

Synapsin Ia/b (A-8): sc-376623

BACKGROUND

Synapsins are synaptic vesicle-associated phosphoproteins that regulate synaptic vesicle exocytosis and may be involved in synaptogenesis. Evidence suggests that Synapsin I, Synapsin II and Synapsin IIIa are ATP-binding proteins that are regulated by Ca^{2+} and calmodulin binding. Ca^{2+} has been shown to stimulate ATP binding to Synapsin I, to have no effect on Synapsin II and to inhibit Synapsin III. Synapsin I and Synapsin II both undergo alternative splicing to produce two forms of each protein, Synapsin Ia and Ib and Synapsin IIIa and IIIb, respectively. Synapsin III gives rise to at least three isoforms: Synapsin IIIa, IIIb and IIIc. Synapsin III plays unique roles both in early axon outgrowth and in the regulation of synaptic vesicle trafficking. In cultured mouse hippocampal neurons, Synapsin III is expressed early during development, with levels peaking seven days after plating and declining thereafter. Synapsin III is highly concentrated in growth cones.

REFERENCES

1. Sudhof, T.C., et al. 1989. Synapsins: mosaics of shared and individual domains in a family of synaptic vesicle phosphoproteins. *Science* 245: 1474-1480.
2. Sudhof, T.C. 1990. The structure of the human Synapsin I gene and protein. *J. Biol. Chem.* 265: 7849-7852.

SOURCE

Synapsin Ia/b (A-8) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 2-29 at the N-terminus of Synapsin Ia/b of human origin.

PRODUCT

Each vial contains 200 μg IgM kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-376623 P, (100 μg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

APPLICATIONS

Synapsin Ia/b (A-8) is recommended for detection of a broad range of synapsin family members of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 μg per 100-500 μg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Synapsin Ia/b (A-8) is also recommended for detection of a broad range of synapsin family members in additional species, including canine, bovine and porcine.

Molecular Weight of Synapsin Ia: 80 kDa.

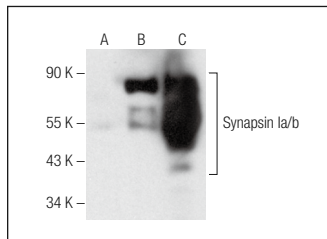
Molecular Weight of Synapsin Ib: 86 kDa.

Positive Controls: mouse brain extract: sc-2253, rat brain extract: sc-2392 or Synapsin Ia/b (m): 293T Lysate: sc-123862.

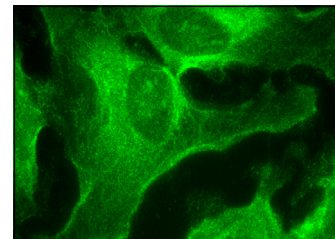
STORAGE

Store at 4° C, ****DO NOT FREEZE****. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

DATA



Synapsin Ia/b (A-8): sc-376623. Western blot analysis of Synapsin Ia/b expression in non-transfected: sc-117752 (A) and mouse Synapsin Ia/b transfected: sc-123862 (B) 293T whole cell lysates and rat brain tissue extract (C).



Synapsin Ia/b (A-8): sc-376623. Immunofluorescence staining of methanol-fixed HeLa cells showing membrane localization.

SELECT PRODUCT CITATIONS

1. Liu, J., et al. 2017. Roscovitine, a CDK5 inhibitor, alleviates sevoflurane-induced cognitive dysfunction via regulation Tau/GSK3 β and ERK/PPAR γ /CREB signaling. *Cell. Physiol. Biochem.* 44: 423-435.
2. Vysokov, N.V., et al. 2018. Proteolytically released Lasso/Teneurin-2 induces axonal attraction by interacting with Latrophilin-1 on axonal growth cones. *Elife* 7: e37935.
3. Liang, X., et al. 2019. Exercise improves depressive symptoms by increasing the number of excitatory synapses in the hippocampus of CUS-induced depression model rats. *Behav. Brain Res.* 374: 112115.
4. Prieto, M., et al. 2021. Missense mutation of Fmr1 results in impaired AMPAR-mediated plasticity and socio-cognitive deficits in mice. *Nat. Commun.* 12: 1557.
5. Pronot, M., et al. 2022. Bidirectional regulation of synaptic SUMOylation by group 1 metabotropic glutamate receptors. *Cell. Mol. Life Sci.* 79: 378.
6. Bhat, A., et al. 2022. Roflumilast, a phosphodiesterase-4 inhibitor, ameliorates sleep deprivation-induced cognitive dysfunction in C57BL/6J mice. *ACS Chem. Neurosci.* 13: 1938-1947.
7. Wei, N., et al. 2022. Inhibitions and down-regulation of motor protein Eg5 expression in primary sensory neurons reveal a novel therapeutic target for pathological pain. *Neurotherapeutics* 19: 1401-1413.
8. Xuan, C., et al. 2023. Glutamine ameliorates hyperoxia-induced hippocampal damage by attenuating inflammation and apoptosis via the MKP-1/MAPK signaling pathway in neonatal rats. *Front. Pharmacol.* 14: 1096309.
9. Wang, Y.Y., et al. 2023. Long-term voluntary exercise inhibited AGE/RAGE and microglial activation and reduced the loss of dendritic spines in the hippocampi of APP/PS1 transgenic mice. *Exp. Neurol.* 363: 114371.

RESEARCH USE

For research use only, not for use in diagnostic procedures.