SYSY Antibodies

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GABA-A receptor γ2 extracellular

Cat.No. 224 003; 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) (see remarks) **IP**: yes **ICC**: 1 : 500 (see remarks) **IHC**: external data (see remarks) **IHC-P (FFPE)**: not tested yet **IHC-Fr**: 1 : 500 **IHC-G**: 1 : 500 (see remarks) **EM**: external data (see remarks)
Immunogen	Synthetic peptide corresponding to AA 39 to 67 from mouse GABA-A receptor γ2 (UniProt Id: P22723)
Reactivity	Reacts with: human (P18507), rat (P18508), mouse (P22723), monkey, zebrafish. Other species not tested yet.
Specificity	Specific for GABA-A receptor γ2. Does not discriminate between the L and S form. K.O. validated PubMed: 24849349
Matching control	224-0P
Remarks	**WB**: To avoid protein aggregation, do not heat samples for SDS-PAGE. **ICC**: This antibody can be used for the surface staining of living cells. **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. **IHC-G**: The following fixatives are possible: 3% glyoxal, 9% glyoxal. **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

Gamma-**a**mino**b**utyric **a**cid type **A** (**GABA-A**) receptors mediate the majority of inhibitory neurotransmission in the brain. These receptor proteins are ligand gated chloride ion channels and consist of a pentameric combination of different subunits (alpha, beta, **gamma**, delta, epsilon and rho). The resulting heterogenous population of GABA-A receptor subtypes are expressed throughout the brain with specific cellular and subcellular expression patterns.

Selected References for 224 003

The small GTPase ARF6 regulates GABAergic synapse development.
Kim H, Jung H, Jung H, Kwon SK, Ko J, Um JW
Molecular brain (2020) 131: 2. . **WB, ICC, IHC; tested species: rat**

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**

Diazepam Accelerates GABAAR Synaptic Exchange and Alters Intracellular Trafficking.
Lorenz-Guertin JM, Bambino MJ, Das S, Weintraub ST, Jacob TC
Frontiers in cellular neuroscience (2019) 13: 163. . **WB, IP, ICC; tested species: rat**

The endoplasmic reticulum membrane complex promotes proteostasis of GABAA receptors.
Whittsette AL, Wang YJ, Mu TW
iScience (2022) 258: 104754. . **WB, UPTAKE; tested species: rat**

Similar GABAA receptor subunit composition in somatic and axon initial segment synapses of hippocampal pyramidal cells.
Kerti-Szigeti K, Nusser Z
eLife (2016) 5: . . **IHC, EM**

The NLRP3 inflammasome in microglia regulates repetitive behavior by modulating NMDA glutamate receptor functions.
Jung H, Kim B, Jang G, Kim H, Lee AR, Yoon SH, Lee KS, Hyun G, Kim Y, Ko J, Yu JW, et al.
Cell reports (2025) 445: 115656. . **WB, IHC; tested species: 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**

Cannabidiol modulates excitatory-inhibitory ratio to counter hippocampal hyperactivity.
Rosenberg EC, Chamberland S, Bazelot M, Nebet ER, Wang X, McKenzie S, Jain S, Greenhill S, Wilson M, Marley N, Salah A, et al.
Neuron (2023) : . . **WB, ICC; tested species: rat**

Inhibitory and excitatory synaptic neuroadaptations in the diazepam tolerant brain.
Lorenz-Guertin JM, Povysheva N, Chapman CA, MacDonald ML, Fazzari M, Nigam A, Nuwer JL, Das S, Brady ML, Vajn K, Bambino MJ, et al.
Neurobiology of disease (2023) : 106248. . **WB, IP; tested species: mouse**

Aberrant expression of S-SCAM causes the loss of GABAergic synapses in hippocampal neurons.
Shin SM, Skaar S, Danielson E, Lee SH
Scientific reports (2020) 101: 83. . **WB, ICC; tested species: rat**

Receptor protein tyrosine phosphatase delta is not essential for synapse maintenance or transmission at hippocampal synapses.
Han KA, Lee HY, Lim D, Shin J, Yoon TH, Liu X, Um JW, Choi SY, Ko J
Molecular brain (2020) 131: 94. . **WB, ICC; tested species: mouse**

Calsyntenin-3 interacts with both α- and β-neurexins in the regulation of excitatory synaptic innervation in specific Schaffer collateral pathways.
Kim H, Kim D, Kim J, Lee HY, Park D, Kang H, Matsuda K, Sterky FH, Yuzaki M, Kim JY, Choi SY, et al.
The Journal of biological chemistry (2020) : . . **WB, IHC; tested species: mouse**

Access the online factsheet including applicable protocols at https://sysy.com/product/224003 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.