SYSY Antibodies

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VGAT (SLC32A1) luminal domain

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

Data Sheet

Reconstitution/ Storage	50 µg specific antibody, lyophilized. Affinity purified with the immunogen. Albumin was 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) (see remarks) **IP**: yes **ICC**: 1 : 100 up to 1 : 200 (see remarks) **IHC**: 1 : 100 up to 1 : 500 **IHC-P (FFPE)**: not tested yet
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 PubMed: 19052203
Remarks	**WB**: To avoid protein aggregation, do not heat samples for SDS-PAGE. **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 131 103

Unique luminal localization of VGAT-C terminus allows for selective labeling of active cortical GABAergic synapses.
Martens H, Weston MC, Boulland JL, Grønborg M, Grosche J, Kacza J, Hoffmann A, Matteoli M, Takamori S, Harkany T, Chaudhry FA, et al.
The Journal of neuroscience : the official journal of the Society for Neuroscience (2008) 2849: 13125-31. . **WB, ICC, IHC, UPTAKE; KO verified; tested species: mouse,rat**

Spatial proteomics in neurons at single-protein resolution.
Unterauer EM, Shetab Boushehri S, Jevdokimenko K, Masullo LA, Ganji M, Sograte-Idrissi S, Kowalewski R, Strauss S, Reinhardt SCM, Perovic A, Marr C, et al.
Cell (2024) 1877: 1785-1800.e16. . **DNA_PAINT; tested species: rat**

A new method for isolation and purification of fusion-competent inhibitory synaptic vesicles.
Gopal N, Leitz J, Wang C, Esquivies L, Pfuetzner RA, Brunger AT
Current research in physiology (2024) 7: 100121. . **WB; tested species: mouse**

NaV1.1 haploinsufficiency impairs glutamatergic and GABAergic neuron function in the thalamus.
Studtmann C, Ladislav M, Topolski MA, Safari M, Swanger SA
Neurobiology of disease (2022) 167: 105672. . **IHC; tested species: mouse**

Excitatory neuronal CHD8 in the regulation of neocortical development and sensory-motor behaviors.
Kweon H, Jung WB, Im GH, Ryoo J, Lee JH, Do H, Choi Y, Song YH, Jung H, Park H, Qiu LR, et al.
Cell reports (2021) 348: 108780. . **IHC; tested species: mouse**

Inhibitory control in neuronal networks relies on the extracellular matrix integrity.
Dzyubenko E, Fleischer M, Manrique-Castano D, Borbor M, Kleinschnitz C, Faissner A, Hermann DM
Cellular and molecular life sciences : CMLS (2021) 7814: 5647-5663. . **IHC; tested species: mouse**

Extracellular matrix remodeling through endocytosis and resurfacing of Tenascin-R.
Dankovich TM, Kaushik R, Olsthoorn LHM, Petersen GC, Giro PE, Kluever V, Agüi-Gonzalez P, Grewe K, Bao G, Beuermann S, Hadi HA, et al.
Nature communications (2021) 121: 7129. . **ICC; tested species: rat**

The potassium channel subunit Kvβ1 serves as a major control point for synaptic facilitation.
Cho IH, Panzera LC, Chin M, Alpizar SA, Olveda GE, Hill RA, Hoppa MB
Proceedings of the National Academy of Sciences of the United States of America (2020) 11747: 29937-29947. . **UPTAKE; tested species: rat**

Biallelic DMXL2 mutations impair autophagy and cause Ohtahara syndrome with progressive course.
Esposito A, Falace A, Wagner M, Gal M, Mei D, Conti V, Pisano T, Aprile D, Cerullo MS, De Fusco A, Giovedì S, et al.
Brain : a journal of neurology (2019) : . . **ICC; tested species: mouse**

Nuclei-specific differences in nerve terminal distribution, morphology, and development in mouse visual thalamus.
Hammer S, Carrillo GL, Govindaiah G, Monavarfeshani A, Bircher JS, Su J, Guido W, Fox MA
Neural development (2014) 9: 16. . **IHC**

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