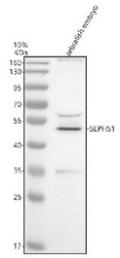
Zebrafish Sephs1 Antibody / Selenophosphate synthetase 1 (RZ1050)

Catalog No.	Formulation	Size
RZ1050	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	Q7ZW38
Applications	Western Blot : 0.5-1 ug/ml
Limitations	This Zebrafish Sephs1 antibody is available for research use only.



Zebrafish Sephs1 Antibody WB. Western blot analysis of Sephs1 protein using Zebrafish Sephs1 antibody and zebrafish embryo tissue lysate. The predicted molecular weight of Sephs1 is ~43 kDa.

Description

Zebrafish (Danio rerio) Sephs1 antibody recognizes Selenophosphate synthetase 1, a conserved metabolic enzyme encoded by the zebrafish sephs1 gene. Sephs1 catalyzes the ATP-dependent synthesis of selenophosphate, the selenium donor required for the biosynthesis of all selenocysteine-containing proteins. These selenoproteins play essential roles in redox balance, antioxidant defense, thyroid hormone metabolism, and cellular stress-response pathways. In Danio rerio, Sephs1 is expressed during early embryogenesis, with enriched localization in neural tissues, somites, developing heart, pronephric kidney, retina, and endoderm-derived organs including liver and pancreas. Subcellular localization is cytosolic, aligning with its function in selenoprotein biosynthetic pathways.

Selenophosphate synthetase 1 supports metabolic and antioxidant processes fundamental to vertebrate development. Zebrafish embryos experience significant oxidative and metabolic demands as they undergo rapid proliferation, differentiation, and organogenesis. Sephs1 provides selenophosphate for the synthesis of key antioxidant selenoproteins, including glutathione peroxidases and thioredoxin reductases, which maintain redox stability and protect developing tissues from oxidative damage. Because redox balance strongly influences signaling pathways, Sephs1 indirectly affects transcriptional networks that regulate neural patterning, muscle differentiation, and growth trajectories.

Neural development relies heavily on Sephs1 activity. The central nervous system generates substantial reactive oxygen species during mitochondrial maturation and neurotransmitter-related metabolism. Selenoprotein-dependent antioxidant pathways help protect neural progenitors and differentiating neurons from oxidative stress. Disruption of selenophosphate production can impair axon growth, disrupt neural tube patterning, and alter neuroepithelial survival. Retinal development also depends on proper selenium metabolism, as photoreceptor cells exhibit high metabolic turnover and sensitivity to redox imbalance.

Cardiac and skeletal muscle development require robust selenium-dependent antioxidant and metabolic control. In forming cardiac tissue, Sephs1 contributes to mitochondrial redox regulation and supports contractile protein synthesis. Somitic muscle formation similarly depends on selenoproteins that maintain metabolic homeostasis, regulate calcium handling, and protect developing myofibers from oxidative stress. Altered Sephs1 function can lead to defects in myotome organization, reduced muscle integrity, and compromised cardiac output.

Endoderm-derived organs also rely on Sephs1, particularly liver and pancreas, where selenium-dependent enzymes regulate lipid oxidation, glucose metabolism, and detoxification pathways. Zebrafish models with disrupted sephs1 expression exhibit metabolic abnormalities, altered organ morphology, and increased vulnerability to chemical stressors, emphasizing its roles in embryonic metabolic regulation and systemic redox control.

Beyond its metabolic functions, Sephs1 influences transcriptional regulation and stress signaling. Selenophosphate availability affects transcription factors sensitive to cellular redox state and modulates pathways such as MAPK, TGF-beta, and oxidative-stress response cascades. Because redox signals help coordinate cell fate decisions and developmental timing, Sephs1 connects selenium metabolism directly to morphogenetic processes.

This Zebrafish Sephs1 antibody is suitable for detecting Selenophosphate synthetase 1 in research focused on selenium metabolism, selenoprotein biosynthesis, redox biology, neural development, cardiac and muscle morphogenesis, and metabolic regulation in zebrafish. It supports studies examining antioxidant pathways, developmental redox control, and phenotypes arising from disrupted selenium utilization. NSJ Bioreagents provides this reagent within its zebrafish and metabolic-enzyme antibody collection.

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

Application Notes

Optimal dilution of the Zebrafish Sephs1 antibody should be determined by the researcher.

Immunogen

A synthetic peptide corresponding to a sequence in the middle region of zebrafish Sephs1 was used as the immunogen for the Zebrafish Sephs1 antibody.

Storage

After reconstitution, the Zebrafish Sephs1 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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