

# CTPS1 (K-21): sc-101925

## BACKGROUND

CTPS (cytidine-5'-triphosphate synthase) is a 591 amino acid protein that contains one glutamine amidotransferase type-1 domain and is involved in pyrimidine metabolism. CTPS catalyzes the ATP-dependent conversion of UTP to CTP, a rate-limiting reaction that requires either ammonia or L-glutamine as a nitrogen source. Via its catalytic activity, CTPS plays an important role in the synthesis of nucleic acids and is crucial for proper cell growth and development. The function of CTPS is regulated by a variety of mechanisms, including phosphorylation by protein kinase C (PKC), an event that can either stimulate or inhibit CTPS activity. The gene encoding CTPS is located in a region on chromosome 1 that is often associated with the progression of several tumor types, suggesting a possible role for CTPS in tumorigenesis.

## REFERENCES

- Whelan, J., Phear, G., Yamauchi, M. and Meuth, M. 1993. Clustered base substitutions in CTP synthetase conferring drug resistance in Chinese hamster ovary cells. *Nat. Genet.* 3: 317-322.
- Verschuur, A.C., Van Gennip, A.H., Muller, E.J., Voûte, P.A., Vreken, P. and Van Kuilenburg, A.B. 1999. Cytidine triphosphate synthase activity and mRNA expression in normal human blood cells. *Biol. Chem.* 380: 41-46.
- Goto, M., Omi, R., Nakagawa, N., Miyahara, I. and Hirotsu, K. 2004. Crystal structures of CTP synthetase reveal ATP, UTP, and glutamine binding sites. *Structure* 12: 1413-1423.
- Endrizzi, J.A., Kim, H., Anderson, P.M. and Baldwin, E.P. 2005. Mechanisms of product feedback regulation and drug resistance in cytidine triphosphate synthetases from the structure of a CTP-inhibited complex. *Biochemistry* 44: 13491-13499.
- Han, G.S., Sreenivas, A., Choi, M.G., Chang, Y.F., Martin, S.S., Baldwin, E.P. and Carman, G.M. 2005. Expression of Human CTP synthetase in *Saccharomyces cerevisiae* reveals phosphorylation by protein kinase A. *J. Biol. Chem.* 280: 38328-38336.

## CHROMOSOMAL LOCATION

Genetic locus: CTPS1 (human) mapping to 1p34.2; Ctps (mouse) mapping to 4 D2.2.

## SOURCE

CTPS1 (K-21) is a purified rabbit polyclonal antibody raised against CTPS1 of human origin.

## PRODUCT

Each vial contains 100 µg IgG in 1.0 ml PBS with < 0.1% sodium azide, 0.1% gelatin and < 0.02% sucrose.

## STORAGE

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

## APPLICATIONS

CTPS1 (K-21) is recommended for detection of CTPS1 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)] and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for CTPS1 siRNA (h): sc-78858, CTPS1 siRNA (m): sc-142624, CTPS1 shRNA Plasmid (h): sc-78858-SH, CTPS1 shRNA Plasmid (m): sc-142624-SH, CTPS1 shRNA (h) Lentiviral Particles: sc-78858-V and CTPS1 shRNA (m) Lentiviral Particles: sc-142624-V.

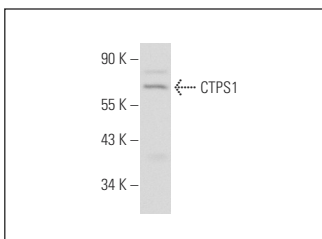
Molecular Weight of CTPS1: 66 kDa.

Positive Controls: Hep G2 cell lysate: sc-2227 or U-251-MG whole cell lysate: sc-364176.

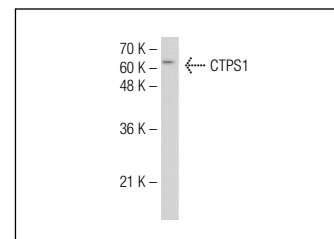
## RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use goat anti-rabbit IgG-HRP: sc-2004 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible goat anti-rabbit IgG-HRP: sc-2030 (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) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml).

## DATA



CTPS1 (K-21): sc-101925. Western blot analysis of CTPS1 expression in U-251-MG whole cell lysate.



CTPS1 (K-21): sc-101925. Western blot analysis of CTPS1 expression in Hep G2 whole cell lysate.

## SELECT PRODUCT CITATIONS

- Chen, K., Zhang, J., Tastan, Ö.Y., Deussen, Z.A., Siswick, M.Y. and Liu, J.L. 2011. Glutamine analogs promote cytoophidium assembly in human and *Drosophila* cells. *J. Genet. Genomics* 38: 391-402.

## RESEARCH USE

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



Try **CTPS1 (2G7-1D10): sc-293266**, our highly recommended monoclonal alternative to CTPS1 (K-21).