

## VGLUT2

Cat.No. 135 404; 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 : 1000 (AP staining) (see remarks) <b>IP:</b> yes <b>ICC:</b> 1 : 200 up to 1 : 500 <b>IHC:</b> 1 : 200 up to 1 : 500 <b>IHC_P:</b> 1 : 500 <b>IDISCO:</b> yes <b>EM:</b> yes
Immunogen	Synthetic peptide corresponding to residues near the carboxy terminus of rat VGLUT2 (UniProt Id: Q9JI12)
Reactivity	Reacts with: rat (Q9JI12), mouse (Q8BLE7). Other species not tested yet.
Specificity	K.O. PubMed: <a href="https://pubmed.ncbi.nlm.nih.gov/25357191/">25357191</a>
Matching control	135-4P
Remarks	This antibody is highly recommended as a marker for glutamatergic nerve terminals. <b>WB:</b> VGLUT 2 aggregates after boiling, making it necessary to run SDS-PAGE with non-boiled samples.

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

### Background

The vesicular **glutamate transporter 2 VGLUT 2**, also referred to as **DNPI** and **SLC17A6**, has a more restricted expression than the related VGLUT 1. Like VGLUT 1, it 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 135 404

Hevin-calcyon interaction promotes synaptic reorganization after brain injury.

Kim JH, Jung HG, Kim A, Shim HS, Hyeon SJ, Lee YS, Han J, Jung JH, Lee J, Ryu H, Park JY, et al. Cell death and differentiation (2021) 289: 2571-2588. . **WB, ICC, IHC; tested species: mouse**

Structural and functional connections between the median and the ventrolateral preoptic nucleus.

Walter A, van der Spek L, Hardy E, Bemelmans AP, Rouach N, Rancillac A  
Brain structure & function (2019) 2249: 3045-3057. . **IHC, IDISCO; tested species: mouse**

Vesicular Glutamate Transporters (SLCA17 A6, 7, 8) Control Synaptic Phosphate Levels.

Cheret C, Ganzella M, Preobraschenski J, Jahn R, Ahnert-Hilger G  
Cell reports (2021) 342: 108623. . **WB, ICC; tested species: human, mouse**

An essential role of acetylcholine-glutamate synergy at habenular synapses in nicotine dependence.

Frahm S, Antolin-Fontes B, Görllich A, Zander JF, Ahnert-Hilger G, Ibañez-Tallón I  
eLife (2015) 4: e11396. . **WB, IHC**

Splice-specific roles of glycine receptor alpha3 in the hippocampus.

Eichler SA, Förster B, Smolinsky B, Jüttner R, Lehmann TN, Fähring M, Schwarz G, Legendre P, Meier JC  
The European journal of neuroscience (2009) 306: 1077-91. . **ICC, IHC; tested species: mouse**

Cadherins mediate cocaine-induced synaptic plasticity and behavioral conditioning.

Mills F, Globa AK, Liu S, Cowan CM, Mobasser M, Phillips AG, Borgland SL, Bamji SX  
Nature neuroscience (2017) 204: 540-549. . **EM; tested species: mouse**

CD20/MS4A1 is a mammalian olfactory receptor expressed in a subset of olfactory sensory neurons that mediates innate avoidance of predators.

Jiang HC, Park SJ, Wang IH, Bear DM, Nowlan A, Greer PL  
Nature communications (2024) 151: 3360. . **IDISCO; tested species: mouse**

Alzheimer's Disease-associated Region-specific Decrease of Vesicular Glutamate Transporter Immunoreactivity in the Medial Temporal Lobe and Superior Temporal Gyrus.

Wood OWG, Walby J, Yeung JH, Ke S, Palpagama TH, Turner C, Waldvogel HJ, Faull RLM, Kwakowsky A  
Neuroscience (2024) 546: 75-87. . **IHC; tested species: human**

Synaptic cell-adhesion molecule latrophilin-2 is differentially directed to dendritic domains of hippocampal neurons.

Murphy TR, Amidon RF, Donohue JD, Li L, Anderson GR  
iScience (2024) 272: 108799. . **IHC; tested species: mouse**

Development and Optimization of a Multilayer Rat Purkinje Neuron Culture.

Uggerud IM, Kråkenes T, Hirai H, Vedeler CA, Schubert M  
Cerebellum (London, England) (2023) : . . **ICC; tested species: rat**

c-Maf-positive spinal cord neurons are critical elements of a dorsal horn circuit for mechanical hypersensitivity in neuropathy.

Frezel N, Ranucci M, Foster E, Wende H, Pelczar P, Mendes R, Ganley RP, Werynska K, d'Aquin S, Beccarini C, Birchmeier C, et al. Cell reports (2023) 424: 112295. . **IHC; tested species: mouse**

Access the online factsheet including applicable protocols at <https://sysy.com/product/135404> 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.