Revision 1

Store at -20C

#31866

Phospho-Pyruvate Dehydrogenase α1 (Ser293) Antibody

Cell Signaling TECHNOLOGY®

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For Research Use Only. Not for Use in Diagnostic Procedures.

Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
W	H M R Mk	Endogenous	43	Rabbit	#P08559, #P29803	5160, 5161

Product Usage Information

Application	Dilution
Western Blotting	1:1000

Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA and 50% glycerol. Store at –20°C. Do not aliquot the antibody.

Specificity/Sensitivity

Phospho-Pyruvate Dehydrogenase α1 (Ser293) Antibody recognizes endogenous levels of pyruvate dehydrogenase α1 protein only when phosphorylated at Ser293 residue. Based on amino acid sequence comparisons, this antibody is predicted to detect endogenous levels of pyruvate dehydrogenase α2 protein only when phosphorylated at Ser291 residue.

Source / Purification

Polyclonal antibody is produced by immunizing animals with a synthetic phosphopeptide corresponding to residues surrounding Ser293 of human pyruvate dehydrogenase α1 protein.

Background

The pyruvate dehydrogenase complex catalyzes the conversion of pyruvate and CoA into acetyl-CoA and CO_2 in the presence of NAD^+. Acetyl-CoA then goes into the citric acid cycle where it reacts with oxaloacetate to form citrate. The reaction of oxidative decarboxylation of pyruvate serves as a critical link between glycolysis and the citric acid cycle. In mammalian cells, the pyruvate dehydrogenase complex is located in the mitochondrial matrix (1). This complex is composed of three enzymes: pyruvate dehydrogenase (E1), dihydrolipoamide acetyltransferase (E2), and dihydrolipoamide dehydrogenase (E3). Pyruvate dehydrogenase (E1) consists of two subunits: α and β. This enzyme catalyzes the removal of CO_2 from pyruvate. Mutations in the α subunits of pyruvate dehydrogenase (E1) lead to congenital defects that are usually associated with lactic acidosis, neurodegeneration, and early death (2).

Pyruvate dehydrogenase kinase 1 phosphorylates pyruvate dehydrogenase (E1) α1 subunit at Ser293 to inactivate its activity (3, 4). This phosphorylation contributes to the tumor metabolic reprogramming toward glycolysis in hypoxia by inhibiting the citric acid cycle (4).

Background References

1. Strumiło, S. (2005) *Acta Biochim Pol* 52, 759-64.
2. Stacpoole, P.W. et al. (2003) *Curr Gene Ther* 3, 239-45.
3. Fan, J. et al. (2014) *J Biol Chem* 289, 26533-41.
4. Chae, Y.C. et al. (2016) *Cancer Cell* 30, 257-272.

Species Reactivity

Species reactivity is determined by testing in at least one approved application (e.g., western blot).

Western Blot Buffer

IMPORTANT: For western blots, incubate membrane with diluted primary antibody in 5% w/v nonfat dry milk, 1X TBS, 0.1% Tween® 20 at 4°C with gentle shaking, overnight.

Applications Key

W: Western Blotting

Cross-Reactivity Key

H: Human **M:** Mouse **R:** Rat **Mk:** Monkey

Trademarks and Patents

Limited Uses

force or effect.

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