abcam

ab209437

PE Anti-ALDH1A1 antibody [EP1933Y]

Recombinant | RabMAb | KO Validated

Key facts

Isotype	IgG
Host species	Rabbit
Conjugation	PE
Excitation/Emission	Ex: 480;565nm, Em: 578nm
Storage buffer	pH: 7.4 Preservative: 0.02% Sodium azide Constituents: PBS, 1% 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	0.5 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/500

Notes	-

Expected

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

Predicted

Species	Rat
Dilution info	-
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/50
Notes	-

Expected

Species	Human
Dilution info	1/50
Notes	-

Species	Mouse
Dilution info	-
Notes	-

Predicted

Species	Rat
Dilution info	-

Notes	-

IHC-P

Expected

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

Predicted

Species	Rat
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	Blue Ice
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	+4°C
Aliquoting information	Upon delivery aliquot
Storage information	Do Not Freeze, Store in the dark

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.

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

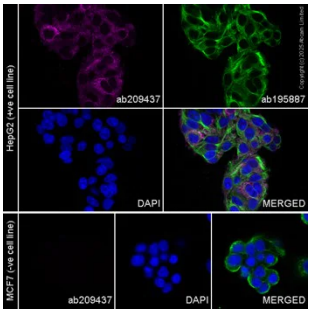
We do not recommend this combination. It is not covered by our product promise.

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.

3 product images



Immunocytochemistry/ Immunofluorescence - PE Anti-ALDH1A1 antibody [EP1933Y] (ab209437)

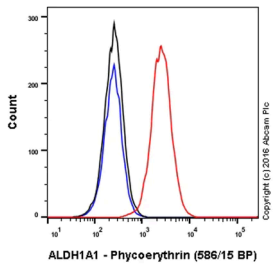
ALDH1A1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-ALDH1A1 antibody

Immunofluorescent analysis of 4% Paraformaldehyde-fixed, 0.1% TritonX-100 permeabilized HepG2 (human hepatocellular carcinoma epithelial cell) cells labelling ALDH1A1 with ab209437 at 1/50 dilution (Magenta).

Confocal image showing cytoplasmic staining in HepG2 cells and no staining in MCF7 cells.

Nuclear DNA was labelled with DAPI (shown in blue).

ab195887 Anti-alpha Tubulin mouse monoclonal antibody - Microtubule Marker (Alexa Fluor® 488) was used to counterstain tubulin at 1/200 dilution (Green).

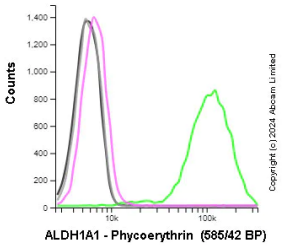


Flow Cytometry (Intracellular) - PE Anti-ALDH1A1 antibody [EP1933Y] (ab209437)

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

Overlay histogram showing MCF7 cells stained with ab209437 (red line). The cells were fixed with 80% methanol (5 min) and then permeabilized with 0.1% PBS-Triton X-100 for 15 min at 22°C. The cells were then incubated in 1x PBS / 10% normal goat serum to block non-specific protein-protein interactions followed by the antibody (ab209437, 1/500 dilution) for 30 min at 22°C.
Isotype control antibody (black line) was rabbit IgG (monoclonal) Phycoerythrin (ab209478) used at the same concentration and conditions as the primary antibody. Unlabelled sample (blue line) was also used as a control.

Acquisition of >5,000 events were collected using a 50 mW Yellow/Green laser (561nm) and 586/15 bandpass filter.



Flow Cytometry (Intracellular) - PE Anti-ALDH1A1 antibody [EP1933Y] (ab209437)

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

Flow cytometry overlay histogram showing wild-type A549 (green line) and ALDH1A1 knockout A549 cells stained with ab209437 (magenta line). The cells were fixed with 80% methanol (5 min) and then permeabilised with 0.1% PBS-Triton X-100 for 15 min. The cells were then incubated in 1x PBS containing 10% normal goat serum to block non-specific protein-protein interaction followed by the antibody (ab209437) (1x 10^6 in 100 µl at 0.04 µg/ml (1/12500)) for 30 min at 22°C.

Isotype control antibody Rabbit IgG monoclonal Phycoerythrin Isotype Control (ab209478) was used at the same concentration and conditions as the primary antibody (wild-type A549 - black line, ALDH1A1 knockout A549 - grey line). Unlabelled sample was also used as a control (this line is not shown for the purpose of simplicity).

Acquisition of >5000 events were collected using a 50 mW Yellow/Green laser (561nm) and 585/42 bandpass filter.

This antibody gave a positive signal in wild-type A549 fixed with 4% formaldehyde (10 min) / permeabilised with 0.1% PBS-Triton X-100 for 15 min under the same conditions.

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