SYSY Antibodies

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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**: 1 : 250 up to 1 : 500
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

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).

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**

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**

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**

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**

Expression of synaptic proteins and development of dendritic spines in fetal and postnatal neocortex of the pig, the European wild boar Sus scrofa.
Sobierajski E, Czubay K, Schmidt MR, Wiedenski S, Rettschlag S, Beemelmans C, Beemelmans C, Wahle P
Brain structure & function (2025) 2302: 38. . **WB; tested species: pig**

Stabilization of Spine Synaptopodin by mGluR1 Is Required for mGluR-LTD.
Speranza L, Inglebert Y, De Sanctis C, Wu PY, Kalinowska M, McKinney RA, Francesconi A
The Journal of neuroscience : the official journal of the Society for Neuroscience (2022) 429: 1666-1678. . **ICC; tested species: mouse**

Combined DiI and Antibody Labeling Reveals Complex Dysgenesis of Hippocampal Dendritic Spines in a Mouse Model of Fragile X Syndrome.
Speranza L, Filiz KD, Goebel S, Perrone-Capano C, Pulcrano S, Volpicelli F, Francesconi A
Biomedicines (2022) 1011: . . **IHC; tested species: mouse**

EW-7197 Attenuates the Progression of Diabetic Nephropathy in db/db Mice through Suppression of Fibrogenesis and Inflammation.
Ha KB, Sangartit W, Jeong AR, Lee ES, Kim HM, Shim S, Kukongviriyapan U, Kim DK, Lee EY, Chung CH
Endocrinology and metabolism (Seoul, Korea) (2022) 371: 96-111. . **WB; tested species: mouse**

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 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.