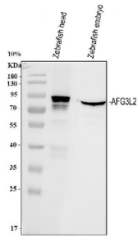
Zebrafish Afg3l2 Antibody / AFG3 like protein 2 (RZ1127)

Catalog No.	Formulation	Size
RZ1127	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	A9JRG9
Applications	Western Blot : 0.5-1 ug/ml
Limitations	This Zebrafish Afg3l2 antibody is available for research use only.



Western blot analysis of Zebrafish Afg3l2 protein using Zebrafish Afg3l2 antibody and 1) zebrafish head and 2) zebrafish embryo tissue lysate. Predicted molecular weight ~89 kDa.

Description

Zebrafish (Danio rerio) Afg3l2 antibody detects Afg3l2, a mitochondrial AAA protease that plays a central role in mitochondrial protein quality control, respiratory chain function, and organelle maintenance. In zebrafish, the afg3l2 gene encodes AFG3 like protein 2, a subunit of the m-AAA protease complex located in the inner mitochondrial membrane. This complex is responsible for processing, remodeling, and degrading misfolded or damaged mitochondrial proteins, ensuring proper assembly of respiratory complexes and the stability of mitochondrial translation machinery. Because mitochondrial quality control is essential for embryonic growth and tissue homeostasis, Zebrafish Afg3l2 antibody reagents are widely used in studies of mitochondrial physiology, neurodevelopment, and metabolic regulation.

Afg3l2 functions within oligomeric protease assemblies composed either of Afg3l2 homooligomers or heterooligomers with related m-AAA subunits. These complexes use ATP-driven conformational changes to unfold and degrade substrates that compromise mitochondrial efficiency. In zebrafish embryos, afg3l2 is expressed strongly in tissues with high metabolic demand, including the developing brain, musculature, sensory organs, and heart. These regions rely on robust oxidative phosphorylation and are particularly sensitive to disturbances in mitochondrial protein homeostasis.

Mutations in AFG3L2 in vertebrates, including humans, have been linked to neurodegenerative syndromes characterized by cerebellar ataxia, axonal degeneration, and impaired mitochondrial function. Zebrafish models exhibit comparable phenotypes when afg3l2 activity is disrupted, showing defects in motor behavior, mitochondrial morphology, and neuronal maintenance. These models highlight the conserved requirement for Afg3l2 in supporting ATP production, synaptic stability, and neuronal survival.

At the molecular level, AFG3 like protein 2 participates in the maturation of mitochondrial ribosomal proteins, assembly factors, and components of the electron transport chain. By regulating proteolytic turnover within the inner membrane, Afg3l2 ensures proper respiratory complex formation and prevents accumulation of toxic intermediates. The m-AAA protease also helps maintain mitochondrial dynamics by influencing fusion-fission balance and interacting with inner membrane scaffolding systems. In zebrafish, these processes are critical during rapid organogenesis, when mitochondrial biogenesis and energy production must adapt continuously to developing tissue architecture.

Disruption of afg3l2 function leads to impaired mitochondrial translation, respiratory chain deficiencies, and increased oxidative stress. In high-energy tissues such as cerebellar neurons or skeletal muscle, these defects can trigger apoptosis or compromise cell function. Zebrafish provide a powerful in vivo platform for studying these mitochondrial stress responses, enabling live imaging of organelle dynamics, calcium handling, and metabolically driven developmental processes.

Subcellular localization of Afg3l2 is restricted to the inner mitochondrial membrane, where it interacts with partner m-AAA protease components, mitochondrial ribosomal proteins, and quality control regulators. This localization supports its role in regulating protein maturation and turnover within the organelle. Conservation of Afg3l2 structure and activity across vertebrates underscores the relevance of zebrafish for understanding mitochondrial quality control pathways and their contributions to human neurological and metabolic disorders.

A Zebrafish Afg3l2 antibody is suitable for research applications such as western blotting, immunohistochemistry, and assays examining mitochondrial proteostasis, respiratory chain assembly, and neuronal maintenance. This antibody targets Afg3l2 for studies involving mitochondrial function, neurodevelopment, and vertebrate energy metabolism. NSJ Bioreagents provides the Zebrafish Afg3l2 antibody to support investigations in mitochondrial biology and developmental physiology.

Application Notes

Optimal dilution of the Zebrafish Afg3l2 antibody should be determined by the researcher.

Immunogen

An E.coli-derived zebrafish Afg3l2 recombinant protein (amino acids G161-D245) was used as the immunogen for the Zebrafish Afg3l2 antibody.

Storage

After reconstitution, the Zebrafish Afg3l2 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.