SYSY Antibodies

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Npas4

Cat.No. 546 008; Recombinant rabbit antibody, 100 µg recombinant IgG (lyophilized)

Data Sheet

Reconstitution/ Storage	100 µg purified recombinant IgG, lyophilized. Albumin and azide were added for stabilization. For **reconstitution** add 100 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 : 500 up to 1 : 2000 (ECL detection) **ICC**: 1 : 500 up to 1 : 2000 **IHC**: 1 : 500 up to 1 : 2000 **IHC-P (FFPE)**: 1 : 400 **iDISCO**: external data (see remarks) **ELISA**: not tested yet
Clone	ASF.15241
Subtype	IgG1 (κ light chain)
Reactivity	Reacts with: mouse (Q8BGD7), rat (Q8CJH6), human (Q8IUM7). Other species not tested yet.
Remarks	This antibody was developed by Activity Signaling, San Diego, USA. **iDISCO**: 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

The neuronal PAS domain protein 4 (Npas4) is a neuron specific transcription factor that belongs to the inducible immediate□early genes and plays a key role in controlling activity dependent inhibitory synapse formation (1, 2). It has been originally identified as an upregulated transcript in ischemic brain tissue (3).
Npas4 is activated within minutes by Ca^{2}□ influx mediated neuronal depolarization and peaks after 1–2 h (1, 4). Unlike the classic activity markers c□Fos, Arc or Egr1, which can be driven by a variety of signaling pathways like cAMP, neurotrophic factors or neuromodulators, Npas4 expression is selectively triggered by neuronal activity (1, 5). This strict coupling to synaptic activity gives Npas4 a higher fidelity as a read□out of recent neuronal activity (1). The deletion of Npas4 leads to an impairment of neuronal plasticity, underlining its importance for the nervous system to adapt to sensory input (5, 6).

Selected References for 546 008

Functionally distinct NPAS4-expressing somatostatin interneuron ensembles critical for motor skill learning.
Yang J, Serrano P, Yin X, Sun X, Lin Y, Chen SX
Neuron (2022) 11020: 3339-3355.e8. . **WB, IHC; tested species: mouse**

Patient-derived anti-NMDAR antibody disinhibits cortical neuronal networks through dysfunction of inhibitory neuron output.
Andrzejak E, Rabinovitch E, Kreye J, Prüss H, Rosenmund C, Ziv NE, Garner CC, Ackermann F
The Journal of neuroscience : the official journal of the Society for Neuroscience (2022) : . . **ICC; tested species: mouse**

Biphasic Npas4 expression promotes inhibitory plasticity and suppression of fear memory consolidation in mice.
Brito DVC, Kupke J, Sokolov R, Cambridge S, Both M, Bengtson CP, Rozov A, Oliveira AMM
Molecular psychiatry (2024) : . . **WB; tested species: mouse**

Npas4-mediated dopaminergic regulation of safety memory consolidation.
Ko B, Yoo JY, Yoo T, Choi W, Dogan R, Sung K, Um D, Lee SB, Kim HJ, Lee S, Beak ST, et al.
Cell reports (2023) 427: 112678. . **IHC; tested species: mouse**

Moderate effect of early-life experience on dentate gyrus function.
Rukundo P, Feng T, Pham V, Pieraut S
Molecular brain (2022) 151: 92. . **IHC; tested species: mouse**

Profound downregulation of neural transcription factor Npas4 and Nr4a family in fetal mice neurons infected with Zika virus.
Alpuche-Lazcano SP, Saliba J, Costa VV, Campolina-Silva GH, Marim FM, Ribeiro LS, Blank V, Mouland AJ, Teixeira MM, Gatignol A
PLoS neglected tropical diseases (2021) 155: e0009425. . **WB; tested species: mouse**

Elimination of Calm1 long 3' UTR mRNA isoform by CRISPR-Cas9 gene editing impairs dorsal root ganglion development and hippocampal neuron activation in mice.
Bae B, Gruner HN, Lynch M, Feng T, So K, Oliver D, Mastick GS, Yan W, Pieraut S, Miura P
RNA (New York, N.Y.) (2020) : . . **IHC; tested species: mouse**

Selected General References

Activity-dependent regulation of inhibitory synapse development by Npas4.
Lin Y et al. Nature (2008) PubMed:18815592

Human variants in the neuronal basic helix-loop-helix/Per-Arnt-Sim (bHLH/PAS) transcription factor complex NPAS4/ARNT2 disrupt function.
Bersten DC et al. PLoS One (2014) PubMed:24465693

Access the online factsheet including applicable protocols at https://sysy.com/product/546008 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.