SYSY Antibodies

Rudolf-Wissell-Str. 28a
37079 Göttingen, Germany
Phone: +49 551-50556-0
Fax: +49 551-50556-384
E-mail: sales@sysy.com
Web: www.sysy.com

Synaptopodin

Cat.No. 163 002; Polyclonal rabbit antibody, 200 µl antiserum (lyophilized)

Data Sheet

Reconstitution/ Storage	200 µl antiserum, lyophilized. For **reconstitution** add 200 µl H_2O, 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 (AP staining) **IP**: yes **ICC**: 1 : 600 **IHC**: 1 : 250 up to 1 : 500 **IHC-P (FFPE)**: 1 : 250 up to 1 : 500 **EM**: external data (see remarks)
Immunogen	Recombinant protein corresponding to residues near the central region of mouse Synaptopodin. (UniProt Id: Q8CC35)
Reactivity	Reacts with: human (Q8N3V7), rat (Q9Z327), mouse (Q8CC35). Other species not tested yet.
Specificity	This antibody detects the renal Synpo-long and the neuronal Synpo-short isofoms but is negativ for the T-variant. K.O. validated
Matching control	163-0P
Remarks	**EM**: This antibody has been successfully applied and published for this method by customers (see application-specific references).

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

Background

Synaptopodin is the founding member of a class of proline-rich actin-associated proteins and has been originally identified in podocytes of renal glomeruli (1, 2). In brain it localizes to the post-synaptic density (PSD) and the spine aparatus (1). In humans, three isoforms of synaptopodin with a distinct expression profile have been identified, neuronal Synpo-short, renal Synpo-long and Synpo-T. All three isoforms interact with alpha-actinin and induce alpha-actinin-induced actin filaments (3). Synaptopodin deficient mice lack the dendritic spine apparatus and exhibit impaired activity-dependent long-term synaptic plasticity (4).

For more information on protein expression pattern, please refer to the overview image in our SYSY Antibodies ATLAS.

Selected References for 163 002

Synaptopodin is regulated by aromatase activity.
Fester L, Zhou L, Ossig C, Labitzke J, Bläute C, Bader M, Vollmer G, Jarry H, Rune GM
Journal of neurochemistry (2017) 1401: 126-139. . **WB, ICC, IHC**

Overexpression of Synaptopodin increases the number of spine apparatuses and active synapses of dentate granule cells.
Del Turco D, Paul MH, Rietsche M, Schlaudraff J, Kreuzer A, Mittag M, Drakew A, Jedlicka P, Bas-Orth C, Roeper J, Deller T, et al.
Scientific reports (2026) 161: . . **WB, IHC, EM; tested species: mouse**

Pharmacological targeting of bunyavirus-induced synaptic impairment prevents neuronal hyperexcitability.
Gorda B, Bouget J, Saini V, Lutz W, Hirschler A, Almeida GM, Brychka D, Bernou C, Partiot E, Delalande F, Sinha P, et al.
Nature communications (2026) 171: . . **WB, IHC; tested species: human**

miR-124-dependent tagging of synapses by synaptopodin enables input-specific homeostatic plasticity.
Dubes S, Soula A, Benquet S, Tessier B, Poujol C, Favereaux A, Thoumine O, Letellier M
The EMBO journal (2022) : e109012. . **WB, ICC; tested species: rat**

All-trans retinoic acid induces synaptic plasticity in human cortical neurons.
Lenz M, Kruse P, Eichler A, Straehle J, Beck J, Deller T, Vlachos A
eLife (2021) 10: . . **IHC, EM; tested species: human,mouse**

Granule Cell Ensembles in Mouse Dentate Gyrus Rapidly Upregulate the Plasticity-Related Protein Synaptopodin after Exploration Behavior.
Paul MH, Choi M, Schlaudraff J, Deller T, Del Turco D
Cerebral cortex (New York, N.Y. : 1991) (2019) : . . **IHC, EM; tested species: mouse**

Chronic corticosterone exposure alters postsynaptic protein levels of PSD-95, NR1, and synaptopodin in the mouse brain.
Cohen JW, Louneva N, Han LY, Hodes GE, Wilson RS, Bennett DA, Lucki I, Arnold SE
Synapse (New York, N.Y.) (2011) 658: 763-70. . **WB, IHC**

Synaptopodin regulates plasticity of dendritic spines in hippocampal neurons.
Vlachos A, Korkotian E, Schonfeld E, Copanaki E, Deller T, Segal M
The Journal of neuroscience : the official journal of the Society for Neuroscience (2009) 294: 1017-33. . **WB, ICC**

Synaptopodin Regulates Denervation-Induced Plasticity at Hippocampal Mossy Fiber Synapses.
Kruse P, Brandes G, Hemeling H, Huang Z, Wrede C, Hegermann J, Vlachos A, Lenz M
Cells (2024) 132: . . **IP; tested species: mouse**

Low-dose mixtures of dietary nutrients ameliorate behavioral deficits in multiple mouse models of autism.
Huang TN, Lin MH, Hsu TT, Yu CH, Hsueh YP
PLoS biology (2025) 2312: e3003231. . **WB; tested species: mouse**

Unveiling the cell biology of hippocampal neurons with dendritic axon origin.
Han Y, Hacker D, Donders BC, Parperis C, Thuenauer R, Leterrier C, Grünewald K, Mikhaylova M
The Journal of cell biology (2025) 2241: . . **ICC; tested species: rat**

Access the online factsheet including applicable protocols at https://sysy.com/product/163002 or scan the QR-code.

FAQ - How should I store my antibody?

Shipping Conditions

- All SYSY antibodies and control proteins/peptides are shipped lyophilized (vacuum freeze-dried). In this form, they remain stable 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. **Do not freeze lyophilized antibodies**. Temperatures below 0°C may impair performance.
- **Fluorescence-labeled antibodies** should be reconstituted immediately upon receipt. Long-term storage of lyophilized fluorophore-conjugates may cause aggregation.
- **Control peptides** should be stored at -20°C before reconstitution.

Long Term Storage after Reconstitution (General Considerations)

- **Do not use frost-free ("no-frost") freezers.** These units periodically warm to remove ice buildup, causing freeze–thaw cycles that can damage antibodies.
- Store vials in areas with minimal temperature fluctuation - preferably toward the back of the freezer, not on the door.
- Aliquot reconstituted antibodies and store at –20°C to –80°C.
- Avoid very small aliquots (<20 µL), as evaporation and adsorption to tube surfaces can reduce antibody concentration and activity.
- Use the smallest practical storage vial to minimize surface area.
- Adding glycerol to a final concentration of 50% prevents freezing at -20°C, allowing storage in liquid form and effectively avoiding freeze–thaw cycles.

Product Specific Hints for Storage

Control proteins / peptides

- Store at -20°C to -80°C

Monoclonal Antibodies

- **Ascites and hybridoma supernatant:** Store at -20°C to -80°C
  Prolonged storage at 4°C is not recommended, as proteases present in ascites may degrade antibodies.
- **Purified IgG:** Store at -20°C to -80°C
  Adding a carrier protein (e.g., BSA) enhances long-term stability.
  Many SYSY antibodies already contain carrier proteins - refer to the respective datasheet for details.

Polyclonal Antibodies

- **Crude antisera:** Can be stored at 4°C with antimicrobials added, but -20°C to -80°C is preferred
- **Affinity-purified antibodies:** Less stable than antisera; store at -20°C to -80°C
  Adding a carrier protein such as BSA improves long-term stability.
  Most SYSY antibodies already contain carrier proteins - refer to the respective datasheet for details.

Fluorescence-labeled Antibodies

- Store as a liquid with 1:1 (v/v) glycerol at -20°C, and protect from light exposure

Avoid repeated freeze-thaw cycles for all antibodies!

FAQ - How should I reconstitute my antibody?

Reconstitution

- All purified SYSY antibodies are lyophilized from PBS. To reconstitute the antibody in PBS, add the volume of deionized water specified in the corresponding datasheet. If a larger final volume is desired, first add the recommended amount of water, then adjust with PBS and, if needed, add a stabilizing carrier protein (e.g., BSA) to a final concentration of 2%. Some SYSY antibodies already contain albumin; please take this into account before adding additional carrier protein.

For complete reconstitution, carefully remove the vial cap. After adding water, briefly vortex the solution. To collect the liquid at the bottom of the vial, place the vial inside a 50 ml centrifuge tube padded with paper and centrifuge briefly.

- If desired, small amounts of azide or thimerosal may be added to prevent microbial growth. This is particularly recommended when storing an aliquot at 4°C.
- After reconstitution of fluorescence-labeled antibodies, add glycerol 1:1 (v/v) to achieve a final concentration of 50%. This prevents freezing at –20°C and keeps the antibody in liquid form, effectively avoiding freeze–thaw cycles.
- Glycerol may also be added to unlabeled primary antibodies as a general measure to prevent freeze–thaw damage.
- For further guidance, please refer to our **storage tips** and recommendations for reconstituted antibodies, control peptides, and control proteins.