

## CPS1 (B-1): sc-376190



The Power to Question

## BACKGROUND

The multicomplex protein, carbamoyl-phosphate synthetase-aspartate carbamoyl transferase-dihydro-ototase (CAD), consists of three distinct proteins, carbamoyl phosphate synthetase 2 (CPS2), aspartate transcarbamylase, and dihydro-ototase, which catalyze the second and third steps of pyrimidine biosynthesis. CAD is allosterically regulated by the phosphorylation of CPS2 by cyclic AMP-dependent protein kinase, and this activation enables CPS2 to catalyze the rate-limiting step of pyrimidine synthesis. CAD is expressed in brain and skeletal muscle. A related protein, carbamoyl phosphate synthetase 1 (CPS1) is expressed in liver. CPS1 catalyzes the rate-limiting step in the urea cycle, and deficiency of CPS1 is an autosomal recessive disorder that causes hyperammonemia.

## CHROMOSOMAL LOCATION

Genetic locus: CPS1 (human) mapping to 2q34; Cps1 (mouse) mapping to 1 C3.

## SOURCE

CPS1 (B-1) is a mouse monoclonal antibody raised against amino acids 1361-1500 mapping at the C-terminus of CPS1 of human origin.

## PRODUCT

Each vial contains 200 µg IgG<sub>1</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

CPS1 (B-1) is available conjugated to agarose (sc-376190 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-376190 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-376190 PE), fluorescein (sc-376190 FITC), Alexa Fluor® 488 (sc-376190 AF488), Alexa Fluor® 546 (sc-376190 AF546), Alexa Fluor® 594 (sc-376190 AF594) or Alexa Fluor® 647 (sc-376190 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-376190 AF680) or Alexa Fluor® 790 (sc-376190 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

## APPLICATIONS

CPS1 (B-1) is recommended for detection of CPS1 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, 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 CPS1 siRNA (h): sc-35099, CPS1 siRNA (m): sc-35100, CPS1 shRNA Plasmid (h): sc-35099-SH, CPS1 shRNA Plasmid (m): sc-35100-SH, CPS1 shRNA (h) Lentiviral Particles: sc-35099-V and CPS1 shRNA (m) Lentiviral Particles: sc-35100-V.

Molecular Weight of CPS1: 165 kDa.

Positive Controls: rat liver extract: sc-2395, mouse liver extract: sc-2256 or human liver extract: sc-363766.

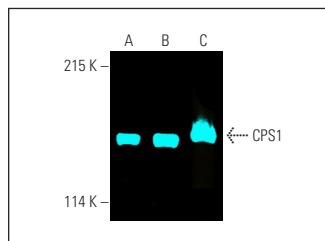
## RESEARCH USE

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

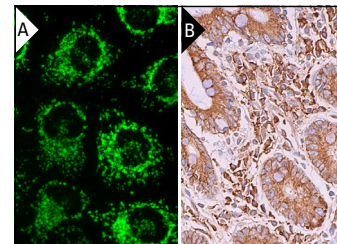
## STORAGE

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

## DATA



CPS1 (B-1) Alexa Fluor® 647: sc-376190 AF647. Direct fluorescent western blot analysis of CPS1 expression in human liver (A), mouse liver (B) and rat liver (C) tissue extracts. Blocked with UltraCruz® Blocking Reagent: sc-516214.



CPS1 (B-1): sc-376190. Immunofluorescence staining of methanol-fixed HeLa cells showing mitochondrial localization (A). Immunoperoxidase staining of formalin fixed, paraffin-embedded human small intestine tissue showing cytoplasmic staining of glandular cells and interstitial cells (B).

## SELECT PRODUCT CITATIONS

- Willis, I.M., et al. 2018. Metabolic programming a lean phenotype by deregulation of RNA polymerase III. *Proc. Natl. Acad. Sci. USA* 115: 12182-12187.
- Dehghan, E., et al. 2019. Hydralazine targets cAMP-dependent protein kinase leading to sirtuin1/5 activation and lifespan extension in *C. elegans*. *Nat. Commun.* 10: 4905.
- Bao, X., et al. 2019. Glutarylation of Histone H4 lysine 91 regulates chromatin dynamics. *Mol. Cell* 76: 660-675.e9.
- Daniel, P., et al. 2019. Differentially expressed mitochondrial proteins in human MCF7 breast cancer cells resistant to paclitaxel. *Int. J. Mol. Sci.* 20: 2986.
- Moura, F.H., et al. 2020. Effects of energy-protein supplementation frequency on performance of primiparous grazing beef cows during pre and postpartum. *Asian-Australas. J. Anim. Sci.* 33: 1430-1443.
- Gallego-Durán, R., et al. 2022. Liver injury in non-alcoholic fatty liver disease is associated with urea cycle enzyme dysregulation. *Sci. Rep.* 12: 3418.
- Dai, W., et al. 2022. Glutamine synthetase limits β-catenin-mutated liver cancer growth by maintaining nitrogen homeostasis and suppressing mTORC1. *J. Clin. Invest.* 132: e161408.
- Zhang, S., et al. 2023. Deficiency of carbamoyl phosphate synthetase 1 engenders radioresistance in hepatocellular carcinoma via deubiquitinating c-Myc. *Int. J. Radiat. Oncol. Biol. Phys.* 115: 1244-1256.

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.

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