

GluA1

Cat.No. 182 011; Monoclonal mouse antibody, 100 µg purified IgG (lyophilized)

Data Sheet

Reconstitution/ Storage	100 µg purified IgG, lyophilized. Albumin and azide were added for stabilization. For reconstitution add 100 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 : 500 up to 1 : 1000 (AP staining) (see remarks) IP: yes ICC: 1 : 200 IHC: 1 : 200 IHC-P: 1 : 200
Clone	160E5
Subtype	IgG2b (κ light chain)
Immunogen	Synthetic peptide corresponding to AA 895 to 907 from rat GluA1 (UniProt Id: P19490)
Reactivity	Reacts with: human (P42261), rat (P19490), mouse (P23818). No signal: zebrafish. Other species not tested yet.
Specificity	K.O. validated
Matching control	182-01P
Remarks	WB: This antibody is less sensitive than the rabbit polyclonal antibody (cat. no. 182 003).

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

Background

Inotropic **glutamate receptors (iGluRs)** mediate rapid excitatory neurotransmission in the mammalian CNS. They can be subdivided into three major groups, the **AMPA/GluA**, **NMDA/GluN** and **kainate/GluK receptors (KARs)**. mRNAs coding for glutamate receptors are substrates for an adenosine deaminase acting on RNA (ADAR) that increases the diversity of these proteins. Glutamate receptors of the AMPA subtype are monovalent cation channels and are composed of the four AMPA subunits **GluA 1**, GluA 2, GluA 3, and GluA 4.

Selected References for 182 011

Fusion Competent Synaptic Vesicles Persist upon Active Zone Disruption and Loss of Vesicle Docking. Wang SSH, Held RG, Wong MY, Liu C, Karakhanyan A, Kaeser PS Neuron (2016) 914: 777-791. . **WB, ICC**

Microglia modulate TNFα-mediated synaptic plasticity. Kleidonas D, Kirsch M, Andrieux G, Pfeifer D, Boerries M, Vlachos G Glia (2023) 719: 2117-2136. . **WB, IHC; tested species: mouse**

AMPA Receptor Antagonists Facilitate NEDD4-2-Mediated GRIA1 Ubiquitination by Regulating PP2B-ERK1/2-SGK1 Pathway in Chronic Epilepsy Rats.

Kim JE, Lee DS, Park H, Kim TH, Kang TC Biomedicines (2021) 98: . . **WB, IP; tested species: rat**

Spatial proteomics in neurons at single-protein resolution.

Unterauer EM, Shetab Boushehri S, Jevdokimenko K, Masullo LA, Ganji M, Sograte-Idrissi S, Kowalewski R, Strauss S, Reinhardt SCM, Perovic A, Marr C, et al.

Cell (2024) 1877: 1785-1800.e16. . **DNA_PAINT; tested species: rat**

Copine-6 is a Ca²⁺ sensor for activity-induced AMPA receptor exocytosis.

Tan JZA, Jang SE, Batallas-Borja A, Bhembre N, Chandra M, Zhang L, Guo H, Ringuet MT, Widagdo J, Collins BM, Anggono V, et al.

Cell reports (2023) 4212: 113460. . **ICC; tested species: rat**

CDKL5 deficiency in adult glutamatergic neurons alters synaptic activity and causes spontaneous seizures via TrkB signaling.

Zhu ZA, Li YY, Xu J, Xue H, Feng X, Zhu YC, Xiong ZQ Cell reports (2023) 4210: 113202. . **WB; tested species: mouse**

PDI augments kainic acid-induced seizure activity and neuronal death by inhibiting PP2A-GluA2-PICK1-mediated AMPA receptor internalization in the mouse hippocampus.

Lee DS, Kim TH, Park H, Kim JE Scientific reports (2023) 131: 13927. . **WB; tested species: mouse**

Abl2 Kinase Differentially Regulates iGluRs Current Activity and Synaptic Localization.

Kabirova M, Reichenstein M, Borovok N, Sheinin A, Gorobets D, Michaelevski I Cellular and molecular neurobiology (2023) 436: 2785-2799. . **ICC; tested species: rat**

Molecular Characterization of AMPA-Receptor-Containing Vesicles.

Peters JJ, Leitz J, Oses-Prieto JA, Burlingame AL, Brunger AT Frontiers in molecular neuroscience (2021) 14: 754631. . **IP; tested species: mouse**

Loss of miR-183/96 alters synaptic strength via pre- and postsynaptic mechanisms at a central synapse.

Krohs C, Körber C, Ebbers L, Altaf F, Hollje G, Hoppe S, Dörflinger Y, Prosser HM, Nothwang HG The Journal of neuroscience : the official journal of the Society for Neuroscience (2021) : . . **IHC; tested species: mouse**

PKC-phosphorylation of Liprin-α3 triggers phase separation and controls presynaptic active zone structure.

Emperador-Melero J, Wong MY, Wang SSH, de Nola G, Nyitrai H, Kirchhausen T, Kaeser PS Nature communications (2021) 121: 3057. . **ICC; tested species: mouse**

Access the online factsheet including applicable protocols at <https://sysy.com/product/182011> 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.