SYSY Antibodies

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Synaptotagmin4

Cat.No. 105 043; Polyclonal rabbit antibody, 50 µg specific antibody (lyophilized)

Data Sheet

Reconstitution/ Storage	50 µg specific antibody, lyophilized. Affinity purified with the immunogen. Albumin was added for stabilization. For **reconstitution** add 50 µl H_2O to get a 1mg/ml solution in PBS. Then aliquot and store at -20°C to -80°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 : 100 up to 1 : 1000 (AP staining) **IP**: yes **ICC**: not recommended (see remarks) **IHC**: not recommended **IHC-P (FFPE)**: not tested yet
Immunogen	Recombinant protein corresponding to AA 40 to 151 from rat Synaptotagmin4 (UniProt Id: P50232)
Reactivity	Reacts with: rat (P50232), mouse (P40749). Other species not tested yet.
Specificity	K.O. validated
Matching control	105-4P
Remarks	**ICC**: Cat. no. 105 143 is recommended.

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

Background

Up to now at least 17 synaptotagmins have been identified. **Synaptotagmin4** is composed of a vesicular, a transmembrane and two C2 domains. Only the C2B domain is able to bind calcium. In the C2A domain one of the calcium binding aspartates has been substituted for serine leading to a loss of its binding capabilities.
The localization of synaptotagmin4 is still under discussion. A localization to synaptic vesicles (SVs) has been postulated but more recent studies suggest that it is present in the Golgi compartment, in distal parts of neurites and on large dense core vesicles (LDCVs) of NGF differentiated PC12 cells.

Selected References for 105 043

Synaptotagmin-IV modulates synaptic function and long-term potentiation by regulating BDNF release.
Dean C, Liu H, Dunning FM, Chang PY, Jackson MB, Chapman ER
Nature neuroscience (2009) 126: 767-76. . **WB, IP, ICC**

Cell therapy modulates expression of Tax1-binding protein 1 and synaptotagmin IV in a model of optic nerve lesion.
Mesentier-Louro LA, Coronel J, Zaverucha-do-Valle C, Mencalha A, Paredes BD, Abdelhay E, Mendez-Otero R, Santiago MF
Investigative ophthalmology & visual science (2012) 538: 4720-9. . **WB, IHC**

Synaptotagmin IV: a multifunctional regulator of peptidergic nerve terminals.
Zhang Z, Bhalla A, Dean C, Chapman ER, Jackson MB
Nature neuroscience (2009) 122: 163-71. . **WB, EM**

Synaptotagmin 4 Regulates Pancreatic β Cell Maturation by Modulating the Ca2+ Sensitivity of Insulin Secretion Vesicles.
Huang C, Walker EM, Dadi PK, Hu R, Xu Y, Zhang W, Sanavia T, Mun J, Liu J, Nair GG, Tan HYA, et al.
Developmental cell (2018) 453: 347-361.e5. . **WB, IHC; tested species: mouse**

Involvement of complexin 2 in docking, locking and unlocking of different SNARE complexes during sperm capacitation and induced acrosomal exocytosis.
Tsai PS, Brewis IA, van Maaren J, Gadella BM
PloS one (2012) 73: e32603. . **WB, ICC; tested species: pig**

Distinct subsets of Syt-IV/BDNF vesicles are sorted to axons versus dendrites and recruited to synapses by activity.
Dean C, Liu H, Staudt T, Stahlberg MA, Vingill S, Bückers J, Kamin D, Engelhardt J, Jackson MB, Hell SW, Chapman ER, et al.
The Journal of neuroscience : the official journal of the Society for Neuroscience (2012) 3216: 5398-413. . **WB, ICC**

Loss of synaptotagmin IV results in a reduction in synaptic vesicles and a distortion of the Golgi structure in cultured hippocampal neurons.
Arthur CP, Dean C, Pagratis M, Chapman ER, Stowell MH
Neuroscience (2010) 1671: 135-42. . **WB, IP**

Deficiency of PKA-mediated SNAP-25b phosphorylation destabilizes exocytotic fusion pores and reduces the interactions of t-SNAREs.
Hsiao YT, Su YL, Chen PC, Huang CT, Hsieh YY, Chiang N, Lin YC, Lu JC, Wang CT
The Journal of physiology (2025) : . . **WB; tested species: rat**

REST/NRSF drives homeostatic plasticity of inhibitory synapses in a target-dependent fashion.
Prestigio C, Ferrante D, Marte A, Romei A, Lignani G, Onofri F, Valente P, Benfenati F, Baldelli P
eLife (2021) 10: . . **WB; tested species: mouse**

Synaptotagmin oligomerization is essential for calcium control of regulated exocytosis.
Bello OD, Jouannot O, Chaudhuri A, Stroeva E, Coleman J, Volynski KE, Rothman JE, Krishnakumar SS
Proceedings of the National Academy of Sciences of the United States of America (2018) 11532: E7624-E7631. . **WB; tested species: rat**

Reduced insulin secretion correlates with decreased expression of exocytotic genes in pancreatic islets from patients with type 2 diabetes.
Andersson SA, Olsson AH, Esguerra JL, Heimann E, Ladenvall C, Edlund A, Salehi A, Taneera J, Degerman E, Groop L, Ling C, et al.
Molecular and cellular endocrinology (2012) 3641-2: 36-45. . **WB**

Access the online factsheet including applicable protocols at https://sysy.com/product/105043 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.