SYSY Antibodies

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Synaptophysin1 (p38-1)

Cat.No. 101 011C2; Monoclonal mouse antibody, 50 µg purified IgG (lyophilized)

Data Sheet

Reconstitution/ Storage	50 µg purified IgG, lyophilized, fluorescence-labeled with Cyanine 2. Albumin and azide were added for stabilization. For **reconstitution** add 50 µl H_2O to get a 1mg/ml solution in PBS. Either add 1:1 (v/v) glycerol, then aliquot and store at -20°C until use, or store aliquots at -80°C without additives. Reconstitute immediately upon receipt! Avoid bright light when working with the antibody to minimize photo bleeching of the fluorescent dye. For detailed information, see back of the data sheet.
Applications	**WB**: N/A **IP**: N/A **ICC**: 1 : 250 up to 1 : 1000 **IHC**: not tested yet **IHC-P (FFPE)**: not tested yet
Label	Cyanine 2
Clone	7.2
Subtype	IgG1 (λ light chain)
Immunogen	Full-length recombinant rat synaptophysin (UniProt Id: P07825)
Epitop	AA 219 to 307 from rat Synaptophysin1 (UniProt Id: P07825)
Reactivity	Reacts with: human (P08247), rat (P07825), mouse (Q62277), mammals. Weaker signal: zebrafish, other vertebrates. Other species not tested yet.
Specificity	K.O. validated
Remarks	Widely used as marker for nerve terminals and neuroendocrine tumors. For unknown reason, neuronal synaptophysin is better recognised than neuroendocrine synaptophysin. If this is a problem, the polyclonal rabbit antibody, cat. no. 101 002 or 101 203 are recommended.

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

Background

Synaptophysin1, also referred to as **p38-1**, is a membrane glycoprotein of synaptic vesicles that is ubiquitously expressed in all neurons and in many endocrine cells. It is currently the most widely used marker for nerve terminals and probably the best marker for the pathologist in differentiating neuroendocrine tumors.
Synaptophysin1 has four transmembrane domains with both N- and C-terminus facing the cytoplasm. It binds to synaptobrevin1 and synaptobrevin2 in detergent extracts but its function has not been elucidated completely. It forms a complex with dynamin at high Ca^{2+} concentration suggesting an involvement in synaptic vesicle endocytosis. As typical for synaptic vesicle proteins, synaptophysin1 represents a small protein family with two additonal members, synaptoporin (synaptophysin2) and panthophysin. Like synaptophysin1, synaptoporin is widely expressed in neurons and colocalizes with synaptophysin1 on synaptic vesicles whereas panthophysin is expressed in all tissues.

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

Selected References for 101 011C2

Synaptophysin accelerates synaptic vesicle fusion by expanding the membrane upon neurotransmitter loading.
Preobraschenski J, Kreutzberger AJB, Ganzella M, Münster-Wandowski A, Kreutzberger MAB, Oolsthorn LHM, Seibert S, Kiessling V, Riedel D, Witkowska A, Ahnert-Hilger G, et al.
Science advances (2025) 1117: eads4661. . **IP, ICC; tested species: mouse,rat**

Serine-129 phosphorylation of α-synuclein is an activity-dependent trigger for physiologic protein-protein interactions and synaptic function.
Parra-Rivas LA, Madhivanan K, Aulston BD, Wang L, Prakashchand DD, Boyer NP, Saia-Cereda VM, Branes-Guerrero K, Pizzo DP, Bagchi P, Sundar VS, et al.
Neuron (2023) 11124: 4006-4023.e10. . **WB; tested species: mouse**

Pyk2 overexpression in postsynaptic neurons blocks amyloid β1-42-induced synaptotoxicity in microfluidic co-cultures.
Kilinc D, Vreulx AC, Mendes T, Flaig A, Marques-Coelho D, Verschoore M, Demiautte F, Amouyel P, , Eysert F, Dourlen P, et al.
Brain communications (2020) 22: fcaa139. . **ICC; tested species: rat**

Selected General References

Essential roles in synaptic plasticity for synaptogyrin I and synaptophysin I.
Janz R et al. Neuron (1999) PubMed:10595519

Synaptophysin, a major synaptic vesicle protein, is not essential for neurotransmitter release.
McMahon HT et al. Proc. Natl. Acad. Sci. U.S.A. (1996) PubMed:8643476

The synaptic vesicle cycle: a cascade of protein-protein interactions.
Südhof TC et al. Nature (1995) PubMed:7791897

Cloning and sequence analysis of cDNA encoding p38, a major synaptic vesicle protein.
Buckley KM et al. J. Cell Biol. (1987) PubMed:3121632

Synaptophysin: molecular organization and mRNA expression as determined from cloned cDNA.
Leube RE et al. EMBO J. (1987) PubMed:3123215

A synaptic vesicle protein with a novel cytoplasmic domain and four transmembrane regions.
Südhof TC et al. Science (1987) PubMed:3120313

Access the online factsheet including applicable protocols at https://sysy.com/product/101011C2 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.