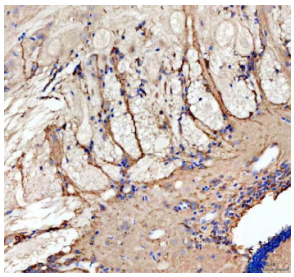
Zebrafish Grin1 Antibody / Grin1a / Grin1b / Nmdar1.1 (RZ1173)

Catalog No.	Formulation	Size
RZ1173	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	F1R366
Localization	Cell membrane
Applications	Immunohistochemistry (FFPE) : 2-5 ug/ml
Limitations	This Zebrafish Grin1 antibody is available for research use only.



Zebrafish Grin1 Antibody Brain Tissue IHC. Immunohistochemical analysis of Grin1a/b protein using Zebrafish Grin1 antibody and paraffin-embedded zebrafish brain tissue. HIER: boil tissue sections in pH8 EDTA for 20 min and allow to cool before testing.

Description

Zebrafish (Danio rerio) Grin1 antibody detects Grin1, the essential NMDA receptor subunit that forms the core of functional glutamatergic NMDA receptor complexes. In zebrafish, two paralogs, grin1a and grin1b, encode highly conserved NR1 subunits, often referred to collectively and historically as Nmdar1.1. The NR1 subunit is required for assembly, membrane trafficking, and gating of NMDA receptors, which mediate calcium-permeable excitatory neurotransmission and play central roles in neural development, synaptic plasticity, and circuit maturation. Because

NMDA receptors govern activity-dependent refinement of neural connections, Zebrafish Grin1 antibody reagents support research in neurodevelopment, synaptic physiology, learning-like processes, and sensory integration.

NMDA receptors are heteromeric ion channels composed of NR1 and various NR2 or NR3 subunits. The NR1 subunit, encoded by grin1a and grin1b in zebrafish, is obligatory for channel formation. Without NR1, no functional NMDA receptors can reach the synapse. This gives Grin1 unique importance in shaping excitatory neurotransmission during development. In zebrafish embryos and larvae, grin1 paralogs are strongly expressed in the brain, hindbrain, spinal cord, retina, and cranial sensory structures, highlighting widespread dependence on NMDA receptor signaling for neuronal patterning and behavioral circuit assembly.

During early development, NR1-containing NMDA receptors help guide axon targeting, dendritic morphogenesis, and synaptic stabilization. Calcium influx through NMDA receptors activates downstream signaling cascades including CaMK, MAPK, and CREB pathways that regulate gene expression programs required for neurogenesis, synaptic strengthening, and refinement of neural networks. In zebrafish, disruptions in grin1a or grin1b expression can alter locomotor activity, sensory reactivity, neuronal excitability, and the formation of functional circuits governing behavior.

Beyond development, NR1 subunits maintain long-term synaptic plasticity in mature circuits. NMDA receptor-dependent long-term potentiation and depression are conserved across vertebrates and are fundamental to adaptive plasticity. Zebrafish models have been widely used to study these phenomena in vivo, making Grin1 an especially valuable target for analyzing how neural networks respond to environmental input, injury, experience, or genetic perturbation.

At the molecular level, NR1 contains glycine-binding domains, transmembrane helices contributing to the ion channel pore, and intracellular C-terminal regions that interact with scaffolding proteins such as PSD-95 and signaling molecules. These domains enable precise control of receptor gating, trafficking, and synaptic localization. Zebrafish Grin1a and Grin1b preserve these structural motifs, ensuring functional parallels to mammalian NMDA receptors.

NR1 also participates in co-agonist regulation, requiring glycine or D-serine binding in addition to glutamate for activation. This dual-ligand requirement provides fine-tuned control over synaptic calcium entry. In zebrafish, NR1-mediated signaling influences processes ranging from retinal circuit development to spinal locomotor rhythm generation.

A Zebrafish Grin1 antibody is suitable for research applications such as western blotting, immunohistochemistry, and assays examining synaptic plasticity, neurodevelopment, glutamatergic signaling, and calcium-dependent transcriptional pathways. This antibody targets Grin1a and Grin1b for studies involving NMDA receptor biology, neural circuit maturation, and vertebrate brain development. NSJ Bioreagents provides the Zebrafish Grin1 antibody to support research in excitatory neurotransmission and developmental neurobiology.

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

Application Notes

Optimal dilution of the Zebrafish Grin1 antibody should be determined by the researcher.

Immunogen

A synthetic peptide corresponding to a sequence at the C-terminus of zebrafish Grin1a/b was used as the immunogen for the Zebrafish Grin1 antibody. This antibody will detect isoforms a & b.

Storage

After reconstitution, the Zebrafish Grin1 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.