

# ALDH1A1 (H-4): sc-374076

## BACKGROUND

Aldehyde dehydrogenases (ALDHs) mediate NADP<sup>+</sup>-dependent oxidation of aldehydes into acids during the detoxification of alcohol-derived acetaldehyde; metabolism of corticosteroids, biogenic amines and neurotransmitters; and lipid peroxidation. ALDH1A1, also designated retinal dehydrogenase 1 (RALDH1 or RALDH1), aldehyde dehydrogenase family 1 member A1, aldehyde dehydrogenase cytosolic, ALDHII, ALDH-E1 or ALDH E1, is a retinal dehydrogenase that participates in the biosynthesis of retinoic acid (RA). There are two major liver isoforms of ALDH1 that can localize to cytosolic or mitochondrial space. The ALDH1A2 (RALDH2, RALDH2-T) gene produces three different transcripts and also catalyzes the synthesis of RA from retinaldehyde. ALDH1A3 (ALDH6, RALDH3, ALDH1A6) is a 37 kb gene that consists of 13 exons and produces a major transcript of approximately 3.5 kb most abundant in salivary gland, stomach and kidney. ALDH3A1 (stomach type, ALDH3, ALDHIII) forms a cytoplasmic homodimer that preferentially oxidizes aromatic aldehyde substrates. ALDH genes upregulate as a part of the oxidative stress response, and appear to be abundant in certain tumors that have an accelerated metabolism toward chemotherapy agents.

## CHROMOSOMAL LOCATION

Genetic locus: ALDH1A1 (human) mapping to 9q21.13.

## SOURCE

ALDH1A1 (H-4) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 105-137 near the N-terminus of ALDH1A1 of human origin.

## PRODUCT

Each vial contains 200 µg IgG<sub>1</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

ALDH1A1 (H-4) is available conjugated to agarose (sc-374076 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-374076 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-374076 PE), fluorescein (sc-374076 FITC), Alexa Fluor<sup>®</sup> 488 (sc-374076 AF488), Alexa Fluor<sup>®</sup> 546 (sc-374076 AF546), Alexa Fluor<sup>®</sup> 594 (sc-374076 AF594) or Alexa Fluor<sup>®</sup> 647 (sc-374076 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor<sup>®</sup> 680 (sc-374076 AF680) or Alexa Fluor<sup>®</sup> 790 (sc-374076 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-374076 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

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## STORAGE

Store at 4° C, **\*\*DO NOT FREEZE\*\***. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.

## APPLICATIONS

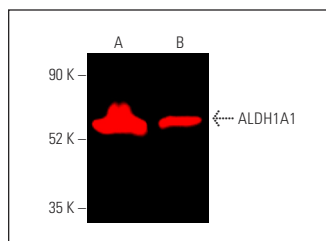
ALDH1A1 (H-4) is recommended for detection of ALDH1A1 of human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for ALDH1A1 siRNA (h): sc-41442, ALDH1A1 shRNA Plasmid (h): sc-41442-SH and ALDH1A1 shRNA (h) Lentiviral Particles: sc-41442-V.

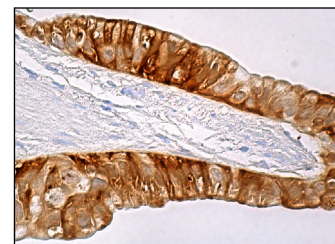
Molecular Weight of ALDH1A1: 56 kDa.

Positive Controls: A549 cell lysate: sc-2413, Hep G2 cell lysate: sc-2227 or human liver extract: sc-363766.

## DATA



ALDH1A1 (H-4): sc-374076. Near-Infrared western blot analysis of ALDH1A1 expression in A549 whole cell lysate (A) and human liver tissue extract (B). Blocked with UltraCruz<sup>®</sup> Blocking Reagent: sc-516214. Detection reagent used: m-IgG<sub>1</sub> BP-CFL 790: sc-533666.



ALDH1A1 (H-4): sc-374076. Immunoperoxidase staining of formalin fixed, paraffin-embedded human gall bladder tissue showing cytoplasmic staining of glandular cells.

## SELECT PRODUCT CITATIONS

- Bu, P., et al. 2013. A microRNA miR-34a-regulated bimodal switch targets Notch in colon cancer stem cells. *Cell Stem Cell* 12: 602-615.
- Lee, J.S., et al. 2019. Gastric cancer depends on aldehyde dehydrogenase 3A1 for fatty acid oxidation. *Sci. Rep.* 9: 16313.
- Oh, T., et al. 2020. Ent-penicihierqueineone suppresses acetaldehyde-induced cytotoxicity and oxidative stress by inducing ALDH and suppressing MAPK signaling. *Pharmaceutics* 12: 1229.
- Uzun, S., et al. 2021. Comprehensive analysis of VEGFR2 expression in HPV-positive and -negative OPSCC reveals differing VEGFR2 expression patterns. *Cancers* 13: 5221.
- Schniewind, I., et al. 2022. Cellular plasticity upon proton irradiation determines tumor cell radiosensitivity. *Cell Rep.* 38: 110422.
- Izycka, N., et al. 2023. The prognostic value of cancer stem cell markers (CSCs) expression-ALDH1A1, CD133, CD44-for survival and long-term follow-up of ovarian cancer patients. *Int. J. Mol. Sci.* 24: 2400.

## RESEARCH USE

For research use only, not for use in diagnostic procedures.