

Synaptophysin1

Cat.No. 101 002; Polyclonal rabbit antibody, 200 µl antiserum (lyophilized)

Data Sheet

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| Reconstitution/ Storage | 200 µl antiserum, lyophilized. For reconstitution add 200 µl H ₂ O, then aliquot and store at -20°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 : 500 IHC: 1 : 500 IHC-P: 1 : 200 DNA-PAINT: yes (see remarks) EM: yes ELISA: yes (see remarks) |
| Immunogen | Synthetic peptide corresponding to residues near the carboxy terminus of human Synaptophysin (UniProt Id: P08247) |
| Reactivity | Reacts with: human (P08247), rat (P07825), mouse (Q62277), hamster, cow, chicken, frog, zebrafish. Other species not tested yet. |
| Matching control | 101-0P |
| Remarks | DNA-PAINT: This antibody has been successfully used for DNA-PAINT application (see Unterauer et al., 2024; PMID: 38552614). ELISA: Suitable as detector antibody for sandwich-ELISA with cat. no. 101 011 as capture 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

Synaptophysin1, also referred to as **p38-1**, is a membrane glycoprotein of synaptic vesicles that is ubiquitously expressed in all neurons and in many endocrine cells. It is currently the most widely used marker for nerve terminals and probably the best marker for the pathologist in differentiating neuroendocrine tumors.

Synaptophysin1 has four transmembrane domains with both N- and C-terminus facing the cytoplasm. It binds to synaptobrevin1 and synaptobrevin2 in detergent extracts but its function has not been elucidated completely. It forms a complex with dynamin at high Ca²⁺ concentration suggesting an involvement in synaptic vesicle endocytosis. As typical for synaptic vesicle proteins, synaptophysin1 represents a small protein family with two additional members, synaptoporin (synaptophysin2) and panthophysin. Like synaptophysin1, synaptoporin is widely expressed in neurons and colocalizes with synaptophysin1 on synaptic vesicles whereas panthophysin is expressed in all tissues.

Selected References for 101 002

- Colocalization of different neurotransmitter transporters on synaptic vesicles is sparse except for VGLUT1 and ZnT3. Upmanyu N, Jin J, Emde HV, Ganzella M, Bösch L, Malviya VN, Zhuleku E, Politi AZ, Ninov M, Silbern I, Leutenegger M, et al. *Neuron* (2022) : . . **WB, EM, UPTAKE; tested species: rat**
- Regulation of the Hippocampal Network by VGLUT3-Positive CCK- GABAergic Basket Cells. Fasano C, Rocchetti J, Pietrajtis K, Zander JF, Manseau F, Sakae DY, Marcus-Sells M, Ramet L, Morel LJ, Carrel D, Dumas S, et al. *Frontiers in cellular neuroscience* (2017) 11: 140. . **WB, IP; tested species: mouse**
- Activity-dependent shedding of the NMDA receptor glycine binding site by matrix metalloproteinase 3: a PUTATIVE mechanism of postsynaptic plasticity. Pauly T, Ratliff M, Pietrowski E, Neugebauer R, Schlicksupp A, Kirsch J, Kuhse J. *PloS one* (2008) 37: e2681. . **WB, ICC; tested species: rat**
- Distribution of synaptic vesicle proteins in the mammalian retina identifies obligatory and facultative components of ribbon synapses. Von Kriegstein K, Schmitz F, Link E, Südhof TC. *The European journal of neuroscience* (1999) 114: 1335-48. . **WB, IHC**
- Jacob-induced transcriptional inactivation of CREB promotes Aβ-induced synapse loss in Alzheimer's disease. Grochowska KM, Gomes GM, Raman R, Kaushik R, Sosulina L, Kaneko H, Oelschlegel AM, Yuanxiang P, Reyes-Resina I, Bayraktar G, Samer S, et al. *The EMBO journal* (2023) : e112453. . **ICC, IHC; tested species: mouse**
- The phosphoprotein Synapsin Ia regulates the kinetics of dense-core vesicle release. Yang HJ, Chen PC, Huang CT, Cheng TL, Hsu SP, Chen CY, Lu JC, Wang CT. *The Journal of neuroscience : the official journal of the Society for Neuroscience* (2021) : . . **WB, ICC**
- Coordinated bi-directional trafficking of synaptic vesicle and active zone proteins in peripheral nerves. Juranek JK, Mukherjee K, Jahn R, Li JY. *Biochemical and biophysical research communications* (2021) 559: 92-98. . **IHC, EM; tested species: rat**
- Uncoupling endosomal CLC chloride/proton exchange causes severe neurodegeneration. Weinert S, Gimber N, Deuschel D, Stuhlmann T, Puchkov D, Farsi Z, Ludwig CF, Novarino G, López-Cayuqueo KI, Planells-Cases R, Jentsch TJ, et al. *The EMBO journal* (2020) : e103358. . **WB, IHC; tested species: mouse**
- Synaptophysin 1 Clears Synaptobrevin 2 from the Presynaptic Active Zone to Prevent Short-Term Depression. Rajappa R, Gauthier-Kemper A, Böning D, Hüve J, Klingauf J. *Cell reports* (2016) 146: 1369-1381. . **ICC, WB; tested species: rat**

Access the online factsheet including applicable protocols at <https://sysy.com/product/101002> 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.