# Zebrafish Cbs Antibody / Cystathionine Beta Synthase / Cbsa (RZ1076)

| Catalog No. | Formulation | Size |
|---|---|---|
| RZ1076 | 0.5mg/ml if reconstituted with 0.2ml sterile DI water | 100 ug |

**Bulk quote request**

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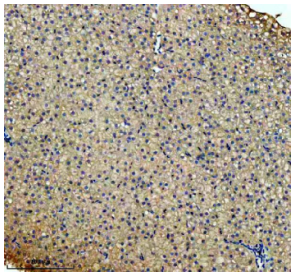
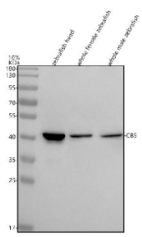
| **Availability** | 2-3 weeks |
| **Species Reactivity** | Zebrafish |
| **Format** | Antigen affinity purified |
| **Host** | Rabbit |
| **Clonality** | Polyclonal (rabbit origin) |
| **Isotype** | Rabbit Ig |
| **Purity** | Antigen affinity chromatography |
| **Buffer** | Lyophilized from 1X PBS with 2% Trehalose |
| **UniProt** | A9JT04 |
| **Localization** | Cytoplasm |
| **Applications** | Western Blot : 0.5-1 ug/ml<br>Immunohistochemistry (FFPE) : 2-5 ug/ml |
| **Limitations** | This Zebrafish Cbs antibody is available for research use only. |



IHC staining of FFPE zebrafish liver tissue with Zebrafish Cbs antibody. HIER: boil tissue sections in pH8 EDTA for 20 min and allow to cool before testing.



Western blot analysis of Cbs protein using Zebrafish Cbs antibody and 1) zebrafish head, 2) whole female zebrafish, 3) whole male zebrafish tissue lysate. Predicted molecular weight ~63 kDa.

## Description

Zebrafish (Danio rerio) Cbs antibody recognizes Cystathionine beta synthase, encoded in zebrafish by the cbsa gene. Cbs is a pyridoxal phosphate-dependent enzyme that catalyzes the conversion of homocysteine and serine to cystathionine, a critical step in the transsulfuration pathway. This pathway regulates sulfur amino acid metabolism, cellular redox balance, and synthesis of cysteine, glutathione, and other sulfur-containing metabolites. In Danio rerio embryos, cbsa is expressed broadly with enrichment in liver, pancreas, neural tissues, somites, heart, vasculature, and notochord. Subcellular localization is cytosolic, consistent with its role in intermediary metabolism and redox regulation.

Cystathionine beta synthase plays a central role in homocysteine clearance, linking methionine metabolism to antioxidant defense. Through production of cystathionine and downstream cysteine, Cbs influences glutathione synthesis and thereby supports resistance to oxidative stress during rapid embryonic growth. Zebrafish embryos undergo intense metabolic activity as tissues proliferate and differentiate, increasing demand for transsulfuration-derived metabolites. Proper Cbs function helps maintain redox homeostasis, modulates methylation capacity indirectly through homocysteine levels, and supports metabolic resilience during organogenesis.

Neural development is highly sensitive to sulfur amino acid metabolism. Neural progenitors require robust antioxidant systems to counteract oxidative stress associated with rapid proliferation. Cbs contributes to glutathione-dependent redox buffering that protects neural tissues from oxidative damage. Additionally, Cbs-mediated metabolic flux influences methylation potential, impacting chromatin states that regulate neurogenesis, neural patterning, and synaptic maturation. Disruption of cbsa can impair neural differentiation, alter brain regionalization, or compromise neuronal survival.

In somite and muscle development, Cbs supports metabolic and redox environments essential for myogenic lineage progression. Myoblasts and differentiating muscle fibers rely on balanced cysteine and glutathione levels to support protein synthesis, cytoskeletal remodeling, and protection from oxidative stress during fiber formation. Perturbation of Cbs activity may impair myotome organization or muscle structural integrity.

Cardiac and vascular tissues also depend on sulfur metabolism during early development. Cbs contributes to endothelial redox balance, angiogenic signaling, and metabolic transitions that support vessel sprouting and stabilization. In the developing heart, Cbs influences redox-sensitive pathways involved in cardiomyocyte proliferation, contractile maturation, and chamber morphogenesis. Reduced Cbs activity can disrupt hemodynamic adaptation or cardiac structural development.

Endoderm-derived organs, particularly liver and pancreas, show strong Cbs expression due to their roles in metabolic regulation and detoxification. Developing hepatocytes rely on Cbs for homocysteine clearance, glutathione synthesis, and maintenance of redox homeostasis. Pancreatic endocrine and exocrine tissues require sulfur amino acid metabolism to support differentiation, stress resilience, and metabolic programming.

Beyond tissue-specific roles, Cbs integrates metabolic and epigenetic regulation across zebrafish development. By influencing methionine cycle balance and antioxidant capacity, Cbs helps coordinate gene expression programs underlying lineage specification, stress adaptation, and morphogenesis.

This Zebrafish Cbs antibody is suitable for detecting Cystathionine beta synthase in research focused on sulfur amino acid metabolism, redox biology, neural and muscle development, cardiovascular formation, and metabolic organogenesis in zebrafish. NSJ Bioreagents provides this reagent within its zebrafish and metabolic-enzyme antibody collection.

## Application Notes

Optimal dilution of the Zebrafish Cbs antibody should be determined by the researcher.

## Immunogen

An E.coli-derived zebrafish Cbs recombinant protein (amino acids K113-E353) was used as the immunogen for the Zebrafish Cbs antibody.

## Storage

After reconstitution, the Zebrafish Cbs antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.