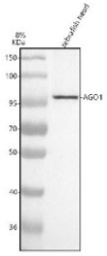
Zebrafish Argonaute 1 Antibody / Ago1 (RZ1175)

Catalog No.	Formulation	Size
RZ1175	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	K4I6K9
Applications	Western Blot : 0.5-1 ug/ml
Limitations	This Zebrafish Argonaute 1 antibody is available for research use only.



Western blot analysis of Argonaute 1 protein using Zebrafish Argonaute 1 antibody and zebrafish head tissue lysate. The predicted molecular weight of Argonaute 1 is ~97 kDa.

Description

Zebrafish (Danio rerio) Argonaute 1 antibody detects Argonaute 1, a core effector protein in the microRNA (miRNA) and RNA interference (RNAi) pathways. Encoded by the ago1 gene, Ago1 associates with miRNAs and small interfering RNAs to guide sequence-specific repression of target mRNAs. This post-transcriptional gene regulatory mechanism is fundamental to vertebrate development, controlling cell fate decisions, proliferation, differentiation, and tissue patterning. Because miRNA-mediated silencing shapes numerous developmental gene networks, Zebrafish Argonaute 1 antibody reagents support research in RNA biology, embryonic regulation, neural development, and cellular homeostasis.

Argonaute proteins bind small RNAs through their PAZ and MID domains, enabling precise recognition of complementary

target transcripts. The PIWI domain contributes to catalytic activity, although vertebrate Ago1 primarily mediates translational repression and mRNA destabilization rather than endonucleolytic cleavage. In zebrafish embryos, ago1 is expressed throughout early developmental stages, with elevated levels in proliferative tissues including the neural tube, somites, retina, heart field, and endodermal derivatives. These expression domains highlight the regulatory significance of miRNA-guided gene control during organogenesis.

miRNA pathways governed by Ago1 influence diverse developmental processes. In early zebrafish patterning, they help establish gradients of transcription factors and signaling molecules that direct germ layer specification, axis formation, and organ primordium emergence. In later stages, Ago1-dependent silencing modulates neuronal differentiation, synaptic maturation, muscle development, and hematopoiesis. Disruption of miRNA function often results in broad defects in tissue morphology and developmental timing, reflecting the crucial role of Argonaute-mediated repression in maintaining balanced gene expression.

In addition to developmental roles, Ago1 participates in stress adaptation and metabolic regulation. miRNAs associated with Ago1 help buffer fluctuations in signaling pathways such as Wnt, FGF, Notch, and Hedgehog. These pathways rely on precise modulation of gene expression, and Ago1 provides the fine-tuning needed for stable network behavior. Zebrafish offer a unique in vivo system for visualizing how these regulatory circuits respond to genetic, environmental, or metabolic perturbations.

At the molecular level, Argonaute 1 interacts with GW182 family proteins, deadenylation machinery, and translational repressors to inhibit target mRNA expression. This multi-layered repression ensures robust control of gene networks during dynamic developmental transitions. Subcellular localization of Ago1 is predominantly cytoplasmic, often concentrated in processing bodies or miRNA-induced silencing complexes where mRNA regulation occurs. Under some conditions, Argonaute proteins can also shuttle to the nucleus, where they may influence chromatin organization or transcriptional regulation, although these functions remain less defined in zebrafish.

Because miRNA-guided repression affects nearly every signaling and developmental pathway, Ago1 is central to maintaining cellular identity and tissue integrity. Zebrafish embryos, which develop rapidly and rely heavily on post-transcriptional regulation, provide an excellent context for studying Argonaute roles in vivo.

A Zebrafish Argonaute 1 antibody is suitable for research applications such as western blotting, immunohistochemistry, and assays examining miRNA function, post-transcriptional regulation, developmental signaling, and gene expression dynamics. This antibody targets Ago1 for studies involving RNA silencing pathways and vertebrate developmental physiology. NSJ Bioreagents provides the Zebrafish Argonaute 1 antibody to support research in RNA regulation and embryonic gene control.

Application Notes

Optimal dilution of the Zebrafish Argonaute 1 antibody should be determined by the researcher.

Immunogen

An E.coli-derived zebrafish Argonaute 1 recombinant protein (amino acids E377-R410) was used as the immunogen for the Zebrafish Argonaute 1 antibody.

Storage

After reconstitution, the Zebrafish Argonaute 1 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.