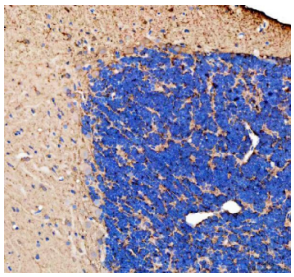
Zebrafish Gap43 Antibody / Growth associated protein 43 (RZ1031)

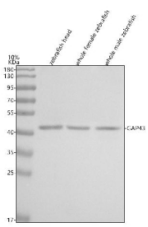
Catalog No.	Formulation	Size
RZ1031	0.5mg/ml if reconstituted with 0.2ml sterile DI water	100 ug

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	Q90462
Applications	Western Blot : 0.5-1 ug/ml Immunohistochemistry (FFPE) : 2-5 ug/ml
Limitations	This Zebrafish Gap43 antibody is available for research use only.



Zebrafish Gap43 Antibody Brain IHC. Immunohistochemistry staining of FFPE zebrafish brain tissue with Zebrafish Gap43 antibody. HIER: boil tissue sections in pH8 EDTA for 20 min and allow to cool before testing.



Zebrafish Gap43 Antibody WB. Western blot analysis of Gap43 protein using Zebrafish Gap43 antibody and 1) zebrafish head 2) whole female zebrafish and 3) whole male zebrafish tissue lysate. Predicted molecular weight ~25 kDa but commonly observed at ~43 kDa.

Description

Zebrafish (Danio rerio) Gap43 antibody recognizes Growth associated protein 43, a conserved neuron-enriched protein encoded by the zebrafish gap43 gene on chromosome 6. Gap43 is a hallmark component of axonal growth cones and plays essential roles in neural development, axon pathfinding, plasticity, and regenerative responses. The protein is intrinsically disordered and associates with the inner leaflet of the plasma membrane through its N-terminal domain, where it influences cytoskeletal dynamics and vesicle trafficking. In Danio rerio, Gap43 is strongly expressed in the developing brain, spinal cord, retinal ganglion cells, hindbrain motor nuclei, and peripheral sensory neurons. Subcellular localization is prominent in growth cones, axonal membranes, and presynaptic regions, reflecting its involvement in axonal extension and synaptic maturation.

Growth associated protein 43 is crucial for coordinating the structural and signaling machinery that drives axonal outgrowth. Gap43 interacts with components of the actin cytoskeleton, modulating actin polymerization and growth cone motility. It also binds calmodulin in a phosphorylation-dependent manner, linking calcium signaling to cytoskeletal remodeling and membrane dynamics. In zebrafish embryos, Gap43 supports key developmental processes such as midline crossing, formation of major axon tracts, spinal motor neuron projection, and refinement of early neural circuits. Its expression is highest during periods of rapid axonal growth, decreasing as neurons mature.

Gap43 is tightly regulated by protein kinase C mediated phosphorylation at its N-terminal serine residue, which controls its interactions with calmodulin and cytoskeletal regulators. This phosphorylation-dependent switch is conserved in zebrafish and plays a critical role in directing growth cone turning, branching, and responses to extracellular cues. Because proper axon guidance requires integration of signaling gradients with cytoskeletal behavior, Gap43 serves as a key mediator linking intracellular signaling pathways to dynamic structural changes.

Developmental studies show that disruption of gap43 impairs retinal ganglion cell axon navigation, reduces brain commissure formation, and compromises peripheral nerve trajectory alignment. Gap43 is also essential for regenerative growth in zebrafish, which exhibit robust neural regeneration compared to mammals. Following injury, gap43 expression reactivates in regenerating neurons and supports axonal re-extension and synaptic restoration. This makes zebrafish an important system for studying conserved mechanisms of neural repair and plasticity, with Gap43 serving as a sensitive molecular marker for regenerative activity.

Gap43 functions within broader signaling pathways including calcium-dependent cascades, PKC signaling, and cytoskeletal regulatory networks that control neuronal morphogenesis. Because neuronal migration, axon guidance, and synaptic refinement all rely on coordinated membrane and cytoskeletal behavior, Gap43 contributes to shaping neural connectivity across early brain regions. Isoform variation may exist due to alternative regulatory elements in zebrafish, potentially tuning Gap43 expression during distinct phases of neural development or regeneration.

This Zebrafish Gap43 antibody is suitable for detecting Growth associated protein 43 in research focused on axonal development, growth cone dynamics, neural circuit assembly, regenerative neuroscience, and embryonic neurobiology in zebrafish. It supports studies examining cytoskeletal remodeling, PKC-dependent signaling, axon guidance pathways, and developmental phenotypes arising from altered neuronal structural regulation. NSJ Bioreagents provides this reagent within its zebrafish and neurodevelopmental research collection.

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

Application Notes

Optimal dilution of the Zebrafish Gap43 antibody should be determined by the researcher.

Immunogen

A synthetic peptide corresponding to a sequence at the N-terminus of zebrafish Gap43 was used as the immunogen for the Zebrafish Gap43 antibody.

Storage

After reconstitution, the Zebrafish Gap43 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.