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Synaptopodin

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

Data Sheet

Decemble the Line /	200 ul anticorum luonhilizad. For reconstitution add 200 ul H. O. then aliquet and
Storage	200 μ l antiserum, lyophilized. For reconstitution add 200 μ l H ₂ O, then aliquot and store at -20°C until use.
Scorage	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
	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.
- '6' '	
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	163-0P
control	105-0P
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

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

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

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

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 freezedried) 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 freezethaw cycles.
- Please refer to our tips and hints for subsequent storage of reconstituted antibodies and control peptides and proteins.