abcam

ab105920

Anti-ALDH1A1 antibody [5A11]

Key facts

Isotype	IgG1
Host species	Mouse
Storage buffer	Preservative: 0.05% Sodium azide Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Immunogen	Recombinant Fragment Protein within Human ALDH1A1. The exact immunogen used to generate this antibody is proprietary information. Database link P00352
Clone number	5A11
Purification technique	Affinity purification Protein G
Concentration	1 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →
Purification notes	Purified from tissue culture supernatant.

Reactivity data

Flow Cyt

Tested

Species	Human
Dilution info	1/100
Notes	ab170190 - Mouse monoclonal IgG1, is suitable for use as an isotype control with this antibody.

WB

Tested

Species	Human
Dilution info	1/200 - 1/1000
Notes	-

IHC-P

Tested

Species	Human
Dilution info	1/200 - 1/1000
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 duration	1-2 weeks
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C

Notes

This product was changed from ascites to supernatant. Lot no's high than GR120645-17 are from Tissue Culture Supernatant

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

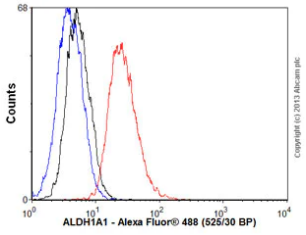
We do not recommend this combination. It is not covered by our product promise.

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.

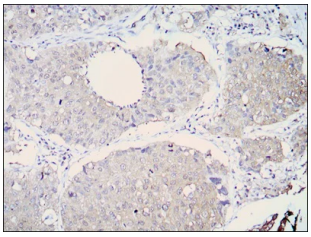
4 product images



Flow Cytometry - Anti-ALDH1A1 antibody [5A11] (ab105920)

ALDH1A1 Flow Cytometry staining using mouse Anti-ALDH1A1 antibody

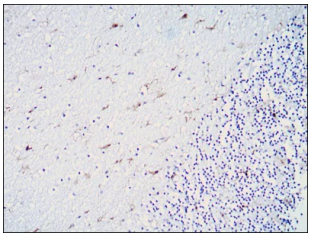
Overlay histogram showing HepG2 cells stained with ab105920 (red line). The cells were fixed with 4% paraformaldehyde (10 min) and then permeabilized with 0.1% PBS-Tween for 20 min. The cells were then incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions followed by the antibody (ab105920, 1/100 dilution) for 30 min at 22°C. The secondary antibody used was Alexa Fluor® 488 goat anti-mouse IgG (H+L) (ab150113) at 1/2000 dilution for 30 min at 22°C. Isotype control antibody (black line) was mouse IgG1 [ICIGG1] (ab91353, 1µg/1x10^6 cells) used under the same conditions. Unlabelled 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. 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.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ALDH1A1 antibody [5A11] (ab105920)

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

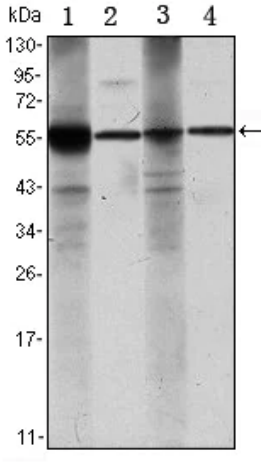
ab105920, at a 1/200 dilution, staining ALDH1A1 in paraffin embedded Human lung cancer tissue by Immunohistochemistry.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ALDH1A1 antibody [5A11] (ab105920)

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

ab105920, at a 1/200 dilution, staining ALDH1A1 in paraffin embedded Human cerebellum tissue by Immunohistochemistry.



Western blot - Anti-ALDH1A1 antibody [5A11] (ab105920)

All lanes:
Western blot - Anti-ALDH1A1 antibody [5A11] (ab105920) at 1/200 dilution

Lane 1:
Raji cell lysate

Lane 2:
Jurkat cell lysate

Lane 3:
THP1 cell lysate

Lane 4:
K562 cell lysate

Predicted band size: 54 kDa

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