SYSY Antibodies

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GABA-A receptor α5 extracellular

Cat.No. 224 503; 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) **IP**: yes **ICC**: 1 : 500 **IHC**: external data (see remarks) **IHC-P (FFPE)**: not tested yet
Immunogen	Synthetic peptide corresponding to AA 26 to 43 from rat GABA-A receptor α5 (UniProt Id: P19969)
Reactivity	Reacts with: rat (P19969), mouse (Q8BHJ7). Other species not tested yet.
Specificity	K.O. validated PubMed: 27792253
Matching control	224-5P
Remarks	**IHC**: This antibody has been successfully applied for this method by our customers using mild fixation (4% PFA and 15% picric acid) according to Kirizs et al. 2014 (see gallery). It has not been validated using our standard protocol.

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 224 503

Synaptic localization of α5 GABA (A) receptors via gephyrin interaction regulates dendritic outgrowth and spine maturation.
Brady ML, Jacob TC
Developmental neurobiology (2015) 7511: 1241-51. . **WB, IP, ICC; tested species: rat**

Sevoflurane alters α5β3GABAA receptor trafficking via calcium/calmodulin-dependent protein kinase II-dependent β3 subunit phosphorylation to produce cognitive impairment in aged mice.
Wan T, Zhang M, Li J, Wang Z, Dong J, Wang X, Dong Z, Liu Q, Dong Y, Wang S, Chen L, et al.
British journal of anaesthesia (2026) : . . **ICC, IHC, UPTAKE; tested species: mouse**

Activity- and sleep-dependent regulation of tonic inhibition by Shisa7.
Wu K, Han W, Tian Q, Li Y, Lu W
Cell reports (2021) 3412: 108899. . **WB, ICC, UPTAKE; 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**

Distinct regulation of tonic GABAergic inhibition by NMDA receptor subtypes.
Wu K, Castellano D, Tian Q, Lu W
Cell reports (2021) 376: 109960. . **WB, UPTAKE; tested species: mouse**

Sustained treatment with an α5 GABA A receptor negative allosteric modulator delays excitatory circuit development while maintaining GABAergic neurotransmission.
Nuwer JL, Brady ML, Povysheva NV, Coyne A, Jacob TC
Neuropharmacology (2021) 197: 108724. . **WB, ICC; tested species: rat**

Assessment of GABAA α1, α4, and α5 receptor subunit protein expression in dorsal and ventral hippocampus of adult male and female Long-Evans rats after moderate prenatal alcohol exposure.
Acosta G, Davies S, Ruddle C, Brundage B, Clark BJ, Savage DD
Neuroscience letters (2026) 886: 138713. . **WB; tested species: rat**

Age-dependent increases in dorsal hippocampal postsynaptic α5GABA-a receptors may be lost in a rat model of Alzheimer's disease.
George JC, Tipton AE, Bonfa NVS, Farb DH, Russek SJ
Scientific reports (2025) 161: 171. . **IHC; tested species: rat**

GluN2B suppression restores phenylalanine-induced neuroplasticity and cognition impairments in a mouse model of phenylketonuria.
Song WS, Kim YS, Bae YS, Yoon SH, Lim JM, Kim MH
The Journal of clinical investigation (2025) 13513: . . **WB; tested species: mouse**

INSIHGT: an accessible multi-scale, multi-modal 3D spatial biology platform.
Yau CN, Hung JTS, Campbell RAA, Wong TCY, Huang B, Wong BTY, Chow NKN, Zhang L, Tsoi EPL, Tan Y, Li JJX, et al.
Nature communications (2024) 151: 10888. . **IHC; tested species: mouse**

Long-term α5 GABA A receptor negative allosteric modulator treatment reduces NMDAR-mediated neuronal excitation and maintains basal neuronal inhibition.
Nuwer JL, Povysheva N, Jacob TC
Neuropharmacology (2023) 237: 109587. . **ICC; tested species: rat**

Access the online factsheet including applicable protocols at https://sysy.com/product/224503 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.