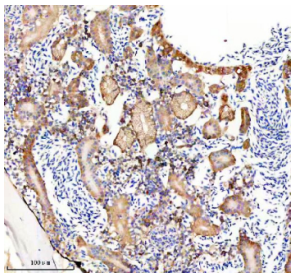
Zebrafish Gmps Antibody / GMP synthase (RZ1167)

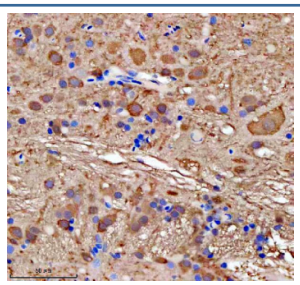
Catalog No.	Formulation	Size
RZ1167	0.5mg/ml if reconstituted with 0.2ml sterile DI water	100 ug

Bulk quote request

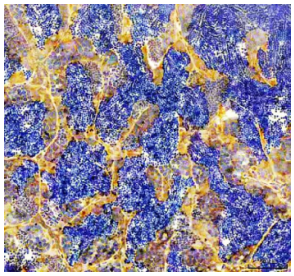
Availability	2-3 weeks
Species Reactivity	Zebrafish
Format	Antigen affinity purified
Host	Rabbit
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit Ig
Purity	Antigen affinity chromatography
Buffer	Lyophilized from 1X PBS with 2% Trehalose
UniProt	B8JLW8
Localization	Cytoplasm
Applications	Immunohistochemistry (FFPE): 2-5 ug/ml
Limitations	This Zebrafish Gmps antibody is available for research use only.



Zebrafish Gmps Antibody Kidney Tissue IHC. Immunohistochemical analysis of Gmps protein using Zebrafish Gmps antibody and paraffin-embedded zebrafish kidney tissue. HIER: boil tissue sections in pH8 EDTA for 20 min and allow to cool before testing.



Zebrafish Gmps Antibody Brain Tissue IHC. Immunohistochemical analysis of Gmps protein using Zebrafish Gmps antibody and a paraffin-embedded zebrafish brain tissue. HIER: boil tissue sections in pH8 EDTA for 20 min and allow to cool before testing.



Zebrafish Gmps Antibody Testis Tissue IHC. Immunohistochemical analysis of Gmps protein using Zebrafish Gmps antibody and paraffin-embedded zebrafish testis tissue. HIER: boil tissue sections in pH8 EDTA for 20 min and allow to cool before testing.

Description

Zebrafish (Danio rerio) Gmps antibody detects Gmps, a conserved metabolic enzyme that catalyzes the ATP-dependent conversion of xanthosine monophosphate (XMP) to guanosine monophosphate (GMP), a key step in the de novo purine biosynthesis pathway. Encoded in zebrafish by the gmps gene, GMP synthase supports the generation of guanine nucleotides required for DNA synthesis, RNA production, energy metabolism, protein translation, and signal transduction. Because proliferating embryonic tissues require high nucleotide output to sustain rapid cell division and growth, Zebrafish Gmps antibody reagents support research in nucleotide metabolism, developmental biology, and cellular growth regulation.

Gmps is a bifunctional enzyme consisting of a glutamine amidase domain and an ATP-dependent synthetase domain. The enzyme transfers an amide nitrogen from glutamine to XMP, forming GMP while generating glutamate as a byproduct. This reaction supplies guanylate pools that fuel GTP-dependent metabolic processes, including ribosome assembly, mRNA capping, protein translation, and cytoskeletal dynamics. In zebrafish embryos, gmps expression is enriched in rapidly proliferating tissues such as the neural tube, somites, hematopoietic regions, and developing organ primordia. These tissues rely on elevated nucleotide synthesis to support DNA replication, transcription, and translational demand during development.

Purine metabolism plays a fundamental role in regulating cellular energy state and biosynthetic capacity. GTP produced downstream of Gmps contributes to microtubule polymerization, signal transduction, and mitochondrial function. Disruption of gmps activity can impair cell proliferation, delay tissue morphogenesis, or alter metabolic pathways that depend on balanced nucleotide pools. In vertebrate systems, GMPS has been linked to developmental defects, metabolic stress, and genomic instability when purine biosynthesis is compromised.

Gmps also participates in regulatory complexes outside of core metabolism. In mammalian cells, GMPS interacts with chromatin-associated proteins and deubiquitinating enzymes, modulating transcriptional activity under certain conditions. Although these roles are less explored in zebrafish, the structural conservation of Gmps suggests potential regulatory functions beyond nucleotide synthesis, especially in tissues that require coordinated control of gene expression and proliferation.

At the molecular level, GMP synthase operates through substrate channeling that transfers ammonia from the glutamine amidase site to the XMP-binding site. This tightly coordinated reaction ensures efficiency and prevents loss of reactive intermediates. Subcellular localization of Gmps is predominantly cytosolic, where it interfaces with other purine biosynthesis enzymes that form multienzyme complexes known as purinosomes. In zebrafish, dynamic purine metabolic activity supports embryonic growth, metabolic adaptation, and organ-specific expansion.

During developmental transitions, increased purine demand accompanies processes such as neurogenesis, muscle differentiation, and vascular development. By sustaining guanylate pools, Gmps helps maintain these biosynthetic priorities while supporting signaling networks that control proliferation and differentiation. Zebrafish models allow real-time visualization of how shifts in nucleotide metabolism influence organogenesis and developmental timing.

A Zebrafish Gmps antibody is suitable for research applications such as western blotting, immunohistochemistry, and

assays examining purine biosynthesis, metabolic regulation, and proliferative growth. This antibody targets GMP synthase for studies involving nucleotide metabolism, embryonic development, and cellular biosynthetic pathways. NSJ Bioreagents provides the Zebrafish Gmps antibody to support research in metabolic regulation and vertebrate developmental biology.

This Zebrafish antibody is part of a broader Zebrafish / Danio rerio antibody panel offered by NSJ Bioreagents.

Application Notes

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

Immunogen

An E.coli-derived zebrafish Gmps recombinant protein (amino acids L20-K670) was used as the immunogen for the Zebrafish Gmps antibody.

Storage

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

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