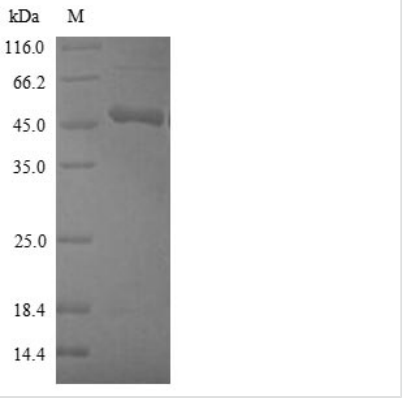
Recombinant Human Cystathionine beta-synthase (CBS), partial

Product Code	CSB-YP004589HU1
Relevance	Only known pyridoxal phosphate-dependent enzyme that contains he. Important regulator of hydrogen sulfide, especially in the brain, utilizing cysteine instead of serine to catalyze the formation of hydrogen sulfide. Hydrogen sulfide is a gastratransmitter with signaling and cytoprotective effects such as acting as a neuromodulator in the brain to protect neurons against hypoxic injury .
Abbreviation	Recombinant Human CBS protein, partial
Storage	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.
Uniprot No.	P35520
Alias	Beta-thionase;Serine sulfhydrase
Product Type	Recombinant Protein
Immunogen Species	Homo sapiens (Human)
Purity	Greater than 90% as determined by SDS-PAGE.
Sequence	MPSETPQAEVGPTGCPHRSGPHSAKGSLEKGSPEDKEAKEPLWIRPDAPSRC TWQLGRPASESPHHHTAPAKSPKILPDILKKIGDTPMVRINKIGKKFGLKCELLA KCEFFNAGGSVKDRISLRMIEDAERDGTLKPGDTIIEPTSGNTGIGLALAAAVR GYRCIIVMPEKMSSEKVDVLRALGAEIVRTPTNARFDSPESHVGVAWRLKNEIP NSHILDQYRNASNPLAHYDTTADEILQQCDGKLDMLVASVGTGGTITGIARKLK EKCPGCRIIGVDPEGSILAEPEELNQTEQTTYEVEGIGYDFIPTVLDRTVVDKWF KSNDEEAFTFARMLIAQEGLLCGGSAGSTVAVAVKAAQELQEGQRCVVILPDS VRNYMTKFLSDRWMLQKGFLKEEDLTEKKPWWWHLR
Research Area	Metabolism
Source	Yeast
Target Names	CBS
Expression Region	1-413aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	N-terminal 6xHis-tagged
Mol. Weight	47.4kDa
Protein Length	Partial
Image	



(Tris-Glycine gel) Discontinuous SDS-PAGE (reduced) with 5% enrichment gel and 15% separation gel.

Description

Recombinant Human Cystathionine beta-synthase (CBS) is produced in a yeast expression system and includes a partial sequence covering amino acids 1-413. The protein carries an N-terminal 6xHis tag, which makes purification and detection more straightforward. Purity levels appear to exceed 90%, as confirmed by SDS-PAGE, suggesting this represents a high-quality reagent that may be suitable for various research applications.

Cystathionine beta-synthase (CBS) is an enzyme that plays a critical role in the transsulfuration pathway, helping to regulate homocysteine levels in the body. This enzyme catalyzes the conversion of homocysteine to cystathionine, a crucial step in sulfur amino acid metabolism. CBS has drawn considerable attention in biomedical research due to its involvement in various physiological processes and its connection to metabolic disorders.

Potential Applications

Note: The applications listed below are based on what we know about this protein's biological functions, published research, and experience from experts in the field. However, we haven't fully tested all of these applications ourselves yet. We'd recommend running some preliminary tests first to make sure they work for your specific research goals.

1. In Vitro Enzyme Kinetics and Biochemical Characterization Studies

This recombinant CBS protein offers researchers a way to investigate the fundamental enzymatic properties of cystathionine beta-synthase under controlled laboratory conditions. Scientists can conduct substrate specificity assays using homocysteine and serine as substrates to measure cystathionine formation. The N-terminal 6xHis tag simplifies protein purification and quantification, which should allow for precise concentration-dependent activity measurements. Such studies may help advance our understanding of the basic biochemical parameters of CBS enzyme function, including optimal pH, temperature, and cofactor requirements.

2. Protein-Protein Interaction Studies

The His-tagged CBS protein can function as bait in pull-down assays to identify and characterize potential binding partners or regulatory proteins that interact

with cystathionine beta-synthase. The tag allows for immobilization on nickel-affinity matrices, enabling the capture of interacting proteins from cell lysates or purified protein libraries. This approach might help reveal cellular pathways and regulatory networks involving CBS. The high purity level appears to minimize background interference in interaction studies, though some non-specific binding may still occur.

3. Antibody Development and Validation

This purified recombinant CBS protein can serve as an antigen for generating specific antibodies against human cystathionine beta-synthase. The high purity and defined amino acid sequence (1-413aa) make it a reasonable candidate for immunization protocols in antibody production. The protein can also function as a positive control and standard for validating antibody specificity in Western blotting, ELISA, and immunoprecipitation experiments. Researchers may find the His tag useful in tag-specific detection assays during antibody characterization, though cross-reactivity with the tag itself could potentially complicate some analyses.

4. Structural and Biophysical Analysis

The recombinant CBS protein shows promise for biophysical studies investigating protein folding, stability, and conformational changes under various conditions. Techniques such as circular dichroism spectroscopy, dynamic light scattering, and thermal stability assays could provide insights into the protein's structural properties. The yeast expression system and high purity level suggest this protein may be well-suited for detailed structural characterization studies. These analyses might contribute to a better understanding of structure-function relationships in cystathionine beta-synthase, though it's worth noting that the truncated nature of this construct (amino acids 1-413) could limit some structural interpretations.

Reconstitution	We recommend that this vial be briefly centrifuged prior to opening to bring the contents to the bottom. Please reconstitute protein in deionized sterile water to a concentration of 0.1-1.0 mg/mL.We recommend to add 5-50% of glycerol (final concentration) and aliquot for long-term storage at -20°C/-80°C. Our default final concentration of glycerol is 50%. Customers could use it as reference.
Shelf Life	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.