abcam

ab200832

Anti-MTH1 antibody [EPR15934-50]

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	EPR15934-50
Purification technique	Affinity purification Protein A
Concentration	0.705 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IP

Tested

Species	Human
Dilution info	1/50
Notes	-

WB

Tested

Species	Human
Dilution info	1/5000
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/500
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/150
Notes	ab172730 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody.

IHC-P

Tested

Species	Human
Dilution info	1/50
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Target data

See full target information NUDT1

Function	Oxidized purine nucleoside triphosphate hydrolase which is a prominent sanitizer of the oxidized nucleotide pool (PubMed:10608900, PubMed:12857738,

PubMed:22556419, PubMed:24695224, PubMed:24695225, PubMed:26238318, PubMed:28679043, PubMed:7713500, PubMed:8226881). Catalyzes the hydrolysis of 2-oxo-dATP (2-hydroxy-dATP) into 2-oxo-dAMP (PubMed:10373420). Also has a significant hydrolase activity toward 2-oxo-ATP, 8-oxo-dGTP and 8-oxo-dATP (PubMed:10373420, PubMed:11139615). Through the hydrolysis of oxidized purine nucleoside triphosphates, prevents their incorporation into DNA and the subsequent transversions A:T to C:G and G:C to T:A (PubMed:10373420, PubMed:10608900, PubMed:11756418, PubMed:12857738, PubMed:16607562, PubMed:24695224, PubMed:24695225, PubMed:26999531, PubMed:28035004, PubMed:8226881). Also catalyzes the hydrolysis of methylated purine nucleoside triphosphate preventing their integration into DNA (PubMed:30304478, PubMed:32144205). Through this antimutagenic activity protects cells from oxidative stress (PubMed:10608900, PubMed:12857738, PubMed:24695224, PubMed:24695225, PubMed:30304478, PubMed:32144205, PubMed:7713500, PubMed:8226881).

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	The target MTH1 also known as NUDT1 or karonudib is a protein with a mass of approximately 18.5 kDa. This protein belongs to the Nudix hydrolase family and is expressed in various tissues including liver brain and pancreas. Mechanically MTH1 plays a role in hydrolyzing oxidized nucleotides like 8-oxo-dGTP and 2-OH-dATP preventing their incorporation into DNA and maintaining genomic integrity.
Biological function summary	MTH1 prevents the incorporation of oxidized purine nucleotides into DNA. Without MTH1 cells risk mutations that can lead to genomic instability. The protein does not form part of a larger complex but acts independently. MTH1 functions are particularly relevant in cell types with high oxidative stress or rapidly dividing cells where its activity helps to protect against oxidative damage.
Pathways	MTH1 fits into DNA repair and antioxidant defense systems. It is notably involved in pathways managing oxidative stress damage. MTH1 works alongside other proteins like superoxide dismutase and catalase contributing to the detoxification of reactive oxygen species ultimately protecting the DNA repair machinery from oxidative damage.
Associated diseases and disorders	MTH1 relates to cancer and neurodegenerative diseases. High MTH1 activity can be seen in cancer cells as these cells depend on MTH1 to prevent DNA damage from oxidative stress. In this context MTH1 pairs up with proteins like p53 which also has a role in maintaining genomic stability. In neurodegenerative diseases such as Parkinson's oxidative stress plays an important role implicating MTH1 since it mitigates oxidative nucleotide damage that might worsen neuronal damage.

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

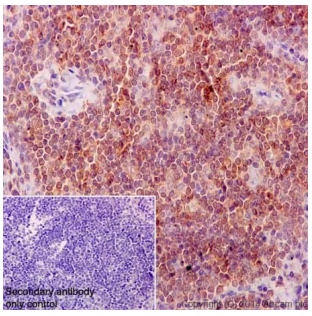
We do not recommend this combination. It is not covered by our product promise.

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.

9 product images

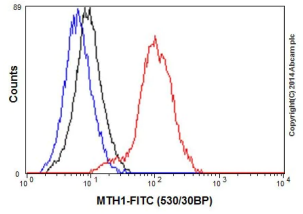


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-MTH1 antibody [EPR15934-50] (ab200832)

MTH1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-MTH1 antibody

Immunohistochemical analysis of paraffin-embedded Human thymus tissue labeling MTH1 with ab200832 at 1/100 dilution followed by Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/500 dilution. Cytoplasmic and nuclear staining on Human thymus tissue is observed. Counter stained with Hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/500 dilution.

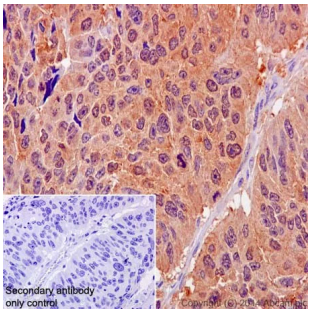
Perform heat mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.



Flow Cytometry (Intracellular) - Anti-MTH1 antibody [EPR15934-50] (ab200832)

MTH1 Flow Cytometry (Intracellular) staining using rabbit Anti-MTH1 antibody

Intracellular flow cytometric analysis of 2% paraformaldehyde-fixed Jurkat (Human T cell leukemia cells from peripheral blood)cells labeling MTH1 with ab200832 at 1/150 dilution (red) compared with a rabbit monoclonal IgG isotype control (ab172730; black) and an unlabelled control (cells without incubation with primary antibody and secondary antibody; blue). Goat anti rabbit IgG (FITC) at 1/150 dilution was used as the secondary antibody.

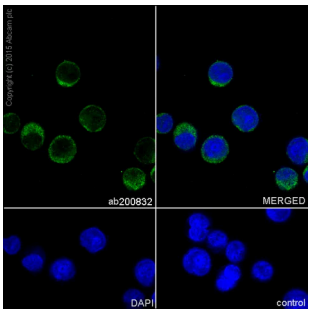


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-MTH1 antibody [EPR15934-50] (ab200832)

MTH1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-MTH1 antibody

Immunohistochemical analysis of paraffin-embedded Human squamous cell carcinoma of lung tissue labeling MTH1 with ab200832 at 1/100 dilution followed by Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/500 dilution. Cytoplasmic and nuclear staining on Human squamous cell carcinoma of lung tissue is observed. Counter stained with Hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/500 dilution.

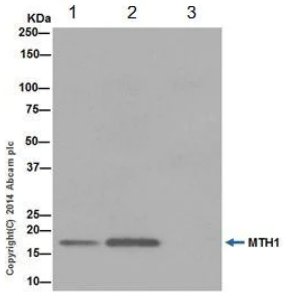
Perform heat mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.



Immunocytochemistry/ Immunofluorescence - Anti-MTH1 antibody [EPR15934-50] (ab200832)

MTH1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-MTH1 antibody

Immunocytochemistry/Immunofluorescence analysis of Daudi (human Burkitt's lymphoma) labelling MTH-1 with purified ab200832 at 1/500. Cells were fixed with 100% methanol. An Alexa Fluor® 488-conjugated goat anti-rabbit IgG (1/1000) was used as the secondary antibody (ab150077). Nuclei counterstained with DAPI (blue).
Control: PBS only



Immunoprecipitation - Anti-MTH1 antibody [EPR15934-50] (ab200832)

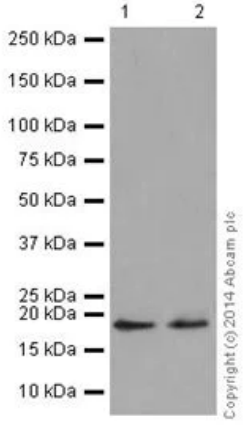
MTH1 was immunoprecipitated from 1mg of Jurkat (Human T cell leukemia cells from peripheral blood) whole cell lysate with ab200832 at 1/50 dilution. Western blot was performed from the immunoprecipitate using ab200832 at 1/2000 dilution. Anti-Rabbit IgG (HRP), specific to the non-reduced form of IgG, was used as secondary antibody at 1/1500 dilution.
Lane 1: Jurkat whole cell lysate 10ug (Input). Lane 2: ab200832 IP in Jurkat whole cell lysate. Lane 3: Rabbit monoclonal IgG (ab172730) instead of ab200832 in Jurkat whole cell lysate.
Blocking and dilution buffer and concentration: 5% NFDM/TBST.

Exposure time: 3 seconds.

All lanes:
Immunoprecipitation - Anti-MTH1 antibody [EPR15934-50] (ab200832)

Predicted band size: 23 kDa

Observed band size: 18 kDa



Western blot - Anti-MTH1 antibody [EPR15934-50] (ab200832)

MTH1 Western blot staining using rabbit Anti-MTH1 antibody

Blocking/dilution Buffer: 5% NFDM/TBST.

The expression profile observed is consistent with the following literature PMID: 11296483.

All lanes:
Western blot - Anti-MTH1 antibody [EPR15934-50] (ab200832) at 1/5000 dilution

Lane 1:
Human fetal kidney lysate at 20 µg

Lane 2:
Human fetal thymus lysate at 20 µg

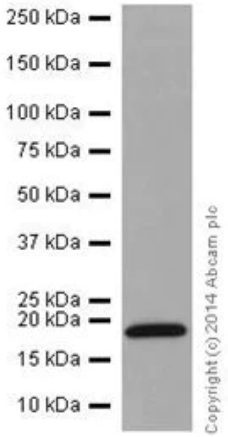
Secondary

All lanes:
Anti-Rabbit IgG (HRP), specific to the non-reduced form of IgG at 1/1000 dilution

Predicted band size: 23 kDa

Observed band size: 18 kDa

Exposure time: 1min



Western blot - Anti-MTH1 antibody [EPR15934-50] (ab200832)

MTH1 Western blot staining of Jurkat (Human T cell leukemia cells from peripheral blood) whole cell lysate using rabbit Anti-MTH1 antibody

Blocking/dilution Buffer: 5% NFDM/TBST.
The expression profile observed is consistent with the following literature PMID: 11296483.

All lanes:
Western blot - Anti-MTH1 antibody [EPR15934-50] (ab200832) at 1/5000 dilution

All lanes:
Jurkat (Human T cell leukemia cells from peripheral blood) whole cell lysate at 20 µg

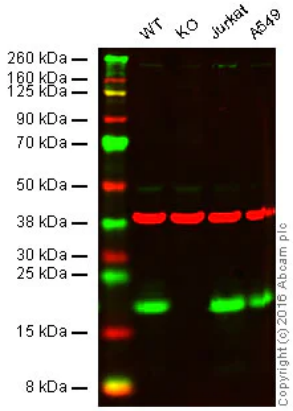
Secondary

All lanes:
Anti-Rabbit IgG (HRP), specific to the non-reduced form of IgG at 1/1000 dilution

Predicted band size: 23 kDa

Observed band size: 18 kDa

Exposure time: 15s



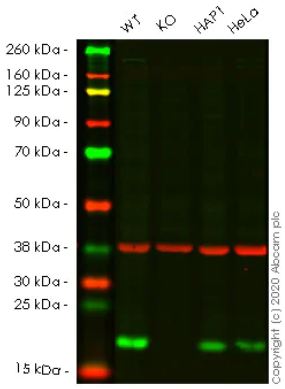
Western blot - Anti-MTH1 antibody [EPR15934-50] (ab200832)

MTH1 Western blot staining using rabbit Anti-MTH1 antibody

Lane 1: Wild-type HAP1 cell lysate (20 µg)
Lane 2: MTH1 knockout HAP1 cell lysate (20 µg)
Lane 3: Jurkat cell lysate (20 µg)
Lane 4: A549 cell lysate (20 µg)
Lanes 1 - 4: Merged signal (red and green). Green - ab200832 observed at 18 kDa. Red - loading control, ab8245, observed at 37 kDa.

ab200832 was shown to specifically react with MTH1 when MTH1 knockout samples were used. Wild-type and MTH1 knockout samples were subjected to SDS-PAGE. ab200832 at a dilution of 1/5000 and ab8245 (loading control to GAPDH) diluted to 1/10,000 were 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 1/10,000 dilution for 1 hour at room temperature before imaging.
All lanes:
Western blot - Anti-MTH1 antibody [EPR15934-50] (ab200832)

Predicted band size: 23 kDa



Western blot - Anti-MTH1 antibody [EPR15934-50] (ab200832)

MTH1 Western blot staining using rabbit Anti-MTH1 antibody

Lanes 1- 4: Merged signal (red and green). Green - ab200832 observed at 18 kDa. Red - Anti-GAPDH antibody [6C5] - Loading Control (ab8245) observed at 37 kDa.
ab200832 was shown to react with MTH1 in wild-type HEK-293T cells in western blot. Loss of signal was observed when knockout cell line ab266400 (knockout cell lysate ab257565) was used. Wild-type HEK-293T and NUDT1 knockout HEK-293T cell lysates were subjected to SDS-PAGE. Membrane was blocked for 1 hour at room temperature in 0.1% TBST with 3% non-fat dried milk. ab200832 and Anti-GAPDH antibody [6C5] - Loading Control (ab8245) overnight at 4°C at a 1 in 5000 dilution and a 1 in 20000 dilution respectively. 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 in 20000 dilution for 1 hour at room temperature before imaging.

All lanes:
Western blot - Anti-MTH1 antibody [EPR15934-50] (ab200832) at 1/5000 dilution

Lane 1:
Wild-type HEK-293T cell lysate at 20 µg

Lane 2:
NUDT1 knockout HEK-293T cell lysate at 20 µg

Lane 2:
Western blot - Human NUDT1 (MTH1) knockout HEK-293T cell line (ab266400)

Lane 3:
HAP1 cell lysate at 20 µg

Lane 4:
HeLa cell lysate at 20 µg

Performed under reducing conditions.

Predicted band size: 23 kDa

Observed band size: 18 kDa

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