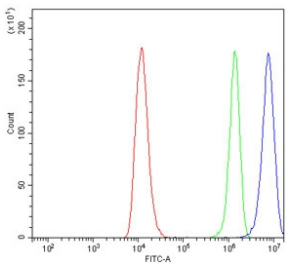
ALDH3 Antibody / ALDH3A1 Rabbit Antibody (RQ7035)

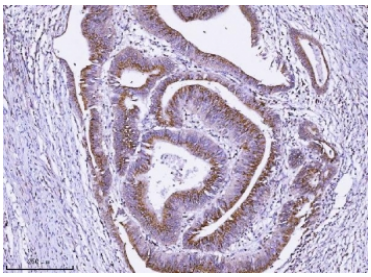
Catalog No.	Formulation	Size
RQ7035	0.5mg/ml if reconstituted with 0.2ml sterile DI water	100 ug

Bulk quote request

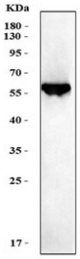
Availability	1-3 business days
Species Reactivity	Human
Format	Antigen affinity purified
Host	Rabbit
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit IgG
Purity	Antigen affinity purified
Buffer	Lyophilized from 1X PBS with 2% Trehalose
UniProt	P30838
Applications	Western blot: 0.5-1 ug/ml Immunohistochemistry (FFPE): 2-5ug/ml Flow cytometry: 1-3ug/million cells Direct ELISA: 0.1-0.5ug/ml
Limitations	This ALDH3 Antibody / ALDH3A1 Rabbit Antibody is available for research use only.



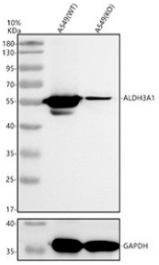
ALDH3 Antibody FACS Analysis of Human RT4 Cells. Flow cytometry analysis of human RT4 cells using ALDH3A1 Rabbit Antibody at 1 ug per 10^6 cells following blocking with goat serum. The blue histogram represents antibody staining, the green histogram represents the isotype control, and the red histogram represents cells alone. A pronounced rightward fluorescence shift is observed in the antibody-stained population relative to both controls, demonstrating increased antibody-associated fluorescence.



ALDH3 Antibody IHC Staining of Human Rectal Cancer Tissue. Immunohistochemical analysis of FFPE human rectal cancer tissue using ALDH3A1 Rabbit Antibody. Prominent brown staining is observed in the cytoplasm of malignant glandular epithelial cells, with variation in staining intensity among tumor regions. The surrounding stromal tissue shows comparatively limited staining. Heat-induced epitope retrieval was performed by boiling sections in pH 8 EDTA buffer for 20 minutes, followed by cooling before antibody incubation.



ALDH3 Antibody WB Analysis of Human A549 Cell Lysate. Western blot analysis of human A549 whole-cell lysate using ALDH3A1 Rabbit Antibody. A prominent immunoreactive band is detected near 55 kDa, slightly above the predicted molecular weight of approximately 51 kDa for ALDH3A1.



ALDH3 Antibody WB Analysis of Wild-Type and ALDH3A1 Knockout A549 Cells. Western blot analysis of human A549 wild-type (WT, lane 1) and ALDH3A1 knockout (KO, lane 2) whole-cell lysates using ALDH3A1 Rabbit Antibody at 0.5 ug/ml. A prominent immunoreactive band near 55 kDa is markedly reduced in KO lysate, while a weaker lower-molecular-weight band detected in WT lysate is no longer visible. Alternative ALDH3A1 splice variants encoding shorter proteins have been documented in published studies, although the lower band has not been confirmed as a specific isoform. GAPDH serves as the loading control.

Description

ALDH3 Antibody / ALDH3A1 Rabbit Antibody targets aldehyde dehydrogenase 3 family member A1 (ALDH3A1), a cytosolic enzyme that catalyzes the oxidation of aldehydes to their corresponding carboxylic acids. ALDH3A1 belongs to the aldehyde dehydrogenase superfamily and contributes to cellular protection against reactive aldehydes generated during normal metabolism and oxidative stress. Its preferred substrates include certain aromatic and medium-chain aliphatic aldehydes, distinguishing its catalytic properties from those of other aldehyde dehydrogenase family members.

ALDH3A1 functions as a homodimer and preferentially uses NADP+ as a cofactor during aldehyde oxidation. Its activity contributes to the removal of electrophilic compounds capable of modifying proteins, lipids, and nucleic acids. Among these compounds are aldehydes generated through lipid peroxidation, including 4-hydroxy-2-nonenal (4-HNE). By metabolizing reactive aldehydes, ALDH3A1 helps limit the accumulation of potentially damaging molecules and supports cellular resistance to oxidative injury.

One of the most distinctive features of ALDH3A1 is its abundant expression in the mammalian cornea. The protein functions as a corneal crystallin, contributing substantially to the soluble protein content of corneal epithelial cells. In addition to its catalytic activity, ALDH3A1 has been associated with protection against ultraviolet radiation and oxidative damage. Its abundance in corneal tissue has also prompted investigations into its contribution to optical transparency and the maintenance of normal corneal physiology.

ALDH3A1 expression is influenced by cellular responses to environmental chemicals and oxidative stress. Regulatory pathways involving the aryl hydrocarbon receptor (AhR) and antioxidant-responsive transcription factors contribute to its expression in certain tissues. ALDH3A1 has also attracted attention in cancer research because aldehyde detoxification can influence tumor cell survival under conditions of metabolic and oxidative stress. Elevated expression has been associated with resistance to selected anticancer agents in particular experimental settings, although these effects vary with cellular context.

ALDH3 Antibody supports investigations into the expression and regulation of this metabolic enzyme in normal and transformed cells. Examining ALDH3A1 abundance provides insight into aldehyde detoxification, cellular redox balance, corneal protection, and the mechanisms by which cells adapt to chemical and oxidative challenges.

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 ALDH3 Antibody / ALDH3A1 Rabbit Antibody should be determined by the researcher.

Immunogen

Recombinant human protein (amino acids E62-H101) was used as the immunogen for the ALDH3 antibody.

Storage

After reconstitution, the ALDH3 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, 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, Dimeric NADP-preferring aldehyde dehydrogenase antibody, Aldehyde dehydrogenase 3 antibody

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