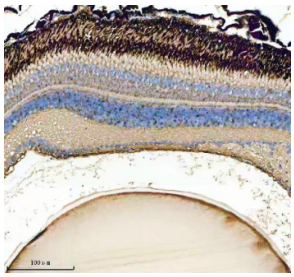
Zebrafish Gnb1 Antibody / Gnb1b (RZ1045)

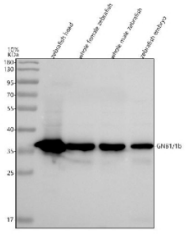
Catalog No.	Formulation	Size
RZ1045	0.5mg/ml if reconstituted with 0.2ml sterile DI water	100 ug

Bulk quote request

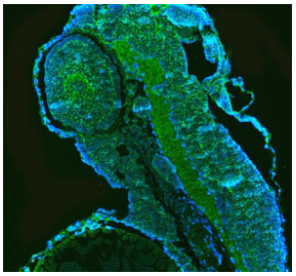
Availability	2-3 weeks
Species Reactivity	Zebrafish
Format	Antigen affinity purified
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit Ig
Purity	Antigen affinity chromatography
Buffer	Lyophilized from 1X PBS with 2% Trehalose
UniProt	Q6PH57
Localization	Cytoplasm
Applications	Western Blot : 0.5-1 ug/ml Immunohistochemistry (FFPE) : 2-5 ug/ml Immunofluorescence : 5ug/ml
Limitations	This Zebrafish Gnb1 antibody is available for research use only.



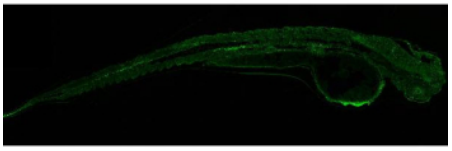
IHC staining of FFPE zebrafish eye tissue with Zebrafish Gnb1 antibody. HIER: boil tissue sections in pH8 EDTA for 20 min and allow to cool before testing.



Western blot analysis of Gnb1/1b protein using Zebrafish Gnb1 antibody and 1) zebrafish head, 2) whole female zebrafish, 3) whole male zebrafish and 4) zebrafish embryo tissue lysate. Expected molecular weight ~37 kDa.



Immunofluorescent staining of FFPE zebrafish embryo tissue with Zebrafish Gnb1 antibody (green) and DAPI nuclear stain (blue). HIER: steam section in pH8 EDTA buffer for 20 min.



Immunofluorescent staining of FFPE zebrafish embryo tissue with Zebrafish Gnb1 antibody. HIER: steam section in pH8 EDTA buffer for 20 min.

Description

Zebrafish (Danio rerio) Gnb1 antibody recognizes Gnb1b, a zebrafish paralog of the G protein beta subunit family encoded by the gnb1b gene. G protein beta subunits form obligate heterodimers with gamma subunits to create functional G beta-gamma complexes, which regulate signaling downstream of G protein-coupled receptors. These complexes modulate a wide array of cellular processes by controlling ion channels, second messenger pathways, kinase cascades, and cytoskeletal regulators. In Danio rerio, Gnb1b is expressed throughout early embryogenesis and is enriched in developing neural tissues, somites, craniofacial mesenchyme, heart, and sensory structures including retina and lateral line neuromasts. Subcellular localization is cytoplasmic and membrane-associated, consistent with its role in receptor-coupled signal transduction.

Gnb1b participates in the regulation of GPCR signaling pathways that shape early developmental decisions. In zebrafish embryos, GPCR-mediated cues influence cell migration, neural patterning, cardiovascular morphogenesis, and sensory system formation. G beta-gamma complexes convey these signals by modulating downstream effectors such as adenylyl cyclases, phospholipase C isoforms, inward rectifying potassium channels, and MAPK pathway components. Gnb1b helps govern the balance of these signals, ensuring appropriate transcriptional responses and cellular behaviors during morphogenesis.

Neural development relies especially heavily on Gnb1b function. In the forming brain and spinal cord, G beta-gamma signaling regulates proliferation of neural progenitors, axon trajectory specification, neurotransmitter receptor function, and early synaptic organization. Because zebrafish embryos undergo rapid neurogenesis, Gnb1b contributes to maintaining the signaling fidelity required for proper neural tube patterning, retinal ganglion cell development, and sensory neuron differentiation. The retina and lateral line, two sensory systems sensitive to GPCR regulation, show strong dependence on Gnb1b-mediated pathways for maturation and circuit assembly.

Gnb1b is also essential for cardiovascular development. GPCR signals regulate heart tube formation, cardiac contractility, and vascular remodeling, and G beta-gamma complexes play central roles in these pathways. Zebrafish studies have shown that disruptions in G protein signaling can impair early cardiac looping, reduce contractile function, alter hemodynamic forces, and affect angiogenic sprouting. Gnb1b likely contributes to these developmental processes by coordinating receptor-driven signals that direct cytoskeletal organization and endothelial behavior.

Somite and muscle development also depend on Gnb1b activity. Signals transmitted through GPCR pathways shape muscle precursor migration, myofibril alignment, and neuromuscular junction formation. Because Gnb1b influences cytoskeletal regulation and membrane excitability, it helps coordinate structural maturation in muscle and related tissues.

In craniofacial mesenchyme, Gnb1b supports signaling networks that guide neural crest migration and cartilage differentiation.

At the molecular level, Gnb1b forms the G beta-gamma dimer by tightly binding gamma subunits to produce a signaling-competent complex. This dimer regulates GPCR activation by modulating G alpha activity and directly influencing downstream signaling proteins. Isoform divergence between gnb1a and gnb1b in zebrafish may reflect specialized roles in tissue-specific GPCR networks. Because G protein signaling is linked to numerous developmental pathways, Gnb1b serves as a versatile regulator that integrates extracellular cues with intracellular responses across organ systems.

This Zebrafish Gnb1 antibody is suitable for detecting Gnb1b in research focused on GPCR signaling, neural development, cardiovascular biology, sensory system maturation, and cytoskeletal regulation in zebrafish. It supports studies examining G beta-gamma complex dynamics, receptor-effector coupling, and developmental phenotypes arising from altered signal transduction. NSJ Bioreagents provides this reagent within its zebrafish and signaling-pathway antibody collection.

Application Notes

Optimal dilution of the Zebrafish Gnb1 antibody should be determined by the researcher.

Immunogen

An E.coli-derived zebrafish Gnb1/1b recombinant protein (amino acids S2-H62) was used as the immunogen for the Zebrafish Gnb1 antibody.

Storage

After reconstitution, the Zebrafish Gnb1 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.