abcam

ab110334

Anti-PDHA1 antibody [8D10E6]

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	8D10E6
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	ab110334 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	Rat, Mouse, Cow
Dilution info	Use at an assay dependent concentration.
Notes	-

Predicted

Species	Drosophila melanogaster, Zebrafish
Dilution info	-
Notes	-

WB

Tested

Species	Human
Dilution info	0.5-1 µg/mL
Notes	-

Species	Rat
Dilution info	0.5-1 µg/mL
Notes	-

Species	Mouse
Dilution info	0.5-1 µg/mL
Notes	-

Species	Cow
Dilution info	0.5-1 µg/mL
Notes	-

Expected

Species	Drosophila melanogaster
Dilution info	0.5-1 µg/mL
Notes	-

Predicted

Species	Zebrafish
Dilution info	-
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1 µg/mL
Notes	(heat-induced antigen-retrieval improves signal)

Expected

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

Predicted

Species	Drosophila melanogaster, Zebrafish
Dilution info	-
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

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

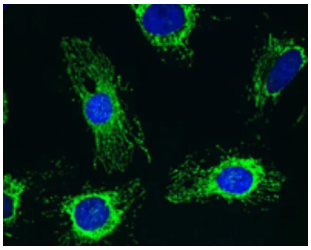
We do not recommend this combination. It is not covered by our product promise.

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.

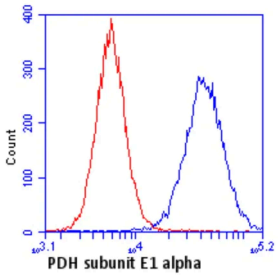
5 product images



Immunocytochemistry/ Immunofluorescence - Anti-PDHA1 antibody [8D10E6] (ab110334)

PDHA1 Immunocytochemistry/ Immunofluorescence staining using mouse Anti-PDHA1 antibody

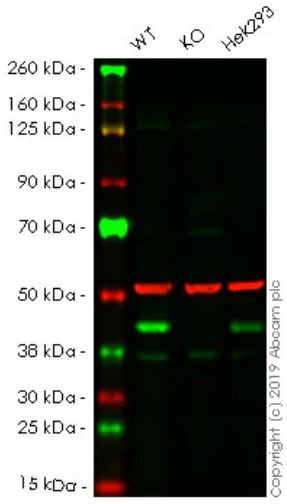
Immunocytochemistry analysis using ab110334 at 1 µg/ml staining PDHA1 in HeLa (human epithelial cell line from cervix adenocarcinoma) cells (4% paraformaldehyde fixed and Triton X-100 permeabilized).
The secondary antibody was (green) Alexa Fluor® 488 goat anti-mouse IgG (H+L) used at a 1/1000 dilution. DAPI was used to stain the cell nuclei (blue).



Flow Cytometry - Anti-PDHA1 antibody [8D10E6] (ab110334)

PDHA1 Flow Cytometry staining using mouse Anti-PDHA1 antibody

Flow cytometric analysis using ab110334 at 1 µg/ml staining PDHA1 in HL-60 (human promyelocytic leukemia cell line) cells (blue). Isotype control antibody (red).



Western blot - Anti-PDHA1 antibody [8D10E6] (ab110334)

Lanes 1 - 3: Merged signal (red and green). Green - ab110334 observed at 43 kDa. Red - loading control, ab52866, observed at 50 kDa.
ab110334 was shown to recognize PDHA1 in wild-type HeLa cells as signal was lost at the expected MW in PDHA1 knockout cells. Additional cross-reactive bands were observed in the wild-type and knockout cells. Wild-type and PDHA1 knockout samples were subjected to SDS-PAGE. ab110334 and ab52866 (Rabbit anti alpha Tubulin loading control) were incubated overnight at 4°C at 0.5 ug/ml and 1/20000 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 [8D10E6] (ab110334) at 0.5 µg/mL

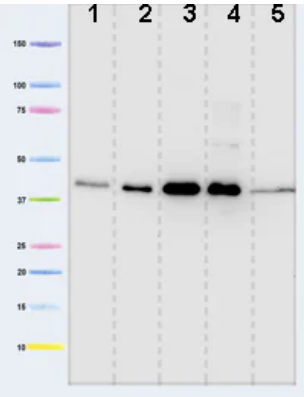
Lane 1:
Wild-type HeLa whole cell lysate at 20 µg

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



Western blot - Anti-PDHA1 antibody [8D10E6] (ab110334)

All lanes:
Western blot - Anti-PDHA1 antibody [8D10E6] (ab110334) at 1 µg/mL

Lane 1:
Isolated mitochondria from human heart at 5 µg

Lane 2:
Isolated mitochondria from bovine heart at 1 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

---

a

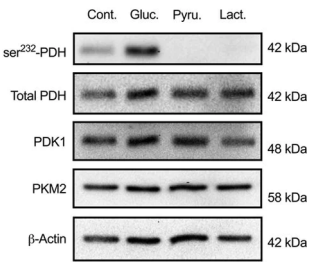


Image collected and cropped by CiteAb under a CC-BY license from the publication

Western blot - Anti-PDHA1 antibody [8D10E6] (ab110334)

PDHA1 Western blot staining using mouse Anti-PDHA1 antibody

PDHA1 western blot using anti-PDHA1 antibody [8D10E6] ab110334. Publication image and figure legend from Kozlov, A. M., Lone, A., et al., 2020, Sci Rep, PubMed 32433492.

ab110334 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 ab110334 please see the product overview.

Defined metabolite treatment promotes post translational and transcriptional changes in human fibroblasts. BJ fibroblasts were cultured in defined metabolite media for 24 h prior to protein harvest and RNA isolation. (a) Immunoblots were probed with antibodies directed against the indicated metabolic markers for glycolysis and OXPHOS. Densitometric analysis of the ratio of ser232-PDH to total PDH band intensities normalized to β-Actin, revealed that BJ cells treated with glucose promoted significantly increased phosphorylation of PDH (indicative of glycolysis), whereas treatment with pyruvate or lactate resulted in significantly decreased phosphorylation of PDH (indicative of OXPHOS) compared to control-treated cells. Densitometric analysis of PKM2 and PDK1 band intensities normalized to β-Actin, revealed that 24 h defined metabolite treatment did not alter PKM2 or PDK1 protein abundance in BJ cells compared to control conditions. (b) qRT-PCR using ACTB and RPL37A as housekeeping genes, revealed that lactate-treatment significantly increased transcription of genes encoding the glycolytic enzymes, HK2, PGK1 and PDK1 compared to control. Pyruvate treatment resulted in a significant increase and decrease in the transcript abundance of genes enocding HK2 and GADPH, respectively, compared to control. The data presented represent N = 3 ± s.e.m. All qRT-PCR was performed in triplicate. The immunoblots are representative of three independent experiments. Full length blots can be found in Supplementary Fig. S4. Asterisks indicate significant difference ($p < 0.05$ = *, $p < 0.01$ = **, $p < 0.001$ = ***, $p < 0.0001$ = ****) and ns = no difference tested by One-way ANOVA and Dunnett's multiple comparisons test.

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.