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ProductInformation

Anti-phospho-Synapsin I (pSer^9)
Developed in Rabbit, Affinity Isolated Antibody

Product Number **S 8067**

Product Description

Anti-phospho-Synapsin I (pSer^9) is developed in rabbit using as immunogen a synthetic phosphorylated peptide derived from the region of rat synapsin 1 that is phosphorylated on serine 9. The antiserum is affinity purified using epitope-specific affinity chromatography with the phosphopeptide column followed by the non-phosphorylated peptide column. Anti-phospho-Synapsin I (pSer^9) specifically recognizes rat synapsin I (78 kDa) phosphorylated at serine 9. It does not crossreact with non-phosphorylated synapsin I. It is likely to detect human, mouse, chicken and *xenopus* synapsin I based on sequence homology. It is used in immunoblotting and ELISA applications.

Synapsins constitute a family of synaptic vesicle phosphoproteins that are thought to regulate two distinct cellular functions: neuronal development and synaptic transmission. Synapsins are major components of mature nerve terminals, where they are highly enriched on small synaptic vesicles. Overexpression of synapsins leads to presynaptic differentiation in cell lines and accelerated synaptogenesis in embryonic cell cultures, whereas reduction of synapsins leads to delayed neuronal differentiation, axonal outgrowth and synaptogenesis. The dynamic association of synapsins with synaptic vesicles correlates with their role in activity-dependent plasticity and provides a potential new approach to neuronal regeneration, after injury and in neurodegenerative diseases. Synapsin I plays a key role in the regulation of nerve terminal function in mature synapses, as well as a function in neuronal development.[1-3]

Only two domains are conserved in all synapsins: a short N-terminal A domain with a single phosphorylation site for cAMP-dependent protein kinase (PKA) and CaM Kinase I, and a large central C domain that binds ATP and may be enzymatic. Synapsin phosphorylation in the A domain, dissociates synapsins from synaptic vesicles. cAMP phosphorylates synapsin A domain on serine 9, known also as a phosphorylation site 1(P-site 1). Synapsin site serine 9 is a substrate for PKA and protein phosphatase 2A. Introduction of phosphospecific antibodies against synapsin I (pSer^9) into cultured neurons decreased neurite length, neurite initiation and neurite growth index.[3,4]

Phosphospecific synapsin antibodies will further the studies of the mechanism of neuronal growth and regeneration.[5]

Reagent

Anti-phospho-Synapsin I (Ser^9) is supplied as a solution in 10 mM HEPES buffer, pH 7.5 with 150 mM NaCl, 100 μg/ml bovine serum albumin and 50% glycerol.

Storage/Stability

Store at –20 °C. For extended storage, upon initial thawing, freeze in working aliquots. Do not store in frost-free freezers. Avoid repeated freezing and thawing to prevent denaturing the antibody. Working dilution samples should be discarded if not used within 12 hours. The antibody is stable for at least 6 months when stored appropriately.

Product Profile

A recommended working dilution of 1:1,000 is determined by immunoblotting using rat brain hipoccampal tissue homogenate. The same working dilution is recommended for immunocytochemistry, immunoprecipitation and ELISA applications.

Note: In order to obtain best results in different techniques and preparations we recommend determining optimal working concentration by titration test.

References

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3. Kao, H. T., et al., A protein kinase A-dependent molecular switch in synapsins regulates neurite outgrowth, Nature Neurosci., **5,** 431-437 (2002).

4. Jovanovic, J. N., et al., Opposing changes in phosphorylation of specific sites in synapsin I during Ca^{2+}-dependent glutamate release in isolated nerve terminals. J. Neurosci., **21**, 7944-7953 (2001).

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