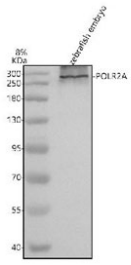
Zebrafish Polr2a Antibody / DNA-directed RNA polymerase subunit (RZ1272)

Catalog No.	Formulation	Size
RZ1272	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	A0A0R4IMS9
Applications	Western Blot : 0.5-1ug/ml
Limitations	This Zebrafish Polr2a antibody is available for research use only.



Western blot analysis of Polr2a protein using Zebrafish Polr2a antibody and zebrafish embryo tissue lysates. Predicted molecular weight ~217 kDa but commonly observed at up to ~270 kDa (human similarity).

Description

The Zebrafish Polr2a antibody targets Polr2a, the catalytic DNA-directed RNA polymerase subunit A, a core component of RNA polymerase II essential for transcription of protein-coding genes, mRNA processing, and global gene expression control in Danio rerio. Zebrafish, also known as Danio rerio, express polr2a ubiquitously from the earliest embryonic stages, reflecting its indispensable role in driving zygotic genome activation, tissue specification, and ongoing transcriptional output throughout development. Polr2a localizes to the nucleus, where it forms the central enzymatic core of RNA polymerase II, catalyzing the synthesis of precursor mRNAs and coordinating transcription elongation, splicing,

and chromatin-associated regulatory events.

Polr2a belongs to the highly conserved RNA polymerase II subunit family, containing a long C-terminal domain (CTD) composed of heptad repeats that undergo extensive phosphorylation. These dynamic modifications regulate transcriptional initiation, promoter escape, elongation, co-transcriptional mRNA capping, splicing factor recruitment, and transcription termination. In zebrafish embryos, polr2a expression is enriched in proliferative and transcriptionally active tissues, including brain primordia, somites, endodermal organs, retina, and hematopoietic territories. A Zebrafish Polr2a antibody is suitable for detecting strong nuclear expression across these regions, providing a marker for transcriptional activity and gene expression capacity.

Functionally, Polr2a is essential for nearly all aspects of gene expression. It drives synthesis of mRNAs, many noncoding RNAs, and regulatory transcripts required for cellular identity, proliferation, and differentiation. In zebrafish, Polr2a supports early zygotic genome activation, germ layer formation, organogenesis, and lineage commitment. Genetic disruption of polr2a results in severe developmental arrest due to failure of transcriptional initiation and defective mRNA production. Because transcriptional output underlies signaling pathways such as Wnt, Fgf, Notch, and Hedgehog, Polr2a indirectly regulates broad developmental networks and tissue-specific programs across the embryo.

Structurally, zebrafish Polr2a contains an enzymatic core that binds DNA and RNA, the multi-heptad CTD that coordinates processing factors, and interaction motifs that stabilize assembly of the multi-subunit polymerase II complex. Its CTD undergoes phosphorylation by CDK7 and CDK9 to transition between transcriptional states, linking chromatin signals to RNA output. The zebrafish polr2a gene maps to chromosome 3, regulated by maternal factors and early embryonic transcriptional machinery. Co-localization studies detect Polr2a in nuclei of actively transcribing cells, overlapping with markers such as phosphorylated Pol II CTD, transcription factor clusters, and RNA processing components.

A Zebrafish Polr2a antibody is suitable for detecting Polr2a in studies focused on transcriptional regulation, zygotic genome activation, RNA synthesis, chromatin-associated processes, and developmental gene expression in Danio rerio. Its nuclear localization provides clear visualization of transcriptionally active cell populations, enabling researchers to investigate gene expression defects in mutants, assess impacts of toxic exposures on transcriptional machinery, and map transcriptional landscapes across organogenesis. Because RNA polymerase II is fundamental to growth and differentiation, Polr2a is a widely used marker in developmental biology and gene regulation research. This antibody is supplied for research use by NSJ Bioreagents.

Application Notes

Optimal dilution of the Zebrafish Polr2a antibody should be determined by the researcher.

Immunogen

E. coli-derived zebrafish Polr2a recombinant protein (amino acids A1145-H1381) was used as the immunogen for the Zebrafish Polr2a antibody.

Storage

After reconstitution, the Zebrafish Polr2a antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.