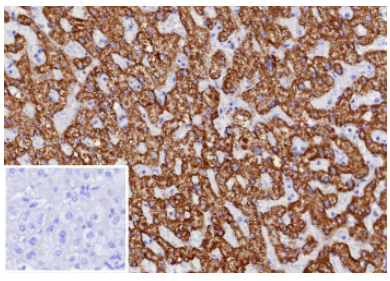
CPS1 Antibody / Carbamoyl-phosphate synthase 1 [clone CPS1/9870] (V5864)

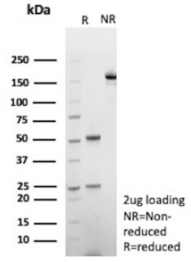
Catalog No.	Formulation	Size
V5864-100UG	0.2 mg/ml in 1X PBS with 0.05% BSA, 0.05% sodium azide	100 ug
V5864-20UG	0.2 mg/ml in 1X PBS with 0.05% BSA, 0.05% sodium azide	20 ug
V5864SAF-100UG	1 mg/ml in 1X PBS; BSA free, sodium azide free	100 ug

Bulk quote request

Species Reactivity	Human
Format	Purified
Host	Mouse
Clonality	Monoclonal (mouse origin)
Isotype	Mouse IgG1, kappa
Clone Name	CPS1/9870
UniProt	P31327
Localization	Cytoplasm, Nucleus
Applications	Immunohistochemistry (FFPE) : 1-2ug/ml
Limitations	This CPS1/Carbamoyl-phosphate synthase 1 antibody is available for research use only.



Formalin-fixed, paraffin-embedded human hepatocellular carcinoma stained with CPS1/Carbamoyl-phosphate synthase 1 antibody (clone CPS1/9870). Tumor cells show strong, diffuse granular cytoplasmic staining consistent with mitochondrial localization, with no nuclear staining observed. Inset: PBS instead of primary antibody; secondary-only negative control. Staining of formalin-fixed tissues requires heating tissue sections in 10mM Tris with 1mM EDTA, pH 9.0, for 45 min at 95oC followed by cooling at RT for 20 minutes.



SDS-PAGE Analysis of purified CPS1/Carbamoyl-phosphate synthase 1 antibody (clone CPS1/9870). Confirmation of Purity and Integrity of Antibody.

Description

Carbamoyl-phosphate synthase 1 antibody targets Carbamoyl-phosphate synthase 1, a mitochondrial matrix enzyme encoded by the CPS1 gene that catalyzes the first and rate-limiting step of the urea cycle. CPS1 converts ammonia and bicarbonate into carbamoyl phosphate using ATP, initiating the detoxification of excess nitrogen through ureagenesis. This protein is highly enriched in hepatocytes and is considered a defining marker of hepatocellular metabolic function. CPS1 localizes to mitochondria and is expressed at high levels in liver tissue, with lower or absent expression in most extrahepatic tissues, reflecting its specialized role in nitrogen metabolism.

Carbamoyl-phosphate synthase 1 antibody is frequently used in research contexts to examine hepatocellular differentiation, mitochondrial enzyme distribution, and metabolic integrity in liver-derived cells and tissues. Loss or reduction of CPS1 expression has been reported in certain hepatocellular carcinomas and poorly differentiated liver tumors, while retained expression is commonly observed in normal liver and well-differentiated hepatic neoplasms. These expression patterns have made CPS1 a widely referenced marker in studies of liver biology, hepatic tumor classification, and metabolic reprogramming associated with malignancy. The CPS1 antibody is also referred to in the literature as CPS antibody or Carbamoyl phosphate synthetase I antibody, reflecting historical naming conventions for this enzyme.

The Carbamoyl-phosphate synthase 1 antibody clone CPS1/9870 is designed to recognize CPS1 protein in research applications and provides a tool for studying mitochondrial metabolic pathways in hepatocytes. CPS1 functions as part of a tightly regulated urea cycle enzyme network, interacting functionally with ornithine transcarbamylase and other mitochondrial enzymes to maintain ammonia homeostasis. Disruption of CPS1 activity is associated with inherited urea cycle disorders and contributes to hyperammonemia, underscoring the biological importance of this enzyme in normal physiology.

The Carbamoyl-phosphate synthase 1 antibody clone CPS1/9870 may be applied in investigative studies examining CPS1 expression patterns in normal liver, metabolic disease models, or tumor specimens, using appropriate experimental controls and assay optimization determined by the researcher. As with all research-use antibodies, interpretation of CPS1 staining or detection should consider tissue context, cellular localization, and experimental conditions.

For a validated reference of CPS1 expression in liver and hepatocellular tumors, see the CPS1 antibody clone CPS1/9859 with supporting IHC and western blot data.

Application Notes

Optimal dilution of the CPS1/Carbamoyl-phosphate synthase 1 antibody should be determined by the researcher.

Immunogen

A recombinant fragment (around amino acids 1300-1500) of human CPS1 protein (exact sequence is proprietary) was used as the immunogen for the CPS1/Carbamoyl-phosphate synthase 1 antibody.

Storage

CPS1/Carbamoyl-phosphate synthase 1 antibody with sodium azide - store at 2 to 8oC; antibody without sodium azide - store at -20 to -80oC.