SYSY Antibodies

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Munc13-1

Cat.No. 126 103; Polyclonal rabbit antibody, 50 µg specific antibody (lyophilized)

Data Sheet

Reconstitution/ Storage	50 µg specific antibody, lyophilized. Affinity purified with the immunogen. Albumin and azide were 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 : 1000 (AP staining) **IP**: yes (see remarks) **ICC**: 1 : 500 up to 1 : 1000 **IHC**: 1 : 200 (see remarks) **IHC-P (FFPE)**: not tested yet **ExM**: external data (see remarks) **DNA-PAINT**: external data (see remarks) **EM**: external data (see remarks) **ELISA**: external data (see remarks)
Immunogen	Recombinant protein corresponding to AA 3 to 317 from rat Munc13-1 (UniProt Id: Q62768)
Reactivity	Reacts with: human (Q9UPW8), rat (Q62768), mouse (Q4KUS2), zebrafish. Other species not tested yet.
Specificity	K.O. validated PubMed: 28772123
Remarks	**IP**: Denaturing IP-protocol is recommended. Protein-protein interactions may be affected. **IHC**: Antigen retrieval with citrate buffer pH 6 is required. **ExM**: This antibody has been successfully applied and published for this method by customers (see application-specific references). **DNA-PAINT**: This antibody has been successfully applied and published for this method by customers (see application-specific references). **EM**: This antibody has been successfully applied and published for this method by customers (see application-specific references). **ELISA**: 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

Munc13s are homologues of the C. elegans unc-13 gene product. Three brain-specific isoforms, Munc13-1, -13-2, and -13-3, are expressed in mammals, where they localize to presynaptic terminals. All three isoforms share multiple regulatory domains that may mediate phorbol ester and diacylglycerol binding.
Munc13-1 shows the broadest expression pattern and is found in cortex, cerebellum, olfactory bulb, and hippocampus. **Munc13-2** is mainly expressed in cortex and hippocampus, whereas **Munc13-3** exhibits highest expression levels in cerebellum and pons.
Munc13-1 interacts directly with a putative coiled-coil domain in the N-terminal part of syntaxin and is involved in synaptic vesicle priming. For **Munc13-2** an additional ubiquitously expressed N-terminal splice variant (ubMunc13-2) has been described. **Munc13-3** has been shown to be involved in the regulation of cerebellar synaptic transmission and motor learning.

For more information on protein expression pattern, please refer to the overview image in our SYSY Antibodies ATLAS.

Selected References for 126 103

Munc13-1 restoration mitigates presynaptic pathology in spinal muscular atrophy.
Moradi M, Weingart J, Deng C, Nasouti M, Briese M, Jablonka S, Sauer M, Sendtner M
Nature communications (2025) 161: 8724. . **EXM, WB, IHC, ICC; tested species: mouse,human**

Loss of synaptic Munc13-1 underlies neurotransmission abnormalities in spinal muscular atrophy.
Moradi M, Deng C, Sendtner M
Cellular and molecular life sciences : CMLS (2025) 821: 325. . **WB, ICC, IHC; tested species: mouse**

Molecular definition of distinct active zone protein machineries for Ca2+ channel clustering and synaptic vesicle priming.
Emperador-Melero J, Andersen JW, Metzbower SR, Levy AD, Dharmasri PA, de Nola G, Blanpied TA, Kaeser PS
bioRxiv : the preprint server for biology (2023) : . . **ICC, DNA_PAINT; tested species: mouse**

Variability in the Munc13-1 content of excitatory release sites.
Karlocai MR, Heredi J, Benedek T, Holderith N, Lorincz A, Nusser Z
eLife (2021) 10: . . **IHC, EM; tested species: mouse**

Munc13-1 couples DAG and Ca2+ signaling to dynamic vesicle priming, synaptic short-term plasticity, and posttetanic potentiation.
Ranjan M, Lin KH, Mueller BD, Wojcik SM, Lohse M, Südhof TC, Jorgensen EM, Neher E, Lipstein N, Brose N, Taschenberger H, et al.
Science advances (2026) 127: eaea0449. . **WB, IHC; KO verified; tested species: mouse**

Endogenous SNAP-Tagging of Munc13□1 for Monitoring Synapse Nanoarchitecture.
Kowald M, Bachollet SPJT, Benseler F, Steinecker M, Boll M, Kaushik S, Soykan T, Sun S, Birke R, Ilic D, Brose N, et al.
JACS Au (2025) 56: 2475-2490. . **WB, ICC; tested species: mouse**

Loss of postsynaptic NMDARs drives nanoscale reorganization of Munc13-1 and PSD-95.
Dharmasri PA, DeMarco EM, Anderson MC, Levy AD, Blanpied TA
bioRxiv : the preprint server for biology (2024) : . . **ICC, DNA_PAINT; tested species: rat**

Liprin-α proteins are master regulators of human presynapse assembly.
Marcó de la Cruz B, Campos J, Molinaro A, Xie X, Jin G, Wei Z, Acuna C, Sterky FH
Nature neuroscience (2024) : . . **WB, ICC; tested species: human**

Distinct active zone protein machineries mediate Ca2+ channel clustering and vesicle priming at hippocampal synapses.
Emperador-Melero J, Andersen JW, Metzbower SR, Levy AD, Dharmasri PA, de Nola G, Blanpied TA, Kaeser PS
Nature neuroscience (2024) 279: 1680-1694. . **DNA_PAINT, ICC; tested species: mouse**

Access the online factsheet including applicable protocols at https://sysy.com/product/126103 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.