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ZBP1 Antibody
Catalog # ASC10614

Specification

ZBP1 Antibody - Product Information

Application	**WB, IHC, IF**
Primary Accession	Q9H171
Other Accession	EAW75510, 119595916
Reactivity	**Human, Mouse, Rat**
Host	**Rabbit**
Clonality	**Polyclonal**
Isotype	**IgG**
Calculated MW	**Predicted: 39, 45 kDa** **Observed: 42 kDa KDa**
Application Notes	**ZBP1 antibody can be used for the detection of ZBP1 by Western blot at 0.5 - 2 µg/mL. Antibody can also be used for immunohistochemistry starting at 2.5 µg/mL. For immunofluorescence start at 20 µg/mL.**

ZBP1 Antibody - Additional Information

Gene ID **81030**

Target/Specificity
ZBP1; Multiple isoforms of ZBP1 are known to exist.

Reconstitution & Storage
ZBP1 antibody can be stored at 4℃ for three months and -20℃, stable for up to one year. As with all antibodies care should be taken to avoid repeated freeze thaw cycles. Antibodies should not be exposed to prolonged high temperatures.

Precautions
ZBP1 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

ZBP1 Antibody - Protein Information

Name ZBP1 {ECO:0000303|PubMed:16876127, ECO:0000312|HGNC:HGNC:16176}

Function
Key innate sensor that recognizes and binds Z-RNA structures, which are produced by a number of viruses, such as herpesvirus, orthomyxovirus or flavivirus, and triggers different forms of cell death (PubMed:32200799). ZBP1 acts as an essential mediator of pyroptosis, necroptosis and apoptosis (PANoptosis), an integral part of host defense against pathogens, by activating RIPK3, caspase-8 (CASP8), and the NLRP3 inflammasome (By similarity). Key activator of necroptosis, a programmed cell death process in response to death- inducing TNF-alpha family

members, via its ability to bind Z-RNA: once activated upon Z-RNA-binding, ZBP1 interacts and stimulates RIPK3 kinase, which phosphorylates and activates MLKL, triggering execution of programmed necrosis (By similarity). In addition to TNF-induced necroptosis, necroptosis can also take place in the nucleus in response to orthomyxoviruses infection: ZBP1 recognizes and binds Z-RNA structures that are produced in infected nuclei by orthomyxoviruses, such as the influenza A virus (IAV), leading to ZBP1 activation, RIPK3 stimulation and subsequent MLKL phosphorylation, triggering disruption of the nuclear envelope and leakage of cellular DNA into the cytosol (PubMed:32200799). ZBP1-dependent cell death in response to IAV infection promotes interleukin-1 alpha (IL1A) induction in an NLRP3- inflammasome-independent manner: IL1A expression is required for the optimal interleukin-1 beta (IL1B) production, and together, these cytokines promote infiltration of inflammatory neutrophils to the lung, leading to the formation of neutrophil extracellular traps (By similarity). In addition to its direct role in driving necroptosis via its ability to sense Z-RNAs, also involved in PANoptosis triggered in response to bacterial infection: component of the AIM2 PANoptosome complex, a multiprotein complex that triggers PANoptosis (By similarity). Also acts as the apical sensor of fungal infection responsible for activating PANoptosis (By similarity). Involved in CASP8-mediated cell death via its interaction with RIPK1 but independently of its ability to sense Z-RNAs (By similarity). In some cell types, also able to restrict viral replication by promoting cell death-independent responses (By similarity). In response to Zika virus infection in neurons, promotes a cell death-independent pathway that restricts viral replication: together with RIPK3, promotes a death- independent transcriptional program that modifies the cellular metabolism via up-regulation expression of the enzyme ACOD1/IRG1 and production of the metabolite itaconate (By similarity). Itaconate inhibits the activity of succinate dehydrogenase, generating a metabolic state in neurons that suppresses replication of viral genomes (By similarity).

Cellular Location
Cytoplasm. Nucleus. Note=Mainly cytoplasmic (PubMed:16876127, PubMed:16990255). Accumulates in the nucleus in response to influenza A virus (IAV) infection: senses IAV defective viral genomes RNA in the nucleus (By similarity). {ECO:0000250|UniProtKB:Q9QY24, ECO:0000269|PubMed:16876127, ECO:0000269|PubMed:16990255}

Tissue Location
Highly expressed in lymphatic tissues including lymph node, leukocytes, tonsil, bone marrow and spleen (PubMed:11842111). Expressed to a lesser extent in thymus, lung and liver (PubMed:11842111).

ZBP1 Antibody - Protocols

Provided below are standard protocols that you may find useful for product applications.

- Western Blot
- Blocking Peptides
- Dot Blot
- Immunohistochemistry
- Immunofluorescence
- Immunoprecipitation
- Flow Cytomety
- Cell Culture

ZBP1 Antibody - Images

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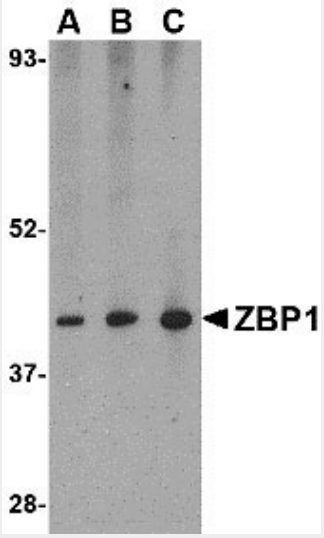
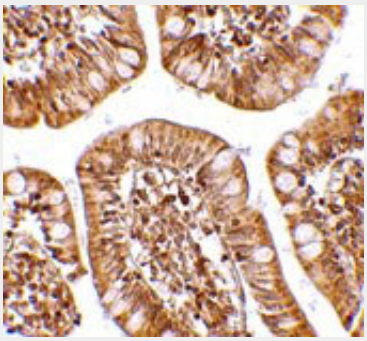
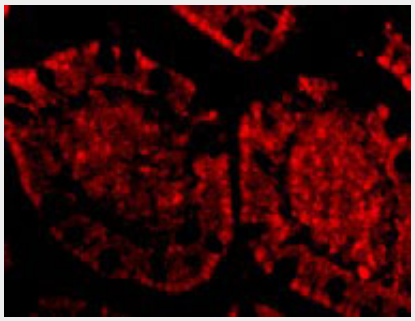


Western blot analysis of ZBP1 in mouse small intestine tissue lysate with ZBP1 antibody at (A) 0.5, (B) 1 and (C) 2 µg/mL.



Immunohistochemistry of ZBP1 in human small intestine tissue with ZBP1 antibody at 2.5 µg/mL.



Immunofluorescence of ZBP1 in Human Small Intestine tissue with ZBP1 antibody at 20 µgg/mL.

ZBP1 Antibody - Background

ZBP1 Antibody: Z-DNA binding protein 1 (ZBP1) belongs to a family of proteins that contain the Zalpha domain which binds specifically to left-handed Z-DNA and Z-RNA. ZBP1 was initially identified as a novel gene that was up-regulated in activated macrophages in mice bearing ascites tumors, suggesting that is may play a role in processes such as host response in neoplasia. More recent reports indicate that the cytosolic ZBP1 has can act like the toll-like receptor TLR9 by detecting cytosolic double-stranded (ds) DNA and trigger induction of type I interferon and other innate immune responses. It is thought that the binding of ZBP1 to dsDNA enhances its association with innate immune response proteins such as the IRF3 transcription factor and the serine/threonine kinase TBK1 (also known as NAK).

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Schwartz T, Behlke J, Lowenhaupt K, et al. Structure of the DLM-1-Z-DNA complex reveals a conserved family of Z-DNA-binding proteins. Nat. Struct. Biol. 2001; 8:761-5.
Fu Y, Comella N, Tognazzi K, et al. Cloning of DLM-1, a novel gene that is up-regulated in active macrophages, using RNA differential display. Gene 1999; 204:157-63.
Takaoda A, Wang Z, Choi MK, et al. DAI (DLM-1/ZBP1) is a cytosolic DNA sensor and an activator of innate immune response. Nature 2007; 448:501-5.