# SANTA CRUZ BIOTECHNOLOGY, INC.

# PDK2 (S-15): sc-100534



## BACKGROUND

Pyruvate dehydrogenase kinase family members (PDK1, 2, 3, 4) are serine kinases that catalyze the phosphorylation of the E1 $\alpha$  subunit of the pyruvate dehydrogenase complex (PDC). PDC activity is controlled through phosphorylation and dephosphorylation of the E1 $\alpha$  subunit, which leads to inactivation and reactivation, respectively. The core of PDC is composed of 60 dihydro-lypoyl acetyltransferase (E2) subunits that bind directly to PDK2 and enhance PDK2 kinase activity. Upregulation of PDK isoenzymes occurs during starvation conditions, rerouting acetyl-CoA generation by facilitating fatty acid oxidation. PDKs contain five conserved regions and are mechanistically similar to bacterial His-kinases, in that both require histidine residues for activity. In mammals, transcripts for PDK2 are ubiquitously expressed with high levels in heart and skeletal muscle and decreased levels in spleen and lung.

#### REFERENCES

- 1. Gudi, R., et al. 1995. Diversity of the pyruvate dehydrogenase kinase gene family in humans. J. Biol. Chem. 270: 28989-28994.
- Bowker-Kinley, M.M., et al. 1998. Evidence for existence of tissue-specific regulation of the mammalian pyruvate dehydrogenase complex. Biochem. J. 329: 191-196.

# **CHROMOSOMAL LOCATION**

Genetic locus: PDK2 (human) mapping to 17q21.33; Pdk2 (mouse) mapping to 11 D.

#### SOURCE

PDK2 (S-15) is a mouse monoclonal antibody raised against amino acids 187-276 of PDK2 of human origin.

## PRODUCT

Each vial contains 100  $\mu g$  lgG\_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

## **APPLICATIONS**

PDK2 (S-15) is recommended for detection of PDK2 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for PDK2 siRNA (h): sc-39027, PDK2 siRNA (m): sc-39028, PDK2 shRNA Plasmid (h): sc-39027-SH, PDK2 shRNA Plasmid (m): sc-39028-SH, PDK2 shRNA (h) Lentiviral Particles: sc-39027-V and PDK2 shRNA (m) Lentiviral Particles: sc-39028-V.

Molecular Weight of PDK2: 46 kDa.

Positive Controls: PDK2 (h): 293T Lysate: sc-158837, rat skeletal muscle extract: sc-364810 or mouse heart extract: sc-2254.

#### STORAGE

Store at 4° C, \*\*DO NOT FREEZE\*\*. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

# DATA





PDK2 (S-15): sc-100534. Western blot analysis of PDK2 expression in mouse heart (A), rat skeletal muscle (B) and rat heart (C) tissue extracts.

PDK2 (S-15): sc-100534. Western blot analysis of PDK2 expression in non-transfected: sc-117752 (A) and human PDK2 transfected: sc-158837 (B) 293T whole cell lysates.

#### **SELECT PRODUCT CITATIONS**

- Hwang, B., et al. 2012. Additive effects of clofibric acid and pyruvate dehydrogenase kinase isoenzyme 4 (PDK4) deficiency on hepatic steatosis in mice fed a high saturated fat diet. FEBS J. 279: 1883-1893.
- 2. Jeoung, N.H., et al. 2012. Fasting induces ketoacidosis and hypothermia in PDHK2/PDHK4-double-knockout mice. Biochem. J. 443: 829-839.
- Fukushima, A., et al. 2018. Acetylation contributes to hypertrophy-caused maturational delay of cardiac energy metabolism. JCI Insight 3: 99239.
- Collins, H.E., et al. 2019. Novel role of the ER/SR Ca<sup>2+</sup> sensor, STIM1, in regulation of cardiac metabolism. Am. J. Physiol. Heart Circ. Physiol. 316: H1014-H1026.
- Liang, Y., et al. 2020. Dichloroacetate restores colorectal cancer chemosensitivity through the p53/miR-149-3p/PDK2-mediated glucose metabolic pathway. Oncogene 39: 469-485.
- Kang, H.J., et al. 2021. Pyruvate dehydrogenase kinase 1 and 2 deficiency reduces high-fat diet-induced hypertrophic obesity and inhibits the differentiation of preadipocytes into mature adipocytes. Exp. Mol. Med. 53: 1390-1401.
- Lee, H., et al. 2023. Inhibition of pyruvate dehydrogenase kinase 4 in CD4+ T cells ameliorates intestinal inflammation. Cell. Mol. Gastroenterol. Hepatol. 15: 439-461.
- Zolfaghari, N., et al. 2023. microRNA-96 targets the INS/AKT/GLUT4 signaling axis: association with and effect on diabetic retinopathy. Heliyon 9: e15539.
- Oh, C.J., et al. 2024. Sodium phenylbutyrate attenuates cisplatin-induced acute kidney injury through inhibition of pyruvate dehydrogenase kinase 4. Biomedicines 12: 2815.

# **RESEARCH USE**

For research use only, not for use in diagnostic procedures.