abcam

ab197028

Anti-MTH1 antibody [EPR15934]

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
Purification technique	Affinity purification Protein A
Concentration	0.529 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

WB

Tested

Species	Human
Dilution info	1/2000
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/250
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	-
Notes	-

IHC-P

Tested

Species	Human
Dilution info	1/100
Notes	-

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

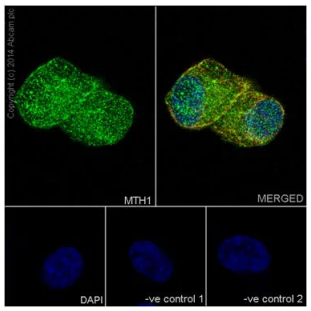
We do not recommend this combination. It is not covered by our product promise.

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.

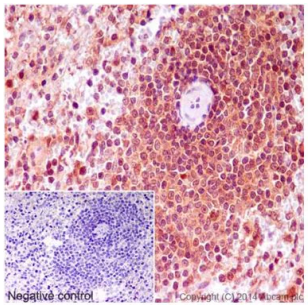
6 product images



Immunocytochemistry/ Immunofluorescence - Anti-MTH1 antibody [EPR15934] (ab197028)

MTH1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-MTH1 antibody

Immunofluorescent analysis of 4% paraformaldehyde-fixed 0.1% Triton X-100 permeabilized PC-3 cells (Human prostate cancer cell line) labeling MTH1 with ab197028 at 1/250 dilution followed by Goat anti-rabbit IgG (Alexa Fluor® 488) (ab150077) secondary antibody at 1/500 dilution (green). Cytoplasm and nuclear staining on PC-3 cell line is observed. The nuclear counterstain is DAPI (blue). Tubulin is detected with ab7291 (anti-Tubulin mouse mAb) at 1/1000 dilution and ab150120 (AlexaFluor®594 Goat anti-Mouse secondary) at 1/500 dilution (red).
The negative controls are as follows:-
-ve control 1 - ab197028 at 1/250 dilution followed by ab150120 (AlexaFluor®594 Goat anti-Mouse secondary) at 1/500 dilution.
-ve control 2. - ab7291 (anti-Tubulin mouse mAb) at 1/1000 dilution followed by ab150077 (Alexa Fluor®488 Goat Anti-Rabbit IgG H&L) at 1/500 dilution.

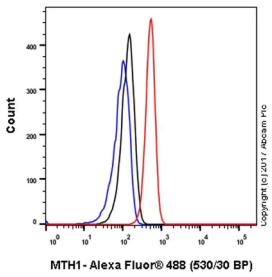


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-MTH1 antibody [EPR15934] (ab197028)

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

Immunohistochemical analysis of paraffin-embedded Human spleen tissue labeling MTH1 with ab197028 at 1/100 dilution followed by ab97051 Goat Anti-Rabbit IgG H&L (HRP) at 1/500 dilution. Cytoplasm and nuclear staining on Human spleen is observed. Counter stained with Hematoxylin. Negative control: Used PBS instead of primary antibody.

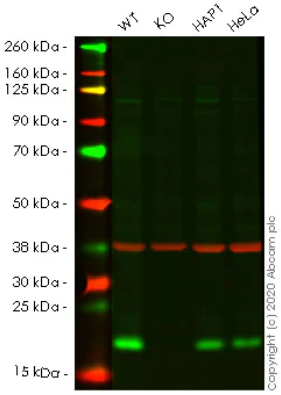
Perform heat mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.



Flow Cytometry (Intracellular) - Anti-MTH1 antibody [EPR15934] (ab197028)

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

Intracellular Flow Cytometry analysis of PC-3 (human prostate adenocarcinoma)cells labeling MTH1 with purified ab188474 at 1/230 (red). Cells were fixed with 4% paraformaldehyde and permeabilised with 90% methanol. A Goat Anti-Rabbit IgG H&L (Alexa Fluorr® 488) (ab150077) (1/2000 dilution) was used as the secondary antibody. Rabbit IgG, monoclonal [EPR25A] - Isotype Control (ab172730) (Black) was used as the isotype control, cells without incubation with primary antibody and secondary antibody (Blue) were used as the unlabeled control.



Western blot - Anti-MTH1 antibody [EPR15934] (ab197028)

MTH1 Western blot staining using rabbit Anti-MTH1 antibody

Lanes 1- 4: Merged signal (red and green). Green - ab197028 observed at 18 kDa. Red - Anti-GAPDH antibody [6C5] - Loading Control (ab8245) observed at 37 kDa.
ab197028 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. ab197028 and Anti-GAPDH antibody [6C5] - Loading Control (ab8245) overnight at 4°C at a 1 in 2000 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] (ab197028) at 1/2000 dilution

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

Lane 2:
Western blot - Human NUDT1 (MTH1) knockout HEK-293T cell lysate (ab257565) at 20 µg

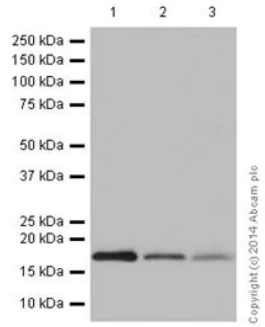
Lane 3:
HAP1 cell lysate at 20 µg

Lane 4:
HeLa cell lysate at 20 µg

Performed under reducing conditions.

Predicted band size: 23 kDa

Observed band size: 18 kDa



Western blot - Anti-MTH1 antibody [EPR15934] (ab197028)

MTH1 Western blot staining using rabbit Anti-MTH1 antibody

The expression profile observed is consistent with what has been described in the literature (PMID: 11296483).The observed band may be isoform p18.

Blocking/dilution buffer: 5% NFDM/TBST.

All lanes:
Western blot - Anti-MTH1 antibody [EPR15934] (ab197028) at 1/2000 dilution

Lane 1:
Jurkat (Human T cell leukemia cells from peripheral blood) whole cell lysate at 20 µg

Lane 2:
A549 (Human lung carcinoma) whole cell lysate at 20 µg

Lane 3:
Human fetal thymus lysate at 20 µg

Secondary

All lanes:

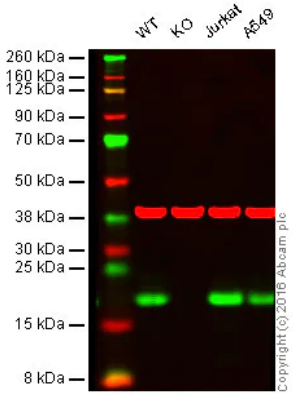
Goat Anti-Rabbit IgG, (H+L), Peroxidase conjugated at 1/1000 dilution

Developed using the ECL technique.

Predicted band size: 23 kDa

Observed band size: 18 kDa

Exposure time: 3min



Western blot - Anti-MTH1 antibody [EPR15934] (ab197028)

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 - ab197028 observed at 18 kDa. Red - loading control, ab8245, observed at 37 kDa.

ab197028 was shown to specifically react with MTH1 when MTH1 knockout samples were used. Wild-type and MTH1 knockout samples were subjected to SDS-PAGE. ab197028 at a dilution of 1/2000 and ab8245 (loading control to GAPDH) diluted at 1/10000 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 1/10000 dilution for 1 hour at room temperature before imaging.
All lanes:
Western blot - Anti-MTH1 antibody [EPR15934] (ab197028)

Predicted band size: 23 kDa

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