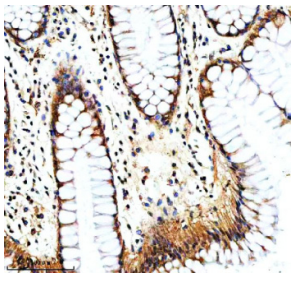
NAV1 Antibody / Neuron navigator 1 (FY13309)

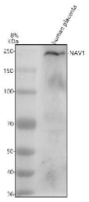
Catalog No.	Formulation	Size
FY13309	Adding 0.2 ml of distilled water will yield a concentration of 500 ug/ml	100 ug

Bulk quote request

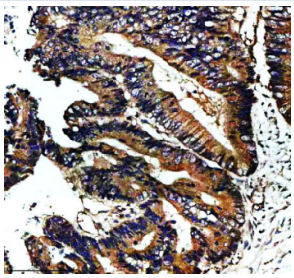
Availability	1-2 days
Species Reactivity	Human
Format	Lyophilized
Host	Rabbit
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit IgG
Purity	Immunogen affinity purified
Buffer	Each vial contains 4 mg Trehalose, 0.9 mg NaCl, 0.2 mg Na2HPO4.
UniProt	Q8NEY1
Localization	Cytoplasm (cytoskeleton)
Applications	Western Blot : 0.25-0.5ug/ml Immunohistochemistry : 2-5ug/ml Immunofluorescence : 5ug/ml ELISA : 0.1-0.5ug/ml
Limitations	This NAV1 antibody is available for research use only.



Immunohistochemical staining of NAV1 using anti-NAV1 antibody. NAV1 was detected in a paraffin-embedded section of human colon cancer tissue. Heat mediated antigen retrieval was performed in EDTA buffer (pH 8.0, epitope retrieval solution). The tissue section was blocked with 10% goat serum. The tissue section was then incubated with 2 ug/ml rabbit anti-NAV1 antibody overnight at 4oC. Peroxidase Conjugated Goat Anti-rabbit IgG was used as secondary antibody and incubated for 30 minutes at 37oC. The tissue section was developed using an HRP secondary and DAB substrate.



Western blot analysis of NAV1 using anti-NAV1 antibody. Electrophoresis was performed on a 8% SDS-PAGE gel at 80V (Stacking gel) / 120V (Resolving gel) for 2 hours. Lane 1: human placenta tissue lysates. After electrophoresis, proteins were transferred to a nitrocellulose membrane at 150 mA for 50-90 minutes. Blocked the membrane with 5% non-fat milk/TBS for 1.5 hour at RT. The membrane was incubated with rabbit anti-NAV1 antibody at 0.5 ug/ml overnight at 4oC, then washed with TBS-0.1%Tween 3 times with 5 minutes each and probed with a goat anti-rabbit IgG-HRP secondary antibody at a dilution of 1:5000 for 1.5 hour at RT. The signal was developed using an ECL Plus Western Blotting Substrate. A predominant band is detected between an approximately 230 and 250 kDa, running above the predicted ~202 kDa size but consistent with the higher apparent molecular weight expected for a large coiled-coil cytoskeletal protein with extensive post translational modification.



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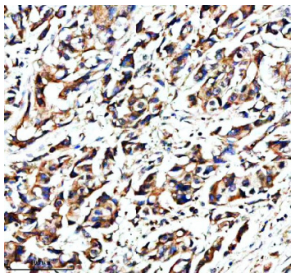
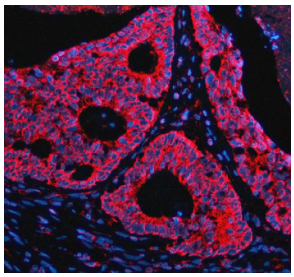


Immunohistochemical staining of NAV1 using anti-NAV1 antibody. NAV1 was detected in a paraffin-embedded section of human breast cancer tissue. Heat mediated antigen retrieval was performed in EDTA buffer (pH 8.0, epitope retrieval solution). The tissue section was blocked with 10% goat serum. The tissue section was then incubated with 2 ug/ml rabbit anti-NAV1 antibody overnight at 4oC. Peroxidase Conjugated Goat Anti-rabbit IgG was used as secondary antibody and incubated for 30 minutes at 37oC. The tissue section was developed using an HRP secondary and DAB substrate.



Immunofluorescent staining of NAV1 using anti-NAV1 antibody (red). NAV1 was detected in a paraffin-embedded section of human colon cancer tissue. Heat mediated antigen retrieval was performed in EDTA buffer (pH 8.0, epitope retrieval solution). The tissue section was blocked with 10% goat serum. The tissue section was then incubated with 5 ug/ml rabbit anti-NAV1 antibody overnight at 4oC. Cy3 Conjugated Goat Anti-Rabbit IgG was used as secondary antibody at 1:500 dilution and incubated for 30 minutes at 37oC. The section was counterstained with DAPI nuclear stain (blue). Visualize using a fluorescence microscope and filter sets appropriate for the label used.

Description

NAV1 antibody detects Neuron navigator 1, a cytoplasmic and microtubule-associated protein encoded by the NAV1 gene on chromosome 1q32.1. NAV1 belongs to the neuron navigator family of cytoskeletal regulators that guide neuronal migration, axon pathfinding, and cell motility. Structurally, NAV1 contains a calponin homology (CH) domain, coiled-coil regions, and a C-terminal AAA ATPase domain that enable its interaction with actin filaments and microtubules. These domains provide NAV1 with the ability to influence cytoskeletal organization and intracellular transport dynamics, particularly during nervous system development.

NAV1 antibody identifies a protein that localizes primarily in the cytoplasm and along microtubule tracks, where it regulates growth cone navigation and neurite extension. The NAV1 protein interacts with microtubule plus-end tracking proteins (+TIPs) and motor proteins to guide axonal growth toward appropriate targets. It is expressed in neurons, glial cells, and various epithelial tissues, with high expression observed in the developing brain, spinal cord, and retina. Through its coordination of cytoskeletal dynamics, NAV1 contributes to processes such as neuronal polarization, synaptic

connectivity, and axon regeneration.

The NAV1 gene produces several isoforms via alternative splicing, allowing tissue-specific regulation of its functions. NAV1 also participates in non-neuronal cell migration and wound healing by influencing actin remodeling and focal adhesion turnover. The protein's CH domain mediates actin binding, while its ATPase domain is thought to regulate conformational changes during cytoskeletal rearrangement. NAV1 functions in signaling pathways controlled by small GTPases such as Rac1 and Cdc42, which govern directional cell movement and axonal pathfinding.

Clinical research links NAV1 dysregulation to neurodevelopmental disorders and brain tumors. Genetic studies have associated NAV1 variants with autism spectrum disorders and schizophrenia, suggesting roles in neuronal wiring and cortical organization. In gliomas, altered NAV1 expression correlates with tumor cell invasiveness, consistent with its role in motility regulation. Additionally, NAV1 is implicated in axon regeneration following injury, making it a potential therapeutic target for neurorepair strategies.

Structurally, the AAA ATPase-like domain of NAV1 shares similarity with microtubule-severing enzymes, though it lacks catalytic residues, indicating a structural or regulatory rather than enzymatic role. Its large size and multi-domain nature allow it to serve as a scaffold linking actin and microtubule cytoskeletons. NAV1 is also thought to influence intracellular transport of signaling endosomes and synaptic vesicles in neurons. The gene's expression is developmentally regulated by transcription factors including CREB and NFAT, reflecting its integration into neuronal growth programs.

Immunohistochemical staining using NAV1 antibody shows cytoplasmic and perinuclear localization in neurons and glial cells, with prominent labeling in axons and dendritic projections. NAV1 antibody from NSJ Bioreagents provides a reliable reagent for research in neuronal development, axon guidance, and cytoskeletal organization. Its use extends to studies of neurodegenerative disease and brain tumor biology where cytoskeletal regulation is disrupted.

Application Notes

Optimal dilution of the NAV1 antibody should be determined by the researcher.

Immunogen

E.coli-derived human NAV1 recombinant protein (Position: Q250-H1813) was used as the immunogen for the NAV1 antibody.

Storage

After reconstitution, the NAV1 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.