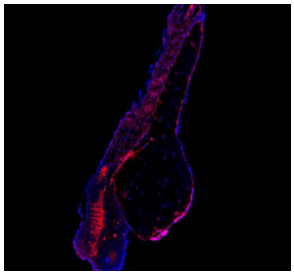
Zebrafish Atp6v1a Antibody (RZ1134)

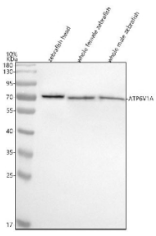
Catalog No.	Formulation	Size
RZ1134	0.5mg/ml if reconstituted with 0.2ml sterile DI water	100 ug

Bulk quote request

Availability	2-3 weeks
Species Reactivity	Zebrafish
Format	Antigen affinity purified
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit Ig
Purity	Antigen affinity chromatography
Buffer	Lyophilized from 1X PBS with 2% Trehalose
UniProt	Q7SY46
Applications	Western Blot : 0.5-1 ug/ml Immunofluorescence : 5 ug/ml
Limitations	This Zebrafish Atp6v1a antibody is available for research use only.



Immunofluorescent staining of FFPE zebrafish embryo tissue with Zebrafish Atp6v1a antibody (red) and DAPI nuclear stain (blue). HIER: steam section in pH8 EDTA buffer for 20 min.



Western blot analysis of Atp6v1a protein using Atp6v1a antibody and 1) zebrafish head, 2) whole female zebrafish and 3) whole male zebrafish tissue lysate. Predicted molecular weight ~68 kDa.

Description

Zebrafish (Danio rerio) Atp6v1a antibody detects Atp6v1a, a core catalytic component of the vacuolar ATPase (V-ATPase), a multisubunit proton pump that drives acidification of intracellular organelles. The V-ATPase is essential for endosomal sorting, lysosomal degradation, synaptic vesicle loading, protein turnover, and many developmental signaling pathways. In zebrafish, the atp6v1a gene encodes the A subunit of the V1 domain, responsible for ATP hydrolysis and generation of the rotational energy that powers proton translocation. Because proper acidification underlies numerous cellular processes, Zebrafish Atp6v1a antibody reagents are widely used to investigate membrane dynamics, organelle function, and metabolic regulation during vertebrate development.

During embryogenesis, zebrafish cells rely heavily on V-ATPase activity to sustain high rates of endocytosis, secretion, and autophagic flux. Atp6v1a shows strong expression in tissues with intensive vesicle turnover, including neural progenitors, developing muscle, the pronephros, digestive tissues, and regions undergoing rapid morphogenesis. These sites require efficient degradation of internalized material and timely recycling of receptors that participate in patterning signals. Acidification controlled by Atp6v1a contributes to activation and trafficking of proteins involved in Notch, Wnt, and Hedgehog signaling, placing the V-ATPase at the center of many developmental regulatory networks.

At the biochemical level, the A subunit encoded by atp6v1a binds and hydrolyzes ATP at the catalytic head of the V1 complex. This energy drives rotation of the central stalk, which in turn enables proton pumping through the membrane-bound V0 sector. The coupling between these domains is highly conserved and ensures that ATP hydrolysis is directly linked to acidification. The Atp6v1a subunit is therefore critical for controlling the pH of lysosomes, endosomes, and secretory vesicles, as well as for maintaining ion balance and proteolytic capacity.

In zebrafish models, disruption of atp6v1a impairs lysosomal maturation, interrupts synaptic vesicle acidification, and alters the processing of receptors that regulate morphogen gradients. These defects can lead to abnormal tissue specification, reduced neuronal activity, or impaired muscle formation. Because V-ATPase function is fundamental for nutrient processing, autophagy, and metabolic regulation, perturbations in Atp6v1a activity can also influence growth rate and survival under conditions of developmental stress.

Subcellular localization of Atp6v1a is cytosolic but closely associated with membranes where the full V-ATPase complex forms. Dynamic assembly and disassembly of the V1 and V0 sectors allow cells to regulate acidification based on energetic needs or environmental cues. This regulation is especially important during zebrafish embryogenesis, where changing metabolic demands require rapid modulation of proton pump activity.

In addition to its roles in intracellular degradation and receptor trafficking, V-ATPase activity affects extracellular matrix remodeling, epithelial polarity, and vesicle fusion events. These processes are fundamental for tissue shaping, organ lumen formation, and the establishment of polarized cell layers. Atp6v1a therefore contributes to many aspects of developmental physiology that depend on proper vesicle acidification and membrane remodeling.

A Zebrafish Atp6v1a antibody is suitable for research applications such as western blotting, immunohistochemistry, and assays that investigate vesicle acidification, lysosomal biology, endosomal signaling, and metabolic adaptation. This antibody targets Atp6v1a for studies examining organelle function, membrane trafficking, and vertebrate developmental mechanisms. NSJ Bioreagents offers the Zebrafish Atp6v1a antibody to support research in cellular physiology and developmental biology.

Application Notes

Optimal dilution of the Zebrafish Atp6v1a antibody should be determined by the researcher.

Immunogen

An E.coli-derived zebrafish Atp6v1a recombinant protein (amino acids A37-D617) was used as the immunogen for the Zebrafish Atp6v1a antibody.

Storage

After reconstitution, the Zebrafish Atp6v1a antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.