

VGLUT1

Cat.No. 135 303; Polyclonal rabbit antibody, 50 µg specific antibody (lyophilized)

Data Sheet

Reconstitution/ Storage	50 µg specific antibody, lyophilized. Affinity purified with the immunogen. Albumin and azide were added for stabilization. For reconstitution add 50 µl H ₂ O 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 up to 1 : 10000 (AP staining) (see remarks) IP: yes ICC: 1 : 500 up to 1 : 10000 IHC: 1 : 1000 IHC-P: 1 : 500 IHC-Fr: 1 : 500 (see remarks) DNA-PAINT: yes (see remarks) Clarity: yes EM: yes ELISA: yes (see remarks)
Immunogen	Recombinant protein corresponding to residues near the carboxy terminus of rat VGLUT 1 (UniProt Id: Q62634)
Reactivity	Reacts with: human (Q9P2U7), rat (Q62634), mouse (Q3TXX4), cow, goat, sheep, dog. Other species not tested yet.
Specificity	K.O. validated PubMed: 15103023
Matching control	135-3P
Remarks	This antibody is highly recommended as marker for glutamatergic nerve terminals. WB: VGLUT 1 aggregates after boiling, making it necessary to run SDS-PAGE with non-boiled samples. IHC-Fr: 5 min MeOH and PFA fixation are possible. DNA-PAINT: This antibody has been successfully used for DNA-PAINT application (see Unterauer et al., 2024; PMID: 38552614). ELISA: Suitable as detector antibody for sandwich-ELISA with cat. no. 135 311 as capture antibody. The ELISA-protocol for membrane proteins is recommended.

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

Background

The vesicular **glutamate transporter 1 VGLUT 1**, also referred to as **BNPI** and **SLC17A7**, was originally identified as a brain specific phosphate transporter. Like the related VGLUT 2, VGLUT 1 is both necessary and sufficient for uptake and storage of glutamate and thus comprises the sole determinant for a glutamatergic phenotype. Both VGLUTs are different from the plasma membrane transporters in that they are driven by a proton electrochemical gradient across the vesicle membrane.

VGLUT 1 and VGLUT 2 show complementary expression patterns. Together, they are currently the best markers for glutamatergic nerve terminals and glutamatergic synapses.

Selected References for 135 303

SAM68 regulates neuronal activity-dependent alternative splicing of neurexin-1. Iijima T, Wu K, Witte H, Hanno-Iijima Y, Glatter T, Richard S, Scheiffele P Cell (2011) 1477: 1601-14. . **ICC, IHC, WB; tested species: mouse**

Synaptic and vesicular co-localization of the glutamate transporters VGLUT1 and VGLUT2 in the mouse hippocampus. Herzog E, Takamori S, Jahn R, Brose N, Wojcik SM Journal of neurochemistry (2006) 993: 1011-8. . **IHC, IP, WB; tested species: mouse**

An essential role for vesicular glutamate transporter 1 (VGLUT1) in postnatal development and control of quantal size. Wojcik SM, Rhee JS, Herzog E, Sigler A, Jahn R, Takamori S, Brose N, Rosenmund C Proceedings of the National Academy of Sciences of the United States of America (2004) 10118: 7158-63. . **ICC, WB, IHC; KO verified; tested species: mouse**

Influenza A Virus (H1N1) Infection Induces Microglial Activation and Temporal Dysbalance in Glutamatergic Synaptic Transmission. Düsedau HP, Steffen J, Figueiredo CA, Boehme JD, Schultz K, Erck C, Korte M, Faber-Zuschratter H, Smalla KH, Dieterich D, Kröger A, et al. mBio (2021) 125: e0177621. . **WB, FACS; tested species: mouse**

NMDA receptors in GABAergic synapses during postnatal development. Cserép C, Szabadits E, Szőnyi A, Watanabe M, Freund TF, Nyiri G PloS one (2012) 75: e37753. . **IHC, EM; tested species: mouse**

GAP43 Located on Corticostriatal Terminals Restrains Novelty-Induced Hyperactivity in Mice. Maroto IB, Costas-Insua C, Montero-Fernández C, Hermoso-López A, Lebour M, Bajo-Grañeras R, Álvaro-Blázquez A, Blázquez C, Cannich A, Marsicano G, Martín R, et al. The Journal of neuroscience : the official journal of the Society for Neuroscience (2024) 4439: . . **WB, IHC; tested species: mouse**

Neuron-derived extracellular vesicles contain synaptic proteins, promote spine formation, activate TrkB-mediated signalling and preserve neuronal complexity. Solana-Balaguer J, Campoy-Campos G, Martín-Flores N, Pérez-Sisqués L, Sitjà-Roqueta L, Kucukerden M, Gámez-Valero A, Coll-Manzano A, Martí E, Pérez-Navarro E, Alberch J, et al. Journal of extracellular vesicles (2023) 129: e12355. . **WB, ICC; tested species: rat**

Colocalization of different neurotransmitter transporters on synaptic vesicles is sparse except for VGLUT1 and ZnT3. Upmanyu N, Jin J, Emde HV, Ganzella M, Böschke L, Malviya VN, Zhuleku E, Politi AZ, Ninov M, Silbern I, Leutenegger M, et al. Neuron (2022) : . . **ICC, EM; tested species: rat**

Anterior Cingulate Cortex Mediates Hyperalgesia and Anxiety Induced by Chronic Pancreatitis in Rats. Ren D, Li JN, Qiu XT, Wan FP, Wu ZY, Fan BY, Zhang MM, Chen T, Li H, Bai Y, Li YQ, et al. Neuroscience bulletin (2021) : . . **WB, IHC; tested species: rat**

LRRTMs Organize Synapses through Differential Engagement of Neurexin and PTPσ. Roppongi RT, Dhume SH, Padmanabhan N, Silwal P, Zahra N, Karimi B, Bomkamp C, Patil CS, Champagne-Jorgensen K, Twilley RE, Zhang P, et al. Neuron (2020) : . . **ICC, IHC; tested species: mouse**

Access the online factsheet including applicable protocols at <https://sysy.com/product/135303> 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.