

## Synapsin 1/2

Cat.No. 106 002; Polyclonal rabbit antibody, 200 µl antiserum (lyophilized)

### Data Sheet

Reconstitution/ Storage	200 µl antiserum, lyophilized. For reconstitution add 200 µl H <sub>2</sub> O, then aliquot and store at -20°C until use.
Applications	<b>WB:</b> 1 : 1000 (AP staining) <b>IP:</b> yes <b>ICC:</b> 1 : 500 <b>IHC:</b> 1 : 500 <b>IHC-P/FFPE:</b> 1 : 500 <b>ELISA:</b> yes (see remarks)
Immunogen	Synthetic peptide corresponding to AA 2 to 28 from rat Synapsin1 (UniProt Id: P09951)
Reactivity	Reacts with: human (P17600, Q92777), rat (P09951, Q63537), mouse (O88935, Q64332), hamster, cow, zebrafish. Other species not tested yet. <a href="#">zebrafish image</a>
Specificity	Specific for synapsins 1a/b and 2a/b. (K.O. verified)
matching control	106-0P
Remarks	<b>ELISA:</b> Suitable as detector antibody for sandwich-ELISA with cat. no. 106 001 as capture antibody (protocol for sandwich-ELISA).

### TO BE USED IN VITRO / FOR RESEARCH ONLY NOT TOXIC, NOT HAZARDOUS, NOT INFECTIOUS, NOT CONTAGIOUS

**Synapsins** are neuron-specific phosphoproteins that are exclusively associated with small synaptic vesicles, with little or no expression in other tissues including neuroendocrine cells. In mammals, three distinct synapsin genes (synapsin 1, 2 and 3) encode more than eight neuronal isoforms. Synapsin 1 is one of the most specific markers of synapses throughout the central and peripheral nervous system. In addition to synaptic nerve terminals, the protein is also present in certain sensory nerve endings. It is expressed in two splice variants (synapsin 1a and synapsin 1b). Synapsin 1 interacts with vesicle membranes as well as with actin and spectrin. **Synapsin 2** is expressed in the nervous system and also two splice variants were described so far, while synapsin 3 shows a more restricted expression pattern and is mainly found in the hippocampus. Synapsins are major phosphoproteins and are substrates for several protein kinases such as PKA, CaMK I and CaMK II. Synapsin 1 is widely used as reference substrate for calmodulin-dependent protein kinases.

### Selected References SYSY Antibodies

Liprin-α2 promotes the presynaptic recruitment and turnover of RIM1/CASK to facilitate synaptic transmission. Spangler SA, Schmitz SK, Kevenaar JT, de Graaff E, de Wit H, Demmers J, Toonen RF, Hoogenraad CC The Journal of cell biology (2013) 201(6): 915-28. **ICC, WB; tested species: rat**

Long-lasting hippocampal synaptic protein loss in a mouse model of posttraumatic stress disorder. Herrmann L, Ionescu IA, Henes K, Golub Y, Wang NX, Buell DR, Holsboer F, Wotjak CT, Schmidt U PLoS one (2012) 7(8): e42603. **WB, IHC; tested species: mouse**

Extensive remodeling of the presynaptic cytomatrix upon homeostatic adaptation to network activity silencing. Lazarevic V, Schöne C, Heine M, Gundelfinger ED, Fejtova A The Journal of neuroscience : the official journal of the Society for Neuroscience (2011) 31(28): 10189-200. **WB, ICC**

Synapsin-dependent reserve pool of synaptic vesicles supports replenishment of the readily releasable pool under intense synaptic transmission.

Vasileva M, Horstmann H, Geumann C, Gitler D, Kuner T The European journal of neuroscience (2012) 36(8): 3005-20. **ELISA**

MACF1 links Rapsyn to microtubule- and actin-binding proteins to maintain neuromuscular synapses. Oury J, Liu Y, Töpf A, Todorovic S, Hoedt E, Preethish-Kumar V, Neubert TA, Lin W, Lochmüller H, Burden SJ The Journal of cell biology (2019) : . **IHC; tested species: mouse**

Epitope specificity of anti-synapsin autoantibodies: Differential targeting of synapsin I domains. Mertens R, Melchert S, Gitler D, Schou MB, Saether SG, Vaaler A, Piepgras J, Kochova E, Benfenati F, Ahnert-Hilger G, Ruprecht K, et al. PLoS one (2018) 13(12): e0208636. **ICC; tested species: human**

Newly produced synaptic vesicle proteins are preferentially used in synaptic transmission. Truckenbrodt S, Viplav A, Jähne S, Vogts A, Denker A, Wildhagen H, Fornasiero EF, Rizzoli SO The EMBO journal (2018) : . **ICC; tested species: rat**

Caldendrin Directly Couples Postsynaptic Calcium Signals to Actin Remodeling in Dendritic Spines. Mikhaylova M, Bär J, van Bommel B, Schätzle P, YuanXiang P, Raman R, Hradsky J, Konietzny A, Loktionov EY, Reddy PP, Lopez-Rojas J, et al. Neuron (2018) 97(5): 1110-1125.e14. **ICC; tested species: mouse**

α-Actinin Anchors PSD-95 at Postsynaptic Sites. Matt L, Kim K, Hergarden AC, Patriarchi T, Malik ZA, Park DK, Chowdhury D, Buonarati OR, Henderson PB, Gökçek Saraç Ç, Zhang Y, et al. Neuron (2018) 97(5): 1094-1109.e9. **ICC; tested species: rat**

SUMO1-conjugation is altered during normal aging but not by increased amyloid burden. Stankova T, Piepkorn L, Bayer TA, Jahn O, Tirard M Aging cell (2018) : e12760. **ICC; tested species: mouse**

Inhibition of colony-stimulating factor 1 receptor early in disease ameliorates motor deficits in SCA1 mice. Qu W, Johnson A, Kim JH, Lukowicz A, Svedberg D, Cvetanovic M Journal of neuroinflammation (2017) 14(1): 107. **WB; tested species: mouse**

Analysis of SUMO1-conjugation at synapses. Daniel JA, Cooper BH, Palvimo JJ, Zhang FP, Brose N, Tirard M eLife (2017) 6: . **ICC; tested species: mouse**

Transgenic FingRs for Live Mapping of Synaptic Dynamics in Genetically-Defined Neurons. Son JH, Keefe MD, Stevenson TJ, Barrios JP, Anjewierden S, Newton JB, Douglass AD, Bonkowski JL Scientific reports (2016) 6: 18734. **IHC**

Astrocyte VAMP3 vesicles undergo Ca<sup>2+</sup>-independent cycling and modulate glutamate transporter trafficking. Li D, Héroult K, Zylbersztein K, Lauterbach MA, Guillon M, Oheim M, Ropert N The Journal of physiology (2015) 593(13): 2807-32. **ICC**

A new probe for super-resolution imaging of membranes elucidates trafficking pathways. Revelo NH, Kamin D, Truckenbrodt S, Wong AB, Reuter-Jessen K, Reisinger E, Moser T, Rizzoli SO The Journal of cell biology (2014) 205(4): 591-606. **ICC**

Fragile X mental retardation protein controls synaptic vesicle exocytosis by modulating N-type calcium channel density. Ferron L, Nieto-Rostro M, Cassidy JS, Dolphin AC Nature communications (2014) 5: 3628. **ICC**

Munc18-1 redistributes in nerve terminals in an activity- and PKC-dependent manner. Cijssouw T, Weber JP, Broeke JH, Broek JA, Schut D, Kroon T, Saarloos I, Verhage M, Toonen RF The Journal of cell biology (2014) 204(5): 759-75. **ICC; tested species: mouse**