SYSY Antibodies

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Munc13-2

Cat.No. 126 203; 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**: not tested yet **ICC**: not tested yet **IHC**: external data (see remarks) **IHC-P (FFPE)**: not tested yet **EM**: external data (see remarks)
Immunogen	Recombinant protein corresponding to AA 151 to 317 from rat Munc13-2 isoform 2 (UniProt Id: Q62769-2)
Reactivity	Reacts with: rat (Q62769), mouse (Q9Z1N9). Other species not tested yet.
Specificity	Specific for munc 13-2 brain specific isoform. K.O. validated
Remarks	**IHC**: This antibody has been successfully applied for this method by our customers using mild fixation (1% PFA at pH 6) according to Lorincz and Nusser 2010 (see gallery). It has not been validated using our standard protocol. **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

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 rat 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 (ubMunc 13-2) has been described. **Munc13-3** has been shown to be involved in the regulation of cerebellar synaptic transmission and motor learning.

Selected References for 126 203

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**

Dynamic recruitment of Munc13 primes docked secretory granules for exocytosis.
Echeverry S, Saras J, Lund PE, Dunevall J, Gandasi NR, Barg S
Cell reports (2025) 4410: 116301. . **WB, ICC; tested species: rat**

GRASPing experience-dependent protein expression signatures enriched for hippocampal engram cell synapses.
Moharana B, Nemat P, Pullen RM, Gradl A, Schipper M, Savage JE, Klaassen RV, van der Loo RJ, Chadick CH, Koopmans F, Gouwenberg Y, et al.
Science advances (2026) 1220: eadv3557. . **FACS; tested species: mouse**

Light-microscopy-based connectomic reconstruction of mammalian brain tissue.
Tavakoli MR, Lyudchik J, Januszewski M, Vistunou V, Agudelo Dueñas N, Vorlaufer J, Sommer C, Kreuzinger C, Oliveira B, Cenameri A, Novarino G, et al.
Nature (2025) 6428067: 398-410. . **EXM; tested species: mouse**

Presynaptic cAMP-PKA-mediated potentiation induces reconfiguration of synaptic vesicle pools and channel-vesicle coupling at hippocampal mossy fiber boutons.
Kim O, Okamoto Y, Kaufmann WA, Brose N, Shigemoto R, Jonas P
PLoS biology (2024) 2211: e3002879. . **EM; tested species: mouse,rat**

Selective Enrichment of Munc13-2 in Presynaptic Active Zones of Hippocampal Pyramidal Cells That Innervate mGluR1α Expressing Interneurons.
Holderith N, Aldahabi M, Nusser Z
Frontiers in synaptic neuroscience (2021) 13: 773209. . **IHC; KD verified; tested species: mouse,rat**

RIM-BP2 primes synaptic vesicles via recruitment of Munc13-1 at hippocampal mossy fiber synapses.
Brockmann MM, Maglione M, Willmes CG, Stumpf A, Bouazza BA, Velasquez LM, Grauel MK, Beed P, Lehmann M, Gimber N, Schmoranzer J, et al.
eLife (2019) 8: . . **IHC; tested species: mouse**

Differential Expression of Munc13-2 Produces Unique Synaptic Phenotypes in the Basolateral Amygdala of C57BL/6J and DBA/2J Mice.
Gioia DA, Alexander NJ, McCool BA
The Journal of neuroscience : the official journal of the Society for Neuroscience (2016) 3643: 10964-10977. . **WB**

Selected General References

Regulation of insulin exocytosis by Munc13-1.
Sheu L et al. J. Biol. Chem. (2003) PubMed:12871971

Access the online factsheet including applicable protocols at https://sysy.com/product/126203 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.