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ALDH1A1 Antibody

Purified Mouse Monoclonal Antibody (Mab)
Catalog # AM1846B

Product Information

Application	WB, IHC-P, E
Primary Accession	P00352
Other Accession	NP_000680.2
Reactivity	Human
Host	Mouse
Clonality	Monoclonal
Isotype	Mouse IgG1
Clone Names	152CT1.2.2
Calculated MW	54862

Additional Information

Gene ID	216
Other Names	Retinal dehydrogenase 1, RALDH 1, RalDH1, ALDH-E1, ALHDII, Aldehyde dehydrogenase family 1 member A1, Aldehyde dehydrogenase, cytosolic, ALDH1A1, ALDC, ALDH1, PUMB1
Target/Specificity	This ALDH1A1 monoclonal antibody is generated from mouse immunized with ALDH1A1 recombinant protein.
Dilution	WB~~1:500~1000 IHC-P~~1:100~500 E~~Use at an assay dependent concentration.
Format	Purified monoclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is purified through a protein G column, followed by dialysis against PBS.
Storage	Maintain refrigerated at 2-8°C for up to 2 weeks. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.
Precautions	ALDH1A1 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	ALDH1A1 (HGNC:402)
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).
Cellular Location	Cytoplasm, cytosol. Cell projection, axon {ECO:0000250|UniProtKB:P24549}
Tissue Location	Expressed by erythrocytes (at protein level).

Background

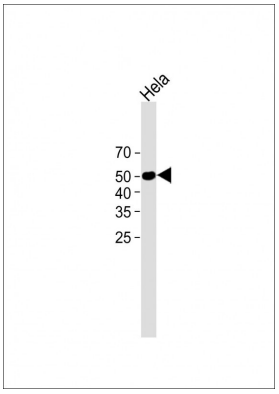
ALDH1A1 encodes a transcriptional regulator belonging to the SCY1-like family of kinase-like proteins. The protein has a divergent N-terminal kinase domain that is thought to be catalytically inactive, and can bind specific DNA sequences through its C-terminal domain. It activates transcription of the telomerase reverse transcriptase and DNA polymerase beta genes. The protein has been localized to the nucleus, and also to the cytoplasm and centrosomes during mitosis.

References

References for protein:
1.Gong, Y., et al. Oncogene 28(12):1549-1560(2009)
2.Burman, J.L., et al. J. Biol. Chem. 283(33):22774-22786(2008)
3.Sugiyama, N., et al. Mol. Cell Proteomics 6(6):1103-1109(2007)
References for HepG2 cell line:
1. Knowles BB, et al. (1980). Human hepatocellular carcinoma cell lines secrete the major plasma proteins and hepatitis B surface antigen. Science 209: 497-499.[PubMed: 6248960].
2. Darlington GJ, et al. (1987). Growth and hepatospecific gene expression of human hepatoma cells in a defined medium. In Vitro Cell. Dev. Biol. 23: 349-354.[PubMed: 3034851].
3. Ihrke, G; Neufeld, EB; Meads, T; Shanks, MR; Cassio, D; Laurent, M; Schroer, TA; Pagano, RE et al. (1993). "WIF-B cells: an in vitro model for studies of hepatocyte polarity". Journal of Cell Biology 123 (6): 1761–1775. [PubMed:7506266].
4. Mersch-Sundermann, V.; Knasmüller, S.; Wu, X. J.; Darroudi, F.; Kassie, F. (2004). "Use of a human-derived liver cell line for the detection of cytoprotective, antigenotoxic and cogenotoxic agents". Toxicology 198 (1–3): 329–340. [PubMed:15138059].

Images

All lanes: Anti-ALDH1A1 Antibody (Center) at 1:2000 dilution + Hela whole cell lysate Lysates/proteins at 20 µg per lane. Secondary: Goat Anti-mouse IgG, (H+L),



Peroxidase conjugated (ASP1613) at 1/15000 dilution. Observed band size: 55KDa Blocking/Dilution buffer: 5% NFDM/TBST.

Citations

- Aldehyde dehydrogenase 1A1 stabilizes transcription factor Gli2 and enhances the activity of Hedgehog signaling in hepatocellular cancer.