

SAMHD1 Antibody
Catalog # ASC12061**Specification****SAMHD1 Antibody - Product Information**

Application	WB, IHC, IF
Primary Accession	O9Y3Z3
Other Accession	38016914 , NP_056289 , 25939
Reactivity	Human, Mouse
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Calculated MW	72201
Application Notes	SAMHD1 antibody can be used for detection of SAMHD1 by Western blot at 1 - 2 µg/ml. Antibody can also be used for immunohistochemistry starting at 5 µg/mL. For immunofluorescence start at 20 µg/mL.

SAMHD1 Antibody - Additional Information

Gene ID	25939
Other Names	SAM domain and HD domain 1, DCIP, CHBL2, HDDC1, MOP-5, SBBI88

Precautions

SAMHD1 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

SAMHD1 Antibody - Protein Information

Name SAMHD1 ([HGNC:15925](#))

Function

Protein that acts both as a host restriction factor involved in defense response to virus and as a regulator of DNA end resection at stalled replication forks (PubMed:[19525956](http://www.uniprot.org/citations/19525956), PubMed:[21613998](http://www.uniprot.org/citations/21613998), PubMed:[21720370](http://www.uniprot.org/citations/21720370), PubMed:[22056990](http://www.uniprot.org/citations/22056990), PubMed:[23601106](http://www.uniprot.org/citations/23601106), PubMed:[23602554](http://www.uniprot.org/citations/23602554), PubMed:[24336198](http://www.uniprot.org/citations/24336198), PubMed:[26294762](http://www.uniprot.org/citations/26294762), PubMed:[26431200](http://www.uniprot.org/citations/26431200), PubMed:[28229507](http://www.uniprot.org/citations/28229507), PubMed:[28834754](http://www.uniprot.org/citations/28834754), PubMed:[29670289](http://www.uniprot.org/citations/29670289)). Has deoxynucleoside triphosphate (dNTPase) activity, which is required to restrict infection by viruses,

such as HIV-1: dNTPase activity reduces cellular dNTP levels to levels too low for retroviral reverse transcription to occur, blocking early- stage virus replication in dendritic and other myeloid cells (PubMed:19525956, PubMed:21613998, PubMed:21720370, PubMed:22056990, PubMed:23364794, PubMed:23601106, PubMed:23602554, PubMed:24336198, PubMed:25038827, PubMed:26101257, PubMed:26294762, PubMed:26431200, PubMed:28229507). Likewise, suppresses LINE-1 retrotransposon activity (PubMed:24035396, PubMed:24217394, PubMed:29610582). Not able to restrict infection by HIV-2 virus; because restriction activity is counteracted by HIV-2 viral protein Vpx (PubMed:21613998, PubMed:21720370). In addition to virus restriction, dNTPase activity acts as a regulator of DNA precursor pools by regulating dNTP pools (PubMed:23858451). Phosphorylation at Thr-592 acts as a switch to control dNTPase-dependent and -independent functions: it inhibits dNTPase activity and ability to restrict infection by viruses, while it promotes DNA end resection at stalled replication forks (PubMed:23601106, PubMed:23602554, PubMed:29610582, PubMed:29670289). Functions during S phase at stalled DNA replication forks to promote the resection of gapped or reversed forks: acts by stimulating the exonuclease activity of MRE11, activating the ATR-CHK1 pathway and allowing the forks to restart replication (PubMed:29670289). Its ability to promote degradation of nascent DNA at stalled replication forks is required to prevent induction of type I interferons, thereby preventing chronic inflammation (PubMed:27477283, PubMed:29670289). Ability to promote DNA end resection at stalled replication forks is independent of dNTPase activity (PubMed:29670289). Enhances immunoglobulin hypermutation in B-lymphocytes by promoting transversion mutation (By similarity).

Cellular Location

Nucleus. Chromosome Note=Localizes to sites of DNA double-strand breaks in response to DNA damage.

Tissue Location

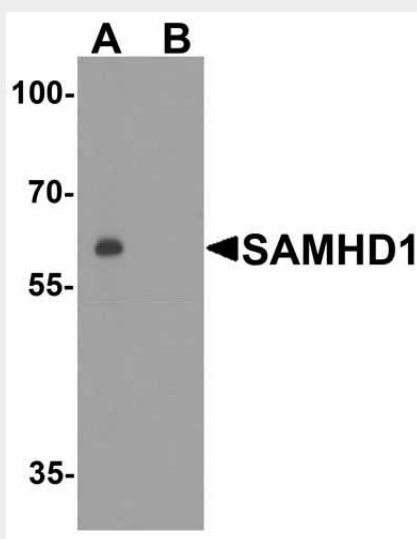
Expressed in heart, skeletal muscle, spleen, liver, small intestine, placenta, lung and peripheral blood leukocytes (PubMed:11064105). No expression is seen in brain and thymus (PubMed:11064105).

SAMHD1 Antibody - Protocols

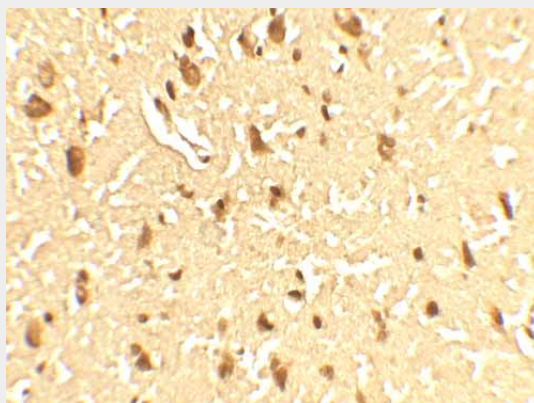
Provided below are standard protocols that you may find useful for product applications.

- [Western Blot](#)
- [Blocking Peptides](#)
- [Dot Blot](#)
- [Immunohistochemistry](#)
- [Immunofluorescence](#)
- [Immunoprecipitation](#)
- [Flow Cytometry](#)
- [Cell Culture](#)

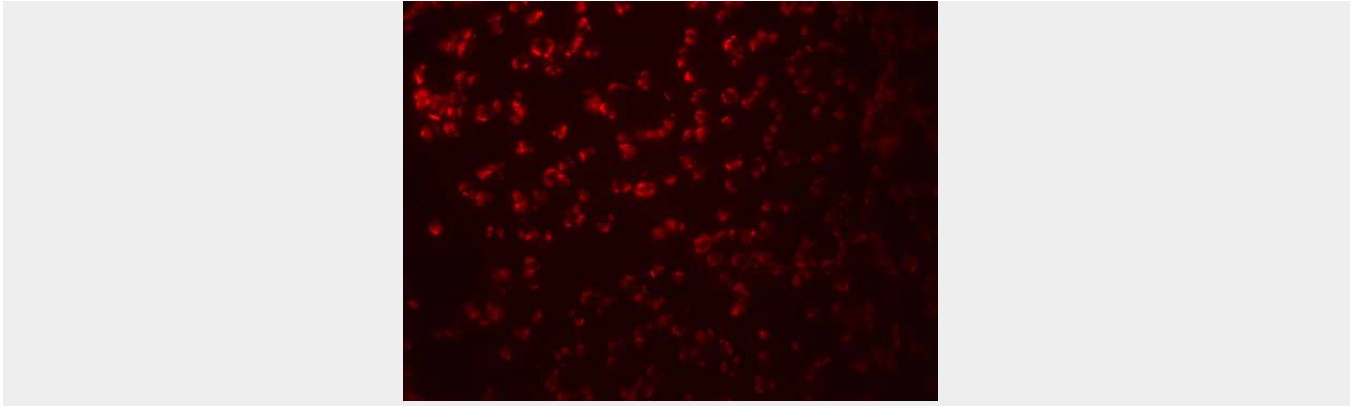
SAMHD1 Antibody - Images



Western blot analysis of SAMHD1 in Daudi cell lysate with SAMHD1 antibody at 1 $\mu\text{g/ml}$ in (A) the absence and (B) the presence of blocking peptide.



Immunohistochemistry of SAMHD1 in human brain tissue with SAMHD1 antibody at 5 $\mu\text{g/ml}$.



Immunofluorescence of SAMHD1 in Daudi cells with SAMHD1 antibody at 20 µg/ml.

SAMHD1 Antibody - Background

The SAM domain and HD domain 1 (SAMHD1) protein is upregulated in response to viral infection and is thought to play a role in innate immunity (1). SAMHD1 blocks the infection of HIV-1 and SIVdeltaVpx before reverse transcription in macrophages and dendritic cells (2), and this restriction is regulated by phosphorylation of SAMHD1 (3). Mutations in this gene have been associated with Aicardi-Goutieres syndrome (1).

SAMHD1 Antibody - References

Rice GI, Bond J, Asipu A, et al. Mutations involved in Aicardi-Goutieres syndrome implicate SAMHD1 as regulator of the innate immune system. *Nat. Genet.* 2009; 41:829-32.; Hrecka K, Hao C, Gierszewska M, et al. Vpx relieves the inhibition of HIV-1 infection of macrophages mediated by the SAMHD1 protein. *Nature* 2011; 474:654-7.; Welbourn S, Dutta SM, Semmes OJ, et al. Restriction of virus infection but not catalytic dNTPase activity is regulated by phosphorylation of SAMHD1. *J. Virol.* 2013; 87:11516-24.;