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CMPK2 Antibody

Catalog # ASC11560

Product Information

Application	WB, IF, E
Primary Accession	Q5EBM0
Other Accession	NP_997198, 117606370
Reactivity	Human, Mouse, Rat
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Calculated MW	49448
Concentration (mg/ml)	1 mg/mL
Conjugate	Unconjugated
Application Notes	CMPK2 antibody can be used for detection of CMPK2 by Western blot at 1 g/mL. For immunofluorescence start at 20 g/mL.

Additional Information

Gene ID	129607
Other Names	UMP-CMP kinase 2, mitochondrial, 2.7.4.14, Nucleoside-diphosphate kinase, 2.7.4.6, CMPK2
Target/Specificity	CMPK2; Multiple isoforms of CMPK2 are known to exist.
Reconstitution & Storage	CMPK2 antibody can be stored at 4℃ for three months and -20℃, stable for up to one year. As with all antibodies care should be taken to avoid repeated freeze thaw cycles. Antibodies should not be exposed to prolonged high temperatures.
Precautions	CMPK2 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	CMPK2
Function	Mitochondrial nucleotide monophosphate kinase needed for salvage dNTP synthesis that mediates immunomodulatory and antiviral activities through IFN-dependent and IFN-independent pathways (PubMed:17999954, PubMed:30083606, PubMed:36930652, PubMed:37075076). Restricts the replication of multiple viruses including flaviviruses or coronaviruses (PubMed:30083606, PubMed:36930652, PubMed:37075076). Together with viperin/RSAD2 and ddhCTP, suppresses the replication of several coronaviruses through inhibition of the viral RNA-dependent RNA polymerase activities (PubMed:36930652). Concerning flaviviruses, restricts RNA translation when localized to the mitochondria independently of its kinase

	activity (PubMed:37075076). Is able to phosphorylate dUMP, dCMP, CMP, UMP and monophosphates of the pyrimidine nucleoside analogs ddC, dFdC, araC, BVDU and FdUrd with ATP as phosphate donor. Efficacy is highest for dUMP followed by dCMP while CMP and UMP are poor substrates. Controls therefore mitochondrial DNA synthesis by supplying required deoxyribonucleotides (By similarity). CMPK2-dependent mitochondrial DNA synthesis is necessary for the production of oxidized mitochondrial DNA fragments after exposure to NLRP3 activators (By similarity). In turn, cytosolic oxidized mtDNA associates with the NLRP3 inflammasome complex and is required for its activation (By similarity).
Cellular Location	Mitochondrion. Note=Mitochondrial localization is required for its antiviral function.
Tissue Location	High levels are observed in myeloid, lymphoid and mesenchymal tissues.

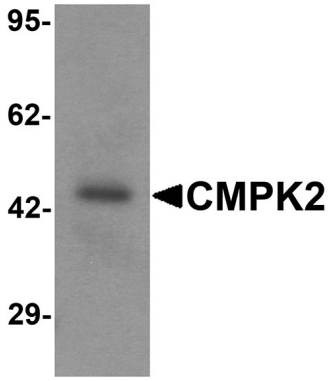
Background

CMPK2 Antibody: UMP-CMP kinase 2 (CMPK2) is the first nucleoside monophosphate kinase that has been identified in human mitochondria. It is a component of the salvage pathway for nucleotide synthesis that may participate in terminal differentiation of monocytic cells. There are two distinct domains of CMPK2: the N-terminal domain with unknown function and the C-terminal domain with the kinase function, suggesting that CMPK2 may be a bifunctional protein with other biological functions in addition to its UMP-CMP kinase activity. CMPK2 may participate in dUTP and dCTP synthesis and is responsible for phosphorylation of dCMP and dUMP in mitochondria. CMPK2 is actively involved in macrophage activation and the inflammatory response

References

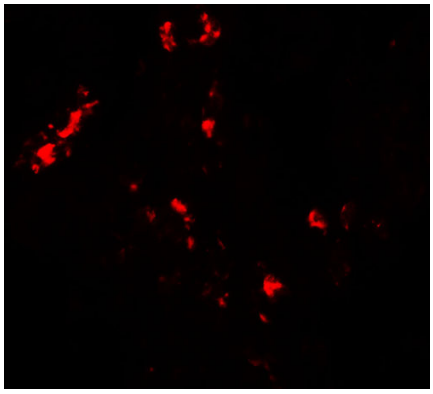
Xu Y, Johansson M, Karlsson A. Human UMP-CMP kinase 2, a novel nucleoside monophosphate kinase localized in mitochondria. J. Biol. Chem. 2008; 283:1563-71.
Chen YL, Lin DW, and Chang ZF. Identification of a putative human mitochondrial thymidine monophosphate kinase associated with monocytic/macrophage terminal differentiation. Genes Cells 2008; 13:679-89.
Arima T, Akiyoshi H, and Fujii S. Characterization of pyrimidine nucleoside monophosphokinase in normal and malignant tissues. Cancer Res. 1977; 37:1593-7.
Goertsches RH, Hecker M, Koczan D, et al. Long-term genome-wide blood RNA expression profiles yield novel molecular response candidates for IFN-beta-1b treatment in relapsing remitting MS. Pharmacogenomics 2010;11:147-61.

Images



Western blot analysis of CMPK2 in rat lung tissue lysate with CMPK2 antibody at 1 µg/mL

Immunofluorescence of CMPK2 in human lung tissue with CMPK2 antibody at 20 µg/mL.



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