

GABA-A receptor $\gamma 2$ extracellular

Cat.No. 224 011; Monoclonal mouse antibody, 100 μ g purified IgG (lyophilized)

Data Sheet

Reconstitution/ Storage	100 μ g purified IgG, lyophilized. Albumin and azide were added for stabilization. For reconstitution add 100 μ l H ₂ 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	WB: not tested yet IP: yes ICC: 1 : 500 IHC: 1 : 500 IHC-P: not tested yet IHC-Fr: 1 : 500 (see remarks) EM: external data (see remarks)
Clone	331A12
Subtype	IgG2a (k light chain)
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	ICC: This antibody can be used for the surface staining of living cells. IHC: Antigen retrieval with citrate buffer pH 6 is required. IHC-Fr: The following fixatives are possible: acetone, methanol Signal intensities as follows: acetone > PFA. 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-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 heterogeneous population of GABA-A receptor subtypes are expressed throughout the brain with specific cellular and subcellular expression patterns.

Selected References for 224 011

Cationic peptides cause memory loss through endophilin-mediated endocytosis.
Stokes EG, Vasquez JJ, Azouz G, Nguyen M, Tierno A, Zhuang Y, Galinato VM, Hui M, Toledano M, Tyler I, Shi X, et al. Nature (2025) 6388050: 479-489. . **UPTAKE; tested species: mouse**

Structural Basis for Teneurin Function in Circuit-Wiring: A Toxin Motif at the Synapse.
Li J, Shalev-Benami M, Sando R, Jiang X, Kibrom A, Wang J, Leon K, Katanski C, Nazarko O, Lu YC, Südhof TC, et al. Cell (2018) 1733: 735-748.e15. . **ICC; tested species: mouse**

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

Interneurons and oligodendrocyte progenitors form a structured synaptic network in the developing neocortex.
Orduz D, Maldonado PP, Balia M, Vélez-Fort M, de Sars V, Yanagawa Y, Emiliani V, Angulo MC eLife (2015) 4: . **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. . **ICC; tested species: mouse**

A High-Resolution Method for Quantitative Molecular Analysis of Functionally Characterized Individual Synapses.
Holderith N, Heredi J, Kis V, Nusser Z Cell reports (2020) 324: 107968. . **IHC; tested species: rat**

Selected General References

GABA receptor heterogeneity modulates dendrodendritic inhibition.
Sassoè-Pognetto M et al. Ann. N. Y. Acad. Sci. (2009) PubMed:19686144

Synaptogenesis in the cerebellar cortex: differential regulation of gephyrin and GABAA receptors at somatic and dendritic synapses of Purkinje cells.
Viltoño L et al. J. Comp. Neurol. (2008) PubMed:18366064

Compensatory alteration of inhibitory synaptic circuits in cerebellum and thalamus of gamma-aminobutyric acid type A receptor alpha1 subunit knockout mice.
Kralic JE et al. J. Comp. Neurol. (2006) PubMed:16485284

Postsynaptic clustering of major GABAA receptor subtypes requires the gamma 2 subunit and gephyrin.
Essrich C et al. Nat. Neurosci. (1998) PubMed:10196563

GABAA-receptor heterogeneity in the adult rat brain: differential regional and cellular distribution of seven major subunits.
Fritschy JM et al. J. Comp. Neurol. (1995) PubMed:8557845

Distribution, prevalence, and drug binding profile of gamma-aminobutyric acid type A receptor subtypes differing in the beta-subunit variant.
Benke D et al. J. Biol. Chem. (1994) PubMed:7929453

Five subtypes of type A gamma-aminobutyric acid receptors identified in neurons by double and triple immunofluorescence staining with subunit-specific antibodies.
Fritschy JM et al. Proc. Natl. Acad. Sci. U.S.A. (1992) PubMed:1323116

Access the online factsheet including applicable protocols at <https://sysy.com/product/224011> 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 at 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.