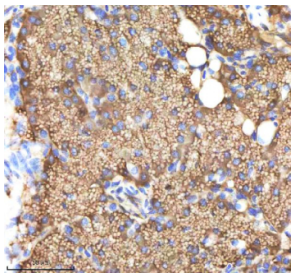
Zebrafish Ndr1 Antibody / Nodal-related 1 (RZ1247)

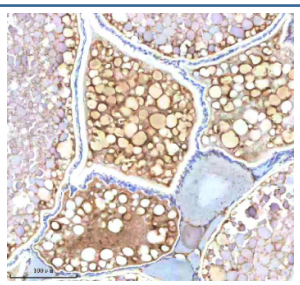
Catalog No.	Formulation	Size
RZ1247	0.5mg/ml if reconstituted with 0.2ml sterile DI water	100 ug

Bulk quote request

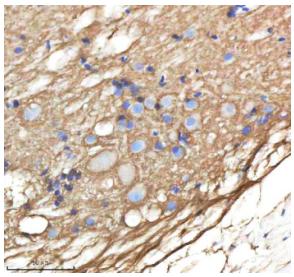
Availability	2-3 weeks
Species Reactivity	Zebrafish
Format	Antigen affinity purified
Host	Rabbit
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit Ig
Purity	Antigen affinity chromatography
Buffer	Lyophilized from 1X PBS with 2% Trehalose
UniProt	O13144
Applications	Immunohistochemistry (FFPE) : 2-5ug/ml
Limitations	This Zebrafish Ndr1 antibody is available for research use only.



Zebrafish Ndr1 Antibody Pancreas Tissue IHC. Immunohistochemistry staining of zebrafish Ndr1 protein using Zebrafish Ndr1 antibody, HRP-labeled secondary and DAB substrate. Ndr1 was detected in a paraffin-embedded section of zebrafish pancreas tissue. HIER: boil tissue sections in pH8 EDTA for 20 min and allow to cool before testing.



Zebrafish Ndr1 Antibody Ovary Tissue IHC. Immunohistochemistry staining of zebrafish Ndr1 protein using Zebrafish Ndr1 antibody, HRP-labeled secondary and DAB substrate. Ndr1 was detected in a paraffin-embedded section of zebrafish ovary tissue. HIER: boil tissue sections in pH8 EDTA for 20 min and allow to cool before testing.



Zebrafish Ndr1 Antibody Spinal Cord Tissue IHC. Immunohistochemistry staining of zebrafish Ndr1 protein using Zebrafish Ndr1 antibody, HRP-labeled secondary and DAB substrate. Ndr1 was detected in a paraffin-embedded section of zebrafish spinal cord tissue. HIER: boil tissue sections in pH8 EDTA for 20 min and allow to cool before testing.

Description

The Zebrafish Ndr1 antibody targets Ndr1 (Nodal-related 1), a secreted TGF-beta family ligand essential for mesendoderm induction, left-right axis formation, germ layer patterning, and early embryonic signaling in Danio rerio. Zebrafish, also known as Danio rerio, express ndr1 as one of the earliest inductive signals during blastula and gastrula stages. Ndr1 is secreted into the extracellular environment, where it activates Nodal pathway receptors on neighboring cells to initiate transcriptional programs that establish mesoderm and endoderm identity. Its activity is fundamental for setting up body axes, defining organizer territories, and coordinating cell movements during gastrulation.

Ndr1 belongs to the Nodal-related subfamily of TGF-beta ligands, sharing structural features with mammalian NODAL, including a conserved cysteine-knot domain required for receptor binding and signal transduction. In zebrafish embryos, ndr1 expression begins in the blastoderm margin and becomes enriched in the germ ring and organizer region, where it regulates gene networks governing cell fate specification. A Zebrafish Ndr1 antibody is suitable for detecting extracellular or pericellular expression patterns in developing mesendodermal tissues and regions undergoing Nodal-dependent morphogenetic signaling.

Functionally, Ndr1 is indispensable for establishing germ layer identity. It activates transcription factors such as sox32, mixer, gata5, and eomesodermin, driving endoderm and mesoderm specification. Ndr1 also coordinates cell polarity and migration during gastrulation, influencing convergence and extension movements that elongate the embryonic axis. In addition to mesendoderm induction, Ndr1 contributes to left-right patterning by providing upstream signals that regulate lateral plate mesoderm asymmetry and downstream effectors such as southpaw and pitx2. Loss of ndr1 disrupts germ layer formation, causes severe gastrulation defects, and leads to failures in axis specification, highlighting its essential developmental role.

Structurally, zebrafish Ndr1 contains a signal peptide for secretion, a pro-domain requiring cleavage, and a mature C-terminal domain responsible for receptor engagement. Following pro-domain removal, the active ligand binds a receptor complex composed of type I and type II serine-threonine kinase receptors, leading to Smad2/3 phosphorylation and transcriptional activation. Zebrafish ndr1 maps to chromosome 14, with regulatory elements responsive to maternal factors, organizer signals, and feedback control by Lefty proteins. Co-localization and expression studies detect Ndr1 in the blastoderm margin, germ ring, and dorsal organizer, often overlapping with mesendoderm markers such as sox17, goosecoid, and no tail.

A Zebrafish Ndr1 antibody is suitable for detecting Ndr1 in studies focused on germ layer induction, axis specification, Nodal pathway regulation, and early embryonic patterning in Danio rerio. Its extracellular distribution allows researchers to map morphogen gradients, analyze mutants affecting organizer function, evaluate deviations in mesendoderm formation, and investigate how signaling changes affect gastrulation movements and axial patterning. Ndr1 expression is central to understanding early vertebrate development, and this antibody supports research spanning developmental signaling, embryo morphology, and TGF-beta pathway biology. This reagent 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 Ndr1 antibody should be determined by the researcher.

Immunogen

E. coli-derived zebrafish Ndr1 recombinant protein (amino acids Q28-D296) was used as the immunogen for the Zebrafish Ndr1 antibody.

Storage

After reconstitution, the Zebrafish Ndr1 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.