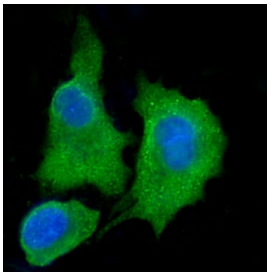
Aldehyde Dehydrogenase 3 Antibody / ALDH3A1 Polyclonal Antibody (RQ7034)

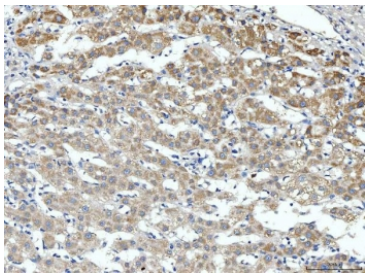
Catalog No.	Formulation	Size
RQ7034	0.5mg/ml if reconstituted with 0.2ml sterile DI water	100 ug

Bulk quote request

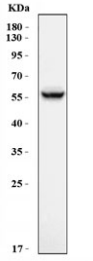
Species Reactivity	Human
Format	Antigen affinity purified
Host	Rabbit
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit IgG
Purity	Antigen affinity purified
Buffer	Lyophilized from 1X PBS with 2% Trehalose
UniProt	P30838
Localization	Cytoplasmic
Applications	Western blot: 0.5-1 ug/ml Immunohistochemistry (FFPE): 2-5ug/ml Immunofluorescence: 5ug/ml Direct ELISA: 0.1-0.5ug/ml
Limitations	This Aldehyde Dehydrogenase 3 Antibody / ALDH3A1 Polyclonal Antibody is available for research use only.



Aldehyde Dehydrogenase 3 Antibody IF Staining of Human A549 Cells. Immunofluorescence analysis of FFPE human A549 cells using ALDH3A1 Polyclonal Antibody at 5 ug/ml. Green fluorescence demonstrates predominantly cytoplasmic staining, with comparatively limited nuclear signal. Nuclei are counterstained blue with DAPI. Heat-induced epitope retrieval was performed by steaming in pH 6 citrate buffer for 20 minutes.



Aldehyde Dehydrogenase 3 Antibody IHC Staining of Human Liver Cancer Tissue. Immunohistochemical analysis of FFPE human liver cancer tissue using ALDH3A1 Polyclonal Antibody at 2-5 ug/ml. Brown staining is observed predominantly in the cytoplasm of tumor cells, with variation in staining among individual cells. Heat-induced epitope retrieval was performed by boiling tissue sections in pH 8 EDTA buffer for 20 minutes, followed by cooling before antibody incubation.



Aldehyde Dehydrogenase 3 Antibody WB Analysis of Human A549 Cell Lysate. Western blot analysis of human A549 whole-cell lysate using ALDH3A1 Polyclonal Antibody at 0.5-1 ug/ml. A prominent immunoreactive band is detected near 55 kDa, slightly above the predicted molecular weight of approximately 51 kDa for ALDH3A1.

Description

Aldehyde Dehydrogenase 3 Antibody / ALDH3A1 Polyclonal Antibody targets aldehyde dehydrogenase 3 family member A1 (ALDH3A1), a cytosolic enzyme involved in the oxidation of reactive aldehydes to their corresponding carboxylic acids. ALDH3A1 belongs to the aldehyde dehydrogenase superfamily and participates in cellular detoxification, particularly the metabolism of aldehydes generated through lipid peroxidation and exposure to environmental chemicals. Its substrate preferences include certain aromatic and medium-chain aliphatic aldehydes, distinguishing its catalytic properties from those of other aldehyde dehydrogenase family members.

Reactive aldehydes are produced during oxidative damage to membrane lipids and can interfere with cellular functions by forming covalent adducts with proteins and nucleic acids. ALDH3A1 contributes to protection against these compounds through NAD(P)+-dependent oxidation, helping maintain cellular redox balance. Its activity is particularly relevant in tissues exposed to oxidative stress, where aldehyde accumulation can contribute to protein dysfunction, membrane damage, and impaired cellular viability.

ALDH3A1 is highly abundant in the mammalian cornea, where it functions as a corneal crystallin. In addition to its enzymatic role, the protein contributes to the soluble protein content of corneal epithelial cells and has been associated with protection against ultraviolet-induced oxidative injury. Its abundance and biochemical properties have prompted investigations into its contribution to corneal transparency and resistance to environmental damage.

Expression of ALDH3A1 can be influenced by transcriptional pathways responding to xenobiotics and oxidative stress, including aryl hydrocarbon receptor signaling and antioxidant-associated regulatory mechanisms. ALDH3A1 has also been investigated in cancer biology because elevated aldehyde detoxification capacity may contribute to cellular survival under oxidative stress. In certain tumor contexts, increased ALDH3A1 expression has been associated with resistance to selected anticancer agents, although these relationships depend on tumor type and treatment conditions.

Aldehyde Dehydrogenase 3 Antibody supports investigations into the distribution and regulation of ALDH3A1 in normal and transformed tissues. Understanding the expression of this enzyme provides insight into aldehyde metabolism, cellular responses to oxidative injury, and the mechanisms connecting detoxification pathways with tissue protection and cancer-associated stress resistance.

For an alternative ALDH3A1 reagent with broader species reactivity, explore our ALDH3A1 Antibody, featuring Western blot analysis of human and rodent samples, cellular immunofluorescence, and knockout comparison data.

Application Notes

Optimal dilution of the Aldehyde Dehydrogenase 3 Antibody / ALDH3A1 Polyclonal Antibody should be determined by the researcher.

Immunogen

Recombinant human protein (amino acids Y413-H453) was used as the immunogen for the Aldehyde dehydrogenase 3 antibody.

Storage

After reconstitution, the Aldehyde dehydrogenase 3 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.

Alternate Names

ALDH3A1 antibody, ALDH3 antibody, Aldehyde dehydrogenase 3A1 antibody, Aldehyde dehydrogenase family 3 member A1 antibody, Aldehyde dehydrogenase class 3 antibody, Class 3 aldehyde dehydrogenase antibody, ALDH III antibody, Corneal aldehyde dehydrogenase antibody, ALDH3A1 corneal crystallin antibody, Aldehyde dehydrogenase 3A1 enzyme antibody

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