abcam

ab110330

Anti-PDHA1 antibody [9H9AF5]

Anti-PDHA1 antibody [9H9AF5] (ab110330) is a mouse monoclonal antibody detecting PDHA1 in **Western Blot, Flow Cytometry, ICC/IF**. Suitable for **Cow, Human, Mouse, Rat**.

- KO validated for confirmed specificity
- Over 80 publications

KO Validated

Key facts

Isotype	IgG1
Host species	Mouse
Storage buffer	pH: 7.5 Preservative: 0.02% Sodium azide Constituents: HEPES buffered saline
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	9H9AF5
Purity	IgG fraction
Light chain type	kappa
Concentration	1 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →
Purification notes	ab110330 was produced in vitro using hybridomas grown in serum-free medium, and then purified by biochemical fractionation.

Reactivity data

Flow Cyt

Tested

Species	Human
Dilution info	1 µg/mL
Notes	ab170190 - Mouse monoclonal IgG1, is suitable for use as an isotype control with this antibody.

Expected

Species	Mouse, Rat, Cow
Dilution info	Use at an assay dependent concentration.
Notes	-

WB

Tested

Species	Human
Dilution info	1 µg/mL
Notes	-

Species	Mouse
Dilution info	1 µg/mL
Notes	-

Species	Rat
Dilution info	1 µg/mL
Notes	-

Species	Cow
Dilution info	1 µg/mL
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	5 µg/mL
Notes	(heat-induced antigen-retrieval improves signal)

Expected

Species	Mouse, Rat, Cow
Dilution info	Use at an assay dependent concentration.
Notes	-

Target data

See full target information PDHA1

Function Together with PDHB forms the heterotetrameric E1 subunit of the pyruvate dehydrogenase (PDH) complex (PubMed:17474719, PubMed:19081061). The PDH complex catalyzes the overall conversion of pyruvate to acetyl-CoA and CO(2), and thereby links cytoplasmic glycolysis and the mitochondrial tricarboxylic acid (TCA) cycle (PubMed:19081061, PubMed:7782287). It contains multiple copies of three enzymatic components: pyruvate dehydrogenase (E1), dihydrolipoamide acetyltransferase (E2) and dihydrolipoamide dehydrogenase (E3) (Probable). The E1 subunit catalyzes both the thiamine pyrophosphate (TPP)-dependent decarboxylation of pyruvate and the reductive acetylation of a lipoyl group covalently linked to the lipoyl-bearing domains of E2 (PubMed:17474719, PubMed:19081061, PubMed:7782287).

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	+4°C
Storage information	Do Not Freeze

Notes

What is this antibody validated in?
Anti-PDHA1 antibody [9H9AF5] (ab110330) is a mouse monoclonal antibody and is validated for use in Western Blot

(WB), Flow Cytometry (Flow Cyt), Immunocytochemistry/immunofluorescence (ICC/IF) in Cow, Human, Mouse, Rat samples.

What is the molecular weight of PDHA1?
Anti-PDHA1 [9H9AF5] (ab110330) specifically detects a band for PDHA1 (UniProt: P08559) at a molecular weight of 43kDa.

Trusted by the scientific community
Anti-PDHA1 [9H9AF5] (ab110330) was first used in a scientific publication in 2011 and has been cited over 80 times in peer-reviewed journals.

Reviewed by scientists
Anti-PDHA1 [9H9AF5] (ab110330) has over 5 independent reviews from customers.

Specificity confirmed
The specificity of Anti-PDHA1 antibody [9H9AF5] (ab110330) has been confirmed by Western blot testing in PDHA1 Knockout HeLa cells.

Other related products
We have a range of other formats of antibody clone [9H9AF5] also available for your convenience: ab110330, HRP - ab197956

Want a custom formulation?
This antibody clone is manufactured by Abcam. If you require a custom buffer formulation or conjugation for your experiments, please contact orders@abcam.com

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	PDHA1 also known as the pyruvate dehydrogenase E1 alpha subunit plays a mechanical role in cellular metabolism. It forms part of the larger pyruvate dehydrogenase (PDH) complex where it serves as a critical catalytic component. PDHA1 is expressed ubiquitously across different tissue types reflecting its fundamental function in energy production. The molecular weight of the PDHA1 protein is approximately 43 kDa. Alternate names for this protein include the PDH E1 component and it partners closely with other components in the PDH complex to facilitate its role.
Biological function summary	PDHA1 engages in the conversion of pyruvate into acetyl-CoA an important step in cellular respiration. This protein is part of the PDH complex which consists of multiple copies of three catalytic and two regulatory subunits. The conversion process is essential for linking glycolysis to the citric acid cycle efficiently channeling energy substrates within the cell. Furthermore the functional activity of PDHA1 is regulated through phosphorylation by the pyruvate dehydrogenase kinases (PDKs) and dephosphorylation by PDH phosphatases.
Pathways	PDHA1 is integral to the metabolic pathway of cellular respiration and energy production. It enables the transition between glycolysis and the citric acid cycle by facilitating the conversion of pyruvate to acetyl-CoA which enters the citric acid cycle. Related proteins in this pathway include PDHA2 and the regulatory PDKs

	that modulate PDHA1 activity. These interactions ensure energy metabolism adapts to various cellular conditions influencing energy balance and substrate utilization.
Associated diseases and disorders	Mutations or dysfunctions in PDHA1 can lead to disorders such as pyruvate dehydrogenase deficiency and Leigh syndrome. These conditions result from impaired energy metabolism leading to severe neurological symptoms and overall energy deficits in tissues with high metabolic demands. The link between PDHA1 and diseases highlights the importance of maintaining its function. Additionally altered interaction with proteins involved in phosphorylation such as the PDKs can exacerbate pathogenic conditions by further disbalancing metabolic activities.

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

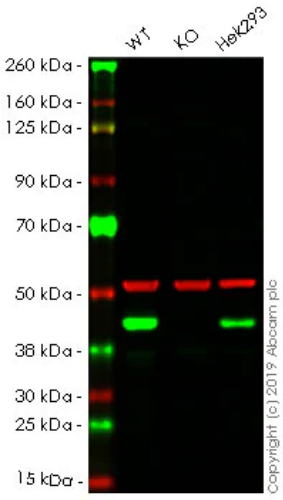
We do not recommend this combination. It is not covered by our product promise.

We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

Full details and terms and conditions can be found here:
Terms & Conditions.

6 product images



Western blot - Anti-PDHA1 antibody [9H9AF5] (ab110330)

PDHA1 Western blot staining using mouse Anti-PDHA1 antibody

Lanes 1 - 3: Merged signal (red and green). Green - ab110330 observed at 43 kDa. Red - loading control, ab52866, observed at 50 kDa.
ab110330 was shown to specifically react with PDHA1 in wild-type HeLa cells as signal was lost in PDHA1 knockout cells. Wild-type and PDHA1 knockout samples were subjected to SDS-PAGE. ab110330 and ab52866 (Rabbit anti alpha Tubulin loading control) were incubated overnight at 4°C at 1 ug/ml and 1/1000 dilution respectively. Blots were developed with Goat anti-Mouse IgG H&L (IRDye® 800CW) preabsorbed ab216772 and Goat anti-Rabbit IgG H&L (IRDye® 680RD) preabsorbed ab216777 secondary antibodies at 1/20000 dilution for 1 hour at room temperature before imaging.

All lanes:
Western blot - Anti-PDHA1 antibody [9H9AF5] (ab110330) at 1 µg/mL

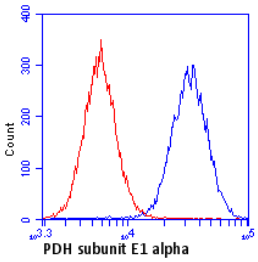
Lane 1:
Wild-type HeLa whole cell lysate at 20 µg

Lane 2:
PDHA1 knockout HeLa whole cell lysate at 20 µg

Lane 3:
HEK-293 whole cell lysate at 20 µg

Predicted band size: 43 kDa

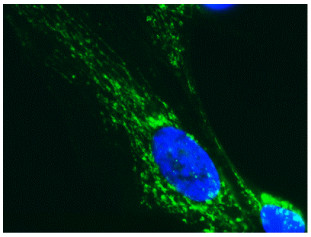
Observed band size: 43 kDa



Flow Cytometry - Anti-PDHA1 antibody [9H9AF5] (ab110330)

PDHA1 Flow Cytometry staining using mouse Anti-PDHA1 antibody

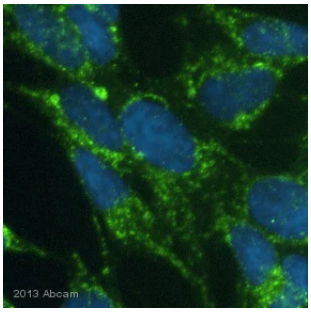
Flow cytometric analysis using ab110330 at 1µg/ml staining PDHA1 in HL60 cells (blue). Isotype control antibody (red).



Immunocytochemistry/ Immunofluorescence - Anti-PDHA1 antibody [9H9AF5] (ab110330)

PDHA1 Immunocytochemistry/ Immunofluorescence staining using mouse Anti-PDHA1 antibody

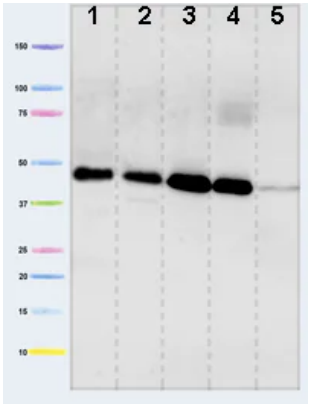
Immunocytochemistry analysis using ab110330 at 5µg/ml staining PDHA1 in cultured, normal Human embryonic lung fibroblasts (strain MRC5) followed by AlexaFluor® 488 goat anti-mouse IgG1 secondary antibody (2 µg/ml).



'This image is courtesy of a customer review submitted by George Allen'

Immunocytochemistry/ Immunofluorescence - Anti-PDHA1 antibody [9H9AF5] (ab110330)

Immunocytochemical analysis of SH-SY5Y human neuroblastoma labeling PDHA1 with ab110330 at 1/500 dilution.



Western blot - Anti-PDHA1 antibody [9H9AF5] (ab110330)

All lanes:
Western blot - Anti-PDHA1 antibody [9H9AF5] (ab110330) at 1 µg/mL

Lane 1:
Isolated mitochondria from Human heart at 10 µg

Lane 2:
Isolated mitochondria from Bovine heart at 4 µg

Lane 3:
Isolated mitochondria from Rat heart at 10 µg

Lane 4:
Isolated mitochondria from Mouse heart at 10 µg

Lane 5:
hepG2 cell lysate at 20 µg

Predicted band size: 43 kDa

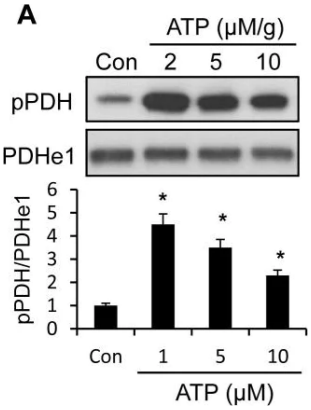


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Western blot - Anti-PDHA1 antibody [9H9AF5] (ab110330)

PDHA1 Western blot staining using mouse Anti-PDHA1 antibody

PDHA1 western blot using anti-PDHA1 antibody [9H9AF5] ab110330. Publication image and figure legend from Zhang, Y., Zhao, Z., et al., 2016, PLoS One, PubMed 26930489.

ab110330 was used in this publication in western blot. This may not be the same as the application(s) guaranteed by Abcam. For a full list of applications guaranteed by Abcam for ab110330 please see the product overview.

Induction of PDH phosphorylation by ATP.A. PDH phosphorylation. Mitochondria lysate was incubated with ATP at multiple dosages for 30 minutes at 37°C. PDH phosphorylation was quantified in Western blot and the results are expressed in bar figure B. Protein levels of PDKs. The proteins of PDK2 and PDK4 were determined in Western blot and the signals were quantified. The experiments were performed three times with consistent results, and the representative blot is shown. In the bar figure, the result represents mean ± SE (n = 3). * $p<0.05$ compared with the control.

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