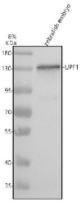
Zebrafish Upf1 Antibody / Rent1 / Regulator of nonsense transcripts 1 (RZ1010)

Catalog No.	Formulation	Size
RZ1010	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	F1RCY6
Applications	Western Blot : 0.5-1 ug/ml Immunohistochemistry (FFPE) : 2-5 ug/ml
Limitations	This Zebrafish Upf1 antibody is available for research use only.



Western blot analysis of Upf1 protein using Upf1 antibody and zebrafish embryo tissue lysate. The predicted molecular weight of Upf1 is 124 kDa.

Description

Zebrafish (Danio rerio) Upf1 antibody recognizes Upf1, also known as Rent1 or Regulator of nonsense transcripts 1, a central RNA helicase in the nonsense mediated mRNA decay pathway in Danio rerio. Upf1 is an ATP dependent RNA helicase encoded by the zebrafish upf1 gene on chromosome 24 and is essential for surveillance of mRNA integrity. By identifying and targeting aberrant transcripts containing premature termination codons, Upf1 maintains transcriptome fidelity during development. The protein localizes to the cytoplasm and nucleus, concentrating near ribosomes,

processing bodies, and mRNA decay centers where it co-localizes with Upf2, Upf3, exon junction complex components, and RNA binding proteins involved in mRNA turnover.

Regulator of nonsense transcripts 1 functions at the core of the nonsense mediated decay pathway by binding aberrant mRNAs and recruiting downstream effector complexes that trigger translational repression and degradation. Upf1 also participates in additional RNA quality control mechanisms including Staufen mediated decay, replication dependent decay, and regulation of long noncoding RNA stability. In zebrafish embryos, Upf1 activity is essential for early developmental transitions where rapid transcriptome remodeling occurs. Expression is enriched in proliferative tissues, neural progenitor zones, and developing somites, reflecting its role in coordinating RNA surveillance during periods of intense transcription.

Upf1 influences multiple developmental pathways by shaping the abundance of transcripts involved in differentiation, morphogenesis, and cell fate specification. Zebrafish studies demonstrate that impaired Upf1 function leads to neural tube defects, brain patterning abnormalities, disrupted muscle formation, and delayed organogenesis. These phenotypes result from accumulation of faulty mRNAs and dysregulated gene expression programs. Upf1 also supports embryonic viability by maintaining balanced expression of signaling components in pathways such as Wnt, FGF, and Notch, all of which depend on precise transcript regulation during tissue patterning.

Beyond its developmental roles, Upf1 participates in stress responses, where it modulates mRNA decay during nutrient limitation, oxidative stress, and environmental toxicity. The protein interfaces with translational machinery to modulate ribosome stalling and contributes to adaptive responses that preserve cellular homeostasis. Upf1 has also been linked to the DNA damage response through RNA-DNA hybrid resolution and interactions with genome stability factors. Zebrafish embryos, with their optical transparency and active transcriptional dynamics, provide a powerful model for studying these Upf1 dependent mechanisms in vivo.

Isoform variation of Upf1 may influence helicase activity, cofactor binding, or localization to processing bodies versus polysomes. Regulation of Upf1 involves phosphorylation cycles controlled by SMG1, SMG5, and SMG7, which guide transitions between transcript recognition, translational repression, and decay. These regulatory layers are conserved in zebrafish and contribute to the coordination of RNA quality control during development and stress adaptation.

This Zebrafish Upf1 antibody is suitable for detecting Regulator of nonsense transcripts 1 in research focused on RNA surveillance, nonsense mediated decay, transcriptome integrity, embryonic patterning, neural development, and stress response pathways in zebrafish. It supports studies examining RNA helicase activity, mRNA decay complexes, and developmental phenotypes associated with disrupted RNA quality control. NSJ Bioreagents offers this antibody as part of its zebrafish and RNA biology research collection.

Application Notes

Optimal dilution of the Zebrafish Upf1 antibody should be determined by the researcher.

Immunogen

An E.coli-derived zebrafish Upf1 recombinant protein (amino acids F538-D591) was used as the immunogen for the Zebrafish Upf1 antibody.

Storage

After reconstitution, the Zebrafish Upf1 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.