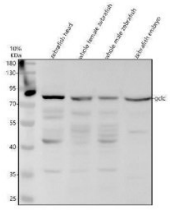
Zebrafish GCLC Antibody / Glutamate-Cysteine Ligase Antibody (RZ1375)

Catalog No.	Formulation	Size
RZ1375	0.5mg/ml if reconstituted with 0.2ml sterile DI water	100 ug

Bulk quote request

Species Reactivity	Zebrafish
Format	Antigen affinity purified
Host	Rabbit
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit Ig
Buffer	Lyophilized from a buffered saline solution containing 2% trehalose. Reconstitute with 0.2 mL distilled water to yield a final antibody concentration of 500 ug/mL.
UniProt	Q6NV35
Applications	Western Blot : 0.5-1ug/ml
Limitations	This Zebrafish GCLC Antibody / Glutamate-Cysteine Ligase Antibody is available for research use only.



Zebrafish GCLC Antibody WB. Western blot analysis of GCLC using Zebrafish GCLC Antibody / Glutamate-Cysteine Ligase Antibody demonstrates a prominent immunoreactive band at approximately 80 kDa in zebrafish head, whole female, whole male, and embryo tissue lysates. The observed molecular weight is slightly higher than the predicted size of approximately 73 kDa, which may reflect post-translational modification or differences in electrophoretic migration. GCLC is the catalytic subunit of glutamate-cysteine ligase, the rate-limiting enzyme in glutathione biosynthesis and a central regulator of cellular antioxidant defense pathways. Consistent detection across developmental and adult tissue samples supports broad expression of GCLC and confirms recognition of the target protein. The observed immunoreactivity demonstrates the utility of this antibody for studies of glutathione metabolism, oxidative stress responses, redox regulation, detoxification pathways, developmental biology, and cellular antioxidant defense mechanisms in zebrafish models.

Description

Zebrafish GCLC Antibody / Glutamate-Cysteine Ligase Antibody recognizes Glutamate-Cysteine Ligase Catalytic Subunit (GCLC), the catalytic component of glutamate-cysteine ligase, the rate-limiting enzyme in glutathione biosynthesis. GCLC catalyzes the first and committed step in glutathione production by promoting the formation of gamma-glutamylcysteine

from glutamate and cysteine. Because glutathione serves as one of the most important intracellular antioxidants, GCLC plays a central role in cellular redox regulation, detoxification pathways, and protection against oxidative stress.

Glutathione is required for maintenance of cellular homeostasis and participates in numerous biological processes including reactive oxygen species scavenging, xenobiotic metabolism, protein redox regulation, and cellular signaling. As the catalytic subunit of glutamate-cysteine ligase, GCLC directly influences intracellular glutathione availability and therefore impacts the ability of cells to respond to oxidative challenges. Regulation of GCLC expression and activity is closely linked to antioxidant response pathways and adaptive cellular stress mechanisms.

Zebrafish have become an important vertebrate model for studying oxidative stress, toxicology, developmental biology, and regenerative processes. Because antioxidant defense pathways are highly conserved among vertebrates, zebrafish provide a valuable system for investigating how glutathione metabolism contributes to development, tissue homeostasis, and environmental stress responses. Expression of GCLC is associated with tissues that require robust antioxidant protection and efficient detoxification capacity, making it a useful marker for studies of redox biology and cellular stress regulation.

Alterations in glutathione metabolism can influence development, cellular survival, regeneration, and susceptibility to oxidative injury. Consequently, GCLC is frequently investigated in research involving toxicological responses, neurobiology, liver biology, metabolic regulation, environmental exposure studies, and disease models characterized by oxidative stress. Monitoring GCLC expression can provide valuable insight into the molecular mechanisms that regulate antioxidant defense and cellular adaptation to physiological and environmental challenges.

At NSJ Bioreagents, we provide highly validated antibodies for developmental biology, redox biology, toxicology, and zebrafish research applications. Zebrafish GCLC Antibody / Glutamate-Cysteine Ligase Antibody is useful for investigations of glutathione biosynthesis, oxidative stress responses, antioxidant defense pathways, detoxification mechanisms, and cellular redox regulation. Continued study of GCLC is advancing our understanding of how vertebrate organisms maintain cellular homeostasis and respond to oxidative stress.

Researchers studying glutathione metabolism, antioxidant defense mechanisms, and oxidative stress signaling may also be interested in our GCLC Antibody page.

This Zebrafish antibody is part of a broader Zebrafish / Danio rerio antibody panel offered by NSJ Bioreagents.

Application Notes

The optimal working dilution of the Zebrafish GCLC Antibody / Glutamate-Cysteine Ligase Antibody should be determined empirically by the investigator.

Immunogen

An E.coli-derived Zebrafish GCLC recombinant protein (amino acids E13-K618) was used as the immunogen for the Zebrafish GCLC Antibody.

Storage

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

Alternate Names

Zebrafish GCLC Antibody, Zebrafish Glutamate-Cysteine Ligase Antibody, Zebrafish Glutamate Cysteine Ligase Catalytic Subunit Antibody, Zebrafish Gamma-Glutamylcysteine Synthetase Antibody, Zebrafish Glutathione Synthesis Enzyme Antibody, Zebrafish Antioxidant Defense Protein Antibody