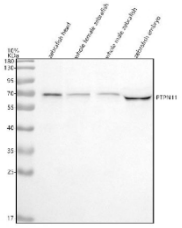
Zebrafish Shp2 Antibody / Ptpn11 (RZ1026)

Catalog No.	Formulation	Size
RZ1026	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	Q7ZW17
Applications	Western Blot : 0.5-1 ug/ml
Limitations	This Zebrafish Shp2 antibody is available for research use only.



Western blot analysis of Shp2/PTPN11 protein using Zebrafish Shp2 antibody and 1) zebrafish head 2) whole female zebrafish, 3) whole male zebrafish and 4) zebrafish embryo tissue lysate. Expected molecular weight ~68 kDa.

Description

Zebrafish (Danio rerio) Shp2 antibody recognizes Shp2, encoded by the zebrafish ptpn11 gene located on chromosome 12. Shp2 (protein tyrosine phosphatase non-receptor type 11) is a highly conserved cytoplasmic phosphatase essential for intracellular signaling pathways that regulate proliferation, differentiation, migration, and embryonic patterning. The protein contains tandem SH2 domains and a catalytic phosphatase domain that together enable Shp2 to bind phosphorylated receptors and adaptor proteins, positioning it as a central regulator of receptor tyrosine kinase signaling. In Danio rerio, ptpn11 is expressed throughout early embryogenesis and is enriched in neural precursors, mesodermal tissues, developing musculature, craniofacial mesenchyme, and endoderm-derived organs including liver and pancreas.

Subcellular localization is predominantly cytoplasmic with plasma membrane-associated recruitment upon receptor activation.

Shp2 functions as a major positive regulator of the Ras/MAPK signaling pathway. By interacting with growth factor receptors, docking proteins, and scaffolding complexes, Shp2 promotes Ras activation, ERK phosphorylation, and downstream transcriptional responses essential for early development. In zebrafish embryos, Shp2 activity governs processes such as axial patterning, neural crest migration, mesoderm specification, somite organization, and cardiac morphogenesis. Loss-of-function mutations in ptpn11 disrupt these core developmental events, leading to craniofacial malformations, heart defects, disrupted somitogenesis, and impaired cell migration.

In addition to its role in Ras/MAPK signaling, Shp2 influences PI3K/Akt pathways, JAK/STAT signaling, and integrin-mediated cell adhesion. Zebrafish studies show that Shp2 contributes to hematopoietic stem cell emergence and expansion, partially through its regulation of cytokine responses. Neural development also depends on Shp2 mediated signaling; ptpn11 disruption affects neuronal differentiation, axon trajectory formation, and the patterning of brain structures. Because Shp2 integrates signals from multiple receptor families, its activity shapes transcriptional networks that guide lineage commitment during early embryogenesis.

Shp2 is also relevant in disease models. In humans, mutations in PTPN11 cause Noonan syndrome, LEOPARD syndrome, and contribute to leukemogenesis through hyperactivation of Ras/MAPK signaling. Zebrafish models expressing mutant ptpn11 variants recapitulate developmental abnormalities and provide valuable systems for studying disease mechanisms, drug responses, and pathway dysregulation. These models highlight conserved roles of Shp2 in craniofacial development, cardiac function, and hematopoietic signaling, reinforcing the utility of zebrafish for translational studies.

At the molecular level, Shp2 exists in an autoinhibited conformation in resting cells, with its N-terminal SH2 domain blocking the catalytic site. Ligand-induced receptor phosphorylation triggers SH2 domain binding, relieving autoinhibition and enabling phosphatase activity. This conformational regulation ensures that Shp2 activation is tightly controlled during tissue-specific signaling events. Zebrafish express multiple ptpn11 splice variants, which may reflect nuanced developmental regulation or tissue-specific activity. Shp2 interacts with Grb2, Gab proteins, FAK complexes, and numerous receptor tyrosine kinases, positioning it at the hub of intracellular signaling networks.

This Zebrafish Shp2 antibody is suitable for detecting Ptpn11 in research focused on Ras/MAPK signaling, neural crest migration, mesoderm patterning, cardiac development, hematopoiesis, and broader receptor tyrosine kinase pathways in zebrafish. It supports studies examining developmental consequences of altered phosphatase activity, pathway dysregulation in disease models, and intracellular signaling dynamics during embryogenesis. NSJ Bioreagents provides this reagent within its zebrafish and signaling biology antibody portfolio.

Application Notes

Optimal dilution of the Zebrafish Shp2 antibody should be determined by the researcher.

Immunogen

An E.coli-derived zebrafish Shp2/PTPN11 recombinant protein (amino acids T2-K99) was used as the immunogen for the Zebrafish Shp2 antibody.

Storage

After reconstitution, the Zebrafish Shp2 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.