

# PRODUCT INFORMATION



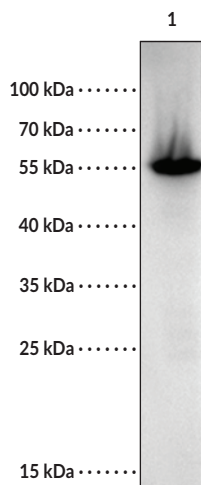
## ALDH1A1 Monoclonal Antibody (Clone 5G9E6C9)

Item No. 38096

### Overview and Properties

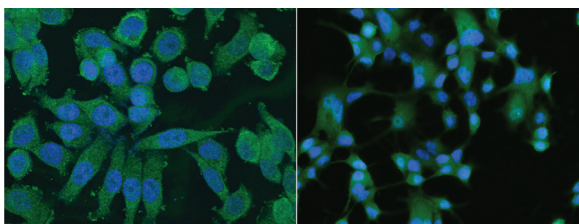
<b>Contents:</b>	This vial contains 50, 100, or 200 µl of protein A-affinity purified monoclonal antibody.
<b>Synonyms:</b>	Aldehyde Dehydrogenase 1A1, RALDH1, Retinaldehyde Dehydrogenase 1
<b>Immunogen:</b>	Recombinant human ALDH1A1 protein
<b>Cross Reactivity:</b>	(+) ALDH1A1
<b>Species Reactivity:</b>	(+) Human; (-) <i>E. coli</i> ; other species not tested
<b>Form:</b>	Liquid
<b>Storage:</b>	-80°C (as supplied)
<b>Stability:</b>	≥1 year
<b>Storage Buffer:</b>	0.2 µm filtered solution in PBS
<b>Clone:</b>	5G9E6C9
<b>Host:</b>	Mouse
<b>Isotype:</b>	IgG1
<b>Applications:</b>	ELISA, Flow cytometry (FC), Immunocytochemistry (ICC), Immunofluorescence (IF), and Western blot (WB) applications; the recommended starting dilution is 1:1,000-1:2,000 for ELISA, 1:25-1:100 for FC, 1:20-1:100 for ICC, and 1:500-1:2,000 for WB. Other applications were not tested, therefore optimal working concentration/dilution should be determined empirically.

### Images



Lane 1: HepG2 whole cell lysate (30 µg)

WB of ALDH1A1 Monoclonal Antibody at 1:500 dilution.



Immunohistochemical staining of human ALDH1A1 in MCF7 or SKBR3 cells. Cells were fixed with 4% PFA, permeabilized with 1% Triton X-100 in PBS, blocked with 10% serum, and incubated with ALDH1A1 Monoclonal Antibody at a dilution of 1:60. Then cells were stained with the Alexa Fluor® 488-conjugated goat anti-mouse IgG secondary antibody (A) captured by laser confocal scanning microscope or (B) captured by fluorescence microscope, counterstained with DAPI (blue). Positive staining was localized to cytoplasm.

WARNING  
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

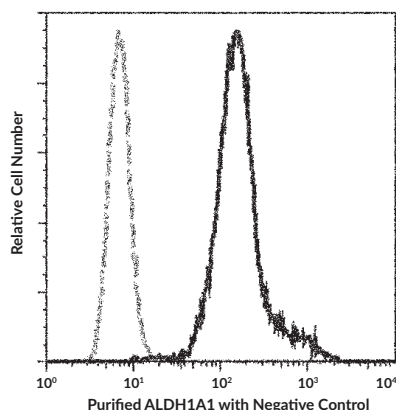
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This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

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**Flow cytometric analysis of ALDH1A1 Monoclonal Antibody A549 cells.** Cells were treated according to manufacturer's manual (BD Pharmingen™) labeled with purified ALDH1A1 Monoclonal Antibody followed by a FITC-conjugated secondary antibody. The fluorescence histogram was derived from gated events with the forward and side light-scatter characteristics of intact cells.

## Description

Aldehyde dehydrogenase 1 (ALDH1) is an NADP<sup>+</sup>-dependent member of the aldehyde dehydrogenase superfamily that metabolizes exogenously produced aldehydes to alleviate aldehyde stress.<sup>1</sup> ALDH1 is expressed as three isozymes, ALDH1A1, ALDH1A2, and ALDH1A3, of which, ALDH1A1 shares greater than 70% sequence homology with ALDH1A2 and ALDH1A3. ALDH1A1 is a cytosolic homotetramer, with each monomer composed of a catalytic domain, an NAD-binding domain, and an oligomerization domain that is widely expressed in brain, liver, kidneys, adipose tissue, retina, and lens. It catalyzes the oxidation of retinaldehyde to retinoic acid, a transcriptional regulator essential for normal cell growth and differentiation.<sup>1,2</sup> Tumoral levels of ALDH1A1 are increased and associated with poor prognosis in patients with high clinical stages of nasopharyngeal carcinomas.<sup>2</sup> Levels of ALDH1A1 are positively correlated with disease severity in postmortem brain tissue from patients with Alzheimer's disease.<sup>3</sup> ALDH1A1-positive nigrostriatal dopaminergic neurons (DANs) are decreased compared with the number of ALDH1A1-negative nigrostriatal DANs in postmortem brain tissue from patients with Parkinson's disease.<sup>4</sup> Cayman's ALDH1A1 Monoclonal Antibody (Clone 5G9E6C9) can be used for ELISA, flow cytometry (FC), immunocytochemistry (ICC), immunofluorescence (IF), and Western blot (WB) applications.

## References

1. Li, B., Yang, K., Liang, D., *et al.* Discovery and development of selective aldehyde dehydrogenase 1A1 (ALDH1A1) inhibitors. *Eur. J. Med. Chem.* **209**, 112940 (2021).
2. Wang, H., Zhan, Y., Peng, S., *et al.* Targeting ALDH1A1 to induce necroptosis in nasopharyngeal carcinoma. *J. Cancer* **13(14)**, 3515-3525 (2022).
3. Nikhil, K., Viccaro, K., and Shah, K. Multifaceted regulation of ALDH1A1 by Cdk5 in Alzheimer's disease pathogenesis. *Mol. Neurobiol.* **56(2)**, 1366-1390 (2019).
4. Carmichael, K., Evans, R.C., Lopez, E., *et al.* Function and regulation of ALDH1A1-positive nigrostriatal dopaminergic neurons in motor control and Parkinson's disease. *Front. Neural. Circuits* **15**, 644776 (2021).

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