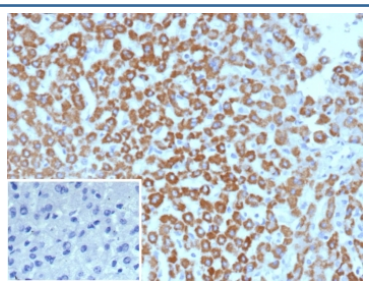
CPSase I Antibody / Urea Cycle Enzyme CPS1 Antibody [clone CPS1/9869] (V5681)

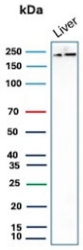
Catalog No.	Formulation	Size
V5681-100UG	0.2 mg/ml in 1X PBS with 0.1 mg/ml BSA (US sourced), 0.05% sodium azide	100 ug
V5681-20UG	0.2 mg/ml in 1X PBS with 0.1 mg/ml BSA (US sourced), 0.05% sodium azide	20 ug
V5681SAF-100UG	1 mg/ml in 1X PBS; BSA free, sodium azide free	100 ug

Bulk quote request

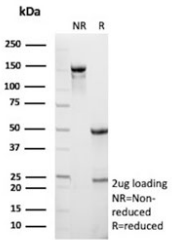
Availability	1-3 business days
Species Reactivity	Human
Format	Purified
Host	Mouse
Clonality	Monoclonal (mouse origin)
Isotype	Mouse IgG, kappa
Clone Name	CPS1/9869
Purity	Protein A/G affinity
UniProt	P31327
Localization	Cytoplasm
Applications	Immunohistochemistry (FFPE) : 1-2ug/ml Western Blot : 2-4ug/ml
Limitations	This CPSase I Antibody / Urea Cycle Enzyme CPS1 Antibody is available for research use only.



CPSase I Antibody Hepatocellular Carcinoma IHC. Immunohistochemistry of Carbamoyl Phosphate Synthetase 1 / CPS1 in FFPE human hepatocellular carcinoma tissue using mouse monoclonal CPSase I antibody, clone CPS1/9869. Strong HRP-DAB brown cytoplasmic staining highlights tumor cells of hepatocellular origin, consistent with mitochondrial localization of this urea cycle enzyme and supporting its role as a marker of hepatocyte-derived metabolic function, while nuclei are counterstained blue. Inset: PBS was used in place of primary antibody as a negative control to confirm specificity of staining. Heat induced epitope retrieval was performed by boiling tissue sections in pH 9 10 mM Tris with 1 mM EDTA for 20 min followed by cooling prior to staining.



CPSase I Antibody Liver WB. Western blot analysis of Carbamoyl Phosphate Synthetase 1 / CPS1 in human liver tissue lysate using mouse monoclonal CPSase I antibody, clone CPS1/9869. A band is detected at approximately 165 kDa, consistent with the predicted molecular weight of CPS1, with additional signal observed at higher apparent molecular weights that may reflect post-translational modification or protein complex formation of this mitochondrial urea cycle enzyme.



SDS-PAGE analysis of purified, BSA-free CPSase I antibody (clone CPS1/9869) as confirmation of integrity and purity.

Description

Carbamoyl phosphate synthetase 1 (CPS1), also referred to as CPSase I, is a mitochondrial enzyme that catalyzes the first and rate-limiting step of the urea cycle, converting ammonia into carbamoyl phosphate within hepatocytes. CPSase I Antibody / Urea Cycle Enzyme CPS1 Antibody is used to study this critical metabolic pathway, with particular relevance to ammonia detoxification and nitrogen metabolism in liver tissue. CPS1 antibody, also known as Carbamoyl phosphate synthetase 1 antibody in the literature, is widely utilized in research focused on hepatic metabolism and mitochondrial enzyme function.

CPS1 is localized to the mitochondrial matrix of hepatocytes, where it initiates the urea cycle by incorporating free ammonia into carbamoyl phosphate. This reaction is essential for preventing toxic accumulation of ammonia in the bloodstream. As a central enzyme in nitrogen metabolism, CPS1 plays a key role in maintaining metabolic homeostasis, particularly under conditions of increased protein catabolism. Its activity is tightly regulated and dependent on allosteric activation by N-acetylglutamate, further highlighting its importance in coordinated metabolic control.

Expression of CPS1 is largely restricted to hepatocytes, making it a valuable marker for liver-specific metabolic function. In immunohistochemistry, CPS1 is typically detected as strong cytoplasmic staining in hepatocytes, consistent with its mitochondrial localization, while non-hepatic tissues show minimal expression. This restricted distribution supports its use in studies examining liver physiology, metabolic zonation, and hepatocyte differentiation.

Functionally, CPS1 serves as the entry point to the urea cycle, linking nitrogen metabolism to energy balance and amino acid turnover. Disruption of CPS1 activity is associated with urea cycle disorders, hyperammonemia, and liver dysfunction. CPS1 antibody is therefore commonly used in investigations of metabolic disease, inherited enzyme deficiencies, and hepatic injury. Its role in mitochondrial metabolism also makes it relevant to studies of cellular energetics and organ-specific metabolic regulation.

In addition to its physiological role, CPS1 expression is often evaluated in the context of liver pathology, including hepatocellular carcinoma and other hepatic disorders. Retention of CPS1 expression in tumor cells can provide insight into hepatocellular origin and metabolic state. The ability to detect CPS1 reliably in tissue sections and biochemical assays supports its continued use in both basic and translational research settings.

CPSase I Antibody provides consistent detection of CPS1 in applications such as immunohistochemistry and western blot, enabling detailed analysis of urea cycle enzyme expression. Its use in studies of nitrogen metabolism, liver function, and mitochondrial biology makes it a valuable tool for understanding the biochemical pathways that regulate ammonia detoxification and metabolic homeostasis.

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 CPSase I Antibody / Urea Cycle Enzyme CPS1 Antibody should be determined by the researcher.

Immunogen

A portion of amino acids 800-100 from human CPS1 protein was used as the immunogen for the CPSase I antibody.

Storage

Aliquot the CPSase I antibody and store frozen at -20oC or colder. Avoid repeated freeze-thaw cycles.

Alternate Names

CPS1 antibody, Carbamoyl phosphate synthetase 1 antibody, CPSase I antibody, Urea cycle enzyme antibody, Mitochondrial CPS1 antibody