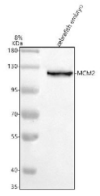
Zebrafish Mcm2 Antibody (RZ1115)

Catalog No.	Formulation	Size
RZ1115	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	A0A0R4IF65
Applications	Western Blot : 0.5-1 ug/ml
Limitations	This Zebrafish Mcm2 antibody is available for research use only.



Western blot analysis of Mcm2 protein using Mcm2 antibody and zebrafish embryo tissue lysate. The predicted molecular weight of MCM2 is ~102 kDa, commonly observed at 100-130 kDa (human similarity).

Description

Zebrafish (Danio rerio) Mcm2 antibody detects Mcm2, a core component of the minichromosome maintenance (MCM) complex that functions as the replicative helicase essential for DNA unwinding and genome duplication. In zebrafish, the mcm2 gene encodes a conserved ATP-dependent helicase subunit that forms a heterohexameric ring with Mcm3-7, creating the catalytic core of the prereplication complex. Activation of this complex is required for origin licensing, initiation of DNA synthesis, and progression through S phase. Because early embryogenesis relies on extremely rapid cell cycles, Zebrafish Mcm2 antibody reagents are widely used in studies of cell proliferation, developmental timing, and genome stability.

Mcm2 is expressed strongly in proliferative zones during zebrafish development, including neural progenitors, somitic mesoderm, hematopoietic tissues, and early organ primordia. High Mcm2 levels correlate with proliferative capacity, making it a well-established marker for actively dividing cells. As embryos progress from cleavage stages into organogenesis, regulated expression of mcm2 ensures proper replication licensing and prevents re-replication or incomplete DNA synthesis, both of which could compromise chromosomal integrity.

Functionally, Mcm2 contributes to helicase activity by forming part of the MCM ring that encircles DNA. Phosphorylation of Mcm2 helps regulate helicase activation through interactions with Cdc7-Dbf4 kinase, cyclin-dependent kinases, and replication initiation factors. This regulation ensures that each origin fires once per cell cycle. In zebrafish, tightly controlled replication licensing is essential for tissue patterning, differentiation timing, and embryonic viability. Abnormal Mcm2 activity can disrupt proliferation, alter gene expression landscapes, and lead to developmental defects tied to replication stress.

Mcm2 also plays a role in DNA repair and replication fork stability. When replication encounters obstacles, Mcm2 participates in checkpoint responses that stabilize stalled forks and prevent chromosomal damage. These functions are particularly important in rapidly developing zebrafish tissues where replication stress is more frequent. Mcm2-associated pathways help safeguard genomic integrity, allowing cells to continue proliferating without accumulating detrimental mutations.

At the molecular level, Mcm2 is part of a broadly conserved replication machinery that coordinates origin licensing, helicase activation, and elongation. The protein binds ATP and interacts with additional MCM subunits to form a ring-shaped structure that translocates along DNA after helicase activation. Its dynamic association with chromatin during G1 and S phases reflects its core function in replication origin control. Subcellular localization is primarily nuclear in proliferative cells.

A Zebrafish Mcm2 antibody is suitable for research applications such as western blotting, immunohistochemistry, and assays examining cell proliferation, replication licensing, and developmental cell cycle regulation. This antibody targets Mcm2 for studies involving genome duplication, replication stress responses, growth-zone biology, and vertebrate embryonic development. NSJ Bioreagents provides the Zebrafish Mcm2 antibody to support research in DNA replication and developmental cell cycle dynamics.

Application Notes

Optimal dilution of the Zebrafish Mcm2 antibody should be determined by the researcher.

Immunogen

An E.coli-derived zebrafish Mcm2 recombinant protein (amino acids A381-R835) was used as the immunogen for the Zebrafish Mcm2 antibody.

Storage

After reconstitution, the Zebrafish Mcm2 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.