

Synapsin IIIa (C-20): sc-8292

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 IIa and IIb, 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.
3. Melloni, R.H. Jr., et al. 1994. Temporal onset of synapsin I gene expression coincides with neuronal differentiation during the development of the nervous system. *J. Comp. Neurol.* 342: 449-462.
4. Nicol, S., et al. 1997. Ca^{2+} -dependent interaction with calmodulin is conserved in the synapsin family: identification of a high-affinity site. *Biochemistry* 36: 11487-11495.
5. Hosaka, M., et al. 1998. Synapsins I and II are ATP-binding proteins with differential Ca^{2+} regulation. *J. Biol. Chem.* 273: 1425-1429.
6. Hosaka, M. and Sudhof, T.C. 1998. Synapsin III, a novel synapsin with an unusual regulation by Ca^{2+} . *J. Biol. Chem.* 273: 13371-13374.
7. Esser, L., et al. 1998. Synapsin I is structurally similar to ATP-utilizing enzymes. *EMBO J.* 17: 977-984.
8. Kao, H.T., et al. 1998. A third member of the synapsin gene family. *Proc. Natl. Acad. Sci. USA* 95: 4667-4672.

CHROMOSOMAL LOCATION

Genetic locus: SYN3 (human) mapping to 22q12.3; Syn3 (mouse) mapping to 10 C2.

SOURCE

Synapsin IIIa (C-20) is an affinity purified goat polyclonal antibody raised against a peptide mapping near the C-terminus of Synapsin IIIa of human origin.

STORAGE

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

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-8292 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

Synapsin IIIa (C-20) is recommended for detection of synapsin IIIa of mouse, rat and human origin by Western Blotting (starting dilution 1:200, 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).

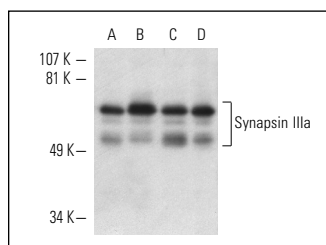
Synapsin IIIa (C-20) is also recommended for detection of Synapsin IIIa in additional species, including equine, canine, bovine and porcine.

Suitable for use as control antibody for Synapsin III siRNA (h): sc-36584, Synapsin III siRNA (m): sc-36585, Synapsin III shRNA Plasmid (h): sc-36584-SH, Synapsin III shRNA Plasmid (m): sc-36585-SH, Synapsin III shRNA (h) Lentiviral Particles: sc-36584-V and Synapsin III shRNA (m) Lentiviral Particles: sc-36585-V.

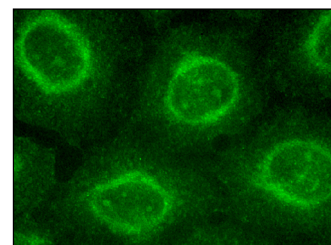
Molecular Weight of Synapsin IIIa: 63 kDa.

Positive Controls: Mouse brain extract: sc-2253, mouse cerebellum extract: sc-2403 or rat cerebellum extract: sc-2398.

DATA



Synapsin IIIa (C-20): sc-8292. Western blot analysis of Synapsin IIIa expression in mouse cerebellum (A), rat brain (B), rat cerebellum (C) and mouse brain (D) tissue extracts.



Synapsin IIIa (C-20): sc-8292. Immunofluorescence staining of methanol-fixed HeLa cells showing cytoplasmic and membrane localization.

SELECT PRODUCT CITATIONS

1. Frederikse, P.H., et al. 2004. Synapsin and synaptic vesicle protein expression during embryonic and post-natal lens fiber cell differentiation. *Mol. Vis.* 10: 794-804.
2. Revest, J.M., et al. 2010. The enhancement of stress-related memory by glucocorticoids depends on synapsin-Ia/Ib. *Mol. Psychiatry* 15: 1125, 1140-1151.

RESEARCH USE

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