SYSY Antibodies

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Neurofilament M

Cat.No. 171 241; Monoclonal mouse antibody, 100 µg purified IgG (lyophilized)

Data Sheet

Reconstitution/ Storage	100 µg purified 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 : 1000 (AP staining) **IP**: not tested yet **ICC**: 1 : 500 up to 1 : 1000 **IHC**: 1 : 500 up to 1 : 1000 **IHC-P (FFPE)**: 1 : 2000 up to 1 : 5000 **DNA-PAINT**: external data (see remarks)
Clone	103H5A1
Subtype	IgG1 (κ light chain)
Immunogen	Recombinant protein corresponding to AA 761 to 846 from rat Neurofilament M (UniProt Id: P12839)
Reactivity	Reacts with: rat (P12839), mouse (P08553). Other species not tested yet.
Remarks	**DNA-PAINT**: 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

Neurofilaments (NFs) are intermediate filaments essential for providing structural support to neurons, particularly within axons. They play a crucial role in maintaining axonal diameter, which directly influences nerve conduction velocity (1). Neurofilaments are composed of three primary subunits - NF-L (light), NF-M (medium) and NF-H (heavy) – along with an NF-associated protein. In the adult central nervous system (CNS), α-internexin serves as the fourth neurofilament subunit, whereas in the peripheral nervous system (PNS), peripherin takes on this role (2).
Beyond their structural function, neurofilaments are also valuable biomarkers in both research and clinical settings. They are widely used in immunohistochemistry to stain and visualize axons, particularly in peripheral nerves and the CNS. Increased levels of neurofilament proteins in cerebrospinal fluid (CSF) or blood are strongly associated with neurodegenerative diseases, such as amyotrophic lateral sclerosis (ALS), multiple sclerosis (MS), and Alzheimer's disease (3). In peripheral nerve studies, neurofilament staining is often combined with other markers, such as S100, to provide a more comprehensive assessment of nerve structure and pathology (4).

Selected References for 171 241

Fast DNA-PAINT imaging using a deep neural network.
Narayanasamy KK, Rahm JV, Tourani S, Heilemann M
Nature communications (2022) 131: 5047. . **DNA_PAINT; tested species: rat**

Selected General References

Neurofilament-dependent radial growth of motor axons and axonal organization of neurofilaments does not require the neurofilament heavy subunit (NF-H) or its phosphorylation.
Rao MV et al. J Cell Biol (1998) PubMed:9763429

The Role of Nerve Fibers in the Tumor Immune Microenvironment of Solid Tumors.
Hernandez S et al. Adv Biol (Weinh) (2022) PubMed:35751462

Neurofilament Proteins as Biomarkers to Monitor Neurological Diseases and the Efficacy of Therapies.
Yuan A et al. Front Neurosci (2021) PubMed:34646114

Neurofilaments: neurobiological foundations for biomarker applications.
Gafson AR et al. Brain (2020) PubMed:32408345

Access the online factsheet including applicable protocols at https://sysy.com/product/171241 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.