abcam

ab53278

Anti-ALDH7A1 antibody [EP1935Y]

Recombinant | RabMAb

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	EP1935Y
Purification technique	Affinity purification Protein A
Concentration	0.117 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Human
Dilution info	1/1500
Notes	-

Species	Mouse

Dilution info	1/1500
Notes	-

Species	Rat
Dilution info	1/1500
Notes	-

Flow Cyt

Tested

Species	Human
Dilution info	1/20
Notes	-

Expected

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

WB

Tested

Species	Human
Dilution info	1/10000 - 1/50000
Notes	-

Species	Mouse
Dilution info	1/10000 - 1/50000
Notes	-

Species	Rat
Dilution info	1/10000 - 1/50000
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/50
Notes	-

Expected

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

IP

Tested

Species	Human
Dilution info	1/20
Notes	-

Expected

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

Target data

See full target information ALDH7A1

Function	Aldehyde dehydrogenase enzyme that mediates important protective effects (PubMed:16491085, PubMed:20207735, PubMed:20554659, PubMed:21338592, PubMed:25554827, PubMed:31302938, PubMed:31652343, PubMed:38604394, PubMed:40233740). Protects cells from oxidative stress by metabolizing a number of lipid peroxidation-derived aldehydes (PubMed:16491085, PubMed:20207735, PubMed:21338592, PubMed:40233740). Involved in cellular defense against hyperosmotic stress by metabolizing betaine aldehyde to betaine, an important

cellular osmolyte and methyl donor (PubMed:20207735). Isoform 1. Involved in lysine catabolism in the brain by mediating the conversion of L-aminoadipate-semialdehyde ((S)-2-amino-6-oxohexanoate) to L-2-aminoadipate. Isoform 2. Acts as a key inhibitor of ferroptosis both by generating membrane NADH and decreasing the level of reactive aldehydes (PubMed:40233740). Recruited to plasma membrane in response to ferroptotic stress and phosphorylation by AMPK, generating membrane NADH to support AIFM2/FSP1 activity, an essential ferroptosis suppressor protein (PubMed:40233740). Also directly inhibits ferroptosis by decreasing lipid peroxidation via consumption of reactive aldehydes, such as 4-hydroxynonenal (4-HNE) and malonaldehyde (PubMed:40233740). Also acts as a regulator of cellular energy homeostasis in response to cellular energy stress, such as starvation and hypoxia, by inhibiting COPI-mediated intracellular transport, thereby reducing cellular energy consumption (PubMed:31492851).

Storage

Shipped at conditions	Conditional Ambient
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Storage information	Stable for 12 months at -20°C

Notes

This product has switched from a hybridoma to recombinant production method on 7th September 2023.

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	ALDH7A1 also known as antiquitin is an enzyme that functions in the cellular metabolism processes specifically catalyzing the oxidation of aldehydes. It has a molecular mass of about 54 kDa and can be found expressed in various tissues including liver and brain. This enzyme is part of the aldehyde dehydrogenase family which plays significant roles in detoxifying aldehydes generated by alcohol metabolism and other metabolic activities.
Biological function summary	The role of ALDH7A1 includes the breakdown of molecules within the cellular detoxification system. As a component of the lysine catabolism pathway it acts to detoxify certain aldehydes to prevent cell damage. ALDH7A1 is not known to form part of any larger protein complex but its activity is important in maintaining nitrogen balance and energy production within the body.
Pathways	Several factors dictate the participation of ALDH7A1 in metabolic functions. This protein is involved mainly in the lysine degradation pathway where it converts α-aminoadipic semialdehyde to other metabolites needed for energy production. It interacts with associated proteins such as pyridoxal phosphate for efficient function a cofactor necessary for the enzymatic action in lysine catabolism.
Associated diseases and disorders	Defects in ALDH7A1 can lead to pyridoxine-dependent epilepsy a rare genetic disorder caused by the accumulation of toxic metabolites due to impaired enzyme function. The disorder influences neurological development and can lead to seizures without treatment. ALDH7A1 dysfunction is also linked with aldehyde dehydrogenase liver deficiency where similarities with ALDH2 — another enzyme from the same family — can influence symptoms like alcohol sensitivity and metabolic responses.

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

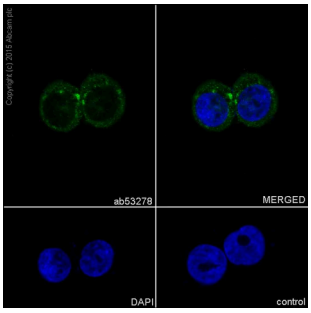
We do not recommend this combination. It is not covered by our product promise.

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.

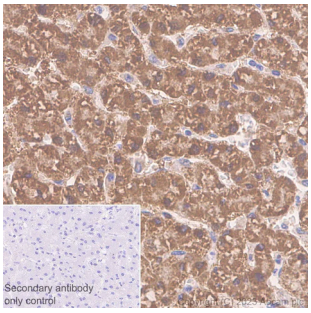
11 product images



Immunocytochemistry/ Immunofluorescence - Anti-ALDH7A1 antibody [EP1935Y] (ab53278)

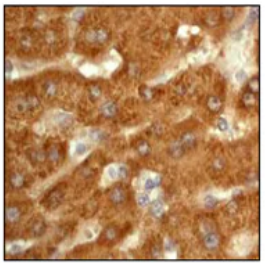
ALDH7A1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-ALDH7A1 antibody

Immunocytochemistry/Immunofluorescence analysis of HT-29 (human colorectal adenocarcinoma) labelling ALDH7A1 with purified ab53278 at 1/500. Cells were fixed with 4% Paraformaldehyde and permeabilized with 0.1% Triton X-100. 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



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ALDH7A1 antibody [EP1935Y] (ab53278)

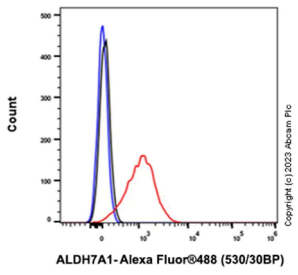
Immunohistochemical analysis of paraffin-embedded Human liver tissue labeling ALDH7A1 with ab53278 at 1/1500 dilution, followed by Rabbit specific IHC polymer detection kit HRP/DAB (ab209101) secondary antibody. The immunostaining was performed on a Leica Biosystems BOND® RX instrument. Counterstained with Hematoxylin. Heat mediated antigen retrieval was performed with Citrate buffer (pH 6.0) for 20 mins.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ALDH7A1 antibody [EP1935Y] (ab53278)

ALDH7A1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-ALDH7A1 antibody

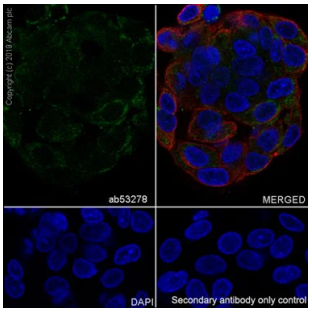
ab53278, at a 1/100 dilution, staining ALDH7A1 in paraffin embedded human liver tissue by Immunohistochemistry.
Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.



Flow Cytometry - Anti-ALDH7A1 antibody [EP1935Y] (ab53278)

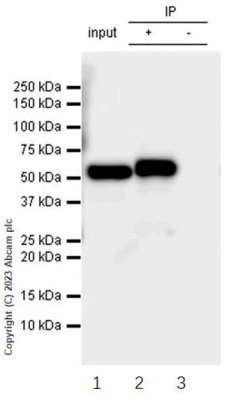
ALDH7A1 Flow Cytometry staining using rabbit Anti-ALDH7A1 antibody

HepG2 cells were fixed with 100µl 4% PFA for 10 min at RT, then permeabilized with 100µl 90% methanol for 30 min (-20° C) followed by blocking with 10% goat serum for 1h at room temperature. Incubate ab53278 for 30 min at room temperature (RT) and then incubate Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) (ab150081) for 30 min at room temperature.



Immunocytochemistry/ Immunofluorescence - Anti-ALDH7A1 antibody [EP1935Y] (ab53278)

Immunofluorescent analysis of 4% Paraformaldehyde-fixed, 0.1% TritonX-100 permeabilized HepG2 cells labelling ALDH7A1 with ab53278 at 1/50 dilution, followed by Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed (ab150081) at 1/1000 dilution at RT for 45 min. Alexa Fluor® 594 Anti-alpha Tubulin antibody [DM1A] - Microtubule Marker (ab195889) at 1/200 dilution, was co-incubated with ab53278 overnight at 4° C. Nucleus were visualized using DAPI.



Immunoprecipitation - Anti-ALDH7A1 antibody [EP1935Y] (ab53278)

ALDH7A1 was immunoprecipitated from 0.35 mg of human liver tissue lysate with the antibody at 1/20 dilution. Western blot was performed from the immunoprecipitated using antibody at 1/1000 dilution.
All lanes:
Immunoprecipitation - Anti-ALDH7A1 antibody [EP1935Y] (ab53278) at 1/20 dilution

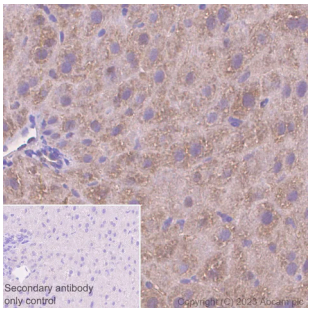
Lane 1:
Human liver tissue lysate (Input) at 10 µg

Lane 2:
Human liver tissue lysate (+)

Lane 3:
Rabbit monoclonal IgG (ab172730) instead of ab53278 in human liver tissue lysate

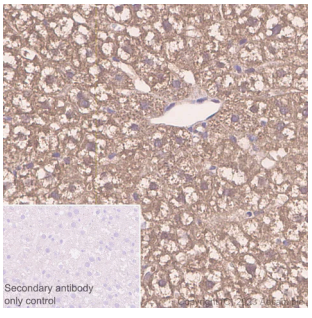
Secondary

All lanes:
Immunoprecipitation - VeriBlot for IP Detection Reagent (HRP) (ab131366) at 1/5000 dilution



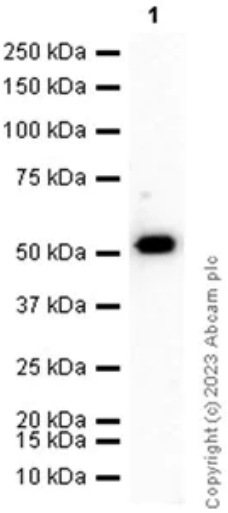
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ALDH7A1 antibody [EP1935Y] (ab53278)

Immunohistochemical analysis of paraffin-embedded Mouse liver tissue labeling ALDH7A1 with ab53278 at 1/1500 dilution, followed by Rabbit specific IHC polymer detection kit HRP/DAB (ab209101) secondary antibody. The immunostaining was performed on a Leica Biosystems BOND® RX instrument. Counterstained with Hematoxylin. Heat mediated antigen retrieval was performed with Citrate buffer (pH 6.0) for 20 mins.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ALDH7A1 antibody [EP1935Y] (ab53278)

Immunohistochemical analysis of paraffin-embedded Rat liver tissue labeling ALDH7A1 with ab53278 at 1/1500 dilution, followed by Rabbit specific IHC polymer detection kit HRP/DAB (ab209101) secondary antibody. The immunostaining was performed on a Leica Biosystems BOND® RX instrument. Counterstained with Hematoxylin. Heat mediated antigen retrieval was performed with Citrate buffer (pH 6.0) for 20 mins.



Western blot - Anti-ALDH7A1 antibody [EP1935Y] (ab53278)

All lanes:
Western blot - Anti-ALDH7A1 antibody [EP1935Y] (ab53278) at 1/10000 dilution

All lanes:
HepG2 (Human hepatocellular carcinoma epithelial cell) whole cell lysate

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/20000 dilution

Performed under reducing conditions.

Observed band size: 55 kDa



Western blot - Anti-ALDH7A1 antibody [EP1935Y] (ab53278)

Blocking and diluting buffer and concentration: 5% NFDM/TBST.
All lanes:
Western blot - Anti-ALDH7A1 antibody [EP1935Y] (ab53278) at 1/10000 dilution

Lane 1:
HT-29 (Human colorectal adenocarcinoma epithelial cell) whole cell lysate at 20 µg

Lane 2:
Human liver lysate at 20 µg

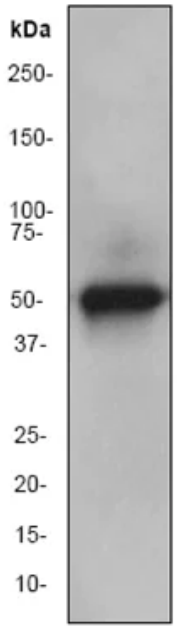
Lane 3:
Mouse liver lysate at 20 µg

Lane 4:
Rat liver lysate at 20 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/20000 dilution

Observed band size: 55 kDa



Western blot - Anti-ALDH7A1 antibody [EP1935Y] (ab53278)

All lanes:
Western blot - Anti-ALDH7A1 antibody [EP1935Y] (ab53278) at 1/50000 dilution

All lanes:
Human liver lysate at 10 µg

Secondary

All lanes:
Goat anti-rabbit HRP at 1/2000 dilution

Predicted band size: 58 kDa

Observed band size: 55 kDa

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