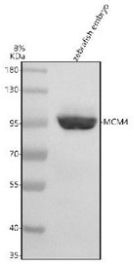
Zebrafish Mcm4 Antibody / Minichromosome maintenance complex component 4 (RZ1139)

Catalog No.	Formulation	Size
RZ1139	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	Q6NZV2
Applications	Western Blot : 0.5-1 ug/ml
Limitations	This Zebrafish Mcm4 antibody is available for research use only.



Zebrafish Mcm4 Antibody Embryo Tissue WB. Western blot analysis of Mcm4 protein using Zebrafish Mcm4 antibody and zebrafish embryo tissue lysate. The predicted molecular weight of MCM4 is ~97 kDa.

Description

Zebrafish (Danio rerio) Mcm4 antibody detects Mcm4, an essential DNA replication licensing factor and a core component of the minichromosome maintenance (MCM) complex. The MCM complex, composed of Mcm2 through Mcm7, functions as the replicative helicase that unwinds duplex DNA at replication forks. In zebrafish, the mcm4 gene encodes Minichromosome maintenance complex component 4, a highly conserved subunit required for helicase activation, origin firing, and replication fork progression. Because accurate DNA replication is fundamental to embryonic growth and tissue formation, Zebrafish Mcm4 antibody reagents are widely used in studies of cell cycle regulation, developmental

proliferation, genomic stability, and replication stress responses.

Mcm4 participates in forming the heterohexameric MCM2-7 helicase, which is loaded onto replication origins during the G1 phase and activated during S phase through phosphorylation and association with Cdc45 and GINS. This active CMG (Cdc45-MCM-GINS) helicase drives fork movement and coordinates the recruitment of polymerases and replication factors. In zebrafish embryos, where rapid and synchronous cell divisions occur during early stages, mcm4 expression is high in proliferating tissues including the neural plate, somites, gut precursors, and hematopoietic populations.

The function of Mcm4 extends beyond simple helicase activity. It contributes to replication origin selection, helps regulate replication fork speed, and participates in preventing excessive origin firing under replication stress. In vertebrate systems, mutations in MCM4 lead to defects in genome maintenance, increased DNA damage, and impaired organ development. Zebrafish models demonstrate similar sensitivities, with reduced mcm4 function resulting in developmental delays, abnormal tissue patterning, and heightened susceptibility to genotoxic stress.

Minichromosome maintenance complex component 4 also plays a role in responding to replication stress by interacting with checkpoint kinases and mediators such as ATR, Claspin, and Chk1. These interactions ensure that stalled forks are stabilized and repaired, preserving genomic integrity during periods of rapid proliferation. In zebrafish, replication stress responses are crucial for proper development of the brain, cardiovascular system, and hematopoietic tissues, all of which require precise synchronization of DNA replication with cell cycle progression.

Subcellular localization of Mcm4 is predominantly nuclear, with dynamic loading and unloading cycles across cell cycle phases. During early zebrafish development, Mcm4 distribution reflects the heightened proliferative state of embryonic tissues, making it a reliable marker for replication competence and cell cycle activity. Its presence within the CMG complex is indispensable for unwinding DNA at origins and allowing replication machinery to access single-stranded templates.

In addition to developmental roles, Mcm4 is relevant for studies of cancer biology, oxidative stress, and DNA repair, as dysregulated replication licensing contributes to genomic instability and oncogenic transformation. Zebrafish models, due to their transparency and genetic tractability, offer a valuable system for visualizing these replication-associated processes in vivo.

A Zebrafish Mcm4 antibody is suitable for research applications such as western blotting, immunohistochemistry, and assays examining DNA replication, cell cycle control, replication stress signaling, and tissue proliferation. This antibody targets Mcm4 for studies involving developmental growth, genome maintenance, and vertebrate replicative machinery. NSJ Bioreagents provides the Zebrafish Mcm4 antibody to support research in DNA replication dynamics and embryonic cell biology.

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

Application Notes

Optimal dilution of the Zebrafish Mcm4 antibody should be determined by the researcher.

Immunogen

An E.coli-derived zebrafish Mcm4 recombinant protein (amino acids M343-I659) was used as the immunogen for the Zebrafish Mcm4 antibody.

Storage

After reconstitution, the Zebrafish Mcm4 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.

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