Synaptic Systems

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VGAT cytoplasmic domain

Cat.No. 131 004; Polyclonal Guinea pig antibody, 100 µl antiserum (lyophilized)

Data Sheet

Reconstitution/ Storage	100 µl antiserum, lyophilized. For **reconstitution** add 100 µl H_2O, then aliquot and store at -20°C until use. For detailed information, see back of the data sheet.
Applications	**WB**: 1 : 1000 up to 1 : 2000 (AP staining) **IP**: not tested yet **ICC**: 1 : 500 up to 1 : 1000 **IHC**: 1 : 200 up to 1 : 500 **IHC-P/FFPE**: yes **EM**: yes
Immunogen	Recombinant protein corresponding to AA 2 to 115 from rat VGAT (UniProt Id: O35458)
Reactivity	Reacts with: rat (O35458), mouse (O35633), zebrafish, ape. Other species not tested yet.
Specificity	Specific for VGAT K.O.
Matching control	131-0GP
Remarks	VGAT aggregates after boiling, making it necessary to run SDS-PAGE only with non-boiled samples.

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

Access the online factsheet including applicable protocols at https://sysy.com/product/131004 or scan the QR-code.

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 131 004

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. . **ICC, IHC, EM**

Development of dissociated cryopreserved rat cortical neurons in vitro.
Schock SC, Jolin-Dahel KS, Schock PC, Theiss S, Arbuthnott GW, Garcia-Munoz M, Staines WA
Journal of neuroscience methods (2012) 2052: 324-33. . **WB, IHC**

Chemico-genetic discovery of astrocytic control of inhibition in vivo.
Takano T, Wallace JT, Baldwin KT, Purkey AM, Uezu A, Courtland JL, Soderblom EJ, Shimogori T, Maness PF, Eroglu C, Soderling SH, et al.
Nature (2020) : . . **ICC, IHC; tested species: mouse**

Expression of Neurofilament Subunits at Neocortical Glutamatergic and GABAergic Synapses.
Bragina L, Conti F
Frontiers in neuroanatomy (2018) 12: 74. . **WB, IHC; tested species: rat**

Mixed inhibitory synaptic balance correlates with glutamatergic synaptic phenotype in cerebellar unipolar brush cells.
Rousseau CV, Dugué GP, Dumoulin A, Mugnaini E, Dieudonné S, Diana MA
The Journal of neuroscience : the official journal of the Society for Neuroscience (2012) 3213: 4632-44. . **IHC-P; tested species: rat**

When the front fails, the rear wins. Cerebellar correlates of prefrontal dysfunction in cocaine-induced memory in male rats.
Guarque-Chabrera J, Gil-Miravet I, Olucha-Bordonau F, Melchor-Eixea I, Miquel M
Progress in neuro-psychopharmacology & biological psychiatry (2022) 112: 110429. . **IHC; tested species: rat**

Layer-specific pyramidal neuron properties underlie diverse anterior cingulate cortical motor and limbic networks.
Medalla M, Chang W, Ibañez S, Guillamon-Vivancos T, Nittmann M, Kapitonava A, Busch SE, Moore TL, Rosene DL, Luebke JI
Cerebral cortex (New York, N.Y. : 1991) (2021) : . . **IHC; tested species: monkey**

Neddylation is required for presynaptic clustering of mGlu7 and maturation of presynaptic terminals.
Kang M, Lee D, Song JM, Park S, Park DH, Lee S, Suh YH
Experimental & molecular medicine (2021) : . . **ICC; tested species: rat**

Pathogenic GRM7 mutations associated with neurodevelopmental disorders impair axon outgrowth and presynaptic terminal development.
Song JM, Kang M, Park DH, Park S, Lee S, Suh YH
The Journal of neuroscience : the official journal of the Society for Neuroscience (2021) : . . **ICC; tested species: rat**

Orexin-A/Hypocretin-1 Controls the VTA-NAc Mesolimbic Pathway via Endocannabinoid-Mediated Disinhibition of Dopaminergic Neurons in Obese Mice.
Tunisi L, D'Angelo L, Fernández-Rilo AC, Forte N, Piscitelli F, Imperatore R, de Girolamo P, Di Marzo V, Cristino L
Frontiers in synaptic neuroscience (2021) 13: 622405. . **IHC; tested species: mouse**

Cytoplasmic FUS triggers early behavioral alterations linked to cortical neuronal hyperactivity and inhibitory synaptic defects.
Scekic-Zahirovic J, Sanjuan-Ruiz I, Kan V, Megat S, De Rossi P, Dieterlé S, Cassel R, Jamet M, Kessler P, Wiesner D, Tzeplaeff L, et al.
Nature communications (2021) 121: 3028. . **IHC; tested species: mouse**

Selective overexpression of Collybistin in mouse hippocampal pyramidal cells enhances GABAergic neurotransmission and protects against PTZ-induced seizures.
George S, James S, de Blas AL
eNeuro (2021) : . . **IHC; tested species: mouse**

Action potential-coupled Rho GTPase signaling drives presynaptic plasticity.
O'Neil SD, Rácz B, Brown WE, Gao Y, Soderblom EJ, Yasuda R, Soderling SH
eLife (2021) 10: . . **ICC; tested species: mouse**

Nutritional regulation of oligodendrocyte differentiation regulates perineuronal net remodeling in the median eminence.
Kohnke S, Buller S, Nuzzaci D, Ridley K, Lam B, Pivonkova H, Bentsen MA, Alonge KM, Zhao C, Tadross J, Holmqvist S, et al.
Cell reports (2021) 362: 109362. . **IHC; tested species: mouse**

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 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.