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PCK1 Antibody (C-term)

Purified Rabbit Polyclonal Antibody (Pab)
Catalog # AP8093b

Product Information

Application	WB, IF, IHC-P-Leica, E
Primary Accession	P35558
Reactivity	Human, Mouse, Rat
Host	Rabbit
Clonality	Polyclonal
Isotype	Rabbit IgG
Calculated MW	69195
Antigen Region	592-622

Additional Information

Gene ID	5105
Other Names	Phosphoenolpyruvate carboxykinase, cytosolic [GTP], PEPCK-C, PCK1, PEPCK1
Target/Specificity	This PCK1 antibody is generated from rabbits immunized with a KLH conjugated synthetic peptide between 592-622 amino acids from the C-terminal region of human PCK1.
Dilution	WB~~1:1000 IF~~1:10~50 IHC-P-Leica~~1:250 E~~Use at an assay dependent concentration.
Format	Purified polyclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is prepared by Saturated Ammonium Sulfate (SAS) precipitation followed by dialysis against PBS.
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	PCK1 Antibody (C-term) is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	PCK1 {ECO:0000303|PubMed:8490617, ECO:0000312|HGNC:HGNC:8724}
Function	Cytosolic phosphoenolpyruvate carboxykinase that catalyzes the reversible decarboxylation and phosphorylation of oxaloacetate (OAA) and acts as the rate-limiting enzyme in gluconeogenesis (PubMed:24863970, PubMed:26971250, PubMed:28216384, PubMed:30193097). Regulates cataplerosis and anaplerosis, the processes that control the levels of

	metabolic intermediates in the citric acid cycle (PubMed:24863970, PubMed:26971250, PubMed:28216384, PubMed:30193097). At low glucose levels, it catalyzes the cataplerotic conversion of oxaloacetate to phosphoenolpyruvate (PEP), the rate-limiting step in the metabolic pathway that produces glucose from lactate and other precursors derived from the citric acid cycle (PubMed:30193097). At high glucose levels, it catalyzes the anaplerotic conversion of phosphoenolpyruvate to oxaloacetate (PubMed:30193097). Acts as a regulator of formation and maintenance of memory CD8(+) T-cells: up- regulated in these cells, where it generates phosphoenolpyruvate, via gluconeogenesis (By similarity). The resultant phosphoenolpyruvate flows to glycogen and pentose phosphate pathway, which is essential for memory CD8(+) T-cells homeostasis (By similarity). In addition to the phosphoenolpyruvate carboxykinase activity, also acts as a protein kinase when phosphorylated at Ser-90: phosphorylation at Ser-90 by AKT1 reduces the binding affinity to oxaloacetate and promotes an atypical serine protein kinase activity using GTP as donor (PubMed:32322062). The protein kinase activity regulates lipogenesis: upon phosphorylation at Ser-90, translocates to the endoplasmic reticulum and catalyzes phosphorylation of INSIG proteins (INSIG1 and INSIG2), thereby disrupting the interaction between INSIG proteins and SCAP and promoting nuclear translocation of SREBP proteins (SREBF1/SREBP1 or SREBF2/SREBP2) and subsequent transcription of downstream lipogenesis- related genes (PubMed:32322062).
Cellular Location	Cytoplasm, cytosol. Endoplasmic reticulum Note=Phosphorylation at Ser-90 promotes translocation to the endoplasmic reticulum.
Tissue Location	Major sites of expression are liver, kidney and adipocytes.

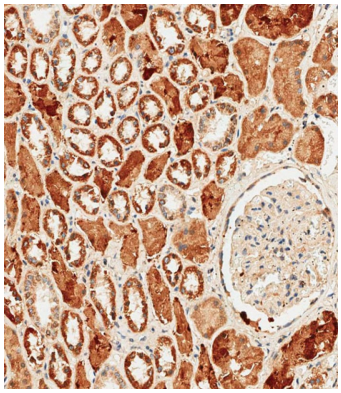
Background

This gene is a main control point for the regulation of gluconeogenesis. The cytosolic enzyme encoded by this gene, along with GTP, catalyzes the formation of phosphoenolpyruvate from oxaloacetate, with the release of carbon dioxide and GDP. The expression of this gene can be regulated by insulin, glucocorticoids, glucagon, cAMP, and diet. A mitochondrial isozyme of the encoded protein also has been characterized.

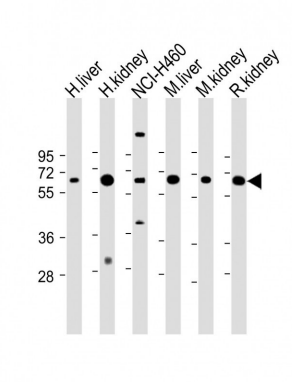
References

Dunten, P., et al., J. Mol. Biol. 316(2):257-264 (2002).
Strausberg, R.L., et al., Proc. Natl. Acad. Sci. U.S.A. 99(26):16899-16903 (2002).
Deloukas, P., et al., Nature 414(6866):865-871 (2001).
O'Brien, R.M., et al., Biochim. Biophys. Acta 1264(3):284-288 (1995).
Ting, C.N., et al., Genomics 16(3):698-706 (1993).

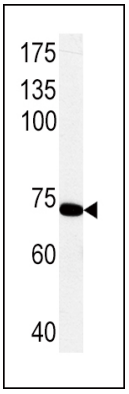
Images



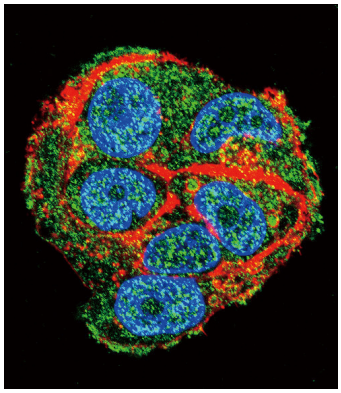
Immunohistochemical analysis of paraffin-embedded human kidney tissue using AP8093B performed on the Leica® BOND RXm. Samples were incubated with primary antibody(1/250) for 1 hours at room temperature. A undiluted biotinylated CRF Anti-Polyvalent HRP Polymer antibody was used as the secondary antibody.



All lanes : Anti-PCK1 Antibody (C-term) at 1:2000 dilution Lane 1: Human liver lysate Lane 2: Human kidney lysate Lane 3: NCI-H460 whole cell lysate Lane 4: Mouse liver lysate Lane 5: Mouse kidney lysate Lane 6: Rat kidney lysate Lysates/proteins at 20 µg per lane. Secondary Goat Anti-Rabbit IgG, (H+L), Peroxidase conjugated at 1/10000 dilution. Predicted band size : 69 kDa Blocking/Dilution buffer: 5% NFDM/TBST.



Western blot analysis of PCK1 Antibody (C-term) (Cat. #AP8093b) in rat primary hepatocyte cell line lysates. PCK1 (arrow) was detected using the purified Pab.



Confocal immunofluorescent analysis of PCK1 Antibody (C-term)(Cat#AP8093b) with HepG2 cell followed by Alexa Fluor 488-conjugated goat anti-rabbit lgG (green). Actin filaments have been labeled with Alexa Fluor 555 phalloidin (red).DAPI was used to stain the cell nuclear (blue).

Citations

- Effects of polysaccharide from the fruiting bodies of Auricularia auricular on glucose metabolism in Co-γ-radiated mice.
- Role of Bicaudal C1 in renal gluconeogenesis and its novel interaction with the CTLH complex.
- Concurrent binding and modifications of AUF1 and HuR mediate the pH-responsive stabilization of phosphoenolpyruvate carboxykinase mRNA in kidney cells.
- Phosphodiesterase 3B is localized in caveolae and smooth ER in mouse hepatocytes and is important in the regulation of glucose and lipid metabolism.
- Adipose overexpression of phosphoenolpyruvate carboxykinase leads to high susceptibility to diet-induced insulin resistance and obesity.