### Function:

Synapsin I, also known as phosphosynaspin I, is a major immunoreactive protein found in most neurons of the central and peripheral nervous systems. It is a member of a group of neuronal phosphoproteins involved in the regulation of neurotransmitter release.

Synapsin I is present in the nerve terminal of axons, specifically in the membranes of synaptic vesicles.

### Clinical Significance:

Antibodies against Synapsin can contribute to neuronal damage\(^2\)\(^4\) as well as non-neuronal tissues.\(^3\) There is a similarity between Synapsin I and Gliadin (a protein of wheat) in that they both have high frequencies of proline and glutamine residues, thus, cross-reactivity occurs between Synapsin I and Gliadin.\(^1\) This molecular mimicry triggers autoimmunity resulting in neurological deficits often associated with gluten sensitivity and, in genetically susceptible patients, with Celiac Disease. Non-neuronal Synapsin I has also been identified in the liver and is thought to be associated with the trans-Golgi network-derived compartment.\(^3\) This placement suggests that Synapsin I plays a role in modulating post-trans-Golgi network trafficking pathways of secreted proteins.\(^3\)

### Antibodies Appear:

- Demyelinating Diseases\(^2\)
- Inhibited Neurotransmitter Release\(^4\)
- Lupus\(^4\)
- Multiple Sclerosis\(^2\)

### Known Cross-Reactions:

- Gliadin\(^1\)

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**References:**