

## GABA-A receptor $\gamma$ 2 extracellular

Cat.No. 224 004; Polyclonal Guinea pig antibody, 100  $\mu$ l antiserum (lyophilized)

### Data Sheet

Reconstitution/Storage	100 $\mu$ l antiserum, lyophilized. For <b>reconstitution</b> add 100 $\mu$ l H <sub>2</sub> O, then aliquot and store at -20°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	<b>WB:</b> yes limited (see remarks) <b>IP:</b> yes <b>ICC:</b> 1 : 500 (see remarks) <b>IHC:</b> 1 : 500 up to 1 : 2000 (see remarks) <b>IHC-P:</b> not tested yet <b>IHC-Fr:</b> 1 : 500 (see remarks)
Immunogen	Synthetic peptide corresponding to AA 39 to 67 from mouse GABA-A receptor $\gamma$ 2 (UniProt Id: P22723)
Reactivity	Reacts with: human (P18507), rat (P18508), mouse (P22723). Other species not tested yet.
Specificity	Specific for GABA-A receptor $\gamma$ 2. Does not discriminate between the L and S form.
Matching control	224-0P
Remarks	<b>WB:</b> The antibody is less sensitive in westernblotting compared to the rabbit antibody. GABA-A receptor gamma2 aggregates after boiling, making it necessary to run SDS-PAGE with non-boiled samples. <b>ICC:</b> This antibody is also suitable for the surface staining of living cells. After washing cells with bound antibodies, they can be fixed and visualized with secondary reagents. <b>IHC:</b> For best results use the protocol of <a href="#">Schneider Gasser</a> et al., 2006.  Heat-mediated antigen retrieval (in citrate buffer pH 6) is required for immunohistochemical staining. <b>IHC-Fr:</b> PFA fixation is recommended.

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

### Background

Gamma-aminobutyric acid 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 224 004

The kinesin KIF21B participates in the cell surface delivery of  $\gamma$ 2 subunit-containing GABAA receptors.  
Labonté D, Thies E, Kneussel M  
European journal of cell biology ( ) 938-9: 338-46. . **IP, ICC**

Distinct mechanisms drive sequential internalization and degradation of GABAARs during global ischemia and reperfusion injury.  
Garcia JD, Wolfe SE, Stewart AR, Tiemeier E, Gookin SE, Guerrero MB, Quillinan N, Smith KR  
iScience (2023) 2610: 108061. . **ICC, UPTAKE; tested species: rat**

Nanoscale Subsynaptic Domains Underlie the Organization of the Inhibitory Synapse.  
Crosby KC, Gookin SE, Garcia JD, Hahm KM, Dell'Acqua ML, Smith KR  
Cell reports (2019) 2612: 3284-3297.e3. . **ICC, IHC; tested species: rat**

Estradiol modulates the efficacy of synaptic inhibition by decreasing the dwell time of GABAA receptors at inhibitory synapses.  
Mukherjee J, Cardarelli RA, Cantaut-Belarif Y, Deeb TZ, Srivastava DP, Tyagarajan SK, Pangalos MN, Triller A, Maguire J, Brandon NJ, Moss SJ, et al.  
Proceedings of the National Academy of Sciences of the United States of America (2017) 11444: 11763-11768. . **ICC, WB**

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: . . **ICC, UPTAKE; tested species: mouse**

Artesunate restores the levels of inhibitory synapse proteins and reduces amyloid- $\beta$  and C-terminal fragments (CTFs) of the amyloid precursor protein in an AD-mouse model.  
Kiss E, Kins S, Zöller Y, Schilling S, Gorgas K, Groß D, Schlicksupp A, Rosner R, Kirsch J, Kuhse J  
Molecular and cellular neurosciences (2021) 113: 103624. . **WB, IHC; tested species: mouse**

Artemisinin-treatment in pre-symptomatic APP-PS1 mice increases gephyrin phosphorylation at Ser270: a modification regulating postsynaptic GABAAR density.  
Kiss E, Kins S, Gorgas K, Orlik M, Fischer C, Endres K, Schlicksupp A, Kirsch J, Kuhse J  
Biological chemistry (2021) : . . **ICC, IHC; tested species: mouse, rat**

ATAD1 Regulates Neuronal Development and Synapse Formation Through Tuning Mitochondrial Function.  
Yan HH, He JJ, Fu C, Chen JH, Tang AH  
International journal of molecular sciences (2024) 261: . . **ICC; tested species: rat**

Structural and functional reorganization of inhibitory synapses by activity-dependent cleavage of neuroligin-2.  
Xu N, Cao R, Chen SY, Gou XZ, Wang B, Luo HM, Gao F, Tang AH  
Proceedings of the National Academy of Sciences of the United States of America (2024) 12118: e2314541121. . **ICC; tested species: mouse**

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

miRNA-mediated control of gephyrin synthesis drives sustained inhibitory synaptic plasticity.  
Welle TM, Rajgor D, Kareemo DJ, Garcia JD, Zych SM, Wolfe SE, Gookin SE, Martinez TP, Dell'Acqua ML, Ford CP, Kennedy MJ, et al.  
EMBO reports (2024) 2511: 5141-5168. . **UPTAKE; tested species: rat**

Access the online factsheet including applicable protocols at <https://sysy.com/product/224004> 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.