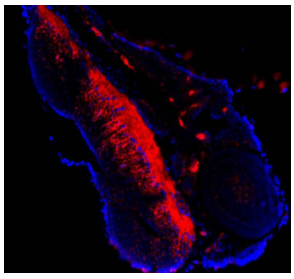
Zebrafish Atp5mc Antibody / Isoforms 1/2/3 (RZ1097)

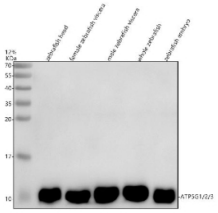
Catalog No.	Formulation	Size
RZ1097	0.5mg/ml if reconstituted with 0.2ml sterile DI water	100 ug

Bulk quote request

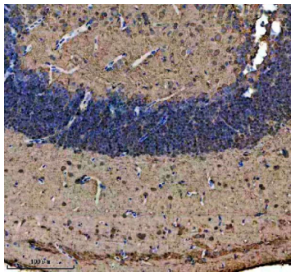
Availability	2-3 weeks
Species Reactivity	Zebrafish
Format	Antigen affinity purified
Host	Rabbit
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit Ig
Purity	Antigen affinity chromatography
Buffer	Lyophilized from 1X PBS with 2% Trehalose
UniProt	Q6IQN6
Applications	Western Blot : 0.5-1 ug/ml Immunohistochemistry (FFPE) : 2-5 ug/ml Immunofluorescence : 5 ug/ml
Limitations	This Zebrafish Atp5mc antibody is available for research use only.



Immunofluorescent staining of FFPE zebrafish embryo tissue with Zebrafish Atp5mc antibody (red) and DAPI nuclear stain (blue). HIER: steam section in pH8 EDTA buffer for 20 min.



Western blot analysis of Atp5mc1/2/3 protein using Zebrafish Atp5mc antibody and and 1) zebrafish head, 2) female zebrafish viscera, 3) male zebrafish viscera, 4) whole zebrafish and 5) zebrafish embryo tissue lysate. Predicted molecular weight ~10 kDa.



IHC staining of FFPE zebrafish brain tissue with Zebrafish Atp5mc antibody. HIER: boil tissue sections in pH8 EDTA for 20 min and allow to cool before testing.

Description

Zebrafish (Danio rerio) Atp5mc antibody detects Atp5mc, a conserved mitochondrial inner membrane protein that forms part of the F0 sector of ATP synthase, the multi-subunit complex responsible for oxidative phosphorylation and ATP production. In zebrafish, the atp5mc gene family includes isoforms 1, 2, and 3, each encoding a small but essential transmembrane subunit that contributes to the proton channel portion of the ATP synthase rotor. These isoforms are structurally conserved across vertebrates and participate directly in the mechanism that couples proton flow to ATP generation. Because mitochondrial metabolism is foundational to early development, reagents such as Isoform 1 antibody, Isoform 2 antibody, and Isoform 3 antibody support research on mitochondrial energetics and tissue maturation.

Atp5mc proteins reside within the inner mitochondrial membrane and interact with additional F0 components to form the c-ring, a structure that rotates in response to proton movement across the membrane's electrochemical gradient. This rotation drives conformational changes in the F1 catalytic domain, resulting in ATP synthesis. The small size of Atp5mc belies its essential contribution to maintaining structural organization and proton translocation efficiency. Zebrafish models have demonstrated that disruptions to mitochondrial ATP synthase components impair early embryogenesis, metabolic homeostasis, and tissue differentiation.

Expression of atp5mc isoforms is widespread in zebrafish embryos, with strong enrichment in tissues exhibiting high metabolic demand, such as developing brain, heart, musculature, and sensory organs. These patterns align with the requirement for efficient ATP production during rapid growth phases. Although isoforms 1, 2, and 3 share core structural motifs, they may exhibit differences in expression timing or tissue specificity, contributing to nuanced regulation of mitochondrial function during development.

At the molecular level, Atp5mc is integrated into mitochondrial biogenesis programs governed by nuclear encoded factors that regulate transcription, translation, and mitochondrial import. Once inserted into the inner membrane, Atp5mc interacts with both protein and lipid components to maintain proper orientation and structural stability. Known interaction partners include additional F0 subunits, mitochondrial assembly proteins, and lipid constituents required for membrane curvature and proton impermeability. These interactions ensure that the ATP synthase rotor functions efficiently under varying energetic conditions.

Because energy metabolism influences virtually all aspects of cell fate and development, Atp5mc is relevant across numerous research areas. In muscle tissues, robust ATP production is required for contractility and structural organization. In neural tissues, mitochondria support synaptic transmission and axonal growth. In cardiac tissues, ATP synthase function is essential for maintaining rhythmic contraction and metabolic balance. Zebrafish provide an ideal vertebrate system for studying these metabolic roles due to transparent embryos, genetic tractability, and well defined developmental stages.

A Zebrafish Atp5mc antibody is suitable for research applications such as western blotting, immunohistochemistry, and assays examining mitochondrial protein expression and metabolic regulation. This reagent detects endogenous Atp5mc without implying epitope mapping or literature validated specificity. NSJ Bioreagents provides the Zebrafish Atp5mc antibody to support studies in mitochondrial biology, oxidative phosphorylation, metabolic development, and energy dependent tissue maturation.

Application Notes

Optimal dilution of the Zebrafish Atp5mc antibody should be determined by the researcher.

Immunogen

An E.coli-derived zebrafish Atp5mc1/2/3 recombinant protein (amino acids D64-L115) was used as the immunogen for the Zebrafish Atp5mc antibody.

Storage

After reconstitution, the Zebrafish Atp5mc antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.