SYSY Antibodies

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Gephyrin

Cat.No. 147 011; 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**: not recommended (see remarks) **IP**: not recommended (see remarks) **ICC**: 1 : 1000 up to 1 : 2000 **IHC**: 1 : 1000 up to 1 : 2000 (see remarks) **IHC-P**: not recommended **ExM**: yes (see remarks) **DNA-PAINT**: yes (see remarks) **Clarity**: 1 : 100 (see remarks) **EM**: yes
Clone	mAb7a
Subtype	IgG1 (κ light chain)
Immunogen	Nativ Protein corresponding to AA 1 to 768 from rat Gephyrin (UniProt Id: Q03555)
Epitop	AA 264 to 276 from rat Gephyrin (UniProt Id: Q03555)
Reactivity	Reacts with: human (Q9NQX3), rat (Q03555), mouse (Q8BUV3), pig, goldfish, zebrafish, chicken. Other species not tested yet.
Specificity	Specific for the brain specific 93 kDa splice variant phosphorylated at Ser-270. K.O. validated PubMed: 9812897
Remarks	**WB**: Clone 3B11 (cat. no. 147 111) is highly recommended. **IP**: Clone 3B11 (cat. no. 147 111) is highly recommended. **IHC**: Hybridoma supernatant (cat. no. 147 021) highly recommended. For best results use the protocol of Schneider Gasser et al., 2006. **ExM**: This antibody has been successfully used for the epitope-preserving magnified analysis of the proteome (eMAP) expansion microscopy method (Park et al. 2021. PMID: 34767453). **DNA-PAINT**: This antibody has been successfully used for DNA-PAINT application (see Unterauer et al., 2024; PMID: 38552614). **Clarity**: This antibody has been successfully used for CLARITY application in human brain (Woelfle et al., 2023; PMID: 37221592).

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 147 011

Autism and Schizophrenia-Associated CYFIP1 Regulates the Balance of Synaptic Excitation and Inhibition.
Davenport EC, Szulc BR, Drew J, Taylor J, Morgan T, Higgs NF, López-Doménech G, Kittler JT
Cell reports (2019) 268: 2037-2051.e6. . **WB, ICC, IHC; tested species: mouse**

HIV-1 Tat-Induced Astrocytic Extracellular Vesicle miR-7 Impairs Synaptic Architecture.
Hu G, Niu F, Liao K, Periyasamy P, Sil S, Liu J, Dravid SM, Buch S
Journal of neuroimmune pharmacology : the official journal of the Society on NeuroImmune Pharmacology (2019) : . . **WB, ICC, IHC; tested species: human,rat,monkey**

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**

Distribution of gephyrin-immunoreactivity in the trigeminal motor nucleus: an immunohistochemical study in rats.
Li Z, Ge S, Zhang F, Zhang T, Mizuno N, Hioki H, Kaneko T, Gao G, Li J
Anatomical record (Hoboken, N.J. : 2007) (2012) 2954: 641-51. . **IHC, EM; tested species: rat**

Cd99l2 regulates excitatory synapse development and restrains immediate-early gene activation.
Kang M, Yoon SH, Kang M, Park SP, Song WS, Kim J, Lee S, Park DH, Song JM, Kim B, Park KH, et al.
Cell reports (2025) 441: 115155. . **WB, IHC; tested species: human,mouse**

Mdga2 deficiency leads to an aberrant activation of BDNF/TrkB signaling that underlies autism-relevant synaptic and behavioral changes in mice.
Zhao D, Huo Y, Zheng N, Zhu X, Yang D, Zhou Y, Wang S, Jiang Y, Wu Y, Zhang YW
PLoS biology (2025) 234: e3003047. . **WB, ICC; tested species: human,mouse**

Role of the Glycine Receptor β Subunit in Synaptic Localization and Pathogenicity in Severe Startle Disease.
Wiessler AL, Hasenmüller AS, Fuhl I, Mille C, Cortes Campo O, Reinhard N, Schenk J, Heinze KG, Schaefer N, Specht CG, Villmann C, et al.
The Journal of neuroscience : the official journal of the Society for Neuroscience (2024) 442: . . **ICC, IHC; tested species: mouse**

Astrocyte-secreted neurocan controls inhibitory synapse formation and function.
Irala D, Wang S, Sakers K, Nagendren L, Ulloa Severino FP, Bindu DS, Savage JT, Eroglu C
Neuron (2024) 11210: 1657-1675.e10. . **ICC, IHC; tested species: mouse,rat**

Learning-induced remodelling of inhibitory synapses in the motor cortex.
Bhembre N, Paolino A, Das SS, Guntupalli S, Fenlon LR, Anggono V
Open biology (2024) 1411: 240109. . **ICC, IHC; tested species: mouse,rat**

Brevican, Neurocan, Tenascin-C, and Tenascin-R Act as Important Regulators of the Interplay Between Perineuronal Nets, Synaptic Integrity, Inhibitory Interneurons, and Otx2.
Mueller-Buehl C, Reinhard J, Roll L, Bader V, Winklhofer KF, Faissner A
Frontiers in cell and developmental biology (2022) 10: 886527. . **WB, IHC; tested species: mouse**

Binding of gephyrin to microtubules is regulated by its phosphorylation at Ser270.
Zhou L, Kiss E, Demmig R, Kirsch J, Nawrotzki RA, Kuhse J
Histochemistry and cell biology (2021) : . . **WB, ICC; tested species: human,rat**

Chemico-genetic discovery of astrocytic control of inhibition in vivo.
Takano T, Wallace JT, Baldwin KT, Purkey AM, Uezu A, Courtland JL, Soderblom EJ, Shimogori T, Maness PF, Eroglu C, Soderling SH, et al.
Nature (2020) : . . **WB, ICC; tested species: mouse**

Access the online factsheet including applicable protocols at https://sysy.com/product/147011 or scan the QR-code.

FAQ - How should I store my antibody?

Shipping Conditions

- All our antibodies and control proteins / peptides are shipped lyophilized (vacuum freeze-dried) and are stable in this form 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. **They must not be stored in the freezer when still lyophilized!** Temperatures below zero may cause loss of performance.
- **Fluorescence-labeled antibodies** should be reconstituted immediately upon receipt. Long term storage (several months) may lead to aggregation.
- **Control peptides** should be kept at -20°C before reconstitution.

Long Term Storage after Reconstitution (General Considerations)

- The storage freezer must not be of the frost-free variety ("no-frost freezer"). This cycle between freezing and thawing (to reduce frost-build-up), which is exactly what should be avoided. For the same reason, antibody vials should be placed in an area of the freezer that has minimal temperature fluctuations, for instance towards the back rather than on a door shelf.
- Aliquot the antibody and store frozen (-20°C to -80°C). Avoid very small aliquots (below 20 µl) and use the smallest storage vial or tube possible. The smaller the aliquot, the more the stock concentration is affected by evaporation and adsorption of the antibody to the surface of the storage vial or tube. Adsorption of the antibody to the surface leads to a substantial loss of activity.
- The addition of glycerol to a final concentration of 50% lowers the freezing point of your stock and keeps your antibody at -20°C in liquid state. This efficiently avoids freeze and thaw cycles.

Product Specific Hints for Storage

Control proteins / peptides

- Store at -20°C to -80°C.

Monoclonal Antibodies

- **Ascites** and **hybridoma supernatant** should be stored at -20°C up to -80°C. **Prolonged storage at 4°C is not recommended!** Unlike serum, ascites may contain proteases that will degrade the antibodies.
- **Purified IgG** should be stored at -20°C up to -80°C. Adding a carrier protein like BSA will increase long term stability. Many of our antibodies already contain carrier proteins. Please refer to the data-sheet for detailed information.

Polyclonal Antibodies

- **Crude antisera**: With anti-microbials added, they may be stored at 4°C. However, frozen storage (-20°C up to -80°C) is preferable.
- **Affinity purified antibodies**: Less robust than antisera. Storage at -20°C up to -80°C is recommended. Adding a carrier protein like BSA will increase long term stability. Most of our antibodies already contain carrier proteins. Please refer to the data-sheet for detailed information.

Fluorescence-labeled Antibodies

- Store as a liquid with 1 : 1 (v/v) glycerol at -20°C. Protect these antibodies from light exposure.

Avoid repeated freeze-thaw cycles for all antibodies!

FAQ - How should I reconstitute my antibody?

Reconstitution

- All our purified antibodies are lyophilized from PBS. To reconstitute the antibody in PBS, add the amount of deionized water given in the respective datasheet. If higher volumes are preferred, add water as mentioned above and then the desired amount of PBS and a stabilizing carrier protein (e.g. BSA) to a final concentration of 2%. Some of our antibodies already contain albumin. Take this into account when adding more carrier protein.
  For complete reconstitution, carefully remove the lid. After adding water, briefly vortex the solution. You can spin down the liquid by placing the vial into a 50 ml centrifugation tube filled with paper.
- If desired, add small amounts of azide or thimerosal to prevent microbial growth. This is especially recommended if you want to keep an aliquot a 4°C.
- After reconstitution of fluorescence-labeled antibodies, add 1 : 1 (v/v) glycerol to a final concentration of 50%. This lowers the freezing point of your stock and keeps your antibody in liquid state at -20°C.
- Glycerol may also be added to unlabeled primary antibodies. It is a suitable way to avoid freeze-thaw cycles.
- Please refer to our **tips and hints for subsequent storage** of reconstituted antibodies and control peptides and proteins.