SYSY Antibodies

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Gephyrin

Cat.No. 147 111; Monoclonal mouse antibody, 100 µg purified IgG (lyophilized)

Data Sheet

Reconstitution/ Storage	100 µg purified IgG, lyophilized. Albumin and azide were added for stabilization. For **reconstitution** add 100 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 up to 1 : 5000 (AP staining) **IP**: yes **ICC**: 1 : 500 up to 1 : 1000 **IHC**: not recommended **IHC-P (FFPE)**: not recommended **IHC-Fr**: 1 : 500 (see remarks) **ExM**: external data (see remarks) **ELISA**:
Clone	3B11
Subtype	IgG1 (κ light chain)
Immunogen	Recombinant protein corresponding to AA 307 to 735 from rat Gephyrin (UniProt Id: Q03555)
Epitop	AA 326 to 550 from rat Gephyrin (UniProt Id: Q03555)
Reactivity	Reacts with: human (Q9NQX3), rat (Q03555), mouse (Q8BUV3), zebrafish. Other species not tested yet.
Specificity	Detects all splice variants that contain a complete E-domain including the C6 domain. K.O. validated PubMed: 26829712
Remarks	This antibody is highly recommended for Western blot experiments and immunoprecipitation. **IHC-Fr**: The following fixatives are possible: 4% formaldehyde/PFA, methanol-acetone. **ExM**: 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

Gephyrin is a bifunctional protein which is essential for both synaptic clustering of inhibitory neurotransmitter receptors in the central nervous system and the biosynthesis of the molybdenum cofactor (MoCo) in peripheral tissues. It co-purifies with the inhibitory glycine receptor (GlyR) and is expressed abundantly in all brain areas which contain synapses.

Selected References for 147 111

Spinal Cord Neuronal Network Formation in a 3D Printed Reinforced Matrix-A Model System to Study Disease Mechanisms.
Fischhaber N, Faber J, Bakirci E, Dalton PD, Budday S, Villmann C, Schaefer N
Advanced healthcare materials (2021) 1019: e2100830. . **WB, ICC, UPTAKE**

Chronic benzodiazepine treatment triggers gephyrin scaffold destabilization and GABAAR subsynaptic reorganization.
Chapman CA, Povysheva N, Tarr TB, Nuwer JL, Meriney SD, Johnson JW, Jacob TC
Frontiers in cellular neuroscience (2025) 19: 1624813. . **WB, ICC, DNA_PAINT**

TRPM2 and CaMKII Signaling Drives Excessive GABAergic Synaptic Inhibition Following Ischemia.
Burch AM, Garcia JD, O'Leary H, Haas A, Orfila JE, Tiemeier E, Chalmers N, Smith KR, Quillinan N, Herson PS
The Journal of neuroscience : the official journal of the Society for Neuroscience (2024) 4419: . . **WB, ICC, IHC; tested species: mouse**

Extracellular signal-regulated kinase and glycogen synthase kinase 3β regulate gephyrin postsynaptic aggregation and GABAergic synaptic function in a calpain-dependent mechanism.
Tyagarajan SK, Ghosh H, Yévenes GE, Imanishi SY, Zeilhofer HU, Gerrits B, Fritschy JM
The Journal of biological chemistry (2013) 28814: 9634-47. . **WB, IP**

Autism-associated ARHGEF9 variants impair GABAergic synapses and ultrasonic communication by reducing gephyrin phosphorylation.
Jung H, Kim B, Jang G, Lee H, Kim Y, Kim H, Lee HJ, Kim D, Yang Y, Jeong WC, Kim S, et al.
Molecular psychiatry (2025) : . . **WB, ICC; tested species: human,mouse**

Glycine Receptor β-Targeting Autoantibodies Contribute to the Pathology of Autoimmune Diseases.
Wiessler AL, Talucci I, Piro I, Seefried S, Hörlin V, Baykan BB, Tüzün E, Schaefer N, Maric HM, Sommer C, Villmann C, et al.
Neurology(R) neuroimmunology & neuroinflammation (2024) 112: e200187. . **WB, ICC; tested species: human,mouse**

The TMEM132B-GABAA receptor complex controls alcohol actions in the brain.
Wang G, Peng S, Reyes Mendez M, Keramidas A, Castellano D, Wu K, Han W, Tian Q, Dong L, Li Y, Lu W, et al.
Cell (2024) 18723: 6649-6668.e35. . **WB, ICC; tested species: mouse**

Adamtsl3 mediates DCC signaling to selectively promote GABAergic synapse function.
Cramer TML, Pinan-Lucarre B, Cavaccini A, Damilou A, Tsai YC, Bhat MA, Panzanelli P, Rama N, Mehlen P, Benke D, Karayannis T, et al.
Cell reports (2023) 428: 112947. . **ICC, IHC; tested species: mouse**

The complement inhibitor CD59 is required for GABAergic synaptic transmission in the dentate gyrus.
Wen L, Yang X, Wu Z, Fu S, Zhan Y, Chen Z, Bi D, Shen Y
Cell reports (2023) 424: 112349. . **WB, IHC; tested species: mouse**

LPS induces microglial activation and GABAergic synaptic deficits in the hippocampus accompanied by prolonged cognitive impairment.
Jung H, Lee D, You H, Lee M, Kim H, Cheong E, Um JW
Scientific reports (2023) 131: 6547. . **WB, IHC; tested species: mouse**

A DARPin-based molecular toolset to probe gephyrin and inhibitory synapse biology.
Campbell BFN, Dittmann A, Dreier B, Plückthun A, Tyagarajan SK
eLife (2022) 11: . . **ICC, IHC; tested species: rat**

The Alzheimer susceptibility gene BIN1 induces isoform-dependent neurotoxicity through early endosome defects.
Lambert E, Saha O, Soares Landeira B, Melo de Farias AR, Hermant X, Carrier A, Pelletier A, Gadaut J, Davoine L, Dupont C, Amouyel P, et al.
Acta neuropathologica communications (2022) 101: 4. . **ICC, IHC; tested species: rat**

Access the online factsheet including applicable protocols at https://sysy.com/product/147111 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.