abcam

ab230949

Anti-IDH1 antibody [EPR21002]

Recombinant | RabMAb | KO Validated | 20ul selling size

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	EPR21002
Purification technique	Affinity purification Protein A
Concentration	0.53 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IP

Tested

Species	Human
Dilution info	1/30
Notes	-

Expected

Species	Mouse, Rat
Dilution info	Use at an assay dependent concentration.
Notes	-

WB

Tested

Species	Mouse
Dilution info	1/1000
Notes	-

Species	Rat
Dilution info	1/1000
Notes	-

Species	Human
Dilution info	1/1000
Notes	-

ICC/IF

Not recommended

Species	Mouse, Rat, Human
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/50
Notes	-

Expected

Species	Mouse, Rat
Dilution info	Use at an assay dependent concentration.
Notes	-

IHC-P

Tested

Species	Mouse
Dilution info	1/1000
Notes	-

Species	Rat
Dilution info	1/1000
Notes	-

Species	Human
Dilution info	1/1000
Notes	-

Target data

See full target information IDH1

Function	Catalyzes the NADP(+)-dependent oxidative decarboxylation of isocitrate (D-threo-isocitrate) to 2-ketoglutarate (2-oxoglutarate), which is required by other enzymes such as the phytanoyl-CoA dioxygenase (PubMed:10521434, PubMed:19935646). Plays a critical role in the generation of NADPH, an important cofactor in many biosynthesis pathways (PubMed:10521434). May act as a corneal epithelial crystallin and may be involved in maintaining corneal epithelial transparency (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	IDH1 also known as isocitrate dehydrogenase 1 is an enzyme with a molecular weight of approximately 45 kDa. It participates in the citric acid cycle aiding the conversion of isocitrate to alpha-ketoglutarate while producing NADPH. IDH1 resides primarily in the cytoplasm and peroxisomes of cells. It finds expression in various tissues most notably the liver and brain where metabolic processes are highly active.
Biological function summary	Isocitrate dehydrogenase 1 plays an important role in cellular metabolism by helping to maintain the NADP+/NADPH balance important for redox reactions. This enzyme operates mainly as a homodimer meaning two identical subunits form a complex for functional activity. It contributes significantly to lipid and glucose metabolism due to its production of NADPH which the cells use for biosynthetic pathways and detoxification.
Pathways	The involvement of IDH1 in the citric acid cycle highlights its importance in energy production and metabolic regulation. This enzyme closely associates with other metabolic enzymes such as IDH2 another member of the isocitrate dehydrogenase family found in mitochondria suggesting a coordinated function between cytoplasmic and mitochondrial metabolism. Beyond its role in the citric acid cycle

	IDH1 also relates to the pentose phosphate pathway an alternative glucose metabolism route providing reducing equivalents and ribose 5-phosphate for nucleotide synthesis.
Associated diseases and disorders	IDH1 mutations particularly the IDH1 R132H variant frequently appear in certain cancers like gliomas and acute myeloid leukemia (AML). These mutations lead to a neomorphic enzyme function producing 2-hydroxyglutarate instead of alpha-ketoglutarate disrupting normal cellular metabolism and aiding tumorigenesis. The mutated IDH1 also affects the TET2 protein which involves in DNA demethylation potentially altering gene expression and contributing to oncogenic pathways.

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

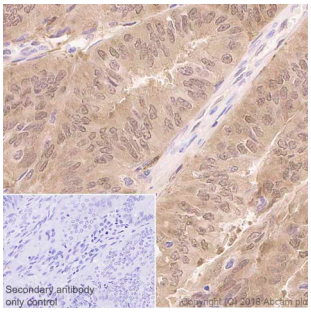
We do not recommend this combination. It is not covered by our product promise.

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.

10 product images

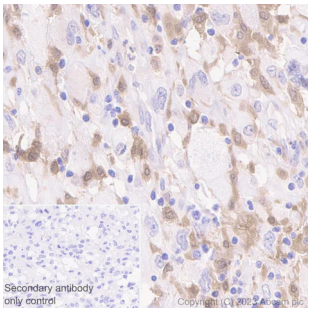


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-IDH1 antibody [EPR21002] (ab230949)

IDH1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-IDH1 antibody

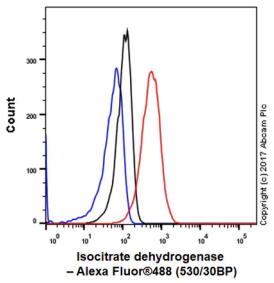
Immunohistochemical analysis of paraffin-embedded human endometrium cancer tissue labeling IDH1 with ab230949 at 1/1000 dilution, followed by Goat Anti-Rabbit IgG H&L (HRP) Ready to use. Cytoplasmic and nuclear staining in human endometrium cancer (PMID:29921847). Counter stained with hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is Goat Anti-Rabbit IgG H&L (HRP) Ready to use.

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



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-IDH1 antibody [EPR21002] (ab230949)

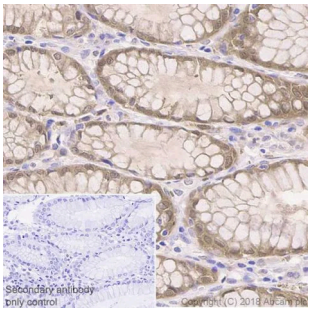
Immunohistochemical analysis of paraffin-embedded human glioblastoma tissue labeling IDH1 with ab230949 at 1/1000 dilution, followed by Goat Anti-Rabbit IgG H&L (HRP) Ready to use. Counter stained with hematoxylin. Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is Goat Anti-Rabbit IgG H&L (HRP polymer) (ab214880) Perform heat mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol. Positive staining on human glioblastoma. The section was incubated with ab230949 at 4°C overnight.



Flow Cytometry (Intracellular) - Anti-IDH1 antibody [EPR21002] (ab230949)

IDH1 Flow Cytometry (Intracellular) staining using rabbit Anti-IDH1 antibody

Intracellular flow cytometric analysis of 4% paraformaldehyde-fixed, 90% methanol-permeabilized HeLa (human epithelial cell line from cervix adenocarcinoma) cell line labeling IDH1 with ab230949 at 1/60 dilution (**red**) compared with a Rabbit IgG, monoclonal [EPR25A] - Isotype Control (ab172730) (**black**) and an unlabeled control (cells without incubation with primary antibody and secondary antibody) (**blue**). Goat Anti-Rabbit IgG H&L (Alexa Fluor¿½ 488) (ab150077) at 1/2000 dilution was used as the secondary antibody.

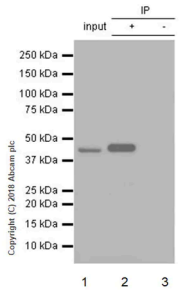


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-IDH1 antibody [EPR21002] (ab230949)

IDH1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-IDH1 antibody

Immunohistochemical analysis of paraffin-embedded human stomach tissue labeling IDH1 with ab230949 at 1/1000 dilution, followed by Goat Anti-Rabbit IgG H&L (HRP) Ready to use. Cytoplasmic and nucleus staining in human stomach (PMID:27466503). Counter stained with hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is Goat Anti-Rabbit IgG H&L (HRP) Ready to use.

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



Immunoprecipitation - Anti-IDH1 antibody [EPR21002] (ab230949)

IDH1 was immunoprecipitated from 0.35 mg of SH-SY5Y (human neuroblastoma cell line from bone marrow) whole cell lysate with ab230949 at 1/30 dilution. Western blot was performed from the immunoprecipitate using ab230949 at 1/1000 dilution. VeriBlot for IP Detection Reagent (HRP) (ab131366), was used for detection at 1/10000 dilution.
Lane 1: SH-SY5Y whole cell lysate 10 µg (Input).

Lane 2: ab230949 IP in SH-SY5Y whole cell lysate.

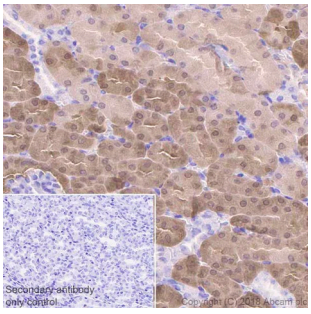
Lane 3: Rabbit monoclonal IgG (ab172730) instead of ab230949 in SH-SY5Y whole cell lysate.

Blocking and dilution buffer and concentration: 5% NFDM/TBST.

Exposure time: 30 seconds.

All lanes:
Immunoprecipitation - Anti-IDH1 antibody [EPR21002] (ab230949)

Predicted band size: 46 kDa

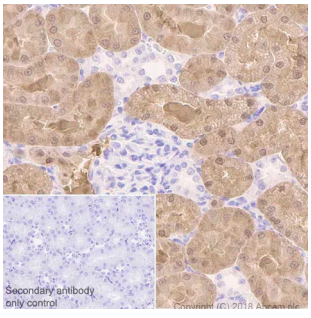


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-IDH1 antibody [EPR21002] (ab230949)

IDH1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-IDH1 antibody

Immunohistochemical analysis of paraffin-embedded mouse kidney tissue labeling IDH1 with ab230949 at 1/1000 dilution, followed by Goat Anti-Rabbit IgG H&L (HRP) Ready to use. Cytoplasmic and nuclear staining in mouse kidney (PMID:30153799). Counter stained with hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is Goat Anti-Rabbit IgG H&L (HRP) Ready to use.

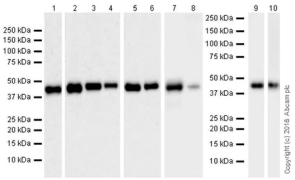
Perform heat mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-IDH1 antibody [EPR21002] (ab230949)

Immunohistochemical analysis of paraffin-embedded rat kidney tissue labeling IDH1 with ab230949 at 1/1000 dilution, followed by Goat Anti-Rabbit IgG H&L (HRP) Ready to use. Cytoplasmic and nuclear staining in rat kidney (PMID:30153799). Counter stained with hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is Goat Anti-Rabbit IgG H&L (HRP) Ready to use.

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



Western blot - Anti-IDH1 antibody [EPR21002] (ab230949)

Exposure times: Lanes 1-6: 3 minutes; Lanes 7-8: 15 seconds; Lanes 9-10: 58 seconds.
Blocking/Dilution buffer: 5% NFDM/TBST.

All lanes:
Western blot - Anti-IDH1 antibody [EPR21002] (ab230949) at 1/1000 dilution

Lane 1:
SH-SY5Y (human neuroblastoma cell line from bone marrow) whole cell lysate at 20 µg

Lane 2:
Raji (human Burkitt's lymphoma cell line) whole cell lysate at 20 µg

Lane 3:
C2C12 (mouse myoblast cell line) whole cell lysate at 20 µg

Lane 4:
Neuro-2a (mouse neuroblastoma cell line) whole cell lysate at 20 µg

Lane 5:
Human fetal brain lysate at 20 µg

Lane 6:
Human fetal kidney lysate at 20 µg

Lane 7:
HepG2 (human liver hepatocellular carcinoma cell line) whole cell lysate at 20 µg

Lane 8:
HeLa (human epithelial cell line from cervix adenocarcinoma) whole cell lysate at 20 µg

Lane 9:
C6 (rat glial tumor cell line) whole cell lysate at 10 µg

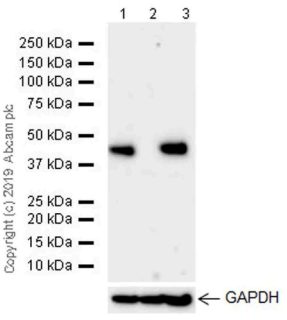
Lane 10:
PC-12 (rat adrenal gland pheochromocytoma cell line) whole cell lysate at 10 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/100000 dilution

Predicted band size: 46 kDa

Observed band size: 47 kDa



Western blot - Anti-IDH1 antibody [EPR21002] (ab230949)

ab230949 was shown to specifically react with IDH1 in wild-type HAP1 cells as signal was lost in IDH1 knockout cells. Wild-type and IDH1 knockout samples were subjected to SDS-PAGE. ab230949 and ab181602 (Rabbit anti-GAPDH loading control) were incubated 1 hour at room temperature at 1/1000 dilution and 1/200,000 dilution respectively. Blots were developed with Goat Anti-Rabbit IgG, (H+L), Peroxidase conjugated (ab97051) secondary antibody at 1/100,000 dilution for 1 hour at room temperature before imaging.
All lanes:
Western blot - Anti-IDH1 antibody [EPR21002] (ab230949) at 1/1000 dilution

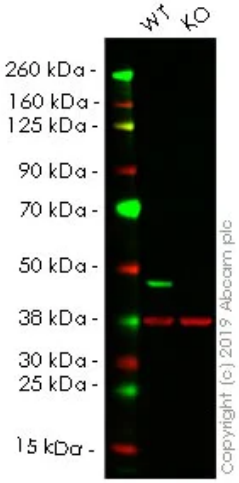
Lane 1:
Wild type HAP1 whole cell lysate at 10 µg

Lane 2:
IDH1 knockout HAP1 whole cell lysate at 10 µg

Lane 3:
SH-SY5Y (human neuroblastoma epithelial cell), whole cell lysate at 10 µg

Predicted band size: 46 kDa

Exposure time: 62s



Western blot - Anti-IDH1 antibody [EPR21002] (ab230949)

IDH1 Western blot staining using rabbit Anti-IDH1 antibody

Lanes 1- 2: Merged signal (red and green). Green - ab230949 observed at 46 kDa. Red - Anti-GAPDH antibody [6C5] - Loading Control (ab8245) observed at 37 kDa.
ab230949 was shown to react with IDH1 in wild-type HeLa cells in western blot. Loss of signal was observed when knockout cell line ab264916 (knockout cell lysate ab257221) was used. Wild-type HeLa and IDH1 knockout HeLa 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. ab230949 and Anti-GAPDH antibody [6C5] - Loading Control (ab8245) overnight at 4°C at a 1 in 1000 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-IDH1 antibody [EPR21002] (ab230949) at 1/1000 dilution

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

Lane 2:
Western blot - Human IDH1 knockout HeLa cell lysate (ab257221) at 20 µg

Secondary

Lanes 1 - 2:
Western blot - Goat anti-Mouse IgG H&L (IRDye® 680RD) preadsorbed (ab216776) at 1/20000 dilution

Lanes 1 - 2:
Western blot - Goat anti-Rabbit IgG H&L (IRDye® 800CW) preadsorbed (ab216773) at 1/20000 dilution

Performed under reducing conditions.

Predicted band size: 46 kDa

Observed band size: 46 kDa, 37 kDa

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