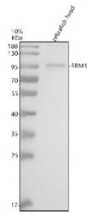
Zebrafish Rrm1 Antibody / Ribonucleotide Reductase M1 (RZ1059)

Catalog No.	Formulation	Size
RZ1059	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	P79732
Applications	Western Blot : 0.5-1 ug/ml
Limitations	This Zebrafish Rrm1 antibody is available for research use only.



Zebrafish Rrm1 Antibody WB. Western blot analysis of Rrm1 protein using Rrm1 antibody and zebrafish head tissue lysate. The predicted molecular weight of Rrm1 is ~90 kDa.

Description

Zebrafish (Danio rerio) Rrm1 antibody recognizes Ribonucleotide reductase M1, encoded by the zebrafish rrm1 gene. RRM1 is the large regulatory subunit of ribonucleotide reductase, the enzyme responsible for converting ribonucleotides into deoxyribonucleotides, thereby supplying the essential precursors for DNA replication and repair. Because DNA synthesis demands escalate rapidly during early embryogenesis, Rrm1 expression is high across proliferative tissues in Danio rerio, including developing brain, neural tube, somites, notochord, heart, vasculature, and endoderm-derived organs such as liver and pancreas. Subcellular localization is predominantly cytoplasmic but may also appear in nuclear-associated regions during periods of active DNA synthesis.

Ribonucleotide reductase M1 is indispensable for maintaining balanced deoxyribonucleotide pools required for accurate DNA replication. In zebrafish embryos, which undergo extremely rapid cell cycles, Rrm1 functions as a key regulator that ensures adequate nucleotide supply for chromosomal duplication and genome stability. Through allosteric control, Rrm1 modulates substrate specificity and overall catalytic activity of the ribonucleotide reductase complex. Loss or reduction of Rrm1 activity can result in replication stress, stalled cell cycles, or DNA damage, each of which profoundly influences developmental patterning.

Neural development is particularly dependent on Rrm1. Neural progenitors and differentiating neurons require precisely regulated DNA synthesis to support proliferation, neuroepithelial organization, and lineage specification. Rrm1 ensures that neural tissues avoid imbalances in deoxynucleotide pools that could trigger genomic instability or apoptosis. Because the developing zebrafish nervous system expands rapidly, Rrm1-mediated nucleotide regulation is essential for brain patterning, spinal cord development, and early synaptic architecture.

In somites and skeletal muscle precursors, Rrm1 supports the proliferation of myogenic progenitors and the transition into differentiation phases. Proper somite segmentation and myotome formation rely on correct cell cycle progression, and disruptions in nucleotide biosynthesis can lead to impaired muscle architecture or delayed maturation. Similar principles apply to notochord development, where Rrm1 contributes to the expansion and patterning of axial tissues.

Cardiac and vascular tissues also require Rrm1 for proper growth. During heart tube formation and early chamber morphogenesis, cardiomyocytes undergo rapid proliferation, necessitating robust nucleotide synthesis. Endothelial progenitors in the vasculature similarly rely on Rrm1 to sustain angiogenic growth, lumen formation, and vascular branching. Perturbation of rrm1 expression can lead to reduced cardiac output, abnormal looping, or impaired vessel patterning.

Endoderm-derived organs depend on Rrm1 for their expansion and metabolic specialization. In liver and pancreas primordia, high rates of DNA replication accompany increased differentiation and metabolic gene activation. Rrm1 helps maintain genomic stability as these organs develop functional complexity. Because deoxynucleotide balance strongly influences DNA repair pathways, Rrm1 also contributes to stress resilience during periods of oxidative or metabolic fluctuation in early organogenesis.

This Zebrafish Rrm1 antibody is suitable for detecting Ribonucleotide reductase M1 in research focused on DNA synthesis, cell cycle control, neural development, cardiac and vascular growth, myogenesis, and endodermal organ maturation in zebrafish. NSJ Bioreagents provides this reagent within its zebrafish and DNA-metabolism antibody collection.

This Zebrafish antibody is part of a broader Zebrafish / Danio rerio antibody panel offered by NSJ Bioreagents.

Application Notes

Optimal dilution of the Zebrafish Rrm1 antibody should be determined by the researcher.

Immunogen

An E.coli-derived zebrafish Rrm1 recombinant protein (amino acids A129-Q730) was used as the immunogen for the Zebrafish Rrm1 antibody.

Storage

After reconstitution, the Zebrafish Rrm1 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.