SYSY Antibodies

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Shank2 (SPANK3)

Cat.No. 162 202; Polyclonal rabbit antibody, 200 µl antiserum (lyophilized)

Data Sheet

Reconstitution/ Storage	200 µl antiserum, lyophilized. For **reconstitution** add 200 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**: not tested yet **ICC**: 1 : 500 **IHC**: external data (see remarks) **IHC-P (FFPE)**: not tested yet **IHC-Fr**: 1 : 500 (see remarks)
Immunogen	Recombinant protein corresponding to residues near the carboxy terminus of rat Shank2 (UniProt Id: Q9QX74)
Reactivity	Reacts with: rat (Q9QX74), mouse (Q80Z38), human (Q9UPX8). Other species not tested yet.
Specificity	K.O. validated PubMed: 29572432
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 for this method by our customers using mild fixation (1% PFA at pH 6) according to Lorincz and Nusser 2010 (see gallery). It has not been validated using our standard protocol. **IHC-Fr**: The following fixatives are possible: acetone, 4% formaldehyde/PFA. Methanol fixation is not advised.

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 162 202

Cell-Type-Specific Shank2 Deletion in Mice Leads to Differential Synaptic and Behavioral Phenotypes.
Kim R, Kim J, Chung C, Ha S, Lee S, Lee E, Yoo YE, Kim W, Shin W, Kim E
The Journal of neuroscience : the official journal of the Society for Neuroscience (2018) 3817: 4076-4092. . **WB, IHC; KO verified; tested species: mouse**

Comparison of Multiscale Imaging Methods for Brain Research.
Tröger J, Hoischen C, Perner B, Monajembashi S, Barbotin A, Löschberger A, Eggeling C, Kessels MM, Qualmann B, Hemmerich P
Cells (2020) 96: . . **ICC, IHC; tested species: mouse,rat**

Insulin-like growth factor 1 partially rescues early developmental defects caused by SHANK2 knockdown in human neurons.
Chen ST, Lai WJ, Zhang WJ, Chen QP, Zhou LB, So KF, Shi LL
Neural regeneration research (2020) 1512: 2335-2343. . **WB, ICC; KD verified; tested species: human**

Cerebellar Shank2 Regulates Excitatory Synapse Density, Motor Coordination, and Specific Repetitive and Anxiety-Like Behaviors.
Ha S, Lee D, Cho YS, Chung C, Yoo YE, Kim J, Lee J, Kim W, Kim H, Bae YC, Tanaka-Yamamoto K, et al.
The Journal of neuroscience : the official journal of the Society for Neuroscience (2016) 3648: 12129-12143. . **WB, IHC; KO verified; tested species: mouse**

Microglial Extracellular Vesicles Mediate C1q Deposition at the Pre-Synapse and Promote Synaptic Pruning.
D'Arrigo G, Cutugno G, Golia MT, Sironi F, Lombardi M, Colombo SF, Frigerio R, Cretich M, Gagni P, Battocchio E, Barone C, et al.
Journal of extracellular vesicles (2025) 1412: e70173. . **ICC; tested species: mouse**

Disruption of the autism-associated Pcdh9 gene leads to transcriptional alterations, synapse overgrowth, and defective network activity in the CA1.
Miozzo F, Murru L, Maiellano G, di Iasio I, Zippo AG, Zambrano Avendano A, Metodieva VD, Riccardi S, D'Aliberti D, Spinelli S, Canu T, et al.
The Journal of neuroscience : the official journal of the Society for Neuroscience (2024) 4450: . . **IHC; tested species: rat**

CSF1R-mediated myeloid cell depletion shifts the ratio of motor cortical excitatory to inhibitory neurons in a multiple system atrophy model.
Gauer C, Battis K, Schneider Y, Florio JB, Mante M, Kim HY, Rissman RA, Hoffmann A, Winkler J
Experimental neurology (2024) 374: 114706. . **WB; tested species: mouse**

Microglial large extracellular vesicles propagate early synaptic dysfunction in Alzheimer's disease.
Gabrielli M, Prada I, Joshi P, Falcicchia C, D'Arrigo G, Rutigliano G, Battocchio E, Zenatelli R, Tozzi F, Radeghieri A, Arancio O, et al.
Brain : a journal of neurology (2022) : . . **ICC; tested species: mouse**

The metabolite p-cresol impairs dendritic development, synaptogenesis, and synapse function in hippocampal neurons: Implications for autism spectrum disorder.
Guzmán-Salas S, Weber A, Malci A, Lin X, Herrera-Molina R, Cerpa W, Dorador C, Signorelli J, Zamorano P
Journal of neurochemistry (2022) 1614: 335-349. . **ICC; tested species: rat**

The histone demethylase PHF8 regulates astrocyte differentiation and function.
Iacobucci S, Padilla N, Gabrielli M, Navarro C, Lombardi M, Vicioso-Mantis M, Verderio C, de la Cruz X, Martínez-Balbás MA
Development (Cambridge, England) (2021) 14812: . . **ICC; tested species: mouse**

Prenatal interleukin 6 elevation increases glutamatergic synapse density and disrupts hippocampal connectivity in offspring.
Mirabella F, Desiato G, Mancinelli S, Fossati G, Rasile M, Morini R, Markicevic M, Grimm C, Amegandjin C, Termanini A, Peano C, et al.
Immunity (2021) 5411: 2611-2631.e8. . **WB; tested species: mouse**

Access the online factsheet including applicable protocols at https://sysy.com/product/162202 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.