SYSY Antibodies

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VGAT (SLC32A1) luminal domain

Cat.No. 131 103C5; Polyclonal rabbit antibody, 50 µg specific antibody (lyophilized)

Data Sheet

Reconstitution/ Storage	50 µg specific antibody, lyophilized. Affinity purified with the immunogen, fluorescence-labeled with Cyanine 5. Albumin was added for stabilization. For **reconstitution** add 50 µl H_2O to get a 1mg/ml solution in PBS. Either add 1:1 (v/v) glycerol, then aliquot and store at -20°C until use, or store aliquots at -80°C without additives. Reconstitute immediately upon receipt! Avoid bright light when working with the antibody to minimize photo bleeching of the fluorescent dye. For detailed information, see back of the data sheet.
Applications	**WB**: N/A **IP**: N/A **ICC**: 1 : 100 up to 1 : 200 (see remarks) **IHC**: not tested yet **IHC-P (FFPE)**: not tested yet
Label	Sulfo-Cyanine 5
Immunogen	Synthetic peptide corresponding to residues near the carboxy terminus of rat VGAT (UniProt Id: O35458)
Reactivity	Reacts with: human (Q9H598), rat (O35458), mouse (O35633). Other species not tested yet. Predicted to cross-react with cat due to high sequence homology.
Specificity	K.O. validated
Remarks	**ICC**: This antibody can also be used for labeling of recycling synaptic vesicles in living neurons. Further details see Martens et al. 2008.

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

Background

The **v**esicular **GA**BA **t**ransporter **VGAT** is responsible for uptake and storage of GABA and glycine by synaptic vesicles in the central nervous system. For this reason it is frequently referred to as the **v**esicular **i**nhibitory **a**mino**a**cid **t**ransporter **VIAAT**. It is different from the plasma membrane transporters in that it is driven by a proton electrochemical gradient across the vesicle membrane. So far, only one isoform is known. VGAT is currently the best marker for inhibitory nerve terminals.

For more information on protein expression pattern, please refer to the overview image in our SYSY Antibodies ATLAS.

Selected References for 131 103C5

Mechanism and effects of pulsatile GABA secretion from cytosolic pools in the human beta cell.
Menegaz D, Hagan DW, Almaça J, Cianciaruso C, Rodriguez-Diaz R, Molina J, Dolan RM, Becker MW, Schwalie PC, Nano R, Lebreton F, et al.
Nature metabolism (2019) 111: 1110-1126. . **ICC, IHC; tested species: human,rat**

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**

Microglial Displacement of GABAergic Synapses Is a Protective Event during Complex Febrile Seizures.
Wan Y, Feng B, You Y, Yu J, Xu C, Dai H, Trapp BD, Shi P, Chen Z, Hu W
Cell reports (2020) 335: 108346. . **IHC; tested species: mouse**

Inter-Synaptic Lateral Diffusion of GABAA Receptors Shapes Inhibitory Synaptic Currents.
de Luca E, Ravasenga T, Petrini EM, Polenghi A, Nieus T, Guazzi S, Barberis A
Neuron (2017) 951: 63-69.e5. . **ICC; tested species: mouse**

Nanoscale Molecular Reorganization of the Inhibitory Postsynaptic Density Is a Determinant of GABAergic Synaptic Potentiation.
Pennacchietti F, Vascon S, Nieus T, Rosillo C, Das S, Tyagarajan SK, Diaspro A, Del Bue A, Petrini EM, Barberis A, Cella Zanacchi F, et al.
The Journal of neuroscience : the official journal of the Society for Neuroscience (2017) 377: 1747-1756. . **ICC**

Synaptic recruitment of gephyrin regulates surface GABAA receptor dynamics for the expression of inhibitory LTP.
Petrini EM, Ravasenga T, Hausrat TJ, Iurilli G, Olcese U, Racine V, Sibarita JB, Jacob TC, Moss SJ, Benfenati F, Medini P, et al.
Nature communications (2014) 5: 3921. . **ICC; tested species: mouse**

Selected General References

The vesicular GABA transporter, VGAT, localizes to synaptic vesicles in sets of glycinergic as well as GABAergic neurons.
Chaudhry FA et al. J. Neurosci. (1998) PubMed:9822734

Identification and characterization of the vesicular GABA transporter.
McIntire SL et al. Nature (1997) PubMed:9349821

Cloning of a functional vesicular GABA and glycine transporter by screening of genome databases.
Sagné C et al. FEBS Lett. (1997) PubMed:9395291

Uptake of GABA by rat brain synaptic vesicles isolated by a new procedure.
Hell JW et al. EMBO J. (1988) PubMed:2903047

Access the online factsheet including applicable protocols at https://sysy.com/product/131103C5 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.