SYSY Antibodies

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Shank3 (SPANK2)

Cat.No. 162 304; Polyclonal Guinea pig antibody, 100 µl antiserum (lyophilized)

Data Sheet

Reconstitution/ Storage	100 µl antiserum, lyophilized. For **reconstitution** add 100 µl H_2O, 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	**WB**: 1 : 1000 (AP staining) (see remarks) **IP**: yes **ICC**: 1 : 500 up to 1 : 2000 **IHC**: external data (see remarks) **IHC-P (FFPE)**: 1 : 500 **IHC-Fr**: 1 : 500 (see remarks) **ExM**: external data (see remarks)
Immunogen	Recombinant protein corresponding to residues near the carboxy terminus of rat Shank3 (UniProt Id: Q9JLU4)
Reactivity	Reacts with: rat (Q9JLU4), mouse (Q4ACU6). Other species not tested yet.
Specificity	Antigen used for immunization is present in all Shank3 isoforms described for rat and in all isoforms described for mouse except Shank3-B and Shank3-C4. K.O. validated PubMed: 33115499
Remarks	**WB**: Due to the large size of this protein, we recommend NuPAGE 3-8% Tris-Acetate gels for SDS-PAGE. **IHC**: This antibody has been successfully applied and published for this method by customers (see application-specific references). It has not been validated using our standard protocols. **IHC-Fr**: 4% formaldehyde/PFA 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

Shank1, 2 and **3** are major proteins of the postsynaptic density (PSD). They are composed of several protein-protein interaction domains like PDZ-, homer- and ABP1-binding domains which allow them to crosslink ionotopic and metabotropic glutamate receptor complexes with each other and to the actin-cytoskeleton.

Selected References for 162 304

SHANK3 Antibody Validation: Differential Performance in Western Blotting, Immunocyto- and Immunohistochemistry.
Lutz AK, Bauer HF, Ioannidis V, Schön M, Boeckers TM
Frontiers in synaptic neuroscience (2022) 14: 890231. . **WB, ICC, IHC; tested species: mouse**

A bidirectional switch in the Shank3 phosphorylation state biases synapses toward up- or downscaling.
Wu CH, Tatavarty V, Jean Beltran PM, Guerrero AA, Keshishian H, Krug K, MacMullan MA, Li L, Carr SA, Cottrell JR, Turrigiano GG, et al.
eLife (2022) 11: . . **WB, IP, ICC; tested species: rat**

Jacob-induced transcriptional inactivation of CREB promotes Aβ-induced synapse loss in Alzheimer's disease.
Grochowska KM, Gomes GM, Raman R, Kaushik R, Sosulina L, Kaneko H, Oelschlegel AM, Yuanxiang P, Reyes-Resina I, Bayraktar G, Samer S, et al.
The EMBO journal (2023) : e112453. . **ICC, IHC; tested species: mouse**

Golgi satellites are essential for polysialylation of NCAM and expression of LTP at distal synapses.
Andres-Alonso M, Borgmeyer M, Mirzapourdelavar H, Lormann J, Klein K, Schweizer M, Hoffmeister-Ullerich S, Oelschlegel AM, Dityatev A, Kreutz MR
Cell reports (2023) 427: 112692. . **ICC, IHC; tested species: mouse**

Multiomics of synaptic junctions reveals altered lipid metabolism and signaling following environmental enrichment.
Borgmeyer M, Coman C, Has C, Schött HF, Li T, Westhoff P, Cheung YFH, Hoffmann N, Yuanxiang P, Behnisch T, Gomes GM, et al.
Cell reports (2021) 371: 109797. . **ICC, IHC; tested species: mouse,rat**

Germline AGO2 mutations impair RNA interference and human neurological development.
Lessel D, Zeitler DM, Reijnders MRF, Kazantsev A, Hassani Nia F, Bartholomäus A, Martens V, Bruckmann A, Graus V, McConkie-Rosell A, McDonald M, et al.
Nature communications (2020) 111: 5797. . **WB, ICC; KD verified; tested species: rat**

Chronic Toxoplasma infection is associated with distinct alterations in the synaptic protein composition.
Lang D, Schott BH, van Ham M, Morton L, Kulikovskaja L, Herrera-Molina R, Pielot R, Klawonn F, Montag D, Jänsch L, Gundelfinger ED, et al.
Journal of neuroinflammation (2018) 151: 216. . **WB, IHC; tested species: mouse**

Mapping proteomic composition of excitatory postsynaptic sites in the cerebellar cortex.
Robinson K, Delhaye M, Craig AM
Frontiers in molecular neuroscience (2024) 17: 1381534. . **EXM; tested species: mouse**

Light-microscopy-based connectomic reconstruction of mammalian brain tissue.
Tavakoli MR, Lyudchik J, Januszewski M, Vistunou V, Agudelo Dueñas N, Vorlaufer J, Sommer C, Kreuzinger C, Oliveira B, Cenameri A, Novarino G, et al.
Nature (2025) 6428067: 398-410. . **EXM**

Polar lipids modify Alzheimer's Disease pathology by reducing astrocyte pro-inflammatory signaling through platelet-activating factor receptor (PTAFR) modulation.
Hans S, Stanton JE, Sauer AK, Shiels K, Saha SK, Lordan R, Tsoupras A, Zabetakis I, Grabrucker AM
Lipids in health and disease (2024) 231: 113. . **ICC; tested species: rat**

A septal-ventral tegmental area circuit drives exploratory behavior.
Mocellin P, Barnstedt O, Luxem K, Kaneko H, Vieweg S, Henschke JU, Dalügge D, Fuhrmann F, Karpova A, Pakan JMP, Kreutz MR, et al.
Neuron (2024) : . . **IHC; tested species: mouse**

Access the online factsheet including applicable protocols at https://sysy.com/product/162304 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.