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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 ₂ O 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: 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. <u>105 143</u> 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

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

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

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

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, ICC; IP

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

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

Deficiency of PKA-mediated SNAP-25b phosphorylation destabilizes exocytotic fusion pores and reduces the interactions of t-

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

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 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.