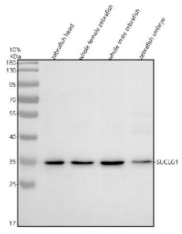
Zebrafish Suclg1 Antibody / Succinyl-CoA synthetase subunit alpha (RZ1162)

Catalog No.	Formulation	Size
RZ1162	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	Q66I58
Applications	Western Blot : 0.5-1 ug/ml
Limitations	This Zebrafish Suclg1 antibody is available for research use only.



Western blot analysis of Suclg1 protein using Zebrafish Suclg1 antibody and 1) zebrafish head, 2) whole female zebrafish, 3) whole male zebrafish and 4) zebrafish embryo tissue lysate. Predicted molecular weight ~34 kDa.

Description

Zebrafish (Danio rerio) Suclg1 antibody detects Suclg1, the alpha subunit of the mitochondrial Succinyl-CoA synthetase enzyme that catalyzes a critical substrate-level phosphorylation step within the tricarboxylic acid (TCA) cycle. Encoded by the suclg1 gene in zebrafish, Succinyl-CoA synthetase subunit alpha forms a heterodimer with a beta subunit to convert succinyl-CoA and ADP or GDP into succinate and ATP or GTP. This reaction is essential for linking TCA cycle carbon flux with direct nucleotide generation, providing an important energetic buffer in metabolically active cells. Because early vertebrate development relies heavily on mitochondrial function and efficient ATP production, Zebrafish Suclg1 antibody reagents support research in mitochondrial metabolism, developmental energetics, and tissue-specific bioenergetic

regulation.

Suclg1 participates in one of the few substrate-level phosphorylation reactions that occur within the mitochondria. By enabling ATP or GTP production independent of oxidative phosphorylation, Suclg1 helps maintain nucleotide pools when electron transport chain activity fluctuates. In zebrafish, suclg1 expression is enriched in tissues with high metabolic demand, including developing skeletal and cardiac muscle, liver, brain, and endoderm-derived organs. These regions require continuous ATP regeneration to support growth, morphogenesis, and the biosynthetic activities that accompany organ development.

Defects in Suclg1 function disrupt multiple metabolic pathways. Succinyl-CoA is a central intermediate in not only the TCA cycle but also heme synthesis, amino acid catabolism, and ketone body utilization. Impaired conversion to succinate can create metabolic bottlenecks that affect energy balance, redox state, and biosynthetic capacity. In vertebrates, SUCLG1 deficiency is associated with mitochondrial encephalomyopathy and lactic acidosis, reflecting the enzyme's importance in managing metabolic flux. Zebrafish models provide a tractable system to study conserved Suclg1 functions and evaluate how mitochondrial metabolism influences embryonic patterning and survival.

At the molecular level, Suclg1 contains conserved catalytic motifs that bind CoA derivatives and coordinate phosphate transfer. The heterodimeric Succinyl-CoA synthetase complex can utilize either ADP or GDP, depending on the associated beta subunit isoform, allowing metabolic flexibility across tissues. Subcellular localization is exclusively mitochondrial, where Suclg1 associates with other TCA cycle enzymes in the matrix. This close arrangement enables rapid exchange of intermediates and supports efficient metabolic throughput.

Suclg1 also contributes to cellular adaptation during metabolic stress. When oxidative phosphorylation is limited, substrate-level phosphorylation through Succinyl-CoA synthetase can provide a temporary buffer against ATP depletion. This mechanism is particularly relevant during zebrafish embryogenesis, when fluctuating oxygen availability, nutrient shifts, and rapid tissue growth place variable demands on mitochondrial function. By sustaining nucleotide levels under these conditions, Suclg1 helps maintain developmental progression and protect against energy crisis.

Because mitochondrial metabolism intersects with signaling pathways such as AMPK, mTOR, and hypoxia-responsive networks, Suclg1 activity can indirectly influence cell growth, proliferation, and survival. Zebrafish studies allow visualization of these metabolic-signaling interactions at the whole-organism level, providing insights into how mitochondrial enzymes integrate energetic and developmental cues.

A Zebrafish Suclg1 antibody is suitable for research applications such as western blotting, immunohistochemistry, and assays examining TCA cycle function, ATP generation, mitochondrial stress responses, and developmental bioenergetics. This antibody targets Succinyl-CoA synthetase subunit alpha for studies involving mitochondrial physiology and vertebrate metabolic regulation. NSJ Bioreagents provides the Zebrafish Suclg1 antibody to support research in energy metabolism and developmental biology.

Application Notes

Optimal dilution of the Zebrafish Suclg1 antibody should be determined by the researcher.

Immunogen

An E.coli-derived zebrafish Suclg1 recombinant protein (amino acids H3-L324) was used as the immunogen for the Zebrafish Suclg1 antibody.

Storage

After reconstitution, the Zebrafish Suclg1 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.