

# CPS2 (K-16): sc-10521

## 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.

## REFERENCES

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- Carrey, E.A., et al. 1985. Phosphorylation and activation of hamster carbamyl-phosphate synthetase II by cAMP-dependent protein kinase. A novel mechanism for regulation of pyrimidine nucleotide biosynthesis. *EMBO J.* 4: 3735-3742.
- Cammer, W., et al. 1991. Localization of the multifunctional protein CAD in astrocytes of rodent brain. *J. Histochem. Cytochem.* 39: 695-700.
- Haraguchi, Y., et al. 1991. Cloning and sequence of a cDNA encoding human carbamyl-phosphate synthetase I: molecular analysis of hyperammonemia. *Gene* 107: 335-340.
- Schofield, J.P., et al. 1999. Mice deficient in the urea-cycle enzyme, carbamoyl-phosphate synthetase I, die during the early neonatal period from hyperammonemia. *Hepatology* 29: 181-185.
- Hewagama, A., et al. 1999. Functional linkage between the glutaminase and synthetase domains of carbamoyl-phosphate synthetase. Role of Serine 44 in carbamoyl-phosphate synthetase-aspartate carbamoyl transferase-dihydro-ototase (CAD). *J. Biol. Chem.* 274: 28240-28245.
- Graves, L.M., et al. 2000. Regulation of carbamoyl-phosphate synthetase by MAP kinase. *Nature* 403: 328-332.

## CHROMOSOMAL LOCATION

Genetic locus: CAD (human) mapping to 2p23.3; Cad (mouse) mapping to 5 B1.

## SOURCE

CPS2 (K-16) is an affinity purified goat polyclonal antibody raised against a peptide mapping near the C-terminus of CPS2 of human origin.

## PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-10521 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

## APPLICATIONS

CPS2 (K-16) is recommended for detection of CPS2 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

CPS2 (K-16) is also recommended for detection of CPS2 in additional species, including equine, canine and bovine.

Suitable for use as control antibody for CPS2 siRNA (h): sc-41457, CPS2 siRNA (m): sc-41458, CPS2 shRNA Plasmid (h): sc-41457-SH, CPS2 shRNA Plasmid (m): sc-41458-SH, CPS2 shRNA (h) Lentiviral Particles: sc-41457-V and CPS2 shRNA (m) Lentiviral Particles: sc-41458-V.

Molecular Weight of CPS2: 243 kDa.

Positive Controls: mouse liver extract: sc-2256 or Y79 cell lysate: sc-2240.

## RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

## STORAGE

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

## RESEARCH USE

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

## PROTOCOLS

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



Try **CPS2 (F-6): sc-376072**, our highly recommended monoclonal alternative to CPS2 (K-16).