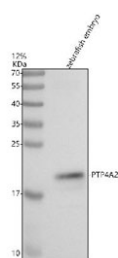


Zebrafish Ptp4a2 Antibody / Protein tyrosine phosphatase type IVA 2 (RZ1072)

| Catalog No. | Formulation | Size |
|-------------|---|--------|
| RZ1072 | 0.5mg/ml if reconstituted with 0.2ml sterile DI water | 100 ug |

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| | |
|--------------------|--|
| Availability | 2-3 weeks |
| Species Reactivity | Zebrafish |
| Format | Antigen affinity purified |
| Clonality | Polyclonal (rabbit origin) |
| Isotype | Rabbit Ig |
| Purity | Antigen affinity chromatography |
| Buffer | Lyophilized from 1X PBS with 2% Trehalose |
| UniProt | Q5U3R3 |
| Applications | Western Blot : 0.5-1 ug/ml |
| Limitations | This Zebrafish Ptp4a2 antibody is available for research use only. |



Western blot analysis of Ptp4a2 protein using Zebrafish Ptp4a2 antibody and zebrafish embryo tissue lysate. The predicted molecular weight of Ptp4a2 is ~19 kDa.

Description

Zebrafish (*Danio rerio*) Ptp4a2 antibody recognizes Protein tyrosine phosphatase type IVA 2, a dual-specificity phosphatase encoded by the zebrafish *ptp4a2* gene. Ptp4a2 belongs to a conserved family of prenylated phosphatases that regulate cell proliferation, migration, cytoskeletal remodeling, and key intracellular signaling pathways. In *Danio rerio* embryos, *ptp4a2* is broadly expressed from early developmental stages and shows enrichment in developing brain, neural tube, somites, heart, vasculature, and endoderm-derived organs such as liver and intestine. Subcellular localization includes cytoplasm and membrane-associated regions, reflecting its roles in modulating signaling complexes, dynamic cytoskeletal structures, and cell-matrix interactions.

Protein tyrosine phosphatase type IVA 2 influences multiple signaling pathways that shape embryonic development. Ptp4a2 regulates phosphotyrosine signaling landscapes by dephosphorylating targets involved in proliferation, survival, and motility. Its activity contributes to balanced MAPK and PI3K-Akt signaling, which are essential for tissue patterning, metabolic adaptation, and cell fate determination. Because zebrafish embryos undergo rapid morphogenesis and lineage diversification, Ptp4a2 helps maintain appropriate signaling thresholds across diverse tissues.

Neural development particularly depends on Ptp4a2 activity. Neural progenitors in the developing brain and spinal cord require coordination between proliferation and differentiation, processes governed in part by phosphatase-mediated signaling. Ptp4a2 helps regulate cytoskeletal organization, neuroepithelial polarity, and responses to growth factor cues that guide neuronal identity and migration. As neurons mature, Ptp4a2 contributes to axonal outgrowth, adhesion dynamics, and responses to environmental signals that shape early neural circuitry.

Somite and muscle development also rely on Ptp4a2. Myogenic progenitors require tightly controlled signaling inputs that influence lineage commitment, cell shape transitions, and assembly of contractile structures. Ptp4a2 contributes to cytoskeletal remodeling and myotome organization by modulating phosphorylation states of regulators involved in actin dynamics, adhesion, and early muscle fiber maturation. Disruption of Ptp4a2 can alter somite boundaries, impair muscle architecture, or disturb tissue alignment.

Cardiac and vascular formation involves continuous integration of phosphoregulation, signaling gradients, and cytoskeletal remodeling. In the developing heart, Ptp4a2 influences cardiomyocyte proliferation, contractile maturation, and chamber morphogenesis through its regulation of growth factor pathways. In endothelial tissues, Ptp4a2 supports angiogenic sprouting, cell polarity, and vascular stabilization. By modulating adhesion and motility programs, Ptp4a2 helps orchestrate vessel branching and lumen formation.

Endoderm-derived organs such as liver and pancreas also depend on phosphatase-mediated control of developmental transitions. Ptp4a2 influences metabolic signaling, stress-response pathways, and proliferation as these organs undergo rapid expansion and functional specialization. Balanced Ptp4a2 activity helps maintain cellular homeostasis during periods of intense biosynthetic and transcriptional demand.

This Zebrafish Ptp4a2 antibody is suitable for detecting Protein tyrosine phosphatase type IVA 2 in research focused on phosphoregulation, neural development, myogenesis, cardiac and vascular morphogenesis, and endodermal organogenesis in zebrafish. NSJ Bioreagents provides this reagent within its zebrafish and signaling-regulation antibody portfolio.

Application Notes

Optimal dilution of the Zebrafish Ptp4a2 antibody should be determined by the researcher.

Immunogen

An E.coli-derived zebrafish Ptp4a2 recombinant protein (amino acids M7-D75) was used as the immunogen for the Zebrafish Ptp4a2 antibody.

Storage

After reconstitution, the Zebrafish Ptp4a2 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.

