

Synaptotagmin 1 cytoplasmic tail

Cat.No. 105 011; Monoclonal mouse antibody, 100 µg purified IgG (lyophilized)

Data Sheet

Reconstitution/ Storage	100 µg purified IgG, lyophilized. Albumin and azide were added for stabilization. For reconstitution add 100 µl H ₂ O to get a 1mg/ml solution in PBS. Then aliquot and store at -20°C to -80°C until use. For detailed information, see back of the data sheet.
Applications	WB: 1 : 1000 (AP staining) (see remarks) IP: yes ICC: 1 : 100 up to 1 : 500 IHC: 1 : 500 IHC-P/FFPE: 1 : 500 EM: yes ELISA: yes (see remarks)
Clone	41.1
Subtype	IgG2a (κ light chain)
Immunogen	Recombinant protein corresponding to AA 80 to 421 from rat Synaptotagmin1 (UniProt Id: P21707)
Epitop	Epitop: AA 150 to 240 from rat Synaptotagmin1 (UniProt Id: P21707)
Reactivity	Reacts with: human (P21579), rat (P21707), mouse (P46096), mammals, zebrafish. Other species not tested yet.
Specificity	Specific for mammalian synaptotagmin 1, no cross-reactivity to other synaptotagmins. K.O. PubMed: 29274147
Remarks	Since synaptotagmin 1 is unevenly expressed in neuronal subpopulations and may, in fact, be missing from some, it is less well suited as a general marker for synapses. WB: Non-boiled samples are recommended when running SDS-PAGE. ELISA: Suitable as capture antibody for sandwich-ELISA with cat. no. 105 002 as detector antibody. The ELISA-protocol for membrane proteins is recommended.

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

Access the online factsheet including applicable protocols at <https://susy.com/product/105011> or scan the QR-code.



Background

Synaptotagmin 1 also known as **p65**, is an integral membrane glycoprotein of neuronal synaptic vesicles and secretory granules of neuroendocrine cells that is widely (but not ubiquitously) expressed in the central and peripheral nervous system. It has a variable N-terminal domain that is exposed to the lumen of the vesicle and a conserved cytoplasmic tail that contains two Ca²⁺-binding C2-domains. Ca²⁺-binding to synaptotagmin triggers exocytosis of synaptic vesicles, thus linking Ca²⁺-influx during depolarization to neurotransmitter release.

Luminal antibodies were used in living neurons to label synaptic vesicles from the outside via endocytotic uptake.

Selected References for 105 011

- SV2B regulates synaptotagmin 1 by direct interaction. Lazzell DR, Belizaire R, Thakur P, Sherry DM, Janz R. The Journal of biological chemistry (2004) 27950: 52124-31. . **IHC, IP, WB; tested species: mouse**
- Synaptotagmin I, synaptobrevin II, and syntaxin I are coexpressed in rat and gerbil pinealocytes. Redecker P. Cell and tissue research (1996) 2833: 443-54. . **WB, EM, IHC; tested species: rat**
- Structural and mutational analysis of functional differentiation between synaptotagmins-1 and -7. Xue M, Craig TK, Shin OH, Li L, Brautigam CA, Tomchick DR, Südhof TC, Rosenmund C, Rizo J. PLoS one (2010) 59: . . **WB, ICC; tested species: mouse**
- Clathrin-independent endocytic retrieval of SV proteins mediated by the clathrin adaptor AP-2 at mammalian central synapses. López-Hernández T, Takenaka KI, Mori Y, Kongpracha P, Nagamori S, Haucke V, Takamori S. eLife (2022) 11: . . **WB, ICC; tested species: mouse**
- Creatine transporter deficiency impairs stress-adaptation and brain energetics homeostasis. Chen HR, Zhang-Brotzge X, Morozov YM, Li Y, Wang S, Zhang H, Kuan IS, Fugate EM, Mao H, Sun YY, Rakic P, et al. JCI insight (2021) : . . **WB, IHC; tested species: mouse**
- Synaptotagmin-7 enhances calcium-sensing of chromaffin cell granules and slows discharge of granule cargos. Bendahmane M, Chapman-Morales A, Kreutzberger AJB, Schenk NA, Mohan R, Bakshi S, Philippe J, Zhang S, Kiessling V, Tamm LK, Giovannucci DR, et al. Journal of neurochemistry (2020) : e14986. . **WB, ICC; tested species: mouse**
- Endophilin-A coordinates priming and fusion of neurosecretory vesicles via intersectin. Gowrisankaran S, Houy S, Del Castillo JGP, Steubler V, Gelker M, Kroll J, Pinheiro PS, Schwitters D, Halbsgut N, Pechstein A, van Weering JRT, et al. Nature communications (2020) 111: 1266. . **WB, ICC; tested species: mouse**
- Expression and secretion of synaptic proteins during stem cell differentiation to cortical neurons. Nazir FH, Becker B, Brinkmalm A, Höglund K, Sandelius A, Bergström P, Satir TM, Öhrfelt A, Blennow K, Agholme L, Zetterberg H, et al. Neurochemistry international (2018) : . . **WB, ICC; tested species: human**
- A novel method for culturing stellate astrocytes reveals spatially distinct Ca²⁺ signaling and vesicle recycling in astrocytic processes. Wolfes AC, Ahmed S, Awasthi A, Stahlberg MA, Rajput A, Magruder DS, Bonn S, Dean C. The Journal of general physiology (2017) 1491: 149-170. . **ICC, WB**
- JIP3 localises to exocytic vesicles and focal adhesions in the growth cones of differentiated PC12 cells. Caswell PT, Dickens M. Molecular and cellular biochemistry (2017) : . . **WB, ICC; tested species: rat**
- Wnt signalling tunes neurotransmitter release by directly targeting Synaptotagmin-1. Ciani L, Marzo A, Boyle K, Stamatakou E, Lopes DM, Anane D, McLeod F, Rosso SB, Gibb A, Salinas PC. Nature communications (2015) 6: 8302. . **WB, ICC**
- The schizophrenia risk gene product miR-137 alters presynaptic plasticity. Siebert S, Seo J, Kwon EJ, Rudenko A, Cho S, Wang W, Flood Z, Martorell AJ, Ericsson M, Mungenast AE, Tsai LH, et al. Nature neuroscience (2015) 187: 1008-16. . **WB, IHC; tested species: mouse**
- Phosphorylation of cysteine string protein in the brain: developmental, regional and synaptic specificity. Evans GJ, Morgan A. The European journal of neuroscience (2005) 2110: 2671-80. . **WB, ICC**

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 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.