SYSY Antibodies

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GluN1 (NMDAR1)

Cat.No. 114 103; 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**: not recommended (see remarks) **IP**: not tested yet **ICC**: 1 : 250 up to 1 : 500 (see remarks) **IHC**: external data (see remarks) **IHC-P (FFPE)**: not tested yet **IHC-G**: 1 : 500 (see remarks)
Immunogen	Synthetic peptide corresponding to AA 35 to 53 from rat GluN1 (UniProt Id: P35439)
Reactivity	Reacts with: human (Q05586), rat (P35439), mouse (P35438). Other species not tested yet.
Matching control	114-0P
Remarks	**WB**: Cat. no. 114 003, is recommended for this application. **ICC**: This antibody can only be used for the surface staining of living cells. It is not recommended for the labeling of fixed cells. **IHC**: This antibody has been successfully applied for this method by our customers using antigen retrieval with pepsin according to Lorincz and Nusser 2010 (see gallery). It has not been validated using our standard protocol. **IHC-G**: 3% glyoxal, 1% acetic acid, 20% ethanol, in ddH2O, pH 4.2-4.4, according to Richter et al. 2017 and 9% glyoxal, 8% acetic acid, in ddH2O, pH 4.2-4.4, according to Konno et al. 2023 are possible.

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

Background

GluNs (NMDA-receptors) represent a class of glutamate receptors that are of central importance in synaptic plasticity. Multiple NMDA receptor subtypes exist: **GluN1** and GluN2 A-D. GluN1 is the most important as it is required for activity. NMDA-receptors allow Ca^{2+} influx and are thought to trigger Ca^{2+} dependent postsynaptic processes involved in long term potentiation and depression.

Selected References for 114 103

Peptide-Purified Anti-N-methyl-D-aspartate Receptor (NMDAR) Autoantibodies Have Inhibitory Effect on Long-Term Synaptic Plasticity.
Day C, Silva JP, Munro R, Mullier B, André VM, Wolff C, Stephens GJ, Bithell A
Pharmaceuticals (Basel, Switzerland) (2024) 1712: . . **WB, ICC; tested species: human,mouse**

Anti-NMDA Receptor Encephalitis in the Polar Bear (Ursus maritimus) Knut.
Prüss H, Leubner J, Wenke NK, Czirják GÁ, Szentiks CA, Greenwood AD
Scientific reports (2015) 5: 12805. . **IHC**

A correlative workflow for synaptic imaging by cryo-electron tomography.
Do TT, Siegert A, Domart F, Hahn F, Zeising C, Muth S, Pape C, Kusch K, Dresbach T, Rizzoli SO, Petrovic A, et al.
Structure (London, England : 1993) (2026) : . . **ICC; tested species: rat**

Alzheimer's disease pathology degrades an NMDA receptor-dependent spontaneous activity pattern in cortico-hippocampal circuits.
Ellingford R, Harris SS, Kehring M, Rajani RM, Lam FKW, Graykowski D, Böken D, Welikovitch LA, Khasnavis A, Laban R, Heslegrave A, et al.
Neuron (2026) : . . **IHC; tested species: human,mouse**

Alzheimer's disease patient-derived high-molecular-weight tau impairs bursting in hippocampal neurons.
Harris SS, Ellingford R, Hartmann J, Dasgupta D, Kehring M, Rajani RM, Graykowski D, Quittot N, Sivasankaran D, Commins C, Fan Z, et al.
Cell (2025) : . . **IHC; tested species: mouse**

The amyloid precursor family of proteins in excitatory neurons are essential for regulating cortico-hippocampal circuit dynamics in vivo.
Harris SS, Rajani RM, Zünkler J, Ellingford R, Yang M, Rowland JM, Schmidt A, Lee BI, Kehring M, Hellmuth M, Lam FKW, et al.
Cell reports (2025) 446: 115801. . **IHC; tested species: mouse**

Disruption of the grid cell network in a mouse model of early Alzheimer's disease.
Ying J, Keinath AT, Lavoie R, Vigneault E, El Mestikawy S, Brandon MP
Nature communications (2022) 131: 886. . **IHC; tested species: mouse**

Human cerebrospinal fluid monoclonal N-methyl-D-aspartate receptor autoantibodies are sufficient for encephalitis pathogenesis.
Kreye J, Wenke NK, Chayka M, Leubner J, Murugan R, Maier N, Jurek B, Ly LT, Brandl D, Rost BR, Stumpf A, et al.
Brain : a journal of neurology (2016) 139Pt 10: 2641-2652. . **ICC; tested species: mouse,rat**

Activity-dependent regulation of MHC class I expression in the developing primary visual cortex of the common marmoset monkey.
Ribic A, Flügge G, Schlumbohm C, Mätz-Rensing K, Walter L, Fuchs E
Behavioral and brain functions : BBF (2011) 7: 1. . **IHC**

Selected General References

AMPA and NMDA receptors: similarities and differences in their synaptic distribution.
Nusser Z et al. Curr. Opin. Neurobiol. (2000) PubMed:10851167

Access the online factsheet including applicable protocols at https://sysy.com/product/114103 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.