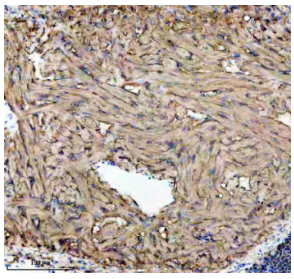
Zebrafish Gls Antibody / Glutaminase / Isoforms a & b (RZ1047)

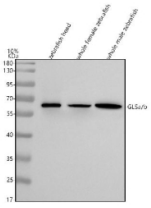
Catalog No.	Formulation	Size
RZ1047	0.5mg/ml if reconstituted with 0.2ml sterile DI water	100 ug

Bulk quote request

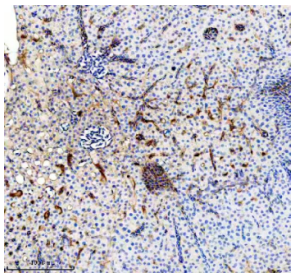
Availability	2-3 weeks
Species Reactivity	Zebrafish
Format	Antigen affinity purified
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit Ig
Purity	Antigen affinity chromatography
Buffer	Lyophilized from 1X PBS with 2% Trehalose
UniProt	A0A8M9PRT8
Localization	Cytoplasm
Applications	Western Blot : 0.5-1 ug/ml Immunohistochemistry (FFPE) : 2-5 ug/ml
Limitations	This Zebrafish Gls antibody is available for research use only.



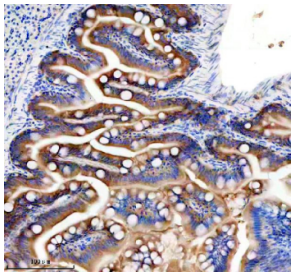
IHC staining of FFPE zebrafish heart tissue with Zebrafish Gls antibody. HIER: boil tissue sections in pH8 EDTA for 20 min and allow to cool before testing.



Western blot analysis of Glsa/b protein using Zebrafish Gls antibody and 1) zebrafish head, 2) whole female zebrafish and 3) whole male zebrafish tissue lysate. Predicted molecular weight: ~ ~36 kDa (isoform a) and ~63 kDa (isoform b).



IHC staining of FFPE zebrafish bile duct tissue with Zebrafish Gls antibody. 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 Gls antibody. HIER: boil tissue sections in pH8 EDTA for 20 min and allow to cool before testing.

Description

Zebrafish (Danio rerio) Gls antibody recognizes Glutaminase, detecting isoforms a and b encoded by the zebrafish gls gene. Glutaminase is a key mitochondrial enzyme that catalyzes the conversion of glutamine to glutamate and ammonia, initiating the glutaminolysis pathway. This reaction provides developing tissues with essential metabolic intermediates for ATP production, nucleotide synthesis, neurotransmitter generation, and redox balance. In Danio rerio, Gls is expressed strongly during early embryogenesis, with enriched localization in the developing brain, retina, somites, heart, kidney, notochord, and rapidly differentiating endodermal organs such as liver and pancreas. Subcellular localization is predominantly mitochondrial, where Glutaminase integrates into central metabolic circuits that support rapid growth and cellular differentiation.

Glutaminase plays a foundational role in shaping metabolic flexibility during early development. Zebrafish embryos undergo significant metabolic transitions as they progress from yolk-derived energy stores toward autonomous oxidative metabolism. Gls enables these transitions by supplying glutamate for the TCA cycle, generating alpha-ketoglutarate for anaplerotic flux, and supporting mitochondrial ATP synthesis. Because metabolic state feeds directly into developmental signaling pathways, Gls influences cell proliferation, differentiation timing, and tissue-specific growth programs. Isoforms a and b may provide fine-tuned metabolic control across tissues with differing energy or biosynthetic demands.

In neural development, Gls activity is especially critical. Glutamate produced by Glutaminase serves as a precursor for neurotransmitter pools and fuels energy production in neural progenitors and differentiating neurons. Gls expression in the developing brain and retina supports axonal growth, synaptic maturation, and neuroepithelial proliferation. Altered glutaminolysis can disrupt neural circuit formation, impair neurotransmission-related metabolism, and reduce the resilience of neurons undergoing rapid structural remodeling.

Gls also supports cardiac and skeletal muscle development. As contractile tissues require high mitochondrial activity, Glutaminase-derived carbon enters the TCA cycle to sustain oxidative phosphorylation and maintain ATP availability. In the forming heart, Gls contributes to metabolic maturation and early contractile function. In somites and emerging musculature, Gls supports myofibril organization, redox balance, and mitochondrial integrity.

Endoderm-derived organs also rely on Glutaminase. Developing liver and pancreas require robust amino acid metabolism to fuel biosynthesis and growth. Gls provides substrates for nucleotide production, glutathione synthesis, and multiple biosynthetic branches necessary for organ expansion. Because amino acid metabolism influences insulin signaling, stress responses, and transcriptional regulation, Glutaminase helps coordinate metabolic status with organogenesis.

Gls additionally participates in oxidative and metabolic stress responses. Under nutrient fluctuation, hypoxia, or

mitochondrial challenge, Glutaminase activity helps maintain TCA cycle flux and redox stability. Zebrafish embryos, which frequently encounter metabolic shifts during rapid growth, rely on Gls for survival and proper developmental progression. Perturbation of gls expression can lead to reduced ATP production, increased reactive oxygen species, and developmental abnormalities across multiple organ systems.

This Zebrafish Gls antibody is suitable for detecting Glutaminase isoforms a and b in research focused on mitochondrial metabolism, neural development, cardiac and muscle maturation, amino acid utilization, and metabolic stress responses in zebrafish. It supports studies examining glutaminolysis, TCA cycle anaplerosis, and developmental phenotypes resulting from altered metabolic capacity. NSJ Bioreagents provides this reagent within its zebrafish and metabolic biology antibody collection.

Application Notes

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

Immunogen

An E.coli-derived zebrafish Glsa/b recombinant protein (amino acids K53-S312) was used as the immunogen for the Zebrafish Gls antibody. This antibody will detect the a and b isoforms.

Storage

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