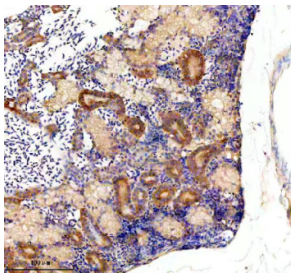
Zebrafish Glutamine synthetase Antibody / Glul | Glula / Glulb (RZ1145)

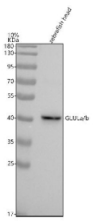
Catalog No.	Formulation	Size
RZ1145	0.5mg/ml if reconstituted with 0.2ml sterile DI water	100 ug

Bulk quote request

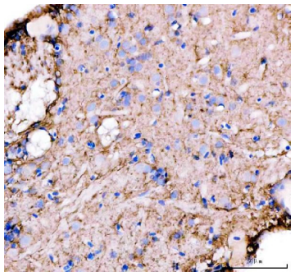
Availability	2-3 weeks
Species Reactivity	Zebrafish
Format	Antigen affinity purified
Host	Rabbit
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit Ig
Purity	Antigen affinity chromatography
Buffer	Lyophilized from 1X PBS with 2% Trehalose
UniProt	Q7T2P7
Localization	Cytoplasm
Applications	Western Blot : 0.5-1 ug/ml Immunohistochemistry (FFPE) : 2-5 ug/ml
Limitations	This Zebrafish Glutamine synthetase antibody is available for research use only.



Immunohistochemical analysis of Glula/b protein using Zebrafish Glutamine synthetase antibody and paraffin-embedded zebrafish kidney tissue. HIER: boil tissue sections in pH8 EDTA for 20 min and allow to cool before testing.



Western blot analysis of Glula/b protein using Zebrafish Glutamine synthetase antibody and zebrafish head tissue lysate. The predicted molecular weight of GLULa/b is ~42 kDa.



Immunohistochemical analysis of Glula/b protein using Zebrafish Glutamine synthetase antibody and paraffin-embedded zebrafish brain tissue. HIER: boil tissue sections in pH8 EDTA for 20 min and allow to cool before testing.

Description

Zebrafish (Danio rerio) Glutamine synthetase antibody detects Glutamine synthetase, a key metabolic enzyme responsible for the ATP-dependent synthesis of glutamine from glutamate and ammonium. In zebrafish, this function is carried out by two paralogs, glula and glulb, which encode highly conserved enzyme isoforms that contribute to nitrogen metabolism, neurotransmitter cycling, detoxification, and cellular growth. Glutamine synthetase is central to maintaining glutamate and ammonia balance within tissues, and its activity is indispensable for proper neural development, hepatic function, and overall metabolic homeostasis. Because glutamine is a major carbon and nitrogen donor for biosynthetic pathways, Zebrafish Glutamine synthetase antibody reagents support research in developmental metabolism, neural physiology, and amino acid regulation.

In the central nervous system, Glutamine synthetase plays a critical role in the glutamate-glutamine cycle by converting excess synaptic glutamate into glutamine within glial cells. This process prevents excitotoxicity and ensures a continuous supply of glutamine for neuronal neurotransmitter synthesis. Zebrafish express Glula and Glulb in distinct but overlapping glial populations, including radial glia, MÃƒÂ¼ller glia in the retina, and additional supportive neural tissues. These expression patterns highlight the enzymeÃ¢Â€Â™s importance in regulating excitatory neurotransmission and supporting neural circuit maturation.

Outside the nervous system, Glutamine synthetase contributes broadly to ammonium detoxification and metabolism. In zebrafish liver and kidney tissues, glula and glulb expression supports safe conversion of ammonium into glutamine, allowing nitrogen to be transported or incorporated into biosynthetic pathways. This function is essential during embryogenesis, particularly as rapidly growing tissues require large amounts of amino acids for protein, nucleotide, and lipid synthesis. Impaired Glutamine synthetase activity disrupts nitrogen balance and can compromise organ development and metabolic adaptation.

Glutamine synthetase also impacts cell proliferation and growth. In vertebrates, glutamine availability influences mTOR signaling, nucleotide biosynthesis, and redox control. Zebrafish embryos rely on these pathways during early cell divisions, tissue expansion, and organogenesis, making Glula and Glulb critical factors in coordinating metabolic supply with developmental demand. In addition, Glutamine synthetase supports responses to oxidative stress by providing glutamine for glutathione synthesis, contributing to cellular antioxidant defense.

At the biochemical level, Glutamine synthetase forms a decameric complex composed of identical subunits that bind ATP, glutamate, and ammonium. The enzymeÃ¢Â€Â™s catalytic mechanism is highly conserved from fish to mammals. In zebrafish, Glula and Glulb differ slightly in tissue distribution and regulatory control but maintain similar catalytic properties. Subcellular localization is predominantly cytosolic, though enrichment varies by cell type depending on metabolic requirements.

Glutamine synthetase expression is dynamically regulated in response to nutrient availability, stress, and developmental cues. Increased expression often marks metabolically active regions, making it a useful indicator of glutamine-dependent biosynthesis. In zebrafish, these properties support its use as a marker for glial identity in neural research and as a readout for metabolic flux in developmental studies.

A Zebrafish Glutamine synthetase antibody is suitable for research applications such as western blotting, immunohistochemistry, and assays examining nitrogen metabolism, neurotransmitter cycling, and metabolic regulation. This antibody targets Glutamine synthetase for studies involving neural development, liver function, and vertebrate metabolic physiology. NSJ Bioreagents provides the Zebrafish Glutamine synthetase antibody to support investigations in developmental metabolism and amino acid biology.

Application Notes

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

Immunogen

An E.coli-derived zebrafish Glula/b recombinant protein (amino acids N74-Y371) was used as the immunogen for the Zebrafish Glutamine synthetase antibody.

Storage

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