SYSY Antibodies

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VAMP4

Cat.No. 136 002; Polyclonal rabbit antibody, 200 µl antiserum (lyophilized)

Data Sheet

Reconstitution/ Storage	200 µl antiserum, lyophilized. For **reconstitution** add 200 µl H_2O, then aliquot and store at -20°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**: 1 : 100 up to 1 : 500 **IHC**: external data (see remarks) **IHC-P (FFPE)**: not tested yet
Immunogen	Recombinant protein corresponding to AA 1 to 117 from rat VAMP4 (UniProt Id: D4A560)
Reactivity	Reacts with: human (O75379), rat (D4A560), mouse (O70480), hamster, zebrafish. Other species not tested yet.
Specificity	K.O. validated PubMed: 33931449
Remarks	**IHC**: This antibody has been successfully used and published for this application by customers (see application-specific references). It is not compatible with our standard protocols.

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

Background

Vesicle-associated membrane protein 4 (VAMP4) is a v-SNARE protein involved in intracellular membrane trafficking and synaptic vesicle recycling. In non-neuronal cells, it is predominantly localized to the trans-Golgi network (TGN), but is also present on endosomes, transport vesicles, and secretory compartments. VAMP4 participates in trafficking between endosomes and the TGN [1, 2]. In neurons, VAMP4 is present on synaptic vesicles, has a specialized role in presynaptic membrane trafficking and neurotransmitter release and is required for efficient formation of synaptic vesicles [3]. VAMP4-containing vesicles have also been associated with asynchronous neurotransmitter release, distinguishing their function from that of VAMP2, which predominantly supports rapid synchronous release [4].
The trafficking of VAMP4 is regulated by sorting signals, including a di-leucine motif, which contributes to its endocytic retrieval and intracellular targeting [2,4]. Following intense neuronal activity, VAMP4 can be sorted toward endolysosomal compartments or recycled into synaptic vesicles, with this sorting influencing presynaptic release probability [5].
VAMP4 was shown to be enriched in TGN-associated tubular and vesicular membranes and to form SNARE complexes with syntaxin 6 [1].

Selected References for 136 002

VAMP4 directs synaptic vesicles to a pool that selectively maintains asynchronous neurotransmission.
Raingo J, Khvotchev M, Liu P, Darios F, Li YC, Ramirez DM, Adachi M, Lemieux P, Toth K, Davletov B, Kavalali ET, et al.
Nature neuroscience (2012) 155: 738-45. . **WB, ICC, IHC**

The vSNAREs VAMP2 and VAMP4 control recycling and intracellular sorting of post-synaptic receptors in neuronal dendrites.
Bakr M, Jullié D, Krapivkina J, Paget-Blanc V, Bouit L, Petersen JD, Retailleau N, Breillat C, Herzog E, Choquet D, Perrais D, et al.
Cell reports (2021) 3610: 109678. . **WB, ICC, EM; KD verified; tested species: rat**

Composition of isolated synaptic boutons reveals the amounts of vesicle trafficking proteins.
Wilhelm BG, Mandad S, Truckenbrodt S, Kröhnert K, Schäfer C, Rammner B, Koo SJ, Claßen GA, Krauss M, Haucke V, Urlaub H, et al.
Science (New York, N.Y.) (2014) 3446187: 1023-8. . **WB, ICC, IHC; tested species: mouse,rat**

β1-integrin- and KV1.3 channel-dependent signaling stimulates glutamate release from Th17 cells.
Birkner K, Wasser B, Ruck T, Thalman C, Luchtman D, Pape K, Schmaul S, Bitar L, Krämer-Albers EM, Stroh A, Meuth SG, et al.
The Journal of clinical investigation (2019) : . . **WB, ICC; tested species: mouse**

VAMP2 is implicated in the secretion of antibodies by human plasma cells and can be replaced by other synaptobrevins.
Gómez-Jaramillo L, Romero-García R, Jiménez-Gómez G, Riegle L, Ramos-Amaya AB, Brieva JA, Kelly-Worden M, Campos-Caro A
Cellular & molecular immunology (2018) 154: 353-366. . **WB, ICC; tested species: human**

Annexin A6 and Late Endosomal Cholesterol Modulate Integrin Recycling and Cell Migration.
García-Melero A, Reverter M, Hoque M, Meneses-Salas E, Koese M, Conway JR, Johnsen CH, Alvarez-Guaita A, Morales-Paytuvi F, Elmaghrabi YA, Pol A, et al.
The Journal of biological chemistry (2016) 2913: 1320-35. . **WB, ICC**

Selected SNARE proteins are essential for the polarized membrane insertion of igf-1 receptor and the regulation of initial axonal outgrowth in neurons.
Grassi D, Plonka FB, Oksdath M, Guil AN, Sosa LJ, Quiroga S
Cell discovery (2015) 1: 15023. . **WB, ICC**

The COG complex interacts directly with Syntaxin 6 and positively regulates endosome-to-TGN retrograde transport.
Laufman O, Hong W, Lev S
The Journal of cell biology (2011) 1943: 459-72. . **WB, ICC**

Access the online factsheet including applicable protocols at https://sysy.com/product/136002 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.