

**PDK4 Antibody (C-term)**  
**Purified Rabbit Polyclonal Antibody (Pab)**  
**Catalog # AP7041B**

### Specification

#### PDK4 Antibody (C-term) - Product Information

Application	WB, IHC-P, IF,E
Primary Accession	<a href="#">Q16654</a>
Reactivity	Human, Mouse
Host	Rabbit
Clonality	Polyclonal
Isotype	Rabbit IgG
Antigen Region	382-410

#### PDK4 Antibody (C-term) - Additional Information

##### Gene ID 5166

##### Other Names

[Pyruvate dehydrogenase (acetyl-transferring)] kinase isozyme 4, mitochondrial, Pyruvate dehydrogenase kinase isoform 4, PDK4, PDHK4

##### Target/Specificity

This PDK4 antibody is generated from rabbits immunized with a KLH conjugated synthetic peptide between 382-410 amino acids from the C-terminal region of human PDK4.

##### Dilution

WB~~1:2000

IHC-P~~1:25

IF~~1:100

E~~Use at an assay dependent concentration.

##### Format

Purified polyclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is purified through a protein A column, followed by peptide affinity purification.

##### Storage

Maintain refrigerated at 2-8°C for up to 2 weeks. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.

##### Precautions

PDK4 Antibody (C-term) is for research use only and not for use in diagnostic or therapeutic procedures.

#### PDK4 Antibody (C-term) - Protein Information

##### Name PDK4

## Synonyms PDHK4

**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.

## Cellular Location

Mitochondrion matrix.

## Tissue Location

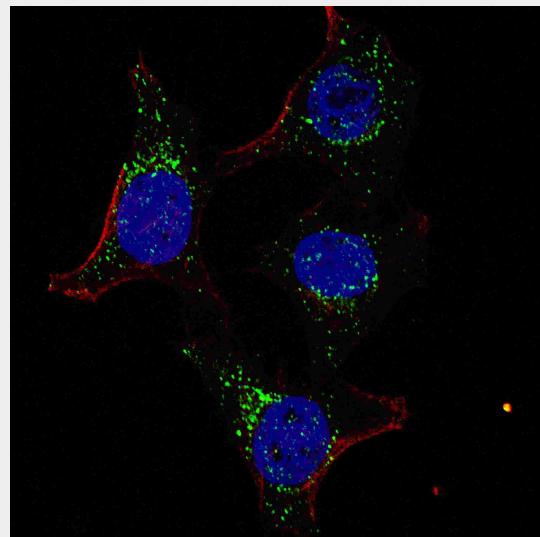
Ubiquitous; highest levels of expression in heart and skeletal muscle.

## PDK4 Antibody (C-term) - Protocols

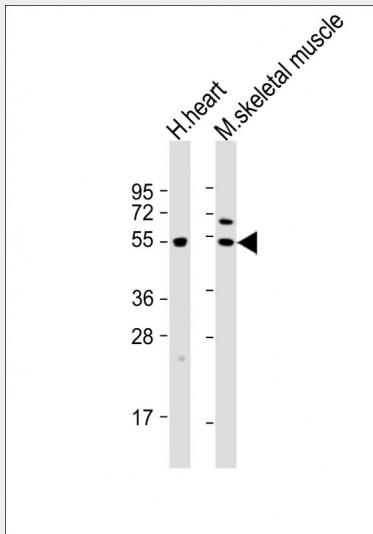
Provided below are standard protocols that you may find useful for product applications.

- [Western Blot](#)
- [Blocking Peptides](#)
- [Dot Blot](#)
- [Immunohistochemistry](#)
- [Immunofluorescence](#)
- [Immunoprecipitation](#)
- [Flow Cytometry](#)
- [Cell Culture](#)

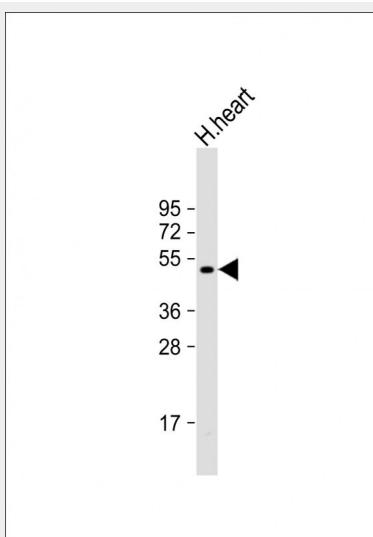
## PDK4 Antibody (C-term) - Images



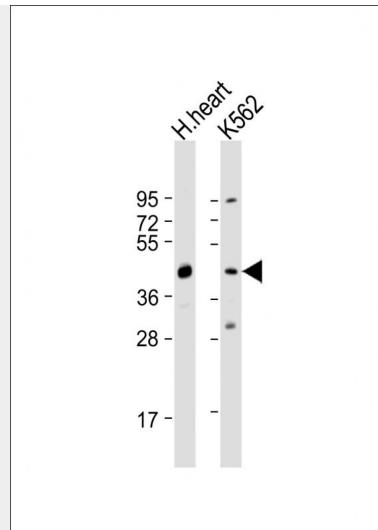
Fluorescent confocal image of HeLa cells stained with PDK4 (C-term) antibody. HeLa cells were fixed with 4% PFA (20 min), permeabilized with Triton X-100 (0.2%, 30 min). Cells were then incubated with AP7041b PDK4 (C-term) primary antibody (1:100, 2 h at room temperature). For secondary antibody, Alexa Fluor® 488 conjugated donkey anti-rabbit antibody (green) was used (1:1000, 1h). Nuclei were counterstained with Hoechst 33342 (blue) (10 µg/ml, 5 min). Note the highly specific localization of the PDK4 mainly to the cytoplasm.



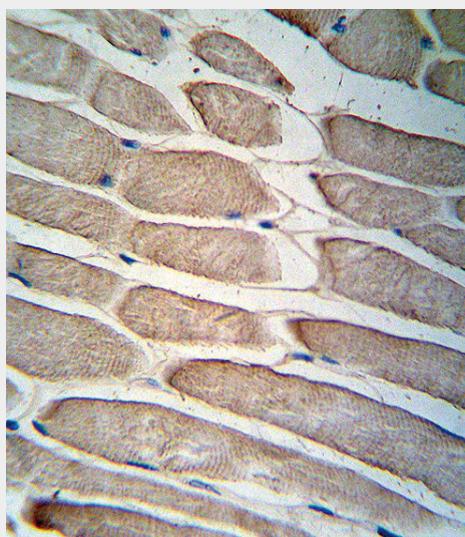
All lanes : Anti-PDK4 Antibody [C396] at 1:2000 dilution Lane 1: human heart lysates Lane 2: mouse skeletal muscle lysates Lysates/proteins at 20 µg per lane. Secondary Goat Anti-Rabbit IgG, (H+L), Peroxidase conjugated at 1/10000 dilution Predicted band size : 46 kDa Blocking/Dilution buffer: 5% NFDM/TBST.



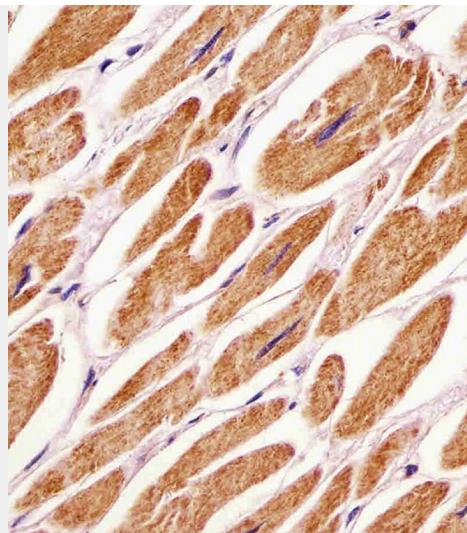
Anti-PDK4 Antibody (C-term) at 1:2000 dilution + human heart lysate Lysates/proteins at 20 µg per lane. Secondary Goat Anti-Rabbit IgG, (H+L), Peroxidase conjugated at 1/10000 dilution. Predicted band size : 46 kDa Blocking/Dilution buffer: 5% NFDM/TBST.



All lanes : Anti-PDK4 Antibody (C-term) at 1:2000 dilution Lane 1: human heart lysate Lane 2: K562 whole cell lysate Lysates/proteins at 20 µg per lane. Secondary Goat Anti-Rabbit IgG, (H+L), Peroxidase conjugated at 1/10000 dilution. Predicted band size : 46 kDa Blocking/Dilution buffer: 5% NFDM/TBST.



Formalin-fixed and paraffin-embedded human skeletal muscle reacted with PDK4 Antibody (C-term) (Cat. #AP7041b), which was peroxidase-conjugated to the secondary antibody, followed by DAB staining. This data demonstrates the use of this antibody for immunohistochemistry; clinical relevance has not been evaluated.



AP7041b staining PDK4 in human heart tissue sections by Immunohistochemistry (IHC-P - paraformaldehyde-fixed, paraffin-embedded sections). Tissue was fixed with formaldehyde and blocked with 3% BSA for 0.5 hour at room temperature; antigen retrieval was by heat mediation with a citrate buffer (pH6). Samples were incubated with primary antibody (1/25) for 1 hours at 37°C. A undiluted biotinylated goat polyclonal antibody was used as the secondary antibody.

### **PDK4 Antibody (C-term) - Background**

PDK4 inhibits the mitochondrial pyruvate dehydrogenase complex by phosphorylation of the E1 alpha subunit, thus contributing to the regulation of glucose metabolism.

### **PDK4 Antibody (C-term) - References**

References for protein:

1. Rosa, G., et al., *Obes. Res.* 11(2):176-182 (2003).
2. Razeghi, P., et al., *Cardiology* 97(4):203-209 (2002).
3. Rowles, J., et al., *J. Biol. Chem.* 271(37):22376-22382 (1996).
4. Gudi, R., et al., *J. Biol. Chem.* 270(48):28989-28994 (1995).

References for HeLa cell line:

1. Scherer WF, Syverton JT, Gey GO (May 1953). "Studies on the propagation in vitro of poliomyelitis viruses. IV. Viral multiplication in a stable strain of human malignant epithelial cells (strain HeLa) derived from an epidermoid carcinoma of the cervix". *J. Exp. Med.* 97 (5): 695-710. [PubMed:13052828].
2. Macville M, Schröck E, Padilla-Nash H, Keck C, Ghadimi BM, Zimonjic D, Popescu N, Ried T (January 1999). "Comprehensive and definitive molecular cytogenetic characterization of HeLa cells by spectral karyotyping". *Cancer Res.* 59 (1): 141-50. [PubMed: 9892199].
3. Rahbari R, Sheahan T, Modes V, Collier P, Macfarlane C, Badge RM (April 2009). "A novel L1 retrotransposon marker for HeLa cell line identification". *BioTechniques* 46 (4): 277-84. [PubMed: 19450234].
4. Capes-Davis A, Theodosopoulos G, Atkin I, Drexler HG, Kohara A, MacLeod RA, Masters JR, Nakamura Y, Reid YA, Reddel RR, Freshney RI (July 2010). "Check your cultures! A list of cross-contaminated or misidentified cell lines". *Int. J. Cancer* 127 (1): 1-8. [PubMed:20143388].

### **PDK4 Antibody (C-term) - Citations**

- [BCKDK regulates the TCA cycle through PDC in the absence of PDK family during embryonic](#)

development.

- FoxO1 inhibition alleviates type 2 diabetes-related diastolic dysfunction by increasing myocardial pyruvate dehydrogenase activity.
- Aldosterone from endometrial glands is benefit for human decidualization.
- Increasing cardiac pyruvate dehydrogenase flux during chronic hypoxia improves acute hypoxic tolerance.
- Defects in the mitochondrial-tRNA modification enzymes MTO1 and GTPBP3 promote different metabolic reprogramming through a HIF-PPAR $\gamma$ -UCP2-AMPK axis.
- The microRNA-182-PDK4 axis regulates lung tumorigenesis by modulating pyruvate dehydrogenase and lipogenesis.
- Transforming Growth Factor  $\beta$  Mediates Drug Resistance by Regulating the Expression of Pyruvate Dehydrogenase Kinase 4 in Colorectal Cancer.
- Arsenic silences hepatic PDK4 expression through activation of histone H3K9 methyltransferase G9a.
- On the pivotal role of PPAR $\alpha$  in adaptation of the heart to hypoxia and why fat in the diet increases hypoxic injury.
- miR-211 functions as a metabolic switch in human melanoma cells.
- Diacylglycerol kinase-5 regulates AMPK signaling, lipid metabolism, and skeletal muscle energetics.
- Altered regulation of PDK4 expression promotes antiestrogen resistance in human breast cancer cells.
- Glucose oxidation modulates anoikis and tumor metastasis.
- Kruppel-like factor 15 regulates skeletal muscle lipid flux and exercise adaptation.
- Dietary supplementation with vitamin E and C attenuates dexamethasone-induced glucose intolerance in rats.
- PDH activation during in vitro muscle contractions in PDH kinase 2 knockout mice: effect of PDH kinase 1 compensation.
- Differential expression of metabolic genes essential for glucose and lipid metabolism in skeletal muscle from spinal cord injured subjects.
- Intrinsic protein kinase activity in mitochondrial oxidative phosphorylation complexes.
- Adaptive gene regulation of pyruvate dehydrogenase kinase isoenzyme 4 in hepatotoxic chemical-induced liver injury and its stimulatory potential for DNA repair and cell proliferation.
- Bezafibrate induces myotoxicity in human rhabdomyosarcoma cells via peroxisome proliferator-activated receptor alpha signaling.
- Regulation of pyruvate dehydrogenase kinase 4 (PDK4) by thyroid hormone: role of the peroxisome proliferator-activated receptor gamma coactivator (PGC-1 alpha).
- Type 1 diabetic cardiomyopathy in the Akita (Ins2WT/C96Y) mouse model is characterized by lipotoxicity and diastolic dysfunction with preserved systolic function.
- Regulation of the PDK4 isozyme by the Rb-E2F1 complex.
- CD36-dependent regulation of muscle FoxO1 and PDK4 in the PPAR delta/beta-mediated adaptation to metabolic stress.
- The STAT5A-mediated induction of pyruvate dehydrogenase kinase 4 expression by prolactin or growth hormone in adipocytes.
- Calcineurin regulates skeletal muscle metabolism via coordinated changes in gene expression.
- Estrogen-related receptors stimulate pyruvate dehydrogenase kinase isoform 4 gene expression.
- Regulation of PDK mRNA by high fatty acid and glucose in pancreatic islets.
- Regulation of pyruvate dehydrogenase kinase expression by the farnesoid X receptor.