abcam

ab214938

Anti-PDK4 antibody [EPR19727-245]

Anti-PDK4 antibody [EPR19727-245] (ab214938) is a rabbit monoclonal antibody detecting PDK4 in **Western Blot, Flow Cytometry (Intra), IP**. Suitable for **Mouse, Rat**.

- Biophysical QC for unrivalled batch-batch consistency
- Over 20 publications

Recombinant | RabMAb | 20ul selling size

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Preservative: 0.01% Sodium azide Constituents: PBS, 40% Glycerol (glycerin, glycerine), 0.05% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	EPR19727-245
Purification technique	Affinity purification Protein A
Concentration	0.579 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IP

Tested

Species	Mouse
Dilution info	1/30
Notes	-

Expected

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

Not recommended

Species	Recombinant fragment - Mouse
Dilution info	-
Notes	-

WB

Tested

Species	Recombinant fragment - Mouse
Dilution info	1/1000
Notes	-

Species	Mouse
Dilution info	1/1000
Notes	-

Species	Rat
Dilution info	1/1000
Notes	-

Flow Cyt (Intra)

Tested

Species	Mouse
Dilution info	1/60
Notes	ab172730 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody.

Expected

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

Not recommended

Species	Recombinant fragment - Mouse
Dilution info	-
Notes	-

Target data

See full target information Pdk4

Function Kinase that plays a key role in regulation of glucose and fatty acid metabolism and homeostasis via phosphorylation of the pyruvate dehydrogenase subunits PDHA1 and PDHA2. This inhibits pyruvate dehydrogenase activity, and thereby regulates metabolite flux through the tricarboxylic acid cycle, down-regulates aerobic respiration and inhibits the formation of acetyl-coenzyme A from pyruvate. Inhibition of pyruvate dehydrogenase decreases glucose utilization and increases fat metabolism in response to prolonged fasting and starvation. Plays an important role in maintaining normal blood glucose levels under starvation, and is involved in the insulin signaling cascade. Via its regulation of pyruvate dehydrogenase activity, plays an important role in maintaining normal blood pH and in preventing the accumulation of ketone bodies under starvation. In the fed state, mediates cellular responses to glucose levels and to a high-fat diet. Regulates both fatty acid oxidation and de novo fatty acid biosynthesis. Plays a role in the generation of reactive oxygen species. Protects detached epithelial cells against anoikis. Plays a role in cell proliferation via its role in regulating carbohydrate and fatty acid metabolism.

Storage

Shipped at conditions Conditional Ambient

Appropriate short-term storage duration	1-2 weeks
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

What is this antibody validated in?
Anti-PDK4 antibody [EPR19727-245] (ab214938) is a rabbit recombinant monoclonal antibody and is validated for use in Western Blot (WB), Flow Cytometry (Intra), Immunoprecipitation (IP) in Mouse, Rat samples.

What is the molecular weight of PDK4?
Anti-PDK4 [EPR19727-245] (ab214938) specifically detects a band for PDK4 (UniProt: O70571) at a molecular weight of 47kDa.

Trusted by the scientific community
Anti-PDK4 [EPR19727-245] (ab214938) was first used in a scientific publication in 2016 and has been cited over 20 times in peer-reviewed journals.

Other related products
We have a range of other formats of antibody clone [EPR19727-245] also available for your convenience: ab214938, Carrier free - ab222401

Patented technology
Our RabMAb® technology is a patented hybridoma-based technology for making rabbit monoclonal antibodies. For details on our patents, please refer to RabMAb® patents.

What are the advantages of a recombinant monoclonal antibody?
This product is a recombinant monoclonal antibody, which offers several advantages including:

- High batch-to-batch consistency and reproducibility
- Improved sensitivity and specificity
- Long-term security of supply
- Animal-free batch production

For more information, read more on recombinant antibodies.

Trial sizes available!
Test your antibody or perform pre-screening before committing to a larger quantity. Sold in 20µl. Discover our selection of trial-size antibodies.

Supplementary info

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

Activity summary	PDK4 also known as Pyruvate Dehydrogenase Kinase Isozyme 4 plays an essential role in regulating mitochondrial energy metabolism. PDK4 phosphorylates the pyruvate dehydrogenase complex controlling the transformation of pyruvate to acetyl-CoA a critical step in energy production. The protein has a molecular weight of around 49 kDa. PDK4 expression occurs in various tissues with high levels observed in skeletal muscle heart and liver reflecting its role in energy metabolic processes.
Biological function summary	The enzyme functions to inhibit the pyruvate dehydrogenase complex by adding phosphate groups which reduces the conversion of pyruvate to acetyl-CoA and shifts energy production from carbohydrates to fats especially during fasting or prolonged exercise. PDK4 operates as a homodimer and is often part of a larger regulatory system balancing glucose and fatty acid oxidation in response to nutrient availability.
Pathways	PDK4 is integral to the regulation of both glucose metabolism and fatty acid oxidation. The enzyme interacts closely with the insulin signaling pathway where it modulates glucose uptake and utilization based on hormonal signals. Additionally PDK4 is a part of the hypoxia-inducible factor-1 (HIF-1) pathway where it plays a role in cellular response to low oxygen levels interacting with related proteins such as pyruvate dehydrogenase (PDH).
Associated diseases and disorders	PDK4's activity is linked to metabolic conditions like diabetes and obesity where its altered expression can lead to insulin resistance by affecting glucose utilization. Furthermore PDK4 is associated with cardiovascular diseases through its influence on cardiac energy metabolism and its interaction with other proteins such as PDH contributing to heart dysfunction when deregulated.

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

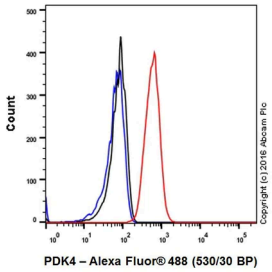
We do not recommend this combination. It is not covered by our product promise.

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.

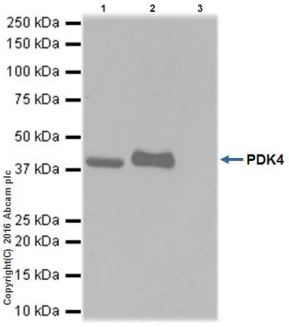
6 product images



Flow Cytometry (Intracellular) - Anti-PDK4 antibody [EPR19727-245] (ab214938)

PDK4 Flow Cytometry (Intracellular) staining using rabbit Anti-PDK4 antibody

Intracellular flow cytometric analysis of 4% paraformaldehyde-fixed C2C12 (Mouse myoblast cell line) cells labeling PDK4 with ab214938 at 1/60 dilution (red) compared withRabbit IgG, monoclonal [EPR25A] - Isotype Control (ab172730; black) and an unlabelled control (cells without incubation with primary antibody and secondary antibody; blue). Goat Anti-Rabbit IgG (Alexa Fluor® 488) at 1/2000 dilution was used as the secondary antibody.



Immunoprecipitation - Anti-PDK4 antibody [EPR19727-245] (ab214938)

PDK4 was immunoprecipitated from 0.35 mg of mouse heart lysate with ab214938 at 1/30 dilution. Western blot was performed from the immunoprecipitate using ab214938 at 1/1000 dilution.

VeriBlot for IP Detection Reagent (HRP) (ab131366), was used for detection at 1/10,000 dilution

Lane 1: Mouse heart lysate 10µg (Input).

Lane 2: ab214938 IP in mouse heart lysate.

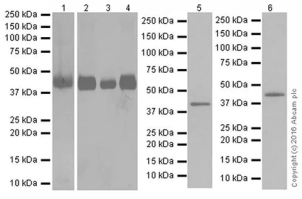
Lane 3: Rabbit IgG, monoclonal [EPR25A] - Isotype Control (ab172730) instead of ab214938 in mouse heart lysate.

Blocking and dilution buffer and concentration: 5% NFDM/TBST.

Exposure time: 0.5 second.

All lanes:
Immunoprecipitation - Anti-PDK4 antibody [EPR19727-245] (ab214938)

Predicted band size: 46 kDa, 48 kDa



Western blot - Anti-PDK4 antibody [EPR19727-245] (ab214938)

PDK4 Western blot staining using rabbit Anti-PDK4 antibody

Blocking/Dilution buffer: 5% NFDM/TBST.
Exposure time: Lane 1: 5 seconds; Lane 2-4: 3 minutes; Lane 5: 1 minutes; Lane 6: 10 seconds.

All lanes:

Western blot - Anti-PDK4 antibody [EPR19727-245] (ab214938) at 1/1000 dilution

Lane 1:
Mouse skeletal muscle lysate at 10 µg

Lane 2:
Mouse heart lysate at 10 µg

Lane 3:
Rat muscle lysate at 10 µg

Lane 4:
Rat heart lysate at 10 µg

Lane 5:
C2C12 (Mouse myoblast cell line) whole cell lysate at 10 µg

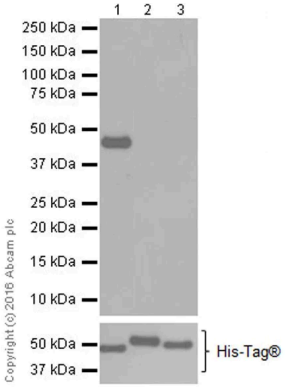
Lane 6:
C6 (Rat glial tumor cell line) whole cell lysate at 10 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/100000 dilution

Predicted band size: 46 kDa

Observed band size: 47 kDa



Western blot - Anti-PDK4 antibody [EPR19727-245] (ab214938)

PDK4 Western blot staining using rabbit Anti-PDK4 antibody

Blocking/Dilution buffer: 5% NFDM/TBST.
Mouse PDK4, PDK1 and PDK2 recombinant proteins contain aa8-412, aa1-434 and aa1-407 respectively with a His-Tag®.

All lanes:
Western blot - Anti-PDK4 antibody [EPR19727-245] (ab214938) at 1/10000 dilution

Lane 1:
Mouse PDK4 recombinant protein at 0.01 µg

Lane 2:
Mouse PDK1 recombinant protein at 0.01 µg

Lane 3:
Mouse PDK2 recombinant protein at 0.01 µg

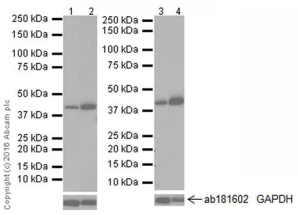
Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/100000 dilution

Predicted band size: 46 kDa

Observed band size: 47 kDa

Exposure time: 5s



Western blot - Anti-PDK4 antibody [EPR19727-245] (ab214938)

Blocking/Dilution buffer: 5% NFDM/TBST.
The expression level of PDK4 is increased under the fasting state (PMID: 11723055 and PMID: 16606348).

Lanes 1 - 2:
Western blot - Anti-PDK4 antibody [EPR19727-245] (ab214938) at 1/10000 dilution

Lanes 3 - 4:
Western blot - Anti-PDK4 antibody [EPR19727-245] (ab214938) at 1/1000 dilution

Lane 1:
Heart from nonfasting mouse at 10 µg

Lane 2:
Heart from mouse fasting for 72 hours at 10 µg

Lane 3:
Gastrocnemius muscle from nonfasting mouse at 10 µg

Lane 4:
Gastrocnemius muscle from mouse fasting for 72 hours at 10 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/100000 dilution

Predicted band size: 46 kDa

Observed band size: 47 kDa

Exposure time: 5s

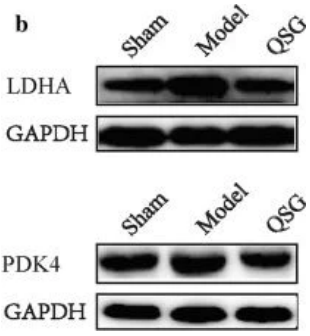


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Western blot - Anti-PDK4 antibody [EPR19727-245] (ab214938)

PDK4 Western blot staining using rabbit Anti-PDK4 antibody

PDK4 western blot using anti-PDK4 antibody [EPR19727-245] ab214938. Publication image and figure legend from Gao, K., Zhang, J., et al., 2020, Chin Med, PubMed 32158496.

ab214938 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 ab214938 please see the product overview.

Effects of QSG on the uncoupling of glycolysis from glucose oxidation in HF rats after AMI. a Lactate level in serum and myocardial tissue. Lactate level in serum and myocardial tissue was significantly increased following HF and downregulated with QSG treatment. n = 8 per group. Values are mean ± SE. Asterisks indicates significant differences. *p < 0.05, **p < 0.01. b Myocardial protein expressional levels of LDHA and PDK4 in the three groups. LDHA involved in regulating glycolysis was observably elevated in the model group. LDHA level was significantly down-regulated by treatment of QSG compared with the model group. PDK4, decreasing glucose oxidation by an inhibitory phosphorylation of the pyruvate dehydrogenase complex, was up-regulated in the model group and down-regulated in the QSG group. n = 4 per group. Values are mean ± SE. Asterisks indicates significant differences. *p < 0.05, **p < 0.01

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