abcam

ab56772

Anti-MTHFD2 antibody [4G7-2G3]

KO Validated

Key facts

Isotype	IgG2a
Host species	Mouse
Storage buffer	pH: 7.4
Form	Liquid
Clonality	Monoclonal
Immunogen	Recombinant Full Length Protein corresponding to Human MTHFD2. Database link P13995
Clone number	4G7-2G3
Purity	Tissue culture supernatant
Light chain type	kappa
Purification notes	Purified from TCS.

Reactivity data

Flow Cyt

Tested

Species	Human
Dilution info	-
Notes	ab170191 - Mouse monoclonal IgG2a, is suitable for use as an isotype control with this antibody.

WB

Tested

Species	Human
Dilution info	-
Notes	-

IHC-P

Tested

Species	Human
Dilution info	-
Notes	-

Target data

See full target information MTHFD2

Function	Although its dehydrogenase activity is NAD-specific, it can also utilize NADP at a reduced efficiency.

Storage

Shipped at conditions	Blue Ice
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

This product was changed from ascites to tissue culture supernatant on 24/1/19. Please note that the dilutions may need to be adjusted accordingly. If you have any questions, please do not hesitate to contact our scientific support

team.

Supplementary info

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

Activity summary	MTHFD2 also known as methylenetetrahydrofolate dehydrogenase (NADP+ dependent) 2 is an enzyme with a mass of approximately 36 kDa. It catalyzes the conversion of methylenetetrahydrofolate to methenyltetrahydrofolate using NADP+ as a cofactor. MTHFD2 is a mitochondrial protein and is highly expressed in embryonic tissues and various cancers while showing low expression in normal adult tissues. This differential expression makes it an interesting target for cancer research.
Biological function summary	Methylenetetrahydrofolate dehydrogenase plays an important role in folate metabolism contributing to the one-carbon metabolic pathway. MTHFD2 is part of the tetrahydrofolate (THF) complex critical for DNA synthesis and repair. The enzyme supports the production of nucleotides and amino acids by providing necessary one-carbon units linking it to rapid cellular proliferation as seen in cancerous cells.
Pathways	MTHFD2 is key in connecting the folate-mediated one-carbon metabolic network to the central metabolism. It is involved in the metabolic pathways that synthesize purines and thymidylate. In these networks MTHFD2 interacts with proteins such as SHMT2 (serine hydroxymethyltransferase 2) facilitating serine to glycine conversion which is important for the provision of one-carbon donors for methylation reactions.
Associated diseases and disorders	The upregulation of MTHFD2 strongly associates with various cancers including breast and colorectal cancers. The involvement of MTHFD2 in these cancers indicates its potential as a biomarker and therapeutic target. Through cancer-related pathways MTHFD2 shows a connection to enzymes such as ALDH1L2 (aldehyde dehydrogenase 1 family member L2) which also participates in folate metabolism and influences cancer progression.

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.

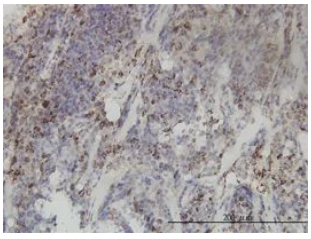
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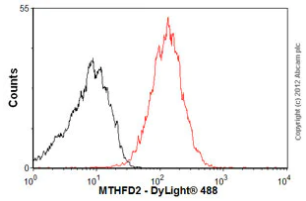
4 product images



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-MTHFD2 antibody [4G7-2G3] (ab56772)

MTHFD2 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-MTHFD2 antibody

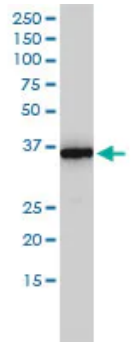
MTHFD2 antibody (ab56772) used in immunohistochemistry at 3µg/ml on formalin fixed and paraffin embedded human lymphoma tissue.



Flow Cytometry - Anti-MTHFD2 antibody [4G7-2G3] (ab56772)

MTHFD2 Flow Cytometry staining using mouse Anti-MTHFD2 antibody

Overlay histogram showing HepG2 cells stained with ab56772 (red line). The cells were fixed with 4% paraformaldehyde (10 min) and then permeabilized with 0.1% PBS-Tween for 20 min. The cells were then incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions followed by the antibody (ab56772, 1µg/1x10^6 cells) for 30 min at 22°C. The secondary antibody used was DyLight® 488 goat anti-mouse IgG (H+L) (ab96879) at 1/500 dilution for 30 min at 22°C. Isotype control antibody (black line) was mouse IgG2a [ICIGG2A] (ab91361, 1µg/1x10^6 cells) used under the same conditions. Acquisition of >5,000 events was performed. This antibody gave a positive signal in HepG2 cells fixed with 80% methanol (5 min)/permeabilized with 0.1% PBS-Tween for 20 min used under the same conditions.
This image was generated using the ascites version of the product.



Western blot - Anti-MTHFD2 antibody [4G7-2G3] (ab56772)

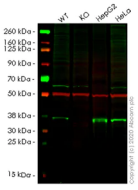
MTHFD2 Western blot staining using mouse Anti-MTHFD2 antibody

MTHFD2 antibody (ab56772) at 1µg/lane + HepG2 cell lysate at 25µg/lane.
This image was generated using the ascites version of the product.

All lanes:
Western blot - Anti-MTHFD2 antibody [4G7-2G3] (ab56772)

Predicted band size: 38 kDa, 42 kDa, 43 kDa

Observed band size: 42 kDa



Western blot - Anti-MTHFD2 antibody [4G7-2G3] (ab56772)

MTHFD2 Western blot staining using mouse Anti-MTHFD2 antibody

Lanes 1-4: Merged signal (red and green). Green - ab56772 observed at 36 kDa. Red - loading control ab52901 observed at kDa.
ab56772 Anti-MTHFD2 antibody was shown to specifically react with MTHFD2 in wild-type HEK293T cells. Loss of signal was observed when knockout cell line ab266383 (knockout cell lysate ab258528) was used. Wild-type and MTHFD2 knockout samples were subjected to SDS-PAGE. ab56772 and Anti-beta Tubulin [EP1331Y] - Microtubule Marker (ab52901) were incubated at room temperature for 2.5 hours at 1 in 500 dilution and 1 in 20000 dilution respectively. Blots were developed with Goat anti-Rabbit IgG H&L (IRDye® 680RD) preadsorbed (ab216777) and Goat anti-Mouse IgG H&L (IRDye® 800CW) preadsorbed (ab216772) secondary antibodies at 1 in 20000 dilution for 1 hour at room temperature before imaging.

All lanes:
Western blot - Anti-MTHFD2 antibody [4G7-2G3] (ab56772) at 1/500 dilution

Lane 1:
Wild-type HEK293T cell lysate at 20 µg

Lane 2:
MTHFD2 knockout HEK293T cell lysate at 20 µg

Lane 2:
Western blot - Human MTHFD2 knockout HEK-293T cell line (ab266383)

Lane 3:
HepG2 cell lysate at 20 µg

Lane 4:
HeLa cell lysate at 20 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (IRDye® 680RD) preadsorbed (ab216777) at 1/10000 dilution

Predicted band size: 38 kDa

Observed band size: 36 kDa

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