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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**: 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.

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 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**

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**

Generation of glutamatergic/GABAergic neuronal co-cultures derived from human induced pluripotent stem cells for characterizing E/I balance in vitro.
Wang S, Hesen R, Mossink B, Nadif Kasri N, Schubert D
STAR protocols (2023) 41: 101967. . **ICC; tested species: human**

Celsr2 Knockout Alleviates Inhibitory Synaptic Stripping and Benefits Motoneuron Survival and Axon Regeneration After Branchial Plexus Avulsion.
Yu L, Liu M, Li F, Wang Q, Wang M, So KF, Qu Y, Zhou L
Molecular neurobiology (2023) : . . **IHC; tested species: mouse**

Increasing astrogenesis in the developing hippocampus induces autistic-like behavior in mice via enhancing inhibitory synaptic transmission.
Chen J, Ma XL, Zhao H, Wang XY, Xu MX, Wang H, Yang TQ, Peng C, Liu SS, Huang M, Zhou YD, et al.
Glia (2022) 701: 106-122. . **IHC; tested species: mouse**

De Novo Missense Variants in SLC32A1 Cause a Developmental and Epileptic Encephalopathy Due to Impaired GABAergic Neurotransmission.
Platzer K, Sticht H, Bupp C, Ganapathi M, Pereira EM, Le Guyader G, Bilan F, Henderson LB, Lemke JR, Taschenberger H, Brose N, et al.
Annals of neurology (2022) : . . **WB; KO verified; 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 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.