

VGLUT1

Cat.No. 135 304; Polyclonal Guinea pig antibody, 100 µl antiserum (lyophilized)

Data Sheet

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| Reconstitution/Storage | 100 µl antiserum, lyophilized. For reconstitution add 100 µl H ₂ O, then aliquot and store at -20°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 : 5000 (AP staining) IP: yes ICC: 1 : 1000 up to 1 : 5000 IHC: 1 : 500 up to 1 : 1000 IHC_P: 1 : 200 IHC_FR: 1 : 750 (see remarks) EXM: 1 : 1000 CLARITY: 1 : 200 (see remarks) EM: yes FACS: yes |
| Immunogen | Recombinant protein corresponding to residues near the carboxy terminus of rat VGLUT 1 (UniProt Id: Q62634) |
| Reactivity | Reacts with: rat (Q62634), mouse (Q3TXX4), human (Q9P2U7), cow. Other species not tested yet. |
| Specificity | K.O. PubMed: 34876472 |
| Matching control | 135-3P |
| Remarks | VGLUT 1 aggregates after boiling, making it necessary to run SDS-PAGE only with non-boiled samples. IHC_FR: 5 min MeOH and PFA fixation are possible. CLARITY: This antibody has been successfully used for CLARITY application in human brain (Woelfle et al., 2023; PMID: 37221592). |

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 135 304

Inhibition of LRRK2 kinase activity promotes anterograde axonal transport and presynaptic targeting of α-synuclein. Brzozowski CF, Hijaz BA, Singh V, Gcwenza NZ, Kelly K, Boyden ES, West AB, Sarkar D, Volpicelli-Daley LA. *Acta neuropathologica communications* (2021) 91: 180. . **WB, ICC, IHC, EXM; 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) 30(1): 2-12. . **ICC, IHC, EM**

Prenatal interleukin 6 elevation increases glutamatergic synapse density and disrupts hippocampal connectivity in offspring. Mirabella F, Desiato G, Mancinelli S, Fossati G, Rasile M, Morini R, Markicevic M, Grimm C, Amegandjin C, Termanini A, Peano C, et al.

Immunity (2021) 54(11): 2611-2631.e8. . **WB, ICC, IHC; tested species: mouse**

Liver-expressed antimicrobial peptide 2 elevation contributes to age-associated cognitive decline.

Tian J, Guo L, Wang T, Jia K, Swerdlow RH, Zigman JM, Du H. *JCI insight* (2023) 8(10): . . **ICC, IHC; tested species: mouse**

Epilepsy-Related CDKL5 Deficiency Slows Synaptic Vesicle Endocytosis in Central Nerve Terminals.

Kontaxi C, Ivanova D, Davenport EC, Kind PC, Cousin MA

The Journal of neuroscience : the official journal of the Society for Neuroscience (2023) 43(11): 2002-2020. . **WB, ICC; tested species: rat**

Microglia enable cross-modal plasticity by removing inhibitory synapses.

Hashimoto A, Kawamura N, Tarusawa E, Takeda I, Aoyama Y, Ohno N, Inoue M, Kagamiuchi M, Kato D, Matsumoto M, Hasegawa Y, et al.

Cell reports (2023) 42(5): 112383. . **WB, IHC; tested species: mouse**

Beclin1 Deficiency Suppresses Epileptic Seizures.

Yang M, Lin P, Jing W, Guo H, Chen H, Chen Y, Guo Y, Gu Y, He M, Wu J, Jiang X, et al.

Frontiers in molecular neuroscience (2022) 15: 807671. . **ICC, IHC; tested species: mouse**

Clathrin-independent endocytic retrieval of SV proteins mediated by the clathrin adaptor AP-2 at mammalian central synapses.

López-Hernández T, Takenaka KI, Mori Y, Kongpracha P, Nagamori S, Haucke V, Takamori S

eLife (2022) 11: . . **WB, ICC; tested species: mouse**

Brevican, Neurocan, Tenascin-C, and Tenascin-R Act as Important Regulators of the Interplay Between Perineuronal Nets, Synaptic Integrity, Inhibitory Interneurons, and Otx2.

Mueller-Buehl C, Reinhard J, Roll L, Bader V, Winkhofer KF, Faissner A

Frontiers in cell and developmental biology (2022) 10: 886527. . **WB, IHC; tested species: mouse**

Extracellular transglutaminase-2, nude or associated with astrocytic extracellular vesicles, modulates neuronal calcium homeostasis.

Tonoli E, Verduci I, Gabrielli M, Prada I, Forcaia G, Coveney C, Savoca MP, Boocock DJ, Sancini G, Mazzanti M, Verderio C, et al.

Progress in neurobiology (2022) : 102313. . **WB, ICC; tested species: rat**

Access the online factsheet including applicable protocols at <https://sysy.com/product/135304> 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.