SYSY Antibodies

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Synaptopodin

Cat.No. 163 004; Polyclonal Guinea pig antibody, 100 µl antiserum (lyophilized)

Data Sheet

Reconstitution/ Storage	100 µl antiserum, lyophilized. For **reconstitution** add 100 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 : 500 up to 1 : 1000 (AP staining) (see remarks) **IP**: not tested yet **ICC**: 1 : 500 **IHC**: 1 : 200 **IHC-P (FFPE)**: 1 : 200 up to 1 : 500 **ExM**: external data (see remarks)
Immunogen	Recombinant protein corresponding to residues near the central region of mouse Synaptopodin. (UniProt Id: Q8CC35)
Reactivity	Reacts with: rat (Q9Z327), mouse (Q8CC35), human (Q8N3V7). 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 PubMed: 28922860
Matching control	163-0P
Remarks	**WB**: The antibody is less sensitive than the rabbit antiserum (cat. no. 163 002). **ExM**: 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 163 004

Expansion-enhanced super-resolution radial fluctuations enable nanoscale molecular profiling of pathology specimens.
Kylies D, Zimmermann M, Haas F, Schwerk M, Kuehl M, Brehler M, Czogalla J, Hernandez LC, Konczalla L, Okabayashi Y, Menzel J, et al.
Nature nanotechnology (2023) : . . **IHC-P, EXM; tested species: human,mouse**

Smad4 promotes diabetic nephropathy by modulating glycolysis and OXPHOS.
Li J, Sun YBY, Chen W, Fan J, Li S, Qu X, Chen Q, Chen R, Zhu D, Zhang J, Wu Z, et al.
EMBO reports (2020) : e48781. . **WB, IHC; tested species: mouse**

CPT1A Protects Podocytes From Lipotoxicity and Apoptosis In Vitro and Alleviates Diabetic Nephropathy In Vivo.
Xie Y, Yuan Q, Tang B, Xie Y, Cao Y, Qiu Y, Zeng J, Wang Z, Su H, Zhang C
Diabetes (2024) 736: 879-895. . **IHC-P, ICC; tested species: mouse,human**

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: . . **IHC; tested species: mouse**

Remodeling synaptic connections via engineered neuron-astrocyte interactions.
Kim SH, Won W, Kim GH, Kook YH, Son S, Choi S, Kang DY, Park MG, Choi YJ, Won SS, Shin J, et al.
Nature communications (2026) 171: . . **IHC; tested species: mouse**

Structural plasticity of the axon initial segment in hippocampal granule cells after entorhinal denervation.
Schneider AJ, Bozic F, Zelic M, Rößler N, Smilovic D, Vuksic M, Engelhardt M, Deller T, Fellenz M
Brain research bulletin (2026) 237: 111790. . **IHC; tested species: mouse**

Targeting SMPDL3B to Ameliorate Radiation- and Cisplatin-Induced Renal Toxicity.
Ahmad A, Mallela SK, Ansari S, Alnukhali M, Merscher S, Mitrofanova A, Zeidan YH, Pollack A, Fornoni A, Marples B
Cells (2026) 152: . . **IHC-P; tested species: mouse**

Mouse Alport podocytes are susceptible to AAV9 transduction in vivo.
Lin MH, Omachi K, Begin JF, Richardson JL, Miner JH
Kidney international (2025) : . . **IHC; tested species: mouse**

Autoantibody-triggered podocyte membrane budding drives autoimmune kidney disease.
Lahme K, Sachs W, Froembling S, Loreth D, Böttcher-Dierks V, Neumann K, Hann FM, Arkan N, Brehler M, Reichelt J, Sgries A, et al.
Cell (2025) : . . **IHC; tested species: mouse**

Pathology-oriented multiplexing enables integrative disease mapping.
Kuehl M, Okabayashi Y, Wong MN, Gernhold L, Gut G, Kaiser N, Schwerk M, Gräfe SK, Ma FY, Tanevski J, Schäfer PSL, et al.
Nature (2025) : . . **IHC-P; tested species: mouse**

Access the online factsheet including applicable protocols at https://sysy.com/product/163004 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.