programmed cell death. This role positions Smac as an important checkpoint protein that helps determine whether apoptotic signals proceed to irreversible cell death. A Smac antibody supports studies focused on mitochondrial apoptosis and caspase regulation.

DIABLO is broadly expressed across tissues, reflecting the universal requirement for tightly regulated apoptotic machinery in multicellular organisms. While Smac is constitutively present in mitochondria, its cytosolic activity is strictly regulated and occurs primarily in response to cellular stress, DNA damage, or death receptor signaling. The controlled release of Smac ensures that apoptosis is activated only under appropriate conditions, maintaining tissue homeostasis and preventing unintended cell loss.

From a disease-relevance perspective, dysregulation of Smac-mediated apoptosis has been implicated in cancer, neurodegenerative disease, and immune disorders. Reduced Smac expression or impaired release from mitochondria can contribute to apoptosis resistance in tumor cells, supporting uncontrolled survival and therapy resistance. Conversely, excessive or inappropriate activation of apoptotic pathways involving Smac has been studied in degenerative conditions characterized by unwanted cell death. These findings have made Smac a molecule of interest in studies of apoptosis regulation and therapeutic targeting of cell death pathways.

At the molecular level, Smac undergoes mitochondrial processing to generate its mature, active form, and post-translational regulation can influence its stability and interactions with IAP proteins. These factors can contribute to variable electrophoretic behavior on SDS-PAGE without implying changes in primary sequence. A Smac antibody supports research applications focused on apoptosis signaling, mitochondrial protein dynamics, and disease-associated alterations in cell death regulation, with NSJ Bioreagents providing reagents intended for research use.

Application Notes

Optimal dilution of the Smac antibody should be determined by the researcher.

Immunogen

Amino acids 56-239 of human Smac/Diablo were used as the immunogen for the Smac antibody.

Storage

After reconstitution, the Smac antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.

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