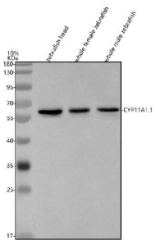
Zebrafish Cyp11a1.1 Antibody / Cyp11a1 (RZ1213)

Catalog No.	Formulation	Size
RZ1213	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	Q7SYJ6
Applications	Western Blot : 0.5-1ug/ml
Limitations	This Zebrafish Cyp11a1.1 antibody is available for research use only.



Western blot analysis of Cyp11a1.1 protein using Zebrafish Cyp11a1.1 antibody and 1) zebrafish head, 2) whole female zebrafish and 3) whole male zebrafish tissue lysate. Predicted molecular weight ~59 kDa.

Description

The Zebrafish Cyp11a1.1 antibody targets Cyp11a1.1, a mitochondrial cytochrome P450 enzyme essential for steroidogenesis, endocrine development, and reproductive tissue differentiation in Danio rerio. Zebrafish, also known as Danio rerio, possess two paralogs, cyp11a1 and cyp11a1.1, derived from the teleost genome duplication. Cyp11a1.1 encodes the cholesterol side-chain cleavage enzyme that catalyzes the conversion of cholesterol to pregnenolone, the first and rate-limiting step in steroid hormone biosynthesis. Localized to the inner mitochondrial membrane, Cyp11a1.1 plays a central role in establishing steroidogenic capacity in developing gonads, interrenal tissue, and other endocrine organs.

Cyp11a1.1 belongs to the cytochrome P450 superfamily, which includes enzymes that mediate oxidative metabolic reactions critical for hormone synthesis, detoxification, and signaling. In zebrafish embryos, cyp11a1.1 expression is strongly associated with steroidogenic cell clusters in the forming interrenal gland, a structure analogous to the mammalian adrenal cortex. As development proceeds, its expression expands to maturing gonads and tissues requiring steroid hormone production. A Zebrafish Cyp11a1.1 antibody is suitable for research applications examining mitochondrial-associated steroidogenic domains, endocrine differentiation, and the spatial establishment of hormone-producing tissues.

Cyp11a1.1-dependent pregnenolone synthesis influences pathways regulating stress responses, reproductive axis activation, and metabolic homeostasis. In early development, its activity supports the formation and function of the hypothalamic-pituitary-interrenal axis, which guides cortisol production and stress reactivity. In gonadal differentiation, Cyp11a1.1 contributes to the biosynthesis of sex steroids that regulate germ cell maturation, folliculogenesis, and testicular development. Its function also integrates with signaling systems such as Wnt, Fgf, and Tgf-beta that coordinate endocrine and organogenic programs. Perturbations of cyp11a1.1 expression disrupt steroid hormone production, altering developmental timing, sex ratios, and stress physiology in zebrafish models.

Structurally, zebrafish Cyp11a1.1 contains the conserved transmembrane helix, heme-binding region, and catalytic core typical of mitochondrial cytochrome P450 enzymes. These features enable electron transfer from ferredoxin and support sequential oxidative cleavages of the cholesterol side chain. Zebrafish cyp11a1.1 maps to chromosome 14, while its paralog cyp11a1 resides on chromosome 15, with distinct expression profiles reflecting their divergence. Co-localization studies frequently detect Cyp11a1.1 alongside markers of steroidogenic cells such as StAR protein, Hsd3b, and mitochondrial metabolic indicators. This co-expression highlights its placement within the broader steroid hormone biosynthesis network.

A Zebrafish Cyp11a1.1 antibody is suitable for detecting Cyp11a1.1 in studies focused on steroidogenesis, interrenal gland formation, gonad differentiation, and endocrine system development in Danio rerio. Its mitochondrial localization makes it valuable for mapping hormone-producing territories in embryos and assessing functional maturation of endocrine tissues. Researchers frequently use Cyp11a1.1 expression patterns to evaluate endocrine disruption, stress axis regulation, and reproductive biology. These applications support investigations into vertebrate endocrine physiology, developmental metabolism, and gene regulatory frameworks controlling steroid hormone production, and this reagent is supplied for research use by NSJ Bioreagents.

Application Notes

Optimal dilution of the Zebrafish Cyp11a1.1 antibody should be determined by the researcher.

Immunogen

E. coli-derived zebrafish Cyp11a1.1 recombinant protein (amino acids K96-K487) was used as the immunogen for the Zebrafish Cyp11a1.1 antibody.

Storage

After reconstitution, the Zebrafish Cyp11a1.1 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.