abcam

ab177462

Anti-SAMHD1 antibody [EPR13040(B)] - C-terminal

Recombinant | RabMAb | KO Validated

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Preservative: 0.01% Sodium azide Constituents: PBS, 40% Glycerol (glycerin, glycerine), 0.05% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	EPR13040(B)
Purification technique	Affinity purification Protein A
Concentration	0.166 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Human
Dilution info	1/100 - 1/250
Notes	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

IP

Not recommended

Species	Human
Dilution info	-
Notes	-

WB

Tested

Species	Human
Dilution info	1/10000 - 1/50000
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/100 - 1/250
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/10 - 1/100
Notes	ab172730 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody.

Target data

See full target information SAMHD1

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, PubMed:21613998, PubMed:21720370, PubMed:22056990, PubMed:23601106, PubMed:23602554, PubMed:24336198, PubMed:26294762, PubMed:26431200, PubMed:28229507, PubMed:28834754, PubMed: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).

Storage

Shipped at conditions	Conditional Ambient
Appropriate short-term storage duration	1-2 weeks
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot
Storage information	Avoid freeze / thaw cycle

Notes

Patented technology
Our RabMAb® technology is a patented hybridoma-based technology for making rabbit monoclonal antibodies. For details on our patents, please refer to RabMAb® patents.

What are the advantages of a recombinant monoclonal antibody?
This product is a recombinant monoclonal antibody, which offers several advantages including:

- High batch-to-batch consistency and reproducibility
- Improved sensitivity and specificity
- Long-term security of supply
- Animal-free batch production

For more information, read more on recombinant antibodies.

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	SAMHD1 also known as Sterile Alpha Motif and HD-Domain Containing Protein 1 functions mechanically as a dGTP-dependent deoxynucleotide triphosphohydrolase. It has a molecular mass of approximately 72 kDa. This protein is expressed in various cell types most notably in immune cells such as macrophages and dendritic cells. SAMHD1 operates by hydrolyzing deoxynucleoside triphosphates (dNTPs) into deoxynucleosides and inorganic triphosphates controlling the intracellular pool of dNTPs.
Biological function summary	SAMHD1 serves as a modulator of cellular proliferation and DNA repair processes. It forms part of a larger complex that regulates DNA replication through its influence on dNTP levels. By modulating these levels the protein prevents excess dNTP buildup which can result in inefficient replication and genomic instability. Moreover SAMHD1 contributes to the innate immune response by restricting viral replication particularly that of retroviruses like HIV-1 in non-dividing cells.
Pathways	SAMHD1 participates in nucleotide metabolism and DNA damage response pathways. For effective dNTP pool regulation it interacts with proteins involved in dNTP synthesis and degradation such as RRM2B. Additionally SAMHD1 is relevant in pathways connected to the restriction of viral infections working alongside proteins like TREX1 that degrade excess DNA and sustain genomic integrity during infection.
Associated diseases and disorders	SAMHD1 mutations associate with autoimmune disorders and certain types of cancers. Aicardi-Goutières syndrome a rare genetic inflammatory disorder shows links to defective SAMHD1 activity where impaired DNA damage response leads to chronic inflammation. Furthermore altered SAMHD1 expression relates to chronic lymphocytic leukemia where it influences both the proliferation and survival of malignant cells. Interaction with proteins such as DNA-PK is significant in linking SAMHD1 to these conditions demonstrating its role in maintaining immune system balance and genomic stability.

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

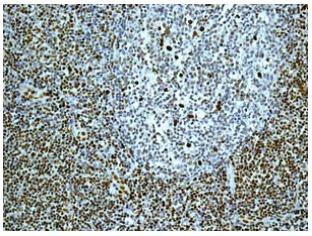
We do not recommend this combination. It is not covered by our product promise.

We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

Full details and terms and conditions can be found here:
Terms & Conditions.

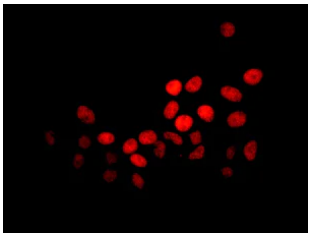
7 product images



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-SAMHD1 antibody [EPR13040(B)] - C-terminal (ab177462)

SAMHD1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-SAMHD1 antibody

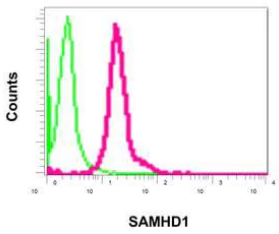
Immunohistochemical analysis of paraffin-embedded Human tonsil tissue labeling SAMHD1 with ab177462 at 1/100 dilution.
Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.



Immunocytochemistry/ Immunofluorescence - Anti-SAMHD1 antibody [EPR13040(B)] - C-terminal (ab177462)

SAMHD1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-SAMHD1 antibody

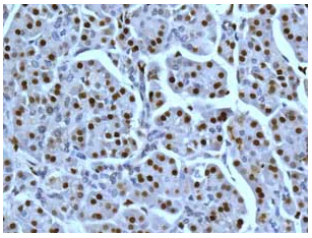
Immunofluorescence analysis of MCF7 cells labeling SAMHD1 with ab177462 at 1/100 dilution.



Flow Cytometry (Intracellular) - Anti-SAMHD1 antibody [EPR13040(B)] - C-terminal (ab177462)

SAMHD1 Flow Cytometry (Intracellular) staining using rabbit Anti-SAMHD1 antibody

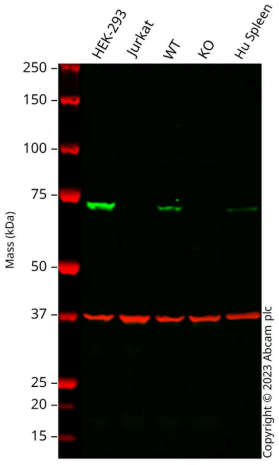
Intracellular flow cytometric analysis of permeabilized THP1 cells labeling SAMHD1 (red)with ab177462 at 1/10 dilution or rabbit IgG (negative) (green).



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-SAMHD1 antibody [EPR13040(B)] - C-terminal (ab177462)

SAMHD1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-SAMHD1 antibody

Immunohistochemical analysis of paraffin-embedded Human pancreas tissue labeling SAMHD1 with ab177462 at 1/100 dilution.
Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.



Western blot - Anti-SAMHD1 antibody [EPR13040(B)] - C-terminal (ab177462)

SAMHD1 Western blot staining using rabbit Anti-SAMHD1 antibody

Anti-SAMHD1 antibody [EPR13040(B)] (ab177462) staining at 1/10000 dilution, shown in green; Mouse anti-GAPDH antibody [6C5] (ab8245) loading control staining at 1/20000 dilution, shown in red. In Western blot, ab177462 was shown to bind specifically to SAMHD1. A band was observed at 73 kDa in wild-type HEK-293 cell lysates with no signal observed at this size in SAMHD1 knockout cell line. To generate this image, wild-type and SAMHD1 knockout HEK-293 cell lysates were analysed. First, samples were run on an SDS-PAGE gel then transferred onto a nitrocellulose membrane. Membranes were blocked in 3% milk in TBS-0.1% Tween® 20 (TBS-T) before incubation with primary antibodies overnight at 4 °C. Blots were washed four times in TBS-T, incubated with secondary antibodies for 1 h at room temperature, washed again four times then imaged. Secondary antibodies used were Goat anti-Rabbit IgG H&L 800CW and Goat anti-Mouse IgG H&L 680RD at 1/20000 dilution.
Lanes 1 - 5:
Western blot - Anti-SAMHD1 antibody [EPR13040(B)] - C-terminal (ab177462) at 1/10000 dilution

Lanes 1 - 5:
Western blot - Anti-SAMHD1 antibody [EPR13040(B)] - BSA and Azide free (ab240199)

Lane 1:
HEK-293 cell lysate at 20 µg

Lane 2:
Jurkat cell lysate at 20 µg

Lane 3:
Wild-type HAP1 cell lysate at 20 µg

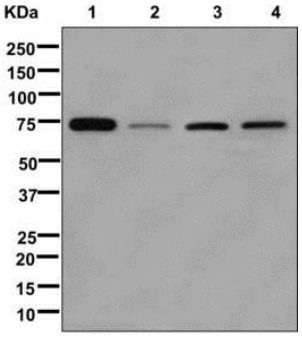
Lane 4:
SAMHD1 knockout HAP1 cell lysate at 20 µg

Lane 5:

Human Spleen cell lysate at 20 µg

Performed under reducing conditions.

Observed band size: 73 kDa



Western blot - Anti-SAMHD1 antibody [EPR13040(B)] - C-terminal (ab177462)

All lanes:
Western blot - Anti-SAMHD1 antibody [EPR13040(B)] - C-terminal (ab177462) at 1/10000 dilution

Lane 1:
THP1 cell lysate at 10 µg

Lane 2:
K562 cell lysate at 10 µg

Lane 3:
HeLa cell lysate at 10 µg

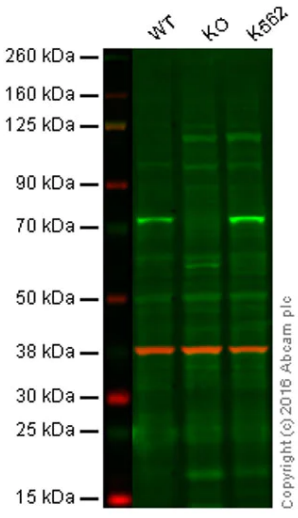
Lane 4:
MCF7 cell lysate at 10 µg

Secondary

All lanes:
Goat-anti-rabbit HRP at 1/2000 dilution

Developed using the ECL technique.

Predicted band size: 72 kDa



Western blot - Anti-SAMHD1 antibody [EPR13040(B)] - C-terminal (ab177462)

SAMHD1 Western blot staining using rabbit Anti-SAMHD1 antibody

Lane 1: Wild-type HAP1 cell lysate (20 µg)
Lane 2: SAMHD knockout HAP1 cell lysate (20 µg)
Lane 3: K562 cell lysate (20 µg)
Lanes 1 - 3: Merged signal (red and green). Green - ab177462 observed at 70 kDa. Red - loading control, ab8245, observed at 37 kDa.
ab177462 was shown to recognize SAMHD1 when SAMHD1 knockout samples were used, along with additional cross-reactive bands. Wild-type and SAMHD1 knockout samples were subjected to SDS-PAGE. ab177462 and ab8245 (loading control to GAPDH) were both diluted 1/10000 and incubated overnight at 4°C. Blots were developed with Goat anti-Rabbit IgG H&L (IRDye® 800CW) preadsorbed ab216773 and Goat anti-Mouse IgG H&L (IRDye® 680RD) preadsorbed ab216776 secondary antibodies at 1/10000 dilution for 1 h at room temperature before imaging.
All lanes:
Western blot - Anti-SAMHD1 antibody [EPR13040(B)] - C-terminal (ab177462)

Predicted band size: 72 kDa

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.