abcam

ab57030

Anti-PHGDH/Malate dehydrogenase antibody [4A3-1D6]

Key facts

Isotype	IgG1
Host species	Mouse
Storage buffer	pH: 7.4
Form	Liquid
Clonality	Monoclonal
Immunogen	Recombinant Full Length Protein corresponding to Human PHGDH. Database link O43175
Clone number	4A3-1D6
Purity	Tissue culture supernatant
Light chain type	kappa
Purification notes	Purified from TCS.

Reactivity data

IP

Tested

Species	Human
Dilution info	-
Notes	-

Flow Cyt

Tested

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

WB

Tested

Species	Human
Dilution info	-
Notes	-

IHC-P

Tested

Species	Human
Dilution info	-
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	-
Notes	-

Target data

See full target information PHGDH

Function	Catalyzes the reversible oxidation of 3-phospho-D-glycerate to 3-phosphonooxypyruvate, the first step of the phosphorylated L-serine biosynthesis

pathway. Also catalyzes the reversible oxidation of 2-hydroxyglutarate to 2-oxoglutarate and the reversible oxidation of (S)-malate to oxaloacetate.

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot
Storage information	Avoid freeze / thaw cycle

Notes

This product was changed from ascites to tissue culture supernatant on 24/1/19. Please note that the dilutions may need to be adjusted accordingly. If you have any questions, please do not hesitate to contact our scientific support team.

Supplementary info

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

Activity summary	Phosphoglycerate dehydrogenase also known as PHGDH is an enzyme that catalyzes the conversion of 3-phosphoglycerate to 3-phosphohydroxypyruvate. It has an approximate mass of 57 kDa. The PHGDH is located in the cytoplasm and mitochondria where it plays a role in serine biosynthesis. Malate dehydrogenase might also get mentioned together with PHGDH because both enzymes link to metabolic processes. The expression of PHGDH is noted in various tissues with higher levels observed in some cancer cells.
Biological function summary	PHGDH is essential for the serine synthesis pathway and cellular metabolism regulation. It does not form part of large complexes but operates independently to convert substrates necessary for cell growth and proliferation. The enzyme supports the synthesis of nucleotides and proteins impacting cell cycle and survival. Researchers investigate PHGDH to understand its role in metabolic reprogramming especially in cancer cells.
Pathways	PHGDH is important in the serine biosynthesis pathway which is part of the larger glycolytic process. It connects to pathways that contribute to cellular carbon metabolism and energy production. PHGDH interacts with glutamate dehydrogenase protein (GDH) and also influences one-carbon metabolism and redox balance within the cell. These pathways play important roles in providing building blocks for nucleotide and lipid biosynthesis.

Associated diseases and disorders	PHGDH has relevance in cancer and neurological disorders. Alterations and overexpression of PHGDH have been linked to oncogenesis and tumor growth particularly in breast cancer. The enzyme also associates with neurodegenerative diseases as proper serine levels are important for neuron function. In both conditions PHGDH becomes connected with glutamate dehydrogenase as alterations can impact amino acid metabolism and neurotransmitter balance. The study of PHGDH inhibitors is gaining attention for therapeutic potentials in these diseases.

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

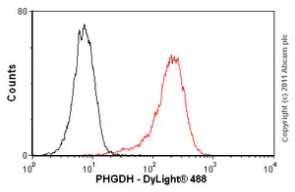
We do not recommend this combination. It is not covered by our product promise.

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

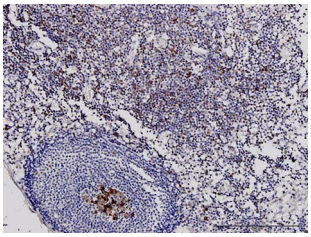


Flow Cytometry - Anti-PHGDH/Malate dehydrogenase antibody [4A3-1D6] (ab57030)

PHGDH/Malate dehydrogenase Flow Cytometry staining using mouse Anti-PHGDH/Malate dehydrogenase antibody

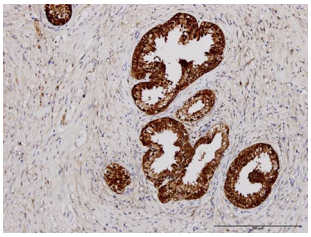
Overlay histogram showing HeLa cells stained with ab57030 (red line). The cells were fixed with 80% methanol (5 min) and then permeabilized with 0.1% PBS-Tween for 20 min. The cells were then incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions followed by the antibody (ab57030, 1µg/1x10^6 cells) for 30 min at 22°C. The

secondary antibody used was DyLight® 488 goat anti-mouse IgG (H+L) (ab96879) at 1/500 dilution for 30 min at 22°C. Isotype control antibody (black line) was mouse IgG1 [ICIGG1] (ab91353, 2µg/1x10^6 cells) used under the same conditions. Acquisition of >5,000 events was performed.
This image was generated using the ascites version of the product.



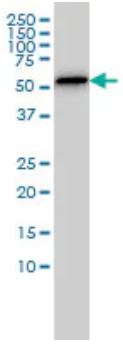
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PHGDH/Malate dehydrogenase antibody [4A3-1D6] (ab57030)

Immunohistochemical analysis of formalin-fixed paraffin-embedded human lymph node tissue labeling PHGDH with an antibody concentration of 3 µg/ml.
Positive staining on human lymph node tissue.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PHGDH/Malate dehydrogenase antibody [4A3-1D6] (ab57030)

Immunohistochemical analysis of formalin-fixed paraffin-embedded human prostate tissue labeling PHGDH with an antibody concentration of 3 µg/mL.
Positive staining on human prostate tissue.



Western blot - Anti-PHGDH/Malate dehydrogenase antibody [4A3-1D6] (ab57030)

PHGDH/Malate dehydrogenase Western blot staining using mouse Anti-PHGDH/Malate dehydrogenase antibody

PHGDH/Malate dehydrogenase antibody (ab57030) at 1µg/ml + Jurkat cell lysate at 25µg/lane.
This image was generated using the ascites version of the product.

All lanes:
Western blot - Anti-PHGDH/Malate dehydrogenase antibody [4A3-1D6] (ab57030)

Predicted band size: 57 kDa

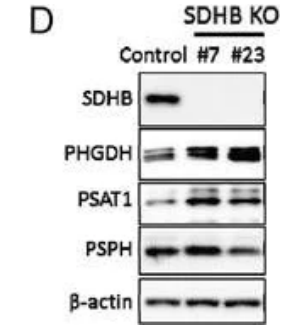


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Western blot - Anti-PHGDH/Malate dehydrogenase antibody [4A3-1D6] (ab57030)

PHGDH/Malate dehydrogenase Western blot staining using mouse Anti-PHGDH/Malate dehydrogenase antibody

PHGDH/Malate dehydrogenase western blot using anti-PHGDH/Malate dehydrogenase antibody [4A3-1D6] ab57030. Publication image and figure legend from Kitazawa, S., Ebara, S., et al., 2017, Oncotarget, PubMed 28423651.

ab57030 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 ab57030 please see the product overview.

Metabolic switch from aerobic metabolism to glycolysis in SDHB-deficient cells(A) Relative values of OCR and ECAR of HCT116 SDHB knockout cells (#7 and #23) were obtained by setting the OCR and ECAR values of the control cells as 1. The OCR and ECAR were analyzed using an XF96 extracellular flux analyzer (n = 12). Data are given as means ± SD. (B) Metabolite concentrations of pyruvate and lactate were measured using CE-MS 48 and 96 h after cell seeding in HCT116 SDHB knockout cells (#7 and #23) and control cells (n = 3). Data are given as means ± SD. *p < 0.05, **p < 0.01, ***p < 0.001 by the Bonferroni's corrected t-test. (C) Metabolites and enzymes in the glycolysis pathway and its derived pathways. Metabolite abundance 48 h after cell seeding was analyzed using CE-MS (n = 3). Ordinate values were obtained by setting the control group value 48 h after cell seeding as 100%. Data are given as means ± SD. ND: not detected. ND: the metabolite concentration was below the detection limit of the analysis. (D) Expression levels of SDHB, PHGDH, PSAT1, PSPH, and β-actin were determined by western blot 64 h after cell seeding.

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