SYSY Antibodies

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Shank2

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) **IP**: not tested yet **ICC**: 1 : 500 **IHC**: external data (see remarks) **IHC-P**: 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	**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 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.