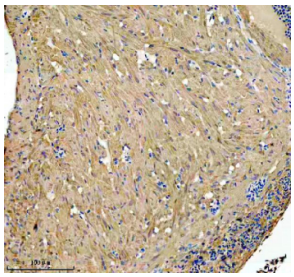
# Zebrafish Glud1 Antibody / Glud1a / Glud1b / Glutamate dehydrogenase (RZ1158)

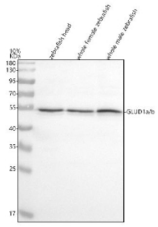
| Catalog No. | Formulation | Size |
|---|---|---|
| RZ1158 | 0.5mg/ml if reconstituted with 0.2ml sterile DI water | 100 ug |

**Bulk quote request**

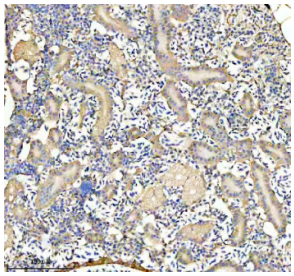
| | |
|---|---|
| **Availability** | 2-3 weeks |
| **Species Reactivity** | Zebrafish |
| **Format** | Antigen affinity purified |
| **Host** | Rabbit |
| **Clonality** | Polyclonal (rabbit origin) |
| **Isotype** | Rabbit Ig |
| **Purity** | Antigen affinity chromatography |
| **Buffer** | Lyophilized from 1X PBS with 2% Trehalose |
| **UniProt** | Q6NZ29 |
| **Localization** | Cytoplasm (Mitochondria) |
| **Applications** | Western Blot : 0.5-1 ug/ml<br>Immunohistochemistry (FFPE) : 2-5 ug/ml |
| **Limitations** | This Zebrafish Glud1 antibody is available for research use only. |



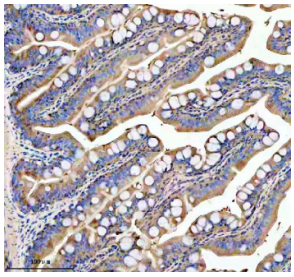
IHC staining of FFPE zebrafish brain tissue with Zebrafish Glud1 antibody, HRP secondary and DAB substrate. HIER: boil tissue sections in pH8 EDTA for 20 min and allow to cool before testing.



Western blot analysis of Glud1a/b protein using Zebrafish Glud1 antibody and 1) zebrafish head, 2) whole female zebrafish and 3) whole male zebrafish tissue lysate. Predicted molecular weight ~60 kDa.



IHC staining of FFPE zebrafish kidney tissue with Zebrafish Glud1 antibody, HRP secondary and DAB substrate. HIER: boil tissue sections in pH8 EDTA for 20 min and allow to cool before testing.



IHC staining of FFPE zebrafish colon tissue with Zebrafish Glud1 antibody, HRP secondary and DAB substrate. HIER: boil tissue sections in pH8 EDTA for 20 min and allow to cool before testing.

## Description

Zebrafish (Danio rerio) Glud1 antibody detects Glud1, a mitochondrial enzyme that catalyzes the reversible oxidative deamination of glutamate to alpha-ketoglutarate and ammonia. In zebrafish, this enzymatic activity is encoded by two paralogs, glud1a and glud1b, both of which produce functional Glutamate dehydrogenase. This enzyme is central to amino acid metabolism, nitrogen handling, neurotransmitter cycling, and the integration of carbon and nitrogen flux within the mitochondria. Because glutamate plays essential metabolic and signaling roles in developing tissues, Zebrafish Glud1 antibody reagents support research in neurobiology, metabolic regulation, hepatic physiology, and vertebrate developmental metabolism.

Glutamate dehydrogenase catalyzes a key reaction linking amino acid metabolism with the tricarboxylic acid (TCA) cycle. By converting glutamate into alpha-ketoglutarate, Glud1 supplies anaplerotic substrates that fuel oxidative phosphorylation and biosynthetic pathways. In zebrafish embryos, glud1a and glud1b expression is enriched in metabolically demanding tissues such as the brain, liver, kidney, musculature, and developing pancreas. These regions depend on Glud1 activity to maintain energy balance, support protein turnover, and regulate the availability of metabolic intermediates during rapid tissue growth.

In the nervous system, Glud1 contributes to glutamate homeostasis and neurotransmitter cycling. Glutamate is the primary excitatory neurotransmitter in vertebrates, and its intracellular concentration must be tightly regulated to prevent excitotoxicity. Glutamate dehydrogenase helps buffer cytosolic glutamate pools, reducing excess levels and supporting metabolic pathways that depend on glutamate-derived carbon. In zebrafish neural development, this regulation influences synaptic maturation, neuronal survival, and circuit formation.

Beyond its neuronal roles, Glud1 plays a prominent part in hepatic and renal nitrogen metabolism. The enzyme contributes to ammonium assimilation or release depending on cellular conditions, helping regulate nitrogen distribution across tissues. In zebrafish larvae, these processes support detoxification, amino acid synthesis, and metabolic transitions that occur as the yolk is depleted and exogenous feeding begins. Disruptions in Glud1 activity can lead to

metabolic stress, impaired growth, or altered tissue differentiation.

At the biochemical level, Glutamate dehydrogenase exists as a hexameric mitochondrial matrix enzyme with regulatory sites responsive to ADP, GTP, NADH, and leucine. This allosteric regulation allows Glud1 to act as a metabolic sensor that adjusts amino acid flux in response to energetic state. Zebrafish Glud1a and Glud1b maintain these conserved regulatory features, enabling embryos to adapt to changing metabolic demands during organogenesis.

Glud1 also participates in redox balance. By generating NADH during oxidative deamination, it contributes to the mitochondrial electron transport chain and influences reactive oxygen species production. These connections tie Glud1 function to cell survival, oxidative stress responses, and overall mitochondrial health.

A Zebrafish Glud1 antibody is suitable for research applications such as western blotting, immunohistochemistry, and assays examining amino acid metabolism, mitochondrial function, neurotransmitter regulation, and developmental energy balance. This antibody targets Glud1a and Glud1b for studies involving glutamate metabolism, nitrogen handling, and vertebrate developmental physiology. NSJ Bioreagents provides the Zebrafish Glud1 antibody to support research in mitochondrial metabolism and neurochemical regulation.

## Application Notes

Optimal dilution of the Zebrafish Glud1 antibody should be determined by the researcher.

## Immunogen

An E.coli-derived zebrafish Glud1a/b recombinant protein (amino acids S40-A539) was used as the immunogen for the Zebrafish Glud1 antibody. This antibody will detect the a and b isoforms.

## Storage

After reconstitution, the Zebrafish Glud1 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.