Synaptic Systems
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Synapsin 2

Cat.No. 106 203; Polyclonal rabbit antibody, 50 µg specific antibody (lyophilized)

Data Sheet

Reconstitution/ Storage	50 µg specific antibody, lyophilized. Affinity purified with the immunogen. Rabbit serum albumin was added for stabilization. For reconstitution add 50 µl H_2O to get a 1mg/ml solution in PBS. Then aliquot and store at -20°C until use.
Applications	**WB**: 1 : 1000 (AP staining) **IP**: yes **ICC**: 1 : 500 up to 1 : 1000 **IHC**: 1 : 200 **IHC-P/FFPE**: 1 : 200
Immunogen	Synthetic peptide corresponding to AA 440 to 458 from rat Synapsin2 (UniProt Id: Q63537-1)
Reactivity	Reacts with: human (Q92777), rat (Q63537), mouse (Q64332), pig. Other species not tested yet.
Specificity	Specific for synapsins 2a and 2b, no cross-reactivity to synapsin 1a/b. (K.O. verified)
matching control	106-2P

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 hypocampus. 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

Alterations in Brain Inflammation, Synaptic Proteins, and Adult Hippocampal Neurogenesis during Epileptogenesis in Mice Lacking Synapsin2.
Chugh D, Ali I, Bakochi A, Bahonjic E, Etholm L, Ekdahl CT
PloS one (2015) 10(7): e0132366. **WB, IHC; KO verified**

Short-chain fatty acid receptor GPR41-mediated activation of sympathetic neurons involves synapsin 2b phosphorylation.
Inoue D, Kimura I, Wakabayashi M, Tsumoto H, Ozawa K, Hara T, Takei Y, Hirasawa A, Ishihama Y, Tsujimoto G
FEBS letters (2012) 586(10): 1547-54. **WB, IP; tested species: mouse**

ATP binding to synaspsin IIa regulates usage and clustering of vesicles in terminals of hippocampal neurons.
Shulman Y, Stavsky A, Fedorova T, Mikulincer D, Atias M, Radinsky I, Kahn J, Slutsky I, Gitler D
The Journal of neuroscience : the official journal of the Society for Neuroscience (2015) 35(3): 985-98. **ICC**

A protective role of autophagy in TDCIPP-induced developmental neurotoxicity in zebrafish larvae.
Li R, Zhang L, Shi Q, Guo Y, Zhang W, Zhou B
Aquatic toxicology (Amsterdam, Netherlands) (2018) 199: 46-54. **WB; tested species: zebrafish**

Transgenerational endocrine disruption and neurotoxicity in zebrafish larvae after parental exposure to binary mixtures of decabromodiphenyl ether (BDE-209) and lead.
Chen L, Wang X, Zhang X, Lam PKS, Guo Y, Lam JCW, Zhou B
Environmental pollution (Barking, Essex : 1987) (2017) 230: 96-106. **WB; tested species: danio rerio**

Synapsin IIb as a functional marker of submissive behavior.
Nesher E, Koman I, Gross M, Tikhonov T, Bairachnaya M, Salmon-Divon M, Levin Y, Gerlitz G, Michaelevski I, Yadid G, Pinhasov A, et al.
Scientific reports (2015) 5: 10287. **WB**

Prenatal transfer of polybrominated diphenyl ethers (PBDEs) results in developmental neurotoxicity in zebrafish larvae.
Chen L, Yu K, Huang C, Yu L, Zhu B, Lam PK, Lam JC, Zhou B
Environmental science & technology (2012) 46(17): 9727-34. **WB**

Selected General References

A phospho-switch controls the dynamic association of synapsins with synaptic vesicles.
Hosaka M, Hammer RE, Südhof TC
Neuron (1999) 24(2): 377-87.

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.

Essential functions of synapsins I and II in synaptic vesicle regulation.
Rosahl TW, Spillane D, Missler M, Herz J, Selig DK, Wolff JR, Hammer RE, Malenka RC, Südhof TC
Nature (1995) 375(6531): 488-93.

The synaptic vesicle cycle: a cascade of protein-protein interactions.
Südhof TC
Nature (1995) 375(6533): 645-53.

Synaptic vesicles and exocytosis.
Jahn R, Südhof TC
Annual review of neuroscience (1994) 17: 219-46.