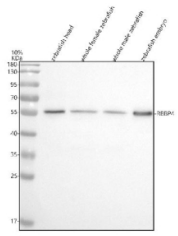
Zebrafish Rbbp4 Antibody / Retinoblastoma-binding protein 4 (RZ1301)

Catalog No.	Formulation	Size
RZ1301	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	Q6P3H7
Applications	Western Blot : 0.5-1ug/ml
Limitations	This Zebrafish Rbbp4 antibody is available for research use only.



Western blot analysis of Rbbp4 protein using Zebrafish Rbbp4 antibody and 1) zebrafish head, 2) whole female zebrafish, 3) whole male zebrafish and 4) zebrafish embryo tissue lysate. Predicted molecular weight ~48 kDa, commonly observed at 48-55 kDa. (human similarity)

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 signal transduction during vertebrate development in Danio rerio. Zebrafish, also known as Danio rerio, express rab5aa and rab5ab broadly throughout embryogenesis, with enriched expression in neural progenitors, epithelial tissues, somites, and endoderm-derived organs where active endocytosis and membrane remodeling are essential. Rab5a localizes primarily to early endosomes and endocytic vesicles, where it controls vesicle fusion, cargo sorting, and maturation of the endosomal compartment.

Rab5a belongs to the Ras superfamily of small GTP-binding proteins and functions as a molecular switch cycling between GTP-bound active and GDP-bound inactive states. In zebrafish embryos, Rab5a activity supports rapid uptake and trafficking of membrane proteins, receptors, and morphogens required for coordinated tissue patterning. A Zebrafish Rab5a antibody is suitable for detecting Rab5a in punctate endosomal structures and perinuclear regions, providing a robust marker for early endosome dynamics and endocytic activity during development.

Functionally, Rab5a is a master regulator of early endocytosis. It controls homotypic fusion of early endosomes, recruitment of tethering and effector complexes, and progression of internalized cargo toward recycling or degradative pathways. In zebrafish, Rab5a-mediated endocytosis influences signaling pathways such as Wnt, Fgf, Hedgehog, Notch, and Tgf-beta by regulating receptor internalization, signaling duration, and spatial distribution. These processes are critical for germ layer specification, neural tube formation, somitogenesis, cardiac morphogenesis, and epithelial organization. Disruption of rab5a paralogs can impair endosomal maturation, alter receptor signaling strength, and lead to defects in cell migration, polarity, and tissue patterning.

Structurally, zebrafish Rab5aa and Rab5ab contain conserved GTP-binding motifs and switch regions that interact with effectors responsible for membrane tethering, phosphoinositide metabolism, and cytoskeletal coordination. Prenylation at the C-terminus anchors Rab5a to endosomal membranes, while specific GEFs and GAPs regulate its activation cycle. The zebrafish rab5aa gene maps to chromosome 11 and rab5ab to chromosome 4, with both paralogs showing overlapping but context-dependent expression patterns regulated by developmental and metabolic cues. Co-localization studies identify Rab5a on early endosomes, often overlapping with markers such as EEA1, Rab4, Rab11, and components of clathrin-mediated endocytosis.

A Zebrafish Rab5a antibody is suitable for detecting Rab5a in studies focused on endocytosis, early endosome biology, receptor trafficking, intracellular signaling regulation, and membrane dynamics in Danio rerio. Because endocytic control is fundamental to morphogen signaling gradients and cellular responsiveness during development, Rab5a serves as a key marker for investigating endosomal regulation, signal attenuation, and membrane transport fidelity in zebrafish embryos. This antibody is supplied for research use by NSJ Bioreagents.

Application Notes

Optimal dilution of the Zebrafish Rbbp4 antibody should be determined by the researcher.

Immunogen

E. coli-derived zebrafish Rbbp4 recombinant protein (amino acids E365-Q424) was used as the immunogen for the Zebrafish Rbbp4 antibody.

Storage

After reconstitution, the Zebrafish Rbbp4 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.