

## Synaptophysin1

Cat.No. 101 004; Polyclonal Guinea pig antibody, 100 µl antiserum (lyophilized)

### Data Sheet

Reconstitution/ Storage	100 µl antiserum, lyophilized. For <b>reconstitution</b> add 100 µl H <sub>2</sub> 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	<b>WB:</b> 1 : 1000 (AP staining) <b>IP:</b> yes <b>ICC:</b> 1 : 1000 <b>IHC:</b> 1 : 500 <b>IHC_P:</b> 1 : 200 <b>IDISCO:</b> 1 : 100 <b>CLARITY:</b> 1 : 500 (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. Other species not tested yet.
Matching control	101-0P
Remarks	<b>CLARITY:</b> This antibody has been successfully used for CLARITY application in human brain (Woelfle et al., 2023; PMID: 37221592).

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

## Background

**Synaptophysin 1**, 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.

Synaptophysin 1 has four transmembrane domains with both N- and C-terminus facing the cytoplasm. It binds to synaptobrevin 1 and synaptobrevin 2 in detergent extracts but its function has not been elucidated completely. It forms a complex with dynamin at high Ca<sup>2+</sup> concentration suggesting an involvement in synaptic vesicle endocytosis. As typical for synaptic vesicle proteins, synaptophysin 1 represents a small protein family with two additional members, synaptoporin (synaptophysin 2) and panthophysin. Like synaptophysin 1, synaptoporin is widely expressed in neurons and colocalizes with synaptophysin 1 on synaptic vesicles whereas panthophysin is expressed in all tissues.

## Selected References for 101 004

Plekhhg5-regulated autophagy of synaptic vesicles reveals a pathogenic mechanism in motoneuron disease.  
Lüningschrör P, Binotti B, Dombert B, Heimann P, Perez-Lara A, Slotta C, Thau-Habermann N, R von Collenberg C, Karl F, Damme M, Horowitz A, et al.  
Nature communications (2017) 81: 678. . **IHC, ICC, WB**

Regulatory Function of Sympathetic Innervation on the Endo/Lysosomal Trafficking of Acetylcholine Receptor.  
Straka T, Schröder C, Roos A, Kollipara L, Sickmann A, Williams MPI, Hafner M, Khan MM, Rudolf R  
Frontiers in physiology (2021) 12: 626707. . **IHC, IDISCO; tested species: mouse**

The lncRNA Malat1 is trafficked to the cytoplasm as a localized mRNA encoding a small peptide in neurons.  
Xiao W, Halabi R, Lin CH, Nazim M, Yeom KH, Black DL  
Genes & development (2024) : . . **WB, ICC; tested species: mouse**

Astrocytic TDP-43 dysregulation impairs memory by modulating antiviral pathways and interferon-inducible chemokines.  
Licht-Murava A, Meadows SM, Palaguachi F, Song SC, Jackvony S, Bram Y, Zhou C, Schwartz RE, Froemke RC, Orr AL, Orr AG, et al.  
Science advances (2023) 916: eade1282. . **ICC, IHC; tested species: mouse**

Synaptic vesicle proteins are selectively delivered to axons in mammalian neurons.  
Watson ET, Pauers MM, Seibert MJ, Vevea JD, Chapman ER  
eLife (2023) 12: . . **ICC, WB**

Plastin 3 rescues cell surface translocation and activation of TrkB in spinal muscular atrophy.  
Hennlein L, Ghanawi H, Gerstner F, Palominos García E, Yildirim E, Saal-Bauernschubert L, Moradi M, Deng C, Klein T, Appenzeller S, Sauer M, et al.  
The Journal of cell biology (2023) 2223: . . **ICC, IHC; tested species: mouse**

Synaptotagmin 7 is targeted to the axonal plasma membrane through γ-secretase processing to promote synaptic vesicle docking in mouse hippocampal neurons.  
Veeva JD, Kusick GF, Courtney KC, Chen E, Watanabe S, Chapman ER  
eLife (2021) 10: . . **WB, ICC; tested species: mouse**

Intact synapse structure and function after combined knockout of PTPδ, PTPσ, and LAR.  
Emperador-Melero J, de Nola G, Kaeser PS  
eLife (2021) 10: . . **WB, ICC; tested species: mouse**

Binary pan-cancer classes with distinct vulnerabilities defined by pro- or anti-cancer YAP/TEAD activity.  
Pearson JD, Huang K, Pacal M, McCurdy SR, Lu S, Aubry A, Yu T, Wadosky KM, Zhang L, Wang T, Gregorieff A, et al.  
Cancer cell (2021) 398: 1115-1134.e12. . **ICC, IHC; tested species: mouse**

Access the online factsheet including applicable protocols at <https://sysy.com/product/101004> 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 at 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.