ALDH1L1 Mouse Monoclonal Antibody

MCA-2E7

Ordering Information
Web *www.encorbio.com*
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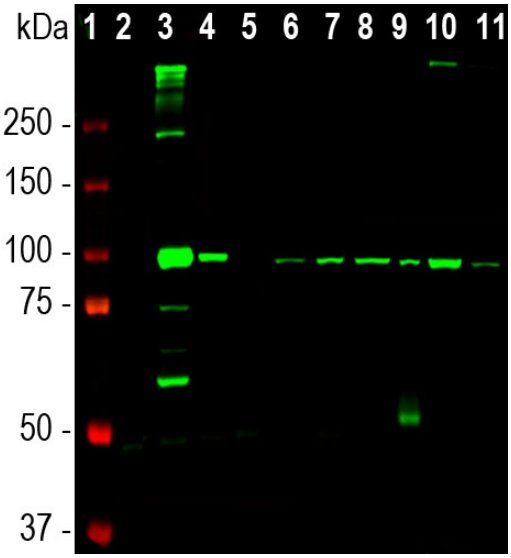
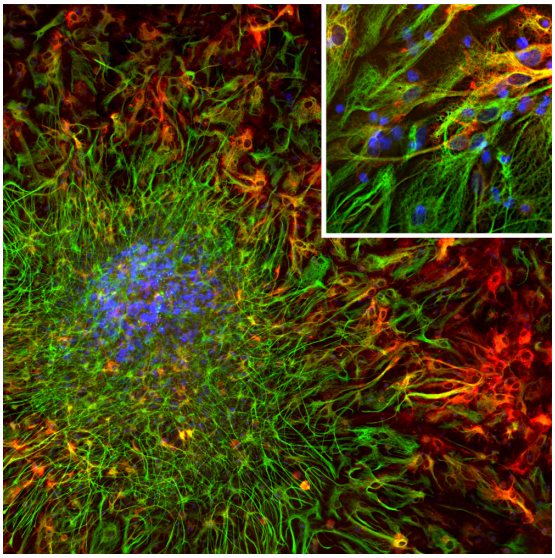
HGNC Name: *ALDH1L1*
UniProt: *O75891*
RRID: *AB_2572220*
Immunogen: *Amino acids 402-902 of human ALDH1L1 protein expressed in and purified from E. coli.*
Format: *Purified antibody at 1mg/mL in 50% PBS, 50% glycerol plus 5mM NaN_3*
Storage: *Stable at 4°C for one year, for longer term store at -20°C*
Recommended dilutions:
WB: 1:5,000-1:10,000. IF/ICC: 1:1,000. IHC: not recommended

Applications	Host	Isotype	Molecular Wt.	Species Cross-Reactivity
WB, IF/ICC	Mouse	IgG1	100kDa	Hu, Rt, Ms



Western blot analysis of different tissue and cell lysates using mouse mAb to ALDH1L1, MCA-2E7, dilution 1:5,000 in green: [1] protein standard (red), rat tissue lysates: [2] heart, [3] liver, [4] kidney, [5] lung, [6] brain, and [7] spinal cord; also mouse tissue lysates: [8] brain, and [9] spinal cord; and cell line lysates: [10] NIH-3T3, and [11] HEK293. The band at 100kDa mark corresponds to ALDH1L1 protein.



Immunofluorescent analysis of cortical neuron-glial cell culture from E20 rat stained with mouse mAb to aldehyde dehydrogenase 1-L1 (ALDH1L1), MCA-2E7, dilution 1:1,000 in red, and costained with chicken pAb to GFAP, CPCA-GFAP, dilution 1:5,000 in green. The blue is Hoechst staining of nuclear DNA. The MCA-2E7 antibody produces cytoplasmic staining of glial cells, while the CPCA-GFAP antibody labels the intermediate filament cytoskeleton in astrocytes and other glial cells. Some astrocytic cells express both ALDH1L1 and GFAP and therefore appear yellow.

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).

The MCA-2E7 antibody was made against a recombinant form of amino acids 402-902 of human ALDH1L1 protein expressed in and purified from *E. coli*. It works for western blots and IF/ICC on human and rodent material, but is not recommended for IHC. We also market an alternate mouse monoclonal to ALDH1L1, MCA-4A12 which will work well for IHC. We also supply a rabbit polyclonal antibody RPCA-ALDH1L1.

References:

1. Kisliuk RL. Folate biochemistry in relation to antifolate selectivity. In Jackman AL, editor. Antifolate drugs in cancer therapy. Humana Press 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.