abcam

ab52492

Anti-ALDH1A1 antibody [EP1933Y] - C-terminal

Anti-ALDH1A1 antibody [EP1933Y] - C-terminal (ab52492) is a rabbit monoclonal antibody detecting ALDH1A1 in **Western Blot, Flow Cytometry (Intra), IP, IHC-P, ICC/IF**. Suitable for **Human, Mouse**.

- KO validated for confirmed specificity
- Biophysical QC for unrivalled batch-batch consistency
- Over 180 publications
- Trusted since 2007

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	EP1933Y
Purification technique	Affinity purification Protein A
Concentration	0.178 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IP

Tested

Species	Human
Dilution info	1/20 - 1/30
Notes	-

Expected

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

WB

Tested

Species	Mouse
Dilution info	1/500 - 1/2000
Notes	-

Species	Human
Dilution info	1/500 - 1/2000
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/100 - 1/250
Notes	-

Expected

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

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/20
Notes	For unpurified use at 1/1000. ab172730 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody.

Expected

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

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.

Not recommended

Species	Mouse
Dilution info	-
Notes	-

Target data

See full target information ALDH1A1

Function	Cytosolic dehydrogenase that catalyzes the irreversible oxidation of a wide range of aldehydes to their corresponding carboxylic acid (PubMed:12941160, PubMed:15623782, PubMed:17175089, PubMed:19296407, PubMed:25450233, PubMed:26373694). Functions downstream of retinol dehydrogenases and catalyzes the oxidation of retinaldehyde into retinoic acid, the second step in the

oxidation of retinol/vitamin A into retinoic acid (By similarity). This pathway is crucial to control the levels of retinol and retinoic acid, two important molecules which excess can be teratogenic and cytotoxic (By similarity). Also oxidizes aldehydes resulting from lipid peroxidation like (E)-4-hydroxynon-2-enal/HNE, malonaldehyde and hexanal that form protein adducts and are highly cytotoxic. By participating for instance to the clearance of (E)-4-hydroxynon-2-enal/HNE in the lens epithelium prevents the formation of HNE-protein adducts and lens opacification (PubMed:12941160, PubMed:15623782, PubMed:19296407). Also functions downstream of fructosamine-3-kinase in the fructosamine degradation pathway by catalyzing the oxidation of 3-deoxyglucosone, the carbohydrate product of fructosamine 3-phosphate decomposition, which is itself a potent glycating agent that may react with lysine and arginine side-chains of proteins (PubMed:17175089). Also has an aminobutyraldehyde dehydrogenase activity and is probably part of an alternative pathway for the biosynthesis of GABA/4-aminobutanoate in midbrain, thereby playing a role in GABAergic synaptic transmission (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

What is this antibody validated in?
Anti-ALDH1A1 antibody [EP1933Y] - C-terminal (ab52492) is a rabbit recombinant monoclonal antibody and is validated for use in Western Blot (WB), Flow Cytometry (Intra), Immunoprecipitation (IP), Immunohistochemistry (IHC-P), Immunocytochemistry/immunofluorescence (ICC/IF) in Human, Mouse samples.

What is the molecular weight of ALDH1A1?
Anti-ALDH1A1 [EP1933Y] - C-terminal (ab52492) specifically detects a band for ALDH1A1 (UniProt: P00352) at a molecular weight of 55kDa.

Trusted by the scientific community
Anti-ALDH1A1 [EP1933Y] - C-terminal (ab52492) was first used in a scientific publication in 2007 and has been cited over 180 times in peer-reviewed journals.

Reviewed by scientists
Anti-ALDH1A1 [EP1933Y] - C-terminal (ab52492) has over 20 independent reviews from customers.

Specificity confirmed
The specificity of Anti-ALDH1A1 antibody [EP1933Y] - C-terminal (ab52492) has been confirmed by Western blot testing in ALDH1A1 Knockout A549 cells.

Other related products
We have a range of other formats of antibody clone [EP1933Y] also available for your convenience: ab52492, Alexa Fluor® 488 - ab195254, Alexa Fluor® 647 - ab195255, HRP - ab195517, Alexa Fluor® 594 - ab206884, PE - ab209437, Carrier free - ab215996

Trial sizes available!
Test your antibody or perform pre-screening before committing to a larger quantity. Sold in 20µl. Discover our selection of trial-size antibodies.

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.

Species reactivity
Rat: We have preliminary internal testing data to indicate this antibody may not react with this species.
Please contact us for more information.

Supplementary info

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

Activity summary	ALDH1A1 also known as aldehyde dehydrogenase 1 family member A1 is an enzyme with a molecular weight of approximately 54 kDa. It functions by catalyzing the irreversible oxidation of aldehydes to carboxylic acids which is an important step in detoxifying alcohol-derived acetaldehyde and other aldehydes. ALDH1A1 is expressed in various tissues including liver kidney and cornea. Its activity allows for maintaining cellular homeostasis by processing endogenous and exogenous aldehydes.
Biological function summary	ALDH1A1 plays significant roles in the biosynthesis of retinoic acid an important regulator of gene expression in developmental and adult processes. It does not form part of a larger enzyme complex but functions independently. The ALDH1A1 proteins contribute to the regulation of cell proliferation differentiation and survival. Researchers often measure its expression using methods like the ALDH1A1 ELISA which quantifies the protein levels in biological samples.

Pathways	The ALDH1A1 enzyme is notably implicated in the retinoid metabolism pathway and the detoxification of alcohol-derived aldehydes within the body. It is closely related to other members of the aldehyde dehydrogenase family including ALDH2 which shares similar detoxification functions. ALDH1A1's role in retinoic acid production links it to gene expression pathways associated with cell differentiation and growth.
Associated diseases and disorders	ALDH1A1 has associations with cancer and alcohol-induced liver disease. Its elevated expression in cancerous tissues often correlates with stem-cell like characteristics and chemoresistance. A connection exists between ALDH1A1 and ALDH2 in the context of alcohol metabolism where ALDH1A1's role in detoxifying acetaldehyde contributes to the lower risk of alcohol-induced damage. Studies explore ALDH1A1 antibodies and inhibitors as potential therapeutic approaches for these conditions.

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

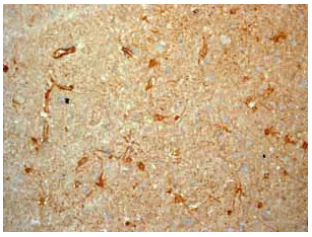
We do not recommend this combination. It is not covered by our product promise.

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.

13 product images



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ALDH1A1 antibody [EP1933Y] - C-terminal (ab52492)

ALDH1A1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-ALDH1A1 antibody

Immunohistochemical analysis of Formalin/PFA-fixed paraffin-embedded normal human brain tissue sections labeling ALDH1A1 with ab52492 (unpurified).

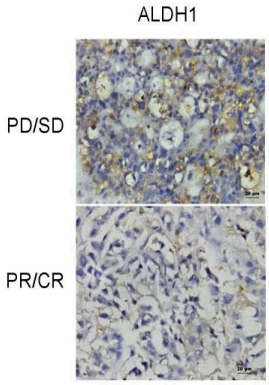


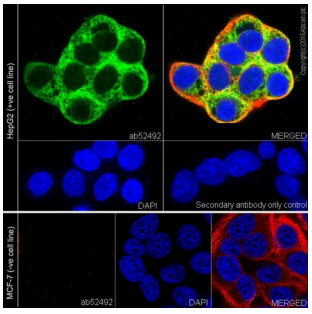
Image from Gong et al PLoS One. 2010 Dec 20;5(12):e15630. doi: 10.1371/journal.pone.0015630. Fig 1.

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ALDH1A1 antibody [EP1933Y] - C-terminal (ab52492)

Tumor tissues of primary invasive ductal carcinomas of the breast were obtained from 192 female patients with stage IIB and III prior to pre-operative neoadjuvant chemotherapy.
(progressive or stable disease, PD/SD)

(partial or complete remission, PR/CR)

The level of ALDH1 was tested by immunohistochemistry staining in paraffin-embedded tissue sections. Rabbit monoclonal ALDH1A1 antibody (unpurified ab52492, Abcam) used at a 1:100 dilution.



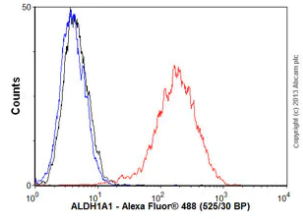
Immunocytochemistry/ Immunofluorescence - Anti-ALDH1A1 antibody [EP1933Y] - C-terminal (ab52492)

ALDH1A1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-ALDH1A1 antibody

Immunocytochemistry/ Immunofluorescence analysis of HepG2 (Human liver hepatocellular carcinoma cell line) cells labeling ALDH1A1 with ab52492 (purified) at 1/500 dilution (4 µg/ml). Cells were fixed in 100% methanol. ab150077, an AlexaFluor®488 Goat anti-Rabbit secondary antibody was used at 1/1000 dilution (2 µg/ml). ab195889, Anti-alpha Tubulin antibody [DM1A] - Microtubule Marker (Alexa Fluor® 594) was used to counterstain at 1/200 dilution (2.5 µg/ml). DAPI was used as nuclear counterstain.

Confocal image showing cytoplasmic staining on HepG2 cell line.

Negative control: No staining on MCF-7 cell line.



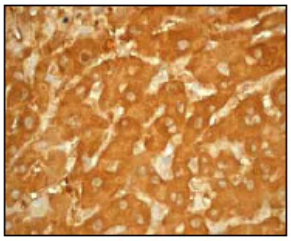
Flow Cytometry (Intracellular) - Anti-ALDH1A1 antibody [EP1933Y] - C-terminal (ab52492)

ALDH1A1 Flow Cytometry (Intracellular) staining using rabbit Anti-ALDH1A1 antibody

Overlay histogram showingHepG2 (Human liver hepatocellular carcinoma cell line) cells stained with ab52492 (unpurified) (red line).
The cells were fixed with 80% methanol (5 minutes) and then permeabilized with 0.1% PBS-Tween for 20 minutes. 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 (ab52492, 1/1000

dilution) for 30 minutes at 22°C. The secondary antibody used was Alexa Fluorr® 488 goat anti-rabbit IgG (H&L) (ab150077) at 1/2000 dilution for 30 minutes at 22°C. Isotype control antibody (black line) was rabbit IgG (monoclonal) (0.1µg/1x10^6 cells) used under the same conditions. Unlabeled sample (blue line) was also used as a control.

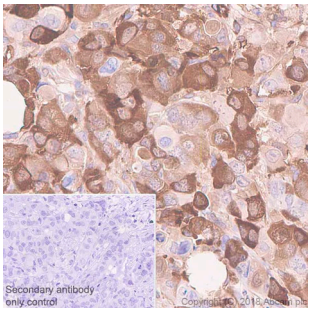
Acquisition of >5,000 events were collected using a 20mW Argon ion laser (488nm) and 525/30 bandpass filter.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ALDH1A1 antibody [EP1933Y] - C-terminal (ab52492)

ALDH1A1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-ALDH1A1 antibody

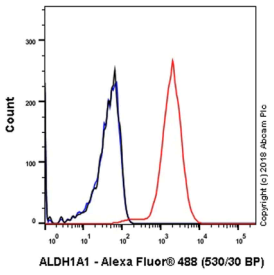
Immunohistochemical analysis of paraffin-embedded human liver tissue sections labeling ALDH1A1 with ab52492 (unpurified) at 1/100 dilution.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ALDH1A1 antibody [EP1933Y] - C-terminal (ab52492)

ALDH1A1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-ALDH1A1 antibody

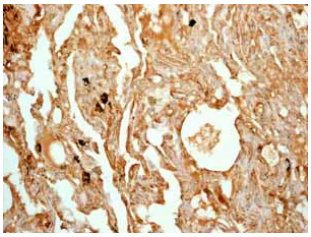
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of human breast carcinoma tissue sections labeling ALDH1A1 with purified ab52492 at 1/50 dilution (3.54 µg/ml). Perform heat mediated antigen retrieval using ab93684 (Tris/EDTA buffer, pH 9.0). ImmunoHistoProbe one step HRP Polymer (ready to use) was used as the secondary antibody. Negative control: PBS instead of the primary antibody. Hematoxylin was used as a counterstain.



Flow Cytometry (Intracellular) - Anti-ALDH1A1 antibody [EP1933Y] - C-terminal (ab52492)

ALDH1A1 Flow Cytometry (Intracellular) staining using rabbit Anti-ALDH1A1 antibody

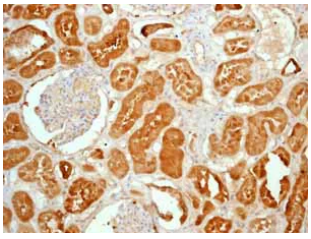
Intracellular Flow Cytometry analysis of HepG2 (Human hepatocellular carcinoma epithelial cell) cells labeling ALDH1A1 with purified ab52492 at 1/20 dilution (10µg/ml) (red). Cells were fixed with 4% Paraformaldehyde and permeabilised with 90% Methanol. A Goat anti rabbit IgG (Alexa Fluorr® 488, ab150077) secondary antibody was used at 1/2000. Isotype control - Rabbit monoclonal IgG (Black). Unlabeled control - Cell without incubation with primary antibody and secondary antibody (Blue).



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ALDH1A1 antibody [EP1933Y] - C-terminal (ab52492)

ALDH1A1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-ALDH1A1 antibody

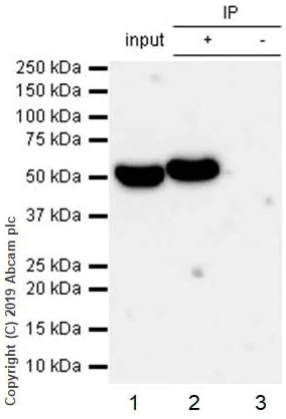
Immunohistochemical analysis of Formalin/PFA-fixed paraffin-embedded normal human lung tissue sections labeling ALDH1A1 with ab52492 (unpurified).



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ALDH1A1 antibody [EP1933Y] - C-terminal (ab52492)

ALDH1A1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-ALDH1A1 antibody

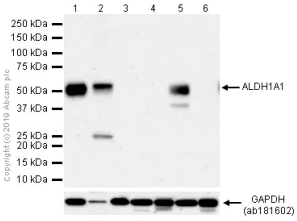
Immunohistochemical analysis of Formalin/PFA-fixed paraffin-embedded normal human kidney tissue sections labeling ALDH1A1 with ab52492 (unpurified).



Immunoprecipitation - Anti-ALDH1A1 antibody [EP1933Y] - C-terminal (ab52492)

ab52492 (purified) at 1/20 dilution (2µg) immunoprecipitating ALDH1A1 in HepG2 (Human hepatocellular carcinoma epithelial cell) whole cell lysates.
Lane 1: HepG2 whole cell lysates 10µg.
Lane 2: ab52492 IP in HepG2 whole cell lysates.
Lane 3: Rabbit monoclonal IgG (ab172730) instead of ab52492 in HepG2 whole cell lysates.
For western blotting, VeriBlot for IP Detection Reagent (HRP) (ab131366) was used at 1/1000 dilution.
Blocking and diluting buffer: 5% NFDM/TBST.
All lanes:
Immunoprecipitation - Anti-ALDH1A1 antibody [EP1933Y] - C-terminal (ab52492)

Predicted band size: 54 kDa



Western blot - Anti-ALDH1A1 antibody [EP1933Y] - C-terminal (ab52492)

All lanes:
Western blot - Anti-ALDH1A1 antibody [EP1933Y] - C-terminal (ab52492) at 1/1000 dilution

Lane 1:
HepG2 (Human hepatocellular carcinoma epithelial cell) whole cell lysates at 20 µg

Lane 2:
Human small intestine lysates

Lane 3:
PC-3 (Human prostate adenocarcinoma epithelial cell) whole cell lysates at 20 µg

Lane 4:

MCF-7 (Human breast adenocarcinoma epithelial cell) whole cell lysates at 20 µg

Lane 5:
Mouse liver lysates at 20 µg

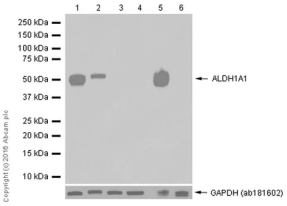
Lane 6:
NIH/3T3 (Mouse embryonic fibroblast) whole cell lysates at 20 µg

Secondary

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

Predicted band size: 54 kDa

Observed band size: 55 kDa



Western blot - Anti-ALDH1A1 antibody [EP1933Y] - C-terminal (ab52492)

ALDH1A1 Western blot staining using rabbit Anti-ALDH1A1 antibody

Blocking/Diluting buffer 5% NFDM/TBST
All lanes:
Western blot - Anti-ALDH1A1 antibody [EP1933Y] - C-terminal (ab52492) at 1/1000 dilution

Lane 1:
HepG2 (Human hepatocellular carcinoma epithelial cell) whole cell lysate at 15 µg

Lane 2:
Human small intestine tissue lysate at 15 µg

Lane 3:
PC-3 (Human prostate adenocarcinoma epithelial cell) whole cell lysate at 15 µg

Lane 4:
MCF-7 (Human breast adenocarcinoma epithelial cell) whole cell lysate at 15 µg

Lane 5:
Mouse liver tissue lysate at 15 µg

Lane 6:
NIH/3T3 (Mouse embryonic fibroblast) whole cell lysate at 15 µg

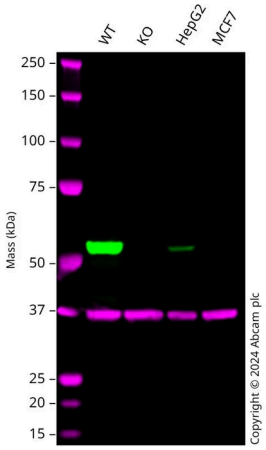
Secondary

All lanes:
Anti-Rabbit IgG (HRP), specific to the non-reduced form of IgG at 1/2000 dilution

Predicted band size: 54 kDa

Observed band size: 55 kDa

Exposure time: 1min



Western blot - Anti-ALDH1A1 antibody [EP1933Y] - C-terminal (ab52492)

ALDH1A1 Western blot staining using rabbit Anti-ALDH1A1 antibody

Western blot: Anti-ALDH1A1 antibody [EP1933Y] (ab52492) staining at 1/1000 dilution, shown in green; Mouse anti-GAPDH antibody [6C5] (ab8245) loading control staining at 1/20000 dilution, shown in magenta. In Western blot, ab52492 was shown to bind specifically to ALDH1A1. A band was observed at 55 kDa in wild-type A549 cell lysates with no signal observed at this size in ALDH1A1 knockout cell line. To generate this image, wild-type and ALDH1A1 knockout A549 cell lysates were analysed. First, samples were run on an SDS-PAGE gel then transferred onto a nitrocellulose membrane. Membranes were blocked in 3 % milk in TBS-0.1 % Tween® 20 (TBS-T) before incubation with primary antibodies overnight at 4 °C. Blots were washed four times in TBS-T, incubated with secondary antibodies for 1 h at room temperature, washed again four times then imaged. Secondary antibodies used were Goat anti-Rabbit IgG H&L 800CW and Goat anti-Mouse IgG H&L 680RD at 1/20000 dilution.
All lanes:
Western blot - Anti-ALDH1A1 antibody [EP1933Y] - C-terminal (ab52492) at 1/1000 dilution

Lane 1:
Wild-type A549 cell lysate at 20 µg

Lane 2:
ALDH1A1 knockout A549 cell lysate at 20 µg

Lane 3:
HepG2 cell lysate at 20 µg

Lane 4:
MCF7 cell lysate at 20 µg

Secondary

All lanes:
Goat anti-Rabbit IgG H&L 800CW and Goat anti-Mouse IgG H&L 680RD at 1/20000 dilution

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