SYSY Antibodies

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VGAT (SLC32A1) cytoplasmic domain

Cat.No. 131 013; 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 : 500 **IHC**: 1 : 500 **IHC-P (FFPE)**: not tested yet **EM**: external dataThis antibody is first choice for electron microscopy. (see remarks)
Immunogen	Recombinant protein corresponding to residues near the amino terminus of rat VGAT (UniProt Id: O35458)
Reactivity	Reacts with: rat (O35458), mouse (O35633), zebrafish. Other species not tested yet.
Specificity	K.O. validated PubMed: 36073542
Matching control	131-0GP
Remarks	**WB**: To avoid protein aggregation, do not heat samples for SDS-PAGE. **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

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 131 013

Electron tomography on γ-aminobutyric acid-ergic synapses reveals a discontinuous postsynaptic network of filaments.
Linsalata AE, Chen X, Winters CA, Reese TS
The Journal of comparative neurology (2014) 5224: 921-36. . **EM, ICC; tested species: rat**

Selective disruption of inhibitory synapses leading to neuronal hyperexcitability at an early stage of tau pathogenesis in a mouse model.
Shimojo M, Takuwa H, Takado Y, Tokunaga M, Tsukamoto S, Minatohara K, Ono M, Seki C, Maeda J, Urushihata T, Minamihisamatsu T, et al.
The Journal of neuroscience : the official journal of the Society for Neuroscience (2020) : . . **WB, IHC; tested species: mouse**

Olig2-Lineage Astrocytes: A Distinct Subtype of Astrocytes That Differs from GFAP Astrocytes.
Tatsumi K, Isonishi A, Yamasaki M, Kawabe Y, Morita-Takemura S, Nakahara K, Terada Y, Shinjo T, Okuda H, Tanaka T, Wanaka A, et al.
Frontiers in neuroanatomy (2018) 12: 8. . **IHC, EM; tested species: mouse**

Quantitative comparison of glutamatergic and GABAergic synaptic vesicles unveils selectivity for few proteins including MAL2, a novel synaptic vesicle protein.
Grønborg M, Pavlos NJ, Brunk I, Chua JJ, Münster-Wandowski A, Riedel D, Ahnert-Hilger G, Urlaub H, Jahn R
The Journal of neuroscience : the official journal of the Society for Neuroscience (2010) 301: 2-12. . **IP; tested species: rat**

Early-life social enrichment induces divergent cognitive-emotional aging along with dorsal hippocampal VGluT1 and glial alterations.
Ma XX, Zheng JY, Yao XD, Yu YJ, Wang XD, Su YA, Li JT, Si TM
Neurobiology of aging (2026) 166: 69-81. . **IHC; tested species: mouse**

Deletion of the microglial phagocytic receptor MerTK mimics early-life adversity-induced changes in synapses and behavior in male mice.
Garvin MM, Kar U, Kooiker CL, Bolton JL
Brain, behavior, and immunity (2026) 133: 106246. . **IHC; tested species: mouse**

Activity-dependent synthesis of Emerin gates neuronal plasticity by regulating proteostasis.
Xie Y, Wang R, McClatchy DB, Ma Y, Diedrich J, Sanchez-Alavez M, Petrascheck M, Yates JR, Cline HT
Cell reports (2025) 444: 115439. . **ICC; tested species: mouse**

Early-life stress of limited bedding/nesting material induced recognition memory loss and decreased hippocampal VGluT1 and nectin3 levels in aged male mice.
He ZC, Yu YJ, Wang T, Yin HR, Sun YX, Liu X, Xie XM, Wang HL, Su YA, Li JT, Si TM, et al.
Pharmacology, biochemistry, and behavior (2025) 249: 173980. . **IHC; tested species: mouse**

Observing isolated synaptic vesicle association and fusion ex vivo.
Leitz J, Wang C, Esquivies L, Peters JJ, Gopal N, Pfuetzner RA, Wang AL, Brunger AT
Nature protocols (2024) 1911: 3139-3161. . **WB; tested species: mouse**

Heterogeneous subpopulations of GABAAR-responding neurons coexist across neuronal network scales and developmental stages in health and disease.
Colombi I, Rastogi M, Parrini M, Alberti M, Potenzieri A, Chellali MM, Rosati S, Chiappalone M, Nanni M, Contestabile A, Cancedda L, et al.
iScience (2024) 274: 109438. . **ICC; tested species: mouse**

Access the online factsheet including applicable protocols at https://sysy.com/product/131013 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.