SNCA Antibody / Alpha Synuclein (FY12837)

Catalog No.	Formulation	Size
FY12837	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, Mouse, Rat
Format	Lyophilized
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit IgG
Purity	Immunogen affinity purified
Buffer	Each vial contains 4 mg Trehalose, 0.9 mg NaCl and 0.2 mg Na2HPO4.
UniProt	P37840
Applications	Western Blot : 0.25-0.5ug/ml Immunohistochemistry : 2-5ug/ml Immunocytochemistry : 5ug/ml Immunofluorescence : 5ug/ml Flow Cytometry : 1-3ug/million cells ELISA : 0.1-0.5ug/ml
Limitations	This SNCA antibody is available for research use only.

Description

SNCA antibody detects Alpha-synuclein, a small neuronal protein central to synaptic regulation, vesicle trafficking, and neurodegenerative disease pathology. Encoded by the SNCA gene on chromosome 4q22.1, Alpha-synuclein is a 140-amino acid presynaptic protein that modulates neurotransmitter release, synaptic vesicle recycling, and membrane curvature. It is highly expressed in the central nervous system, particularly in presynaptic terminals of dopaminergic neurons, where it helps maintain synaptic homeostasis. Despite its physiological role in neurotransmission, misfolded or aggregated forms of Alpha-synuclein are strongly implicated in Parkinson's disease and other synucleinopathies.

Alpha-synuclein belongs to the synuclein family, which also includes Beta- and Gamma-synuclein. Structurally, it consists of three domains: an amphipathic N-terminal region that binds lipid membranes, a hydrophobic central non-amyloid-beta component (NAC) domain that promotes aggregation, and a highly acidic C-terminal region that interacts with synaptic vesicle components. These domains allow Alpha-synuclein to reversibly associate with synaptic vesicle membranes and regulate vesicle clustering, docking, and fusion events required for neurotransmitter release.

The SNCA antibody is widely used in neuroscience, neurodegenerative disease, and cellular biology research to study protein aggregation, synaptic function, and neuronal homeostasis. Western blot analysis identifies a 17 kilodalton band corresponding to Alpha-synuclein, while immunohistochemistry and immunofluorescence reveal diffuse cytoplasmic and presynaptic punctate staining in neurons. In pathological tissue, the antibody recognizes characteristic Lewy bodies and Lewy neurites formed by Alpha-synuclein aggregates, providing a valuable diagnostic marker for Parkinson's disease and dementia with Lewy bodies.

Physiologically, Alpha-synuclein interacts with SNARE complex proteins such as VAMP2 and synaptobrevin to facilitate vesicle fusion, while regulating dopamine release and synaptic plasticity. However, environmental stress, oxidative damage, or genetic mutations (e.g., A53T, A30P, E46K) can cause Alpha-synuclein misfolding and fibril formation. These aggregates trigger mitochondrial dysfunction, ER stress, and neuronal death through toxic oligomer formation. The SNCA antibody is an essential tool for studying these mechanisms and evaluating therapeutic interventions aimed at reducing aggregation or promoting clearance via autophagy and proteasomal degradation.

Alpha-synuclein also plays a role in non-neuronal systems, including erythrocytes and the enteric nervous system, where it may influence vesicular trafficking and lipid metabolism. Dysregulation of SNCA transcription and post-translational modifications such as phosphorylation (Ser129), nitration, or ubiquitination modulate its aggregation behavior and toxicity. The SNCA antibody supports high-resolution mapping of these biochemical changes, helping researchers understand disease progression and identify novel treatment strategies. NSJ Bioreagents validates this antibody for western blotting, immunohistochemistry, and immunofluorescence, ensuring reproducible and sensitive detection for neuroscience and neurodegenerative disease research.

Application Notes

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

Immunogen

E.coli-derived human Alpha Synuclein/SNCA recombinant protein (Position: M1-D135) was used as the immunogen for the SNCA antibody.

Storage

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