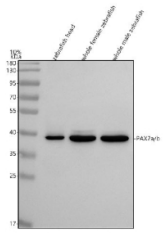
Zebrafish Pax2 Antibody / Pax2a / Pax2b (RZ1136)

Catalog No.	Formulation	Size
RZ1136	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	Q90268, O93370
Applications	Western Blot : 0.5-1 ug/ml
Limitations	This Zebrafish Pax2 antibody is available for research use only.



Western blot analysis of Pax2 protein using Zebrafish Pax2 antibody and 1) zebrafish head, 2) whole female zebrafish and 3) whole male zebrafish tissue lysate. Predicted molecular weight ~42 kDa (Pax2b) and ~44 kDa (Pax2a).

Description

Zebrafish (Danio rerio) Pax2 antibody detects Pax2, a paired box transcription factor essential for neural patterning, kidney development, otic vesicle formation, and midbrain-hindbrain boundary organization. In zebrafish, this developmental regulator is encoded by two paralogs, pax2a and pax2b, which share strong structural and functional conservation with mammalian PAX2. Pax2 proteins contain a paired DNA-binding domain that recognizes target regulatory sequences, enabling them to activate or repress transcriptional programs that guide tissue specification. Because Pax2 activity influences multiple organ systems during early development, Zebrafish Pax2 antibody reagents are widely used in neurobiology, kidney research, sensory organ development, and studies of vertebrate pattern formation.

Pax2 plays a prominent role in establishing the midbrain-hindbrain boundary, one of the earliest patterning centers in vertebrate embryos. In zebrafish, Pax2a and Pax2b work with other transcription factors, including Pax5 and Pax8, to maintain this organizer and regulate signaling pathways that shape neuronal identity and brain regionalization. Loss of Pax2 function disrupts boundary formation and alters neural organization, demonstrating its foundational role in early neural patterning.

Beyond the central nervous system, Pax2 is essential for pronephric and mesonephric kidney development. Pax2 regulates the specification of kidney progenitors, formation of nephric ducts, and differentiation of tubular segments. In zebrafish embryos, pax2a expression marks the pronephric primordium and is often used as a molecular indicator of kidney lineage commitment. Pax2b contributes overlapping and complementary roles in kidney morphogenesis, supporting proper segmentation and structural maintenance of the developing nephron.

Pax2 also directs the formation of the otic vesicle and influences sensory system patterning. In zebrafish, Pax2 defines key domains within the developing inner ear and is required for the formation of semicircular canals and auditory structures. Its regulatory functions help coordinate interactions between otic progenitors and surrounding tissues, shaping the architecture of the sensory epithelium.

At the molecular level, Pax2 interacts with cofactors involved in chromatin remodeling, transcriptional activation, and repression. It regulates genes involved in cell fate determination, epithelial polarity, and lineage restriction. Both Pax2a and Pax2b exhibit dynamic expression patterns that reflect evolving developmental needs, transitioning from broad early domains to tightly restricted patterns as tissues mature. These refined expression domains enable Pax2 to orchestrate spatially precise developmental decisions.

Subcellular localization of Pax2 is strictly nuclear, consistent with its role as a transcription factor. Pax2 proteins bind promoter and enhancer regions to regulate developmental gene networks and to integrate signals from pathways such as FGF, Wnt, and Hedgehog. Because zebrafish embryos offer excellent optical accessibility, Pax2 expression domains are widely used as landmarks for staging developmental events and defining tissue boundaries.

A Zebrafish Pax2 antibody is suitable for research applications such as western blotting, immunohistochemistry, and assays examining neural patterning, kidney development, sensory organ formation, and transcriptional regulation. This antibody targets Pax2 for studies involving lineage specification, organogenesis, and vertebrate developmental mechanisms. NSJ Bioreagents provides the Zebrafish Pax2 antibody to support research in neural development and tissue patterning.

Application Notes

Optimal dilution of the Zebrafish Pax2 antibody should be determined by the researcher.

Immunogen

An E.coli-derived zebrafish Pax2 recombinant protein (amino acids E240-Q282) was used as the immunogen for the Zebrafish Pax2 antibody. This antibody will detect the a and b isoforms.

Storage

After reconstitution, the Zebrafish Pax2 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.