SYSY Antibodies

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GluA1 (AMPA1)

Cat.No. 182 003; 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_2O 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 (AP staining) **IP**: yes **ICC**: 1 : 500 (see remarks) **IHC**: not tested yet **IHC-P (FFPE)**: not tested yet **ExM**: external data (see remarks)
Immunogen	Recombinant protein corresponding to AA 829 to 907 from mouse GluA1 (UniProt Id: P23818)
Reactivity	Reacts with: human (P42261), rat (P19490), mouse (P23818). No signal: zebrafish. Other species not tested yet.
Specificity	K.O. validated PubMed: 32831170
Matching control	182-0P
Remarks	**ICC**: Methanol fixation is recommended. **ExM**: This antibody has been successfully applied and published for this method by customers (see application-specific references).

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

Background

Ionotropic **glu**tamate **r**eceptors (i**GluR**s) 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 (KAR). 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 **GluA1**, GluA2, GluA3, and GluA4.

For more information on protein expression pattern, please refer to the overview image in our SYSY Antibodies ATLAS.

Selected References for 182 003

Synaptotagmin-3 drives AMPA receptor endocytosis, depression of synapse strength, and forgetting.
Awasthi A, Ramachandran B, Ahmed S, Benito E, Shinoda Y, Nitzan N, Heukamp A, Rannio S, Martens H, Barth J, Burk K, et al.
Science (New York, N.Y.) (2018) : . . **WB, ICC; tested species: rat**

Long-term potentiation is independent of the C-tail of the GluA1 AMPA receptor subunit.
Díaz-Alonso J, Morishita W, Incontro S, Simms J, Holtzman J, Gill M, Mucke L, Malenka RC, Nicoll RA
eLife (2020) 9: . . **WB, IHC; KO verified; tested species: mouse**

Neurons undergo pathogenic metabolic reprogramming in models of familial ALS.
Riechers SP, Mojsilovic-Petrovic J, Belton TB, Chakrabarty RP, Garjani M, Medvedeva V, Dalton C, Wong YC, Chandel NS, Dienel G, Kalb RG, et al.
Molecular metabolism (2022) 60: 101468. . **WB, ICC; tested species: rat**

Patch2MAP combines patch-clamp electrophysiology with super-resolution structural and protein imaging in identified single neurons without genetic modification.
Vardalaki D, Pham TLD, Frosch MP, Cosgrove GR, Richardson M, Cash SS, Harnett MT
bioRxiv : the preprint server for biology (2023) : . . **EXM; tested species: human**

High-resolution proteomics unravel architecture and molecular diversity of native AMPA receptor complexes.
Schwenk J, Harmel N, Brechet A, Zolles G, Berkefeld H, Müller CS, Bildl W, Baehrens D, Hüber B, Kulik A, Klöcker N, et al.
Neuron (2012) 744: 621-33. . **IP; tested species: rat**

Dopaminergic tone inhibits spontaneous glutamate release and augments homeostatic synaptic plasticity.
Uzay B, Zhang KJ, Monteggia LM, Kavalali ET
Molecular psychiatry (2025) : . . **WB; tested species: rat**

DEPDC5 regulates the strength of excitatory synaptic transmission by interacting with ubiquitin-specific protease 46.
Cerullo MS, Canevari C, Marte A, Bacq A, De Fusco A, Maletic M, Baulac S, Benfenati F
Neurobiology of disease (2025) 212: 106985. . **ICC; tested species: mouse**

Synaptic neoteny of human cortical neurons requires species-specific balancing of SRGAP2-SYNGAP1 cross-inhibition.
Libé-Philippot B, Iwata R, Recupero AJ, Wierda K, Bernal Garcia S, Hammond L, van Benthem A, Limame R, Ditkowska M, Beckers S, Gaspariunaite V, et al.
Neuron (2024) : . . **WB; tested species: human**

A dendritic mechanism for balancing synaptic flexibility and stability.
Yaeger CE, Vardalaki D, Zhang Q, Pham TLD, Brown NJ, Ji N, Harnett MT
Cell reports (2024) 438: 114638. . **EXM; tested species: mouse**

INSIHGT: an accessible multi-scale, multi-modal 3D spatial biology platform.
Yau CN, Hung JTS, Campbell RAA, Wong TCY, Huang B, Wong BTY, Chow NKN, Zhang L, Tsoi EPL, Tan Y, Li JJX, et al.
Nature communications (2024) 151: 10888. . **IHC; tested species: mouse**

Access the online factsheet including applicable protocols at https://sysy.com/product/182003 or scan the QR-code.

FAQ - How should I store my antibody?

Shipping Conditions

- All SYSY antibodies and control proteins/peptides are shipped lyophilized (vacuum freeze-dried). In this form, they remain stable 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. **Do not freeze lyophilized antibodies**. Temperatures below 0°C may impair performance.
- **Fluorescence-labeled antibodies** should be reconstituted immediately upon receipt. Long-term storage of lyophilized fluorophore-conjugates may cause aggregation.
- **Control peptides** should be stored at -20°C before reconstitution.

Long Term Storage after Reconstitution (General Considerations)

- **Do not use frost-free ("no-frost") freezers.** These units periodically warm to remove ice buildup, causing freeze–thaw cycles that can damage antibodies.
- Store vials in areas with minimal temperature fluctuation - preferably toward the back of the freezer, not on the door.
- Aliquot reconstituted antibodies and store at –20°C to –80°C.
- Avoid very small aliquots (<20 µL), as evaporation and adsorption to tube surfaces can reduce antibody concentration and activity.
- Use the smallest practical storage vial to minimize surface area.
- Adding glycerol to a final concentration of 50% prevents freezing at -20°C, allowing storage in liquid form and effectively avoiding freeze–thaw cycles.

Product Specific Hints for Storage

Control proteins / peptides

- Store at -20°C to -80°C

Monoclonal Antibodies

- **Ascites and hybridoma supernatant:** Store at -20°C to -80°C
  Prolonged storage at 4°C is not recommended, as proteases present in ascites may degrade antibodies.
- **Purified IgG:** Store at -20°C to -80°C
  Adding a carrier protein (e.g., BSA) enhances long-term stability.
  Many SYSY antibodies already contain carrier proteins - refer to the respective datasheet for details.

Polyclonal Antibodies

- **Crude antisera:** Can be stored at 4°C with antimicrobials added, but -20°C to -80°C is preferred
- **Affinity-purified antibodies:** Less stable than antisera; store at -20°C to -80°C
  Adding a carrier protein such as BSA improves long-term stability.
  Most SYSY antibodies already contain carrier proteins - refer to the respective datasheet for details.

Fluorescence-labeled Antibodies

- Store as a liquid with 1:1 (v/v) glycerol at -20°C, and protect from light exposure

Avoid repeated freeze-thaw cycles for all antibodies!

FAQ - How should I reconstitute my antibody?

Reconstitution

- All purified SYSY antibodies are lyophilized from PBS. To reconstitute the antibody in PBS, add the volume of deionized water specified in the corresponding datasheet. If a larger final volume is desired, first add the recommended amount of water, then adjust with PBS and, if needed, add a stabilizing carrier protein (e.g., BSA) to a final concentration of 2%. Some SYSY antibodies already contain albumin; please take this into account before adding additional carrier protein.

For complete reconstitution, carefully remove the vial cap. After adding water, briefly vortex the solution. To collect the liquid at the bottom of the vial, place the vial inside a 50 ml centrifuge tube padded with paper and centrifuge briefly.

- If desired, small amounts of azide or thimerosal may be added to prevent microbial growth. This is particularly recommended when storing an aliquot at 4°C.
- After reconstitution of fluorescence-labeled antibodies, add glycerol 1:1 (v/v) to achieve a final concentration of 50%. This prevents freezing at –20°C and keeps the antibody in liquid form, effectively avoiding freeze–thaw cycles.
- Glycerol may also be added to unlabeled primary antibodies as a general measure to prevent freeze–thaw damage.
- For further guidance, please refer to our **storage tips** and recommendations for reconstituted antibodies, control peptides, and control proteins.