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 **IHC**: not tested yet **IHC-P**: not tested yet **ExM**: external data
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.

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 (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 182 003

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**

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**

SNX17 Mediates Dendritic Spine Maturation via p140Cap.
Cui Q, Liang S, Li H, Guo Y, Lv J, Wang X, Qin P, Xu H, Huang TY, Lu Y, Tian Q, et al.
Molecular neurobiology (2023) : . . **WB; tested species: mouse**

LAR receptor phospho-tyrosine phosphatases regulate NMDA-receptor responses.
Sclip A, Südhof TC
eLife (2020) 9: . . **WB; 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 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.