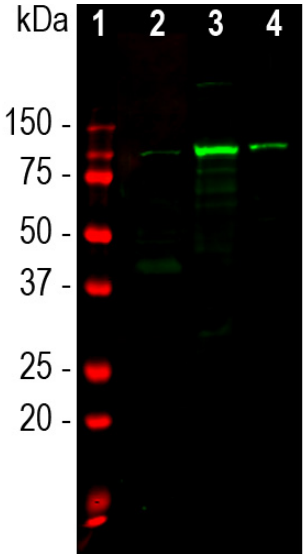
ALDH1L1 Rabbit Polyclonal Antibody

RPCA-ALDH1L1

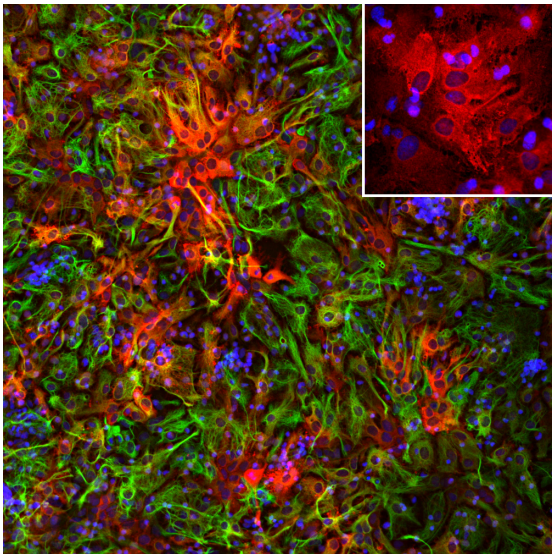
Ordering Information
Web *www.encorbio.com*
Email *admin@encorbio.com*
Phone *352-372-7022*
Fax *352-372-7066*

HGNC Name: *ALDH1L1*
UniProt: *O75891*
RRID: *AB_2572222*
Immunogen: *Recombinant construct of amino acids 1-400 of human protein expressed in and purified from E. coli*
Format: *Supplied as an aliquot of serum + 5 mM NaN3*
Storage: *Store at 4°C for short term, for longer term at -20°C, minimize freeze/thaw cycles*
Recommended dilutions:
WB: 1:2,000-5,000. IF/IHC: 1:1,000.

Applications	Host	Isotype	Molecular Wt.	Species Cross-Reactivity
WB, IF/ICC	Rabbit		100kDa	Hu, Rt, Ms



Western blot analysis of different tissue lysates using rabbit pAb to ALDH1L1, RPCA-ALDH1L1, dilution 1:5,000 in green: [1] protein standard (red), [2] rat brain, [3] rat liver and [4] rat kidney. The single band at 100kDa mark corresponds to the ALDH1L1 protein.



Immunofluorescent analysis of cortical neuron-glial cell culture from E20 rat stained with rabbit pAb to ALDH1L1, RPCA-ALDH1L, dilution 1:1,000 in red, and costained with chicken pAb to GFAP, CPCA-GFAP, dilution 1:5,000 in green. The blue is DAPI staining of nuclear DNA. The ALDH1L1 antibody labels protein expressed in the cytoplasm of non-neuronal cells. The GFAP antibody stains intermediate filaments in astrocytes and other glial cells.

Background:

Aldehyde dehydrogenase family 1, member L1 (ALDH1L1) is a cytosolic enzyme and one member of a large family of aldehyde dehydrogenases. ALDH1L1 catalyses the NADP(+) dependent oxidation of 10-formyltetrahydrofolate to tetrahydrofolate and Carbon dioxide (1). ALDH1L1 expression is highly tissue specific, with very high levels in the liver, representing up to 1% of the total pool of soluble cell proteins. Cahoy et al. used fluorescent activated cell sorting to isolate astrocytes from enhanced green fluorescent protein (GFP) expressing transgenic mice, with GFP expression being under the control of the S100β promoter, expected to direct GFP to astrocytes. They then created a transcriptome database of the gene expression levels using Affymetrix GeneChip arrays (2). They identified ALDH1L1 mRNA as very abundant and expressed only in astrocytes, suggesting that ALDH1L1 protein would be a expressed at high levels and only in astrocytes. Based on immunocytochemical studies they claimed that ALDH1L1 is more widely expressed in astrocytes throughout the brain, while the widely used astrocyte marker GFAP shows more predominant expression in white matter. The also claimed that ALDH1L1 expression gives a more detailed view of astrocyte morphology since it is expressed throughout the cell including fine protoplasmic protrusions. In contrast GFAP is found in the intermediate filament core of the astrocyte, and these filaments are not found in finer cytoplasmic protrusions. Loss of function or expression of ALDH1L1 is associated with decreased apoptosis, increased cell motility, and cancer progression, suggesting its role as a potential biomarker and a target in cancer therapy (3-5).

RPCA-ALDH1L1 was made against a recombinant construct expressing the first 400 amino acids of human ALDH1L1 and is known to work on human, rat and mouse cells and tissue extracts. It stains the expected 100kDa band on western blots of crude tissue extracts cleanly and can be used to identify astrocytes in cell culture and sectioned material. It is not recommended for IHC. EnCor used the same immunogen to generate two high quality mouse monoclonal antibodies to ALDH1L1, MCA-4A12 and MCA-2E7.

References:

1. Kisliuk RL. Folate biochemistry in relation to antifolate selectivity. In :Jackman AL, editor. Antifolate drugs in cancer therapy. Totowa, NJ: Humana Press; p. 13-36 (1999).
2. Cahoy JD, et al. A transcriptome database for astrocytes, neurons, and oligodendrocytes: a new resource for understanding brain development and function. J. Neurosci. 28:264-78 (2008).
3. Krupenko SA, Oleinik NV. 10-formyltetrahydrofolate dehydrogenase, one of the major folate enzymes, is down-regulated in tumor tissues and possesses suppressor effects on cancer cells. Cell Growth Differ. 13:227-36 (2002).
4. Rodriguez FJ, et al. Gene expression profiling of NF-1-associated and sporadic pilocytic astrocytoma identifies aldehyde dehydrogenase 1 family member L1 (ALDH1L1) as an underexpressed candidate biomarker in aggressive subtypes. J. Neuropath. Exp. Neurol. 67:1194-204 (2008).
5. Oleinik NV, Krupenko NI, Krupenko SA. Epigenetic Silencing of ALDH1L1, a Metabolic Regulator of Cellular Proliferation, in Cancers. Genes Cancer. 2:130-9 (2011).

Abbreviation Key:

mAb—Monoclonal Antibody pAb—Polyclonal Antibody WB—Western Blot IF—Immunofluorescence ICC—Immunocytochemistry IHC—Immunohistochemistry E—ELISA Hu—Human Mo—Monkey Do—Dog Rt—Rat Ms—Mouse Co—Cow Pi—Pig Ho—Horse Ch—Chicken Dr—D. rerio Dm—D. melanogaster Sm—S. mutans Ce—C. elegans Sc—S. cerevisiae Sa—S. aureus Ec—E. coli.