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Anti-PPM1K Antibody

Catalog # AP53362

Product Information

Application	WB, IHC
Primary Accession	Q8N3J5
Reactivity	Human, Mouse, Rat, Bovine
Host	Rabbit
Clonality	Polyclonal
Calculated MW	40997

Additional Information

Gene ID	152926
Other Names	PP2CM; Protein phosphatase 1K mitochondrial; PP2C domain-containing protein phosphatase 1K; PP2C-like mitochondrial protein; PP2C-type mitochondrial phosphoprotein phosphatase; PTMP; Protein phosphatase 2C isoform kappa; PP2C-kappa
Target/Specificity	KLH-conjugated synthetic peptide encompassing a sequence within the center region of human PPM1K. The exact sequence is proprietary.
Dilution	WB~~ 1:1000 IHC~~1:100~500
Format	Liquid in 0.42% Potassium phosphate, 0.87% Sodium chloride, pH 7.3, 30% glycerol, and 0.01% sodium azide.
Storage	Store at -20 °C.Stable for 12 months from date of receipt

Protein Information

Name	PPM1K {ECO:0000303|PubMed:23086801, ECO:0000312|HGNC:HGNC:25415}
Function	Serine/threonine-protein phosphatase component of macronutrients metabolism. Forms a functional kinase and phosphatase pair with BCKDK, serving as a metabolic regulatory node that coordinates branched-chain amino acids (BCAAs) with glucose and lipid metabolism via two distinct phosphoprotein targets: mitochondrial BCKDHA subunit of the branched-chain alpha-ketoacid dehydrogenase (BCKDH) complex and cytosolic ACLY, a lipogenic enzyme of Krebs cycle (PubMed:17336929, PubMed:17374715, PubMed:19411760, PubMed:22291014, PubMed:22589535, PubMed:23086801, PubMed:29779826). At high levels of branched-chain ketoacids, dephosphorylates and activates mitochondrial BCKDH complex, a multisubunit complex consisting of three multimeric components each involved in different steps of BCAA catabolism: E1

composed of BCKDHA and BCKDHB, E2 core composed of DBT monomers, and E3 composed of DLD monomers. Tightly associates with the E2 component of BCKDH complex and dephosphorylates BCKDHA on Ser-337 (PubMed:17336929, PubMed:17374715, PubMed:19411760, PubMed:22291014, PubMed:22589535, PubMed:23086801, PubMed:29779826). Regulates the reversible phosphorylation of ACLY in response to changes in cellular carbohydrate abundance such as occurs during fasting to feeding metabolic transition. At fasting state, appears to dephosphorylate ACLY on Ser- 455 and inactivate it. Refeeding stimulates MLXIPL/ChREBP transcription factor, leading to increased BCKDK to PPM1K expression ratio, phosphorylation and activation of ACLY that ultimately results in the generation of malonyl-CoA and oxaloacetate immediate substrates of de novo lipogenesis and gluconeogenesis, respectively (PubMed:29779826). Recognizes phosphosites having SxS or RxxS motifs and strictly depends on Mn(2+) ions for the phosphatase activity (PubMed:29779826). Regulates Ca(2+)-induced opening of mitochondrial transition pore and apoptotic cell death (PubMed:17374715).

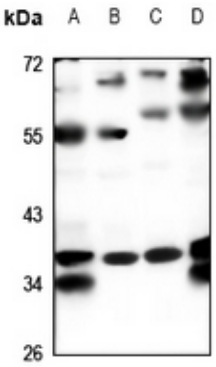
Cellular Location

Mitochondrion matrix. Note=Detected in the cytosolic compartment of liver cells. {ECO:0000250|UniProtKB:A6K136}

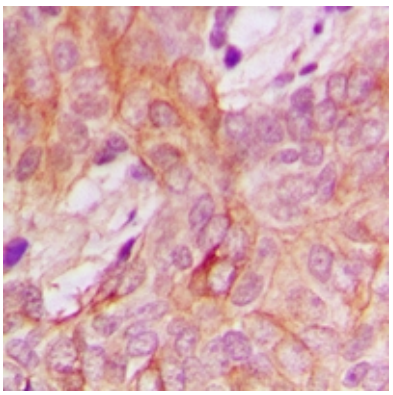
References

Lu G.,et al.Genes Dev. 21:784-796(2007).
Mao Y.,et al.Submitted (OCT-2002) to the EMBL/GenBank/DDBJ databases.
Joshi M.A.,et al.Biochem. Biophys. Res. Commun. 356:38-44(2007).
Xu J.,et al.Submitted (OCT-2003) to the EMBL/GenBank/DDBJ databases.
Ota T.,et al.Nat. Genet. 36:40-45(2004).

Images



Western blot analysis of PPM1K expression in A549 (A), H1792 (B), CT26 (C), PC12 (D) whole cell lysates. (Predicted band size: 40 kD; Observed band size: 36 kD)



Immunohistochemical analysis of PPM1K staining in human breast cancer formalin fixed paraffin embedded tissue section. The section was pre-treated using heat mediated antigen retrieval with sodium citrate buffer (pH 6.0). The section was then incubated with the antibody at room temperature and detected using an HRP conjugated compact polymer system. DAB was used as the chromogen. The section was then counterstained with haematoxylin and mounted with DPX.

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