

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

Cat.No. 224 003; Polyclonal rabbit antibody, 50  $\mu$ g specific antibody (lyophilized)

### Data Sheet

Reconstitution/Storage	50 $\mu$ g specific antibody, lyophilized. Affinity purified with the immunogen. Albumin and azide were added for stabilization. For <b>reconstitution</b> add 50 $\mu$ l H <sub>2</sub> O 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	<b>WB:</b> 1 : 1000 (AP staining) (see remarks) <b>IP:</b> yes <b>ICC:</b> 1 : 500 (see remarks) <b>IHC:</b> 1 : 1000 (see remarks) <b>IHC-P:</b> not tested yet <b>EM:</b> yes
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), monkey, zebrafish. Other species not tested yet.
Specificity	Specific for GABA-A receptor $\gamma 2$ . Does not discriminate between the L and S form. K.O. validated PubMed: <a href="https://pubmed.ncbi.nlm.nih.gov/24849349/">24849349</a>
Matching control	224-0P
Remarks	<b>WB:</b> 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.  Glyoxal fixation according to <a href="#">Konno et al. 2023</a> has improved signal quality and strength.

**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 224 003

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**

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**

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**

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**

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  $\alpha$ - and  $\beta$ -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**

Loss of IQSEC3 Disrupts GABAergic Synapse Maintenance and Decreases Somatostatin Expression in the Hippocampus.  
Kim S, Kim H, Park D, Kim J, Hong J, Kim JS, Jung H, Kim D, Cheong E, Ko J, Um JW, et al.  
Cell reports (2020) 306: 1995-2005.e5. . **ICC, IHC; 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**

C1ptm1 Limits Forward Trafficking of GABAA Receptors to Scale Inhibitory Synaptic Strength.  
Ge Y, Kang Y, Cassidy RM, Moon KM, Lewis R, Wong ROL, Foster LJ, Craig AM  
Neuron (2018) 973: 596-610.e8. . **ICC, IHC; tested species: mouse**

Reciprocal control of excitatory synapse numbers by Wnt and Wnt inhibitor PRR7 secreted on exosomes.  
Lee SH, Shin SM, Zhong P, Kim HT, Kim DI, Kim JM, Do Heo W, Kim DW, Yeo CY, Kim CH, Liu QS, et al.  
Nature communications (2018) 91: 3434. . **WB, ICC; tested species: rat**

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 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.