

Anti-SAMHD1 Antibody Picoband™ (monoclonal, 3B9)
Catalog # ABO15035**Specification****Anti-SAMHD1 Antibody Picoband™ (monoclonal, 3B9) - Product Information**

Application	WB, IHC, IF, ICC, FC
Primary Accession	Q9Y3Z3
Host	Mouse
Isotype	Mouse IgG1
Reactivity	Human
Clonality	Monoclonal
Format	Lyophilized

Description

Anti-SAMHD1 Antibody Picoband™ (monoclonal, 3B9) . Tested in Flow Cytometry, IF, IHC, ICC, WB applications. This antibody reacts with Human.

Reconstitution

Add 0.2ml of distilled water will yield a concentration of 500ug/ml.

Anti-SAMHD1 Antibody Picoband™ (monoclonal, 3B9) - Additional Information

Gene ID 25939

Other Names

Deoxynucleoside triphosphate triphosphohydrolase SAMHD1, dNTPase, 3.1.5.-, Dendritic cell-derived IFNG-induced protein, DCIP, Monocyte protein 5 {ECO:0000303|Ref.2}, MOP-5 {ECO:0000303|Ref.2}, SAM domain and HD domain-containing protein 1, hSAMHD1, SAMHD1 (HGNC:15925)

Calculated MW

72 kDa KDa

Application Details

Western blot, 0.25-0.5 µg/ml, Human
 Immunohistochemistry (Paraffin-embedded Section), 2-5 µg/ml, Human
 Immunocytochemistry/Immunofluorescence, 5 µg/ml, Human
 Flow Cytometry, 1-3 µg/1x10⁶ cells, Human

Contents

Each vial contains 4mg Trehalose, 0.9mg NaCl and 0.2mg Na₂HPO₄.

Immunogen

E.coli-derived human SAMHD1 recombinant protein (Position: E37-M626).

Purification

Immunogen affinity purified.

Storage

Store at -20°C for one year from date of receipt. After reconstitution, at 4°C for one

month. It can also be aliquotted and stored frozen at -20°C for six months. Avoid repeated freeze-thaw cycles.

Anti-SAMHD1 Antibody Picoband™ (monoclonal, 3B9) - 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](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:[23364794](http://www.uniprot.org/citations/23364794), 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:[25038827](http://www.uniprot.org/citations/25038827), PubMed:[26101257](http://www.uniprot.org/citations/26101257), PubMed:[26294762](http://www.uniprot.org/citations/26294762), PubMed:[26431200](http://www.uniprot.org/citations/26431200), PubMed:[28229507](http://www.uniprot.org/citations/28229507)). Likewise, suppresses LINE-1 retrotransposon activity (PubMed:[24035396](http://www.uniprot.org/citations/24035396), PubMed:[24217394](http://www.uniprot.org/citations/24217394), PubMed:[29610582](http://www.uniprot.org/citations/29610582)). Not able to restrict infection by HIV-2 virus; because restriction activity is counteracted by HIV-2 viral protein Vpx (PubMed:[21613998](http://www.uniprot.org/citations/21613998), PubMed:[21720370](http://www.uniprot.org/citations/21720370)). In addition to virus restriction, dNTPase activity acts as a regulator of DNA precursor pools by regulating dNTP pools (PubMed:[23858451](http://www.uniprot.org/citations/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](http://www.uniprot.org/citations/23601106), PubMed:[23602554](http://www.uniprot.org/citations/23602554), PubMed:[29610582](http://www.uniprot.org/citations/29610582), PubMed:[29670289](http://www.uniprot.org/citations/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).

Anti-SAMHD1 Antibody Picoband™ (monoclonal, 3B9) - 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](#)

Anti-SAMHD1 Antibody Picoband™ (monoclonal, 3B9) - Images

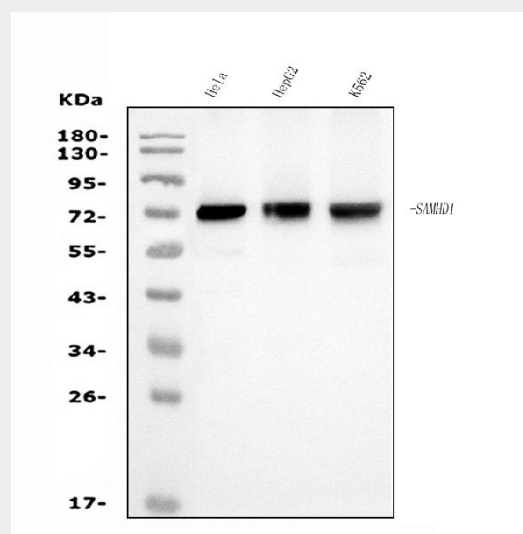


Figure 1. Western blot analysis of SAMHD1 using anti-SAMHD1 antibody (M00592-2). Electrophoresis was performed on a 5-20% SDS-PAGE gel at 70V (Stacking gel) / 90V (Resolving gel) for 2-3 hours. The sample well of each lane was loaded with 30ug of sample under reducing conditions.

Lane 1: human Hela whole cell lysates,
Lane 2: human HepG2 whole cell lysates,
Lane 3: human K562 whole cell lysates.

After Electrophoresis, proteins were transferred to a Nitrocellulose membrane at 150mA for 50-90 minutes. Blocked the membrane with 5% Non-fat Milk/ TBS for 1.5 hour at RT. The membrane was incubated with mouse anti-SAMHD1 antigen affinity purified monoclonal antibody (Catalog # M00592-2) at 0.5 μ g/mL overnight at 4°C, then washed with TBS-0.1%Tween 3 times with 5 minutes each and probed with a goat anti-mouse IgG-HRP secondary antibody at a dilution of 1:10000 for 1.5 hour at RT. The signal is developed using an Enhanced Chemiluminescent detection (ECL) kit (Catalog # EK1001) with Tanon 5200 system. A specific band was detected for SAMHD1 at approximately 72KD. The expected band size for SAMHD1 is at 72KD.

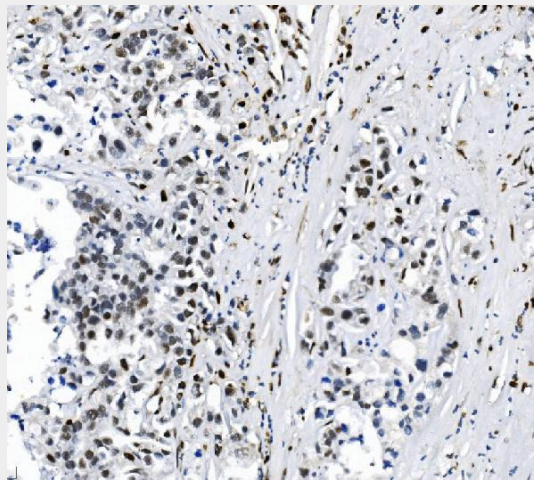


Figure 2. IHC analysis of SAMHD1 using anti-SAMHD1 antibody (M00592-2). SAMHD1 was detected in paraffin-embedded section of human gastric adenocarcinoma tissue. Heat mediated antigen retrieval was performed in EDTA buffer (pH8.0, epitope retrieval solution). The tissue section was blocked with 10% goat serum. The tissue section was then incubated with 2 μ g/ml mouse anti-SAMHD1 Antibody (M00592-2) overnight at 4°C. Biotinylated goat anti-mouse IgG was used as secondary antibody and incubated for 30 minutes at 37°C. The tissue section was developed using Streptavidin-Biotin-Complex (SABC) (Catalog # SA1021) with DAB as the chromogen.

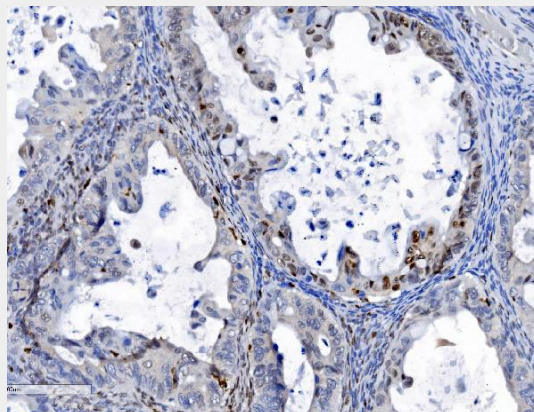


Figure 3. IHC analysis of SAMHD1 using anti-SAMHD1 antibody (M00592-2). SAMHD1 was detected in paraffin-embedded section of human ovarian cancer tissue. Heat mediated antigen retrieval was performed in EDTA buffer (pH8.0, epitope retrieval solution). The

tissue section was blocked with 10% goat serum. The tissue section was then incubated with 2 μ g/ml mouse anti-SAMHD1 Antibody (M00592-2) overnight at 4°C. Biotinylated goat anti-mouse IgG was used as secondary antibody and incubated for 30 minutes at 37°C. The tissue section was developed using Streptavidin-Biotin-Complex (SABC) (Catalog # SA1021) with DAB as the chromogen.

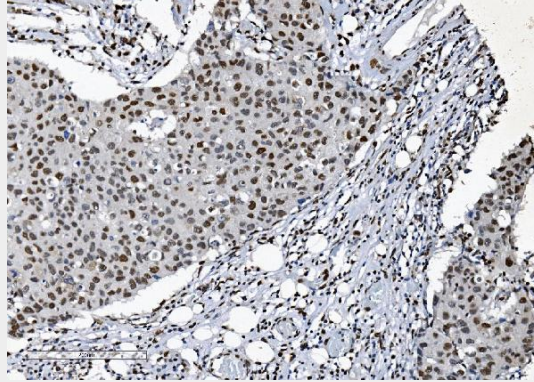


Figure 4. IHC analysis of SAMHD1 using anti-SAMHD1 antibody (M00592-2). SAMHD1 was detected in paraffin-embedded section of human breast cancer tissue. Heat mediated antigen retrieval was performed in EDTA buffer (pH8.0, epitope retrieval solution). The tissue section was blocked with 10% goat serum. The tissue section was then incubated with 2 μ g/ml mouse anti-SAMHD1 Antibody (M00592-2) overnight at 4°C. Biotinylated goat anti-mouse IgG was used as secondary antibody and incubated for 30 minutes at 37°C. The tissue section was developed using Streptavidin-Biotin-Complex (SABC) (Catalog # SA1021) with DAB as the chromogen.

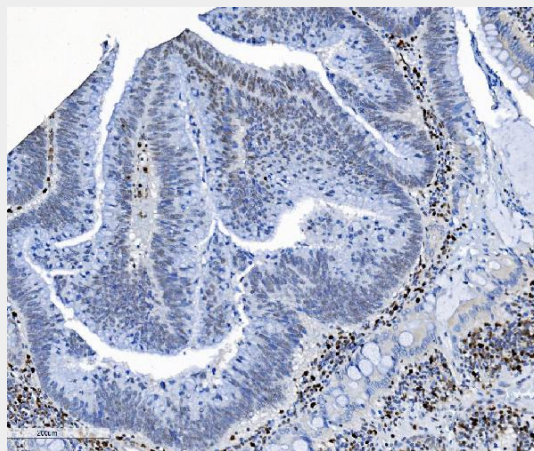


Figure 5. IHC analysis of SAMHD1 using anti-SAMHD1 antibody (M00592-2). SAMHD1 was detected in paraffin-embedded section of human rectal cancer tissue. Heat mediated antigen retrieval was performed in EDTA buffer (pH8.0, epitope retrieval solution). The tissue section was blocked with 10% goat serum. The tissue section was then incubated with 2 μ g/ml mouse anti-SAMHD1 Antibody (M00592-2) overnight at 4°C. Biotinylated goat anti-mouse IgG was used as secondary antibody and incubated for 30 minutes at 37°C. The tissue section was developed using Streptavidin-Biotin-Complex (SABC) (Catalog # SA1021) with DAB as the chromogen.

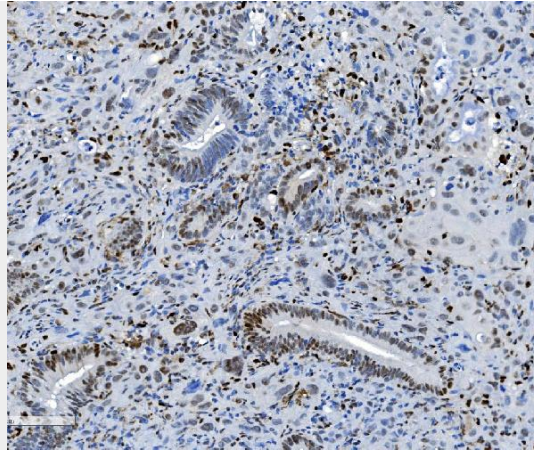


Figure 6. IHC analysis of SAMHD1 using anti-SAMHD1 antibody (M00592-2). SAMHD1 was detected in paraffin-embedded section of human gallbladder adenocarcinoma tissue. Heat mediated antigen retrieval was performed in EDTA buffer (pH8.0, epitope retrieval solution). The tissue section was blocked with 10% goat serum. The tissue section was then incubated with 2 μ g/ml mouse anti-SAMHD1 Antibody (M00592-2) overnight at 4°C. Biotinylated goat anti-mouse IgG was used as secondary antibody and incubated for 30 minutes at 37°C. The tissue section was developed using Streptavidin-Biotin-Complex (SABC) (Catalog # SA1021) with DAB as the chromogen.

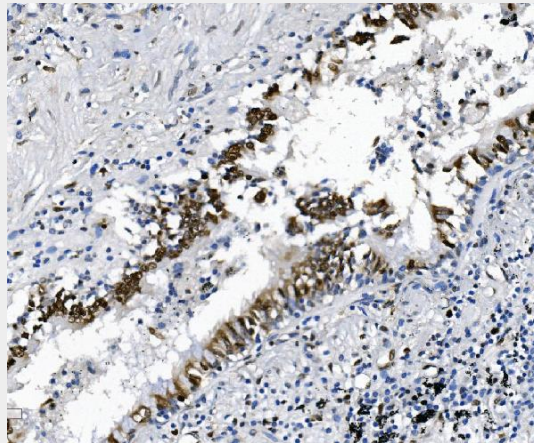


Figure 7. IHC analysis of SAMHD1 using anti-SAMHD1 antibody (M00592-2). SAMHD1 was detected in paraffin-embedded section of human lung cancer tissue. Heat mediated antigen retrieval was performed in EDTA buffer (pH8.0, epitope retrieval solution). The tissue section was blocked with 10% goat serum. The tissue section was then incubated with 2 μ g/ml mouse anti-SAMHD1 Antibody (M00592-2) overnight at 4°C. Biotinylated goat anti-mouse IgG was used as secondary antibody and incubated for 30 minutes at 37°C. The tissue section was developed using Streptavidin-Biotin-Complex (SABC) (Catalog # SA1021) with DAB as the chromogen.

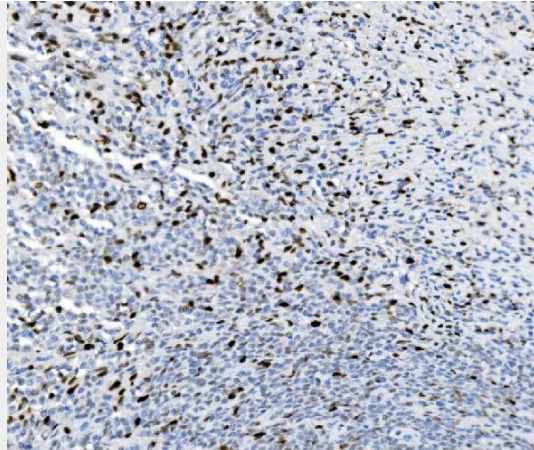


Figure 8. IHC analysis of SAMHD1 using anti-SAMHD1 antibody (M00592-2). SAMHD1 was detected in paraffin-embedded section of human lymphoma tissue. Heat mediated antigen retrieval was performed in EDTA buffer (pH8.0, epitope retrieval solution). The tissue section was blocked with 10% goat serum. The tissue section was then incubated with 2 $\mu\text{g}/\text{ml}$ mouse anti-SAMHD1 Antibody (M00592-2) overnight at 4°C. Biotinylated goat anti-mouse IgG was used as secondary antibody and incubated for 30 minutes at 37°C. The tissue section was developed using Streptavidin-Biotin-Complex (SABC) (Catalog # SA1021) with DAB as the chromogen.

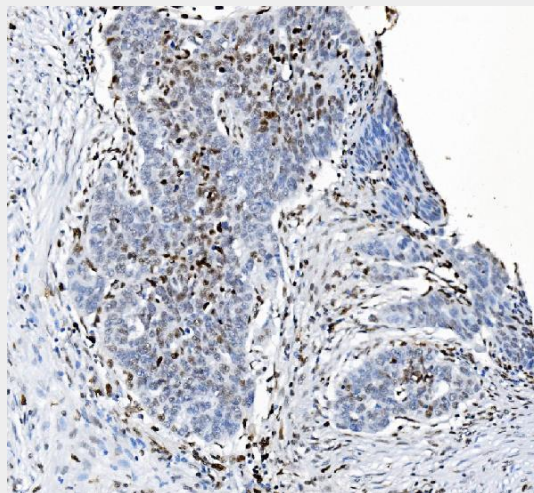


Figure 9. IHC analysis of SAMHD1 using anti-SAMHD1 antibody (M00592-2). SAMHD1 was detected in paraffin-embedded section of human ovarian serous adenocarcinoma tissue. Heat mediated antigen retrieval was performed in EDTA buffer (pH8.0, epitope retrieval solution). The tissue section was blocked with 10% goat serum. The tissue section was then incubated with 2 $\mu\text{g}/\text{ml}$ mouse anti-SAMHD1 Antibody (M00592-2) overnight at 4°C. Biotinylated goat anti-mouse IgG was used as secondary antibody and incubated for 30 minutes at 37°C. The tissue section was developed using Streptavidin-Biotin-Complex (SABC) (Catalog # SA1021) with DAB as the chromogen.

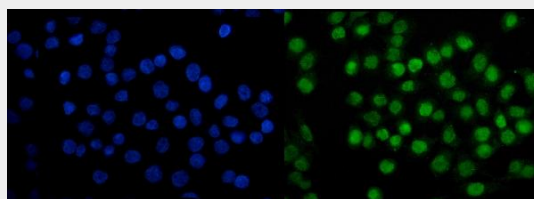


Figure 10. IF analysis of SAMHD1 using anti-SAMHD1 antibody (M00592-2).

SAMHD1 was detected in immunocytochemical section of CACO-2 cells. Enzyme antigen retrieval was performed using IHC enzyme antigen retrieval reagent (AR0022) for 15 mins. The cells were blocked with 10% goat serum. And then incubated with 5 µg/mL mouse anti-SAMHD1 Antibody (M00592-2) overnight at 4°C. DyLight®488 Conjugated Goat Anti-Mouse IgG (BA1126) was used as secondary antibody at 1:100 dilution and incubated for 30 minutes at 37°C. The section was counterstained with DAPI. Visualize using a fluorescence microscope and filter sets appropriate for the label used.

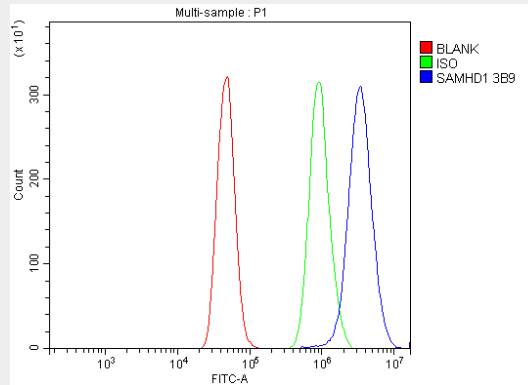


Figure 11. Flow Cytometry analysis of A431 cells using anti-SAMHD1 antibody (M00592-2). Overlay histogram showing A431 cells stained with M00592-2 (Blue line).The cells were blocked with 10% normal goat serum. And then incubated with mouse anti-SAMHD1 Antibody (M00592-2, 1 µg/1x10⁶ cells) for 30 min at 20°C. DyLight®488 conjugated goat anti-mouse IgG (BA1126, 5-10 µg/1x10⁶ cells) was used as secondary antibody for 30 minutes at 20°C. Isotype control antibody (Green line) was mouse IgG (1 µg/1x10⁶) used under the same conditions. Unlabelled sample (Red line) was also used as a control.

Anti-SAMHD1 Antibody Picoband™ (monoclonal, 3B9) - Background

SAM domain and HD domain-containing protein 1 is a protein that in humans is encoded by the SAMHD1 gene. This gene may play a role in regulation of the innate immune response. The encoded protein is upregulated in response to viral infection and may be involved in mediation of tumor necrosis factor-alpha proinflammatory responses. Mutations in this gene have been associated with Aicardi-Goutieres syndrome.