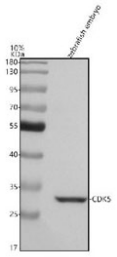
Zebrafish Cdk5 Antibody / Cyclin-dependent kinase 5 (RZ1087)

Catalog No.	Formulation	Size
RZ1087	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	Q9DE44
Applications	Western Blot : 0.5-1 ug/ml
Limitations	This Zebrafish Cdk5 antibody is available for research use only.



Western blot analysis of Cdk5 protein using Cdk5 antibody and zebrafish embryo tissue lysate. The predicted molecular weight of Cdk5 is ~33 kDa.

Description

Zebrafish (Danio rerio) Cdk5 antibody detects Cyclin-dependent kinase 5, a proline-directed serine threonine kinase that plays essential roles in neuronal development, cytoskeletal regulation, and synaptic function. In zebrafish, cdk5 is expressed early in the developing nervous system, with enriched localization in forebrain, hindbrain, and spinal neurons undergoing differentiation. Although part of the cyclin-dependent kinase family, Cdk5 is unique because it is primarily activated not by cyclins, but by neuronally enriched cofactors such as P35 and P39, which guide its functional specificity. These conserved characteristics make Cyclin-dependent kinase 5 antibody reagents valuable for mapping neuronal maturation and axonal patterning in zebrafish models.

Cdk5 regulates multiple processes required for proper neurodevelopment, including neuronal migration, axon pathfinding, dendritic architecture, and synapse formation. Its kinase activity influences actin and microtubule dynamics, guiding cytoskeletal remodeling during neuronal outgrowth. In zebrafish embryos, modulation of cdk5 expression disrupts brain patterning and neural circuit assembly, highlighting its role as a central coordinator of nervous system development. Beyond neuronal functions, Cdk5 contributes to cell cycle independent signaling relevant to muscle differentiation, endocrine regulation, and stress response pathways.

Subcellular localization of Cdk5 is both cytoplasmic and nuclear, reflecting its involvement in structural and transcriptional programs. Activated Cdk5 P35 or Cdk5 P39 complexes associate with membranes, growth cones, and synaptic sites, placing the kinase at key hubs of neuron-to-neuron communication. Known co localization partners include microtubule associated proteins, cytoskeletal regulators, and synaptic scaffolding components. Disruption of these interactions through genetic or environmental factors can alter neuronal connectivity and behavior, a phenomenon conserved across vertebrates.

In addition to developmental roles, Cdk5 participates in neuronal maintenance and survival. Dysregulated Cdk5 activity has been linked to neurodegenerative processes in mammalian systems, particularly when cofactor P35 is cleaved to form P25, resulting in aberrant hyperactivation. While zebrafish specific mechanisms remain under study, conservation of structural domains and regulatory pathways suggests similar vulnerability to dysregulated kinase signaling. This makes zebrafish a useful platform for examining early molecular events tied to neuronal stress, cytoskeletal collapse, and synaptic dysfunction.

Expression of cdk5 is not limited to neurons. Studies indicate additional roles in pancreatic development, skeletal muscle organization, and somite formation, where its influence on cytoskeletal assembly supports broader morphogenetic functions. The kinase also participates in pathways controlling hormone secretion and stress driven transcriptional responses. These diverse roles underscore its versatility as a regulator of cellular architecture and signaling.

The Zebrafish Cdk5 antibody is suitable for research applications such as immunohistochemistry, western blotting, and related assays aimed at monitoring Cdk5 expression across developmental stages. This reagent detects endogenous Cdk5 without implying epitope mapping or literature validated specificity. NSJ Bioreagents provides the Zebrafish Cdk5 antibody to support studies in neurodevelopment, cytoskeletal biology, synaptic regulation, and vertebrate embryo patterning.

Application Notes

Optimal dilution of the Zebrafish Cdk5 antibody should be determined by the researcher.

Immunogen

An E.coli-derived zebrafish Cdk5 recombinant protein (amino acids M1-Q226) was used as the immunogen for the Zebrafish Cdk5 antibody.

Storage

After reconstitution, the Zebrafish Cdk5 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.