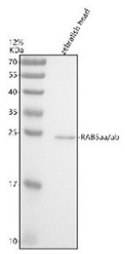
Zebrafish Rab5a Antibody / Rab5aa / Rab5ab (RZ1300)

Catalog No.	Formulation	Size
RZ1300	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	Q7ZUW5, Q7ZUG4
Applications	Western Blot : 0.5-1ug/ml
Limitations	This Zebrafish Rab5a antibody is available for research use only.



Western blot analysis of Rab5aa/ab protein using Zebrafish RAB5aa/ab antibody and zebrafish head tissue lysates. Predicted molecular weight ~23 kDa.

Description

The Zebrafish Rab5a antibody targets Rab5a, including the zebrafish paralogs Rab5aa and Rab5ab, members of the Rab family of small GTPases that regulate early endosome formation, endocytic trafficking, and membrane dynamics essential for proper vertebrate development in Danio rerio. Zebrafish, also known as Danio rerio, express rab5aa and rab5ab broadly during embryogenesis, with enriched levels in neural progenitors, epithelial tissues, endoderm-derived organs, and somitic regions where rapid membrane turnover and signaling uptake are required. Rab5a localizes prominently to early endosomes, clathrin-derived vesicles, and endocytic entry points, making it a central regulator of internalization and early endosomal sorting.

Rab5a is part of the Ras superfamily of small GTP-binding proteins and functions as a molecular switch that cycles between an active GTP-bound state and an inactive GDP-bound form. Its activity promotes membrane fusion, early endosome maturation, and recruitment of effectors such as EEA1 and class III PI3-kinase complexes. In zebrafish embryos, Rab5a-mediated endocytosis is essential for uptake of signaling ligands, receptor downregulation, and dynamic remodeling of the plasma membrane during tissue morphogenesis. A Zebrafish Rab5a antibody is suitable for detecting both Rab5aa and Rab5ab in punctate early endosomal structures, providing insight into endocytic flux and membrane transport during development.

Functionally, Rab5a plays a key role in regulating endocytosis of receptors involved in pathways such as Wnt, Fgf, Notch, Vegf, and Hedgehog. These pathways drive germ layer patterning, neural tube formation, vascular specification, somite development, and epithelial morphogenesis. Rab5a also influences migration, polarity establishment, and membrane recycling by shaping early endosomal signaling hubs. Disruption of rab5aa or rab5ab disrupts endosome maturation, delays receptor downregulation, and produces defects in signaling gradients necessary for coordinated developmental progression.

Structurally, zebrafish Rab5aa and Rab5ab contain conserved GTP-binding motifs and effector-interaction regions required for tethering, docking, and fusion of early endosomes. Prenylation anchors Rab5a to endosomal membranes, while GEFs and GAPs control its nucleotide cycling. The zebrafish rab5aa gene maps to chromosome 19 and rab5ab to chromosome 12, each regulated by developmental cues governing membrane turnover, endocytic capacity, and intracellular signaling dynamics. Co-localization studies identify Rab5a in early endosomes marked by EEA1 and PI3P-rich domains, overlapping with internalized receptor pools and cytoskeletal remodeling components.

A Zebrafish Rab5a antibody is suitable for detecting Rab5a in studies focused on endocytosis, early endosome biology, receptor regulation, intracellular signaling, and morphogen gradient formation in Danio rerio. Because early endocytosis shapes the strength and duration of developmental signaling inputs, Rab5a is a valuable marker for understanding transport mechanisms underlying embryonic patterning. This antibody is supplied for research use by NSJ Bioreagents.

Application Notes

Optimal dilution of the Zebrafish Rab5a antibody should be determined by the researcher.

Immunogen

E. coli-derived zebrafish Rab5a recombinant protein (amino acids M1-N216) was used as the immunogen for the Zebrafish Rab5a antibody.

Storage

After reconstitution, the Zebrafish Rab5a antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.