

## VGLUT1

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

### Data Sheet

Reconstitution/ Storage	100 µl antiserum, lyophilized. For <b>reconstitution</b> add 100 µl H <sub>2</sub> 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	<b>WB:</b> 1 : 5000 (AP staining) <b>IP:</b> yes <b>ICC:</b> 1 : 1000 up to 1 : 5000 <b>IHC:</b> 1 : 500 up to 1 : 1000 <b>IHC-P:</b> 1 : 200 <b>IHC-Fr:</b> 1 : 750 (see remarks) <b>ExM:</b> external data <b>Clarity:</b> external data (see remarks) <b>EM:</b> external data <b>FACS:</b> 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. validated PubMed: <a href="https://pubmed.ncbi.nlm.nih.gov/34876472/">34876472</a>
Matching control	135-3P
Remarks	<b>WB:</b> To avoid protein aggregation, do not heat samples for SDS-PAGE. <b>IHC-Fr:</b> 5 min MeOH and PFA fixation are possible. <b>Clarity:</b> This antibody has been successfully used for CLARITY application in human brain (Woelfle et al., 2023; <a href="https://pubmed.ncbi.nlm.nih.gov/37221592/">PMID: 37221592</a> ).

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

### Background

The vesicular **glutamate transporter 1 VGLUT1**, also referred to as **BNPI** and **SLC17A7**, was originally identified as a brain specific phosphate transporter. Like the related VGLUT2, VGLUT1 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.

VGLUT1 and VGLUT2 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, Gwensa 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**

Early α-synuclein aggregation decreases corticostriatal glutamate drive and synapse density. Brzozowski CF, Challa H, Gwensa NZ, Hall D, Nabert D, Chambers N, Gallardo I, Millet M, Volpicelli-Daley L, Moehle MS. Neurobiology of disease (2025) 210: 106918. . **WB, IHC\_FR, EXM; tested species: mouse**

Quantitative comparison of glutamatergic and GABAergic synaptic vesicles unveils selectivity for few proteins including MAL2, a novel synaptic vesicle protein.

Grønberg 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**

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) 5411: 2611-2631.e8. . **WB, ICC, IHC; tested species: mouse**

Nonapoptotic caspase-3 guides C1q-dependent synaptic phagocytosis by microglia.

Andoh M, Shinoda N, Taira Y, Araki T, Kasahara Y, Takeuchi H, Miura M, Ikegaya Y, Koyama R. Nature communications (2025) 161: 918. . **ICC, IHC; tested species: mouse**

The TMEM132B-GABAA receptor complex controls alcohol actions in the brain.

Wang G, Peng S, Reyes Mendez M, Keramidas A, Castellano D, Wu K, Han W, Tian Q, Dong L, Li Y, Lu W, et al. Cell (2024) 18723: 6649-6668.e35. . **WB, ICC; tested species: mouse**

Disruption of the autism-associated Pcdh9 gene leads to transcriptional alterations, synapse overgrowth, and defective network activity in the CA1.

Miozzo F, Murru L, Maiellano G, di Iasio I, Zippo AG, Zambrano Avendano A, Metodiev VD, Riccardi S, D'Aliberti D, Spinelli S, Canu T, et al.

The Journal of neuroscience : the official journal of the Society for Neuroscience (2024) 4450: . . **WB, ICC; tested species: rat**

Altered expression of Presenilin2 impacts endolysosomal homeostasis and synapse function in Alzheimer's disease-relevant brain circuits.

Perdok A, Van Acker ZP, Vrancx C, Sannerud R, Vorsters I, Verrengia A, Callaerts-Végh Z, Creemers E, Gutiérrez Fernández S, D'hauw B, Serneels L, et al.

Nature communications (2024) 151: 10412. . **WB, ICC; tested species: mouse**

Microglial lipid phosphatase SHIP1 limits complement-mediated synaptic pruning in the healthy developing hippocampus.

Matera A, Compagnion AC, Pedicone C, Janssen MK, Ivanov A, Monsorno K, Labouëbe G, Leggio L, Pereira M, Beule D, Mansuy-Aubert V, et al.

Immunity (2024) : . . **WB, 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) 4311: 2002-2020. . **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 at 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.