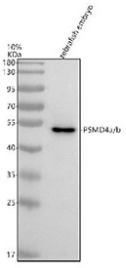
Zebrafish Psmd4 Antibody / Psmd4a / Psmd4b / 26S proteasome non-ATPase regulatory subunit 4 (RZ1293)

Catalog No.	Formulation	Size
RZ1293	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	Q6IQC6, Q561Y1
Applications	Western Blot : 0.5-1ug/ml
Limitations	This Zebrafish Psmd4 antibody is available for research use only.



Zebrafish Psmd4 Antibody Embryo Tissue WB. Western blot analysis of Psmd4a/b protein using Zebrafish Psmd4 antibody and zebrafish embryo tissue lysates. Predicted molecular weight ~40 kDa.

Description

The Zebrafish Psmd4 antibody targets Psmd4, including the duplicated paralogs Psmd4a and Psmd4b, also known as 26S proteasome non-ATPase regulatory subunit 4. Psmd4 is a ubiquitin-binding component of the 19S regulatory particle essential for substrate recognition, recruitment, and regulated degradation in Danio rerio. Zebrafish, also known as Danio rerio, express psmd4a and psmd4b broadly during embryogenesis, with enriched expression in proliferative and metabolically active tissues such as developing brain regions, somites, notochord, heart, and endodermal organs. Psmd4 localizes to the cytoplasm and nucleus as part of the 19S base where it acts as a major receptor for polyubiquitinated

substrates destined for proteasomal degradation.

Psmd4 belongs to a conserved family of ubiquitin-binding proteasome receptors and contains a ubiquitin-interacting motif (UIM) required for selective recognition of polyubiquitin chains. In zebrafish embryos, psmd4 expression increases during stages of rapid differentiation and tissue remodeling, reflecting its central role in coordinating proteasomal load and maintaining proteostasis. A Zebrafish Psmd4 antibody is suitable for detecting nuclear and cytoplasmic populations of this substrate-recognition factor, providing a marker for zones of active ubiquitin-mediated turnover.

Functionally, Psmd4 is indispensable for delivering regulatory proteins, misfolded substrates, and short-lived transcription factors to the 26S proteasome. By binding ubiquitinated substrates and handing them off to the AAA-ATPase ring for unfolding, Psmd4 plays a central role in ensuring efficient degradation of key signaling molecules. In zebrafish, Psmd4-dependent proteolysis influences major developmental pathways such as Wnt, Notch, Fgf, Hedgehog, and NF-kB, all of which require tight turnover control to guide germ layer specification, neural patterning, somite formation, cardiac development, and immune-metabolic responses. Loss or disruption of psmd4 paralogs leads to defective substrate recruitment, accumulation of ubiquitinated proteins, proteotoxic stress, and broad defects in developmental timing and lineage specification.

Structurally, zebrafish Psmd4a and Psmd4b contain conserved UIM domains that mediate recognition of polyubiquitinated substrates, as well as interaction motifs that anchor them within the 19S base. These features allow Psmd4 to bridge the ubiquitin-recognition machinery with the ATP-dependent unfolding apparatus. Zebrafish psmd4a maps to chromosome 21 and psmd4b to chromosome 7, and both are regulated by metabolic signaling, stress responses, and transcriptional programs that influence proteasome biogenesis. Co-localization studies consistently detect Psmd4 in perinuclear proteasome clusters, cytoplasmic ubiquitin-rich regions, and active transcriptional zones in developing tissues, overlapping with AAA-ATPases, deubiquitinating enzymes, and 20S catalytic markers.

A Zebrafish Psmd4 antibody is suitable for detecting Psmd4 in studies focused on ubiquitin-dependent protein degradation, substrate recognition mechanisms, proteasome assembly, developmental proteostasis, stress-response regulation, and intracellular signaling dynamics in Danio rerio. Its distribution across nuclear and cytoplasmic compartments provides insight into tissues undergoing high proteolytic demand, enabling researchers to examine substrate-loading defects, model proteotoxic stress, and explore how regulated protein turnover influences organogenesis and embryonic patterning. This antibody is supplied for research use by NSJ Bioreagents.

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

Application Notes

Optimal dilution of the Zebrafish Psmd4 antibody should be determined by the researcher.

Immunogen

E. coli-derived zebrafish Psmd4 recombinant protein (amino acids M1-D322) was used as the immunogen for the Zebrafish Psmd4 antibody.

Storage

After reconstitution, the Zebrafish Psmd4 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.