SYSY Antibodies

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Synapsin1

Cat.No. 106 011; Monoclonal mouse antibody, 100 µg purified IgG (lyophilized)

Data Sheet

Reconstitution/ Storage	100 µg purified IgG, lyophilized. Albumin and azide were added for stabilization. For **reconstitution** add 100 µl H_2O to get a 1mg/ml solution in PBS. Then aliquot and store at -20°C to -80°C until use. Antibodies should be stored at +4°C when still lyophilized. Do not freeze! For detailed information, see back of the data sheet.
Applications	**WB**: 1 : 1000 up to 1 : 10000 (AP staining) **IP**: yes **ICC**: 1 : 100 up to 1 : 2000 **IHC**: 1 : 500 up to 1 : 1000 **IHC-P**: 1 : 200 **DNA-PAINT**: yes **EM**: yes **ELISA**: yes (see remarks)
Clone	46.1
Subtype	IgG1
Immunogen	full-length recombinant rat Synapsin1 (UniProt Id: P09951)
Epitop	AA 435 to 475 from rat Synapsin1 (UniProt Id: P09951)
Reactivity	Reacts with: human (P17600), rat (P09951), mouse (O88935), mammals. Weaker signal: zebrafish, chicken, other vertebrates. Other species not tested yet.
Specificity	Specific for synapsin 1a and 1b independent of phosphorylation state. K.O. validated
Remarks	**ELISA**: Suitable as capture antibody for sandwich-ELISA with cat. no. 106 002 as detector antibody. The ELISA-protocol for membrane proteins is recommended.

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

Background

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 (synapsin1, 2, and 3) encode more than eight neuronal isoforms.
Synapsin1 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). Synapsin1 interacts with vesicle membranes as well as with actin and spectrin.
Synapsin2 is expressed in the nervous system and also two splice variants were described so far, while synapsin3 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. Synapsin1 is widely used as reference substrate for calmodulin-dependent protein kinases.

Selected References for 106 011

Bacterial cytolysin during meningitis disrupts the regulation of glutamate in the brain, leading to synaptic damage.
Wippel C, Maurer J, Förtsch C, Hupp S, Bohl A, Ma J, Mitchell TJ, Bunkowski S, Brück W, Nau R, Iliev AI, et al.
PLoS pathogens (2013) 96: e1003380. . **IHC, WB; tested species: mouse**

Suppression of guanylyl cyclase (beta1 subunit) expression impairs neurite outgrowth and synapse maturation in cultured cerebellar granule cells.
López-Jiménez ME, Bartolomé-Martín D, Sánchez-Prieto J, Torres M
Cell death and differentiation (2009) 169: 1266-78. . **ICC, WB; tested species: rat**

Polygenic risk for alcohol use disorder affects cellular responses to ethanol exposure in a human microglial cell model.
Li X, Liu J, Boreland AJ, Kapadia S, Zhang S, Stillitano AC, Abbo Y, Clark L, Lai D, Liu Y, Barr PB, et al.
Science advances (2024) 1045: eado5820. . **WB, ICC; tested species: mouse**

Developmental Pb exposure increases AD risk via altered intracellular Ca2+ homeostasis in hiPSC-derived cortical neurons.
Xie J, Wu S, Szadowski H, Min S, Yang Y, Bowman AB, Rochet JC, Freeman JL, Yuan C
The Journal of biological chemistry (2023) : 105023. . **WB, ICC; tested species: human**

Selective disruption of inhibitory synapses leading to neuronal hyperexcitability at an early stage of tau pathogenesis in a mouse model.
Shimojo M, Takuwa H, Takado Y, Tokunaga M, Tsukamoto S, Minatohara K, Ono M, Seki C, Maeda J, Urushihata T, Minamihisamatsu T, et al.
The Journal of neuroscience : the official journal of the Society for Neuroscience (2020) : . . **WB, ICC; tested species: mouse**

Microglia Mediate HIV-1 gp120-Induced Synaptic Degeneration in Spinal Pain Neural Circuits.
Ru W, Liu X, Bae C, Shi Y, Walikonis R, Mo Chung J, Tang SJ
The Journal of neuroscience : the official journal of the Society for Neuroscience (2019) 3942: 8408-8421. . **ICC, IHC; tested species: mouse**

The Calmodulin Binding Region of the Synaptic Vesicle Protein Mover Is Required for Homomeric Interaction and Presynaptic Targeting.
Akula AK, Zhang X, Viotti JS, Nestvogel D, Rhee JS, Ebrecht R, Reim K, Wouters F, Liepold T, Jahn O, Bogeski I, et al.
Frontiers in molecular neuroscience (2019) 12: 249. . **WB, ICC; tested species: mouse**

Astrocytic miR-324-5p is essential for synaptic formation by suppressing the secretion of CCL5 from astrocytes.
Sun C, Zhu L, Ma R, Ren J, Wang J, Gao S, Yang D, Ning K, Ling B, Lu B, Chen X, et al.
Cell death & disease (2019) 102: 141. . **ICC, IHC; tested species: mouse**

Synaptic control of mRNA translation by reversible assembly of XRN1 bodies.
Luchelli L, Thomas MG, Boccaccio GL
Journal of cell science (2015) 1288: 1542-54. . **ICC, WB**

Access the online factsheet including applicable protocols at https://sysy.com/product/106011 or scan the QR-code.

FAQ - How should I store my antibody?

Shipping Conditions

- All our antibodies and control proteins / peptides are shipped lyophilized (vacuum freeze-dried) and are stable in this form without loss of quality at ambient temperatures for several weeks.

Storage of Sealed Vials after Delivery

- **Unlabeled** and **biotin-labeled antibodies** and **control proteins** should be stored at 4°C before reconstitution. **They must not be stored in the freezer when still lyophilized!** Temperatures below zero may cause loss of performance.
- **Fluorescence-labeled antibodies** should be reconstituted immediately upon receipt. Long term storage (several months) may lead to aggregation.
- **Control peptides** should be kept at -20°C before reconstitution.

Long Term Storage after Reconstitution (General Considerations)

- The storage freezer must not be of the frost-free variety ("no-frost freezer"). This cycle between freezing and thawing (to reduce frost-build-up), which is exactly what should be avoided. For the same reason, antibody vials should be placed in an area of the freezer that has minimal temperature fluctuations, for instance towards the back rather than on a door shelf.
- Aliquot the antibody and store frozen (-20°C to -80°C). Avoid very small aliquots (below 20 µl) and use the smallest storage vial or tube possible. The smaller the aliquot, the more the stock concentration is affected by evaporation and adsorption of the antibody to the surface of the storage vial or tube. Adsorption of the antibody to the surface leads to a substantial loss of activity.
- The addition of glycerol to a final concentration of 50% lowers the freezing point of your stock and keeps your antibody at -20°C in liquid state. This efficiently avoids freeze and thaw cycles.

Product Specific Hints for Storage

Control proteins / peptides

- Store at -20°C to -80°C.

Monoclonal Antibodies

- **Ascites** and **hybridoma supernatant** should be stored at -20°C up to -80°C. **Prolonged storage at 4°C is not recommended!** Unlike serum, ascites may contain proteases that will degrade the antibodies.
- **Purified IgG** should be stored at -20°C up to -80°C. Adding a carrier protein like BSA will increase long term stability. Many of our antibodies already contain carrier proteins. Please refer to the data-sheet for detailed information.

Polyclonal Antibodies

- **Crude antisera**: With anti-microbials added, they may be stored at 4°C. However, frozen storage (-20°C up to -80°C) is preferable.
- **Affinity purified antibodies**: Less robust than antisera. Storage at -20°C up to -80°C is recommended. Adding a carrier protein like BSA will increase long term stability. Most of our antibodies already contain carrier proteins. Please refer to the data-sheet for detailed information.

Fluorescence-labeled Antibodies

- Store as a liquid with 1 : 1 (v/v) glycerol at -20°C. Protect these antibodies from light exposure.

Avoid repeated freeze-thaw cycles for all antibodies!

FAQ - How should I reconstitute my antibody?

Reconstitution

- All our purified antibodies are lyophilized from PBS. To reconstitute the antibody in PBS, add the amount of deionized water given in the respective datasheet. If higher volumes are preferred, add water as mentioned above and then the desired amount of PBS and a stabilizing carrier protein (e.g. BSA) to a final concentration of 2%. Some of our antibodies already contain albumin. Take this into account when adding more carrier protein.
  For complete reconstitution, carefully remove the lid. After adding water, briefly vortex the solution. You can spin down the liquid by placing the vial into a 50 ml centrifugation tube filled with paper.
- If desired, add small amounts of azide or thimerosal to prevent microbial growth. This is especially recommended if you want to keep an aliquot a 4°C.
- After reconstitution of fluorescence-labeled antibodies, add 1 : 1 (v/v) glycerol to a final concentration of 50%. This lowers the freezing point of your stock and keeps your antibody in liquid state at -20°C.
- Glycerol may also be added to unlabeled primary antibodies. It is a suitable way to avoid freeze-thaw cycles.
- Please refer to our **tips and hints for subsequent storage** of reconstituted antibodies and control peptides and proteins.