SYSY
Antibodies

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α-Tubulin

Cat.No. 302-21P; control peptide, 100 µg peptide (lyophilized)

Data Sheet

Reconstitution/ Storage	100 µg peptide, lyophilized. 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. Control peptides should be stored at -20°C when still lyophilized! For detailed information, see back of the data sheet.
Immunogen	Synthetic peptide corresponding to AA 419 to 435 from human α-tubulin 4A (UniProt Id: P68366)
Recommended dilution	Optimal concentrations should be determined by the end-user.
Matching antibodies	302 204, 302 211, 302 211C3, 302 411, 302 206, 302 308, 302 209
Remarks	This control peptide consists of the synthetic peptide SEAREDMAALEKDYEEV (aa 419 - 435 in human α-tubulin 4A) that has been used for immunization. It has been tested in preadsorption experiments and blocks efficiently and specifically the corresponding signal in Western blots. The amount of peptide needed for efficient blocking depends on the titer and on the affinity of the antibody to the antigen.

TO BE USED IN VITRO / FOR RESEARCH ONLY
NOT TOXIC, NOT HAZARDOUS, NOT INFECTIOUS, NOT CONTAGIOUS

Background

Microtubules are involved in a wide variety of intracellular events including cell division, intracellular transport and secretion, axonal transport, and maintenance of cell morphology. They are composed of tubulin, a heterodimeric protein, consisting of two polypeptides, **α-tubulin** and β-tubulin (1).
α Tubulin undergoes numerous post-translational modifications that include tyrosination-detyrosination and deglutamylation, phosphorylation, acetylation, polyglutamylation, and polyglycylation. In one of the major posttranslational modifications, the C-terminal tyrosine residue in α-tubulin is added or removed reversibly, producing Glu-tubulin (after detyrosination) and Tyr-tubulin (with re-added tyrosine). Early stages of cell development are often enriched in Tyr tubulin, whereas mature cells show increased Glu tubulin in stable structures. Some microtubule associated proteins (MAPs), motor proteins like kinesins, or stabilizing factors have different affinities for Glu- or Tyr-tubulin (2,3,4).
A third variant of detyrosinated α-tubulin is Δ2-tubulin which lacks the C-terminal glutamic acid. It cannot be tyrosinated by tyrosine ligase and is one of the dominant α-tubulin isoforms in neurons (5).

Selected General References

Post-translational modifications regulate microtubule function.
Westermann S et al. Nat Rev Mol Cell Biol (2003) PubMed:14685172

The chemical complexity of cellular microtubules: tubulin post-translational modification enzymes and their roles in tuning microtubule functions.
Garnham CP et al. Cytoskeleton (Hoboken) (2012) PubMed:22422711

Post-translational modifications of tubulin in the nervous system.
Fukushima N et al. J Neurochem (2009) PubMed:19250341

A vital role of tubulin-tyrosine-ligase for neuronal organization.
Erck C et al. Proc. Natl. Acad. Sci. U.S.A. (2005) PubMed:15899979

Accumulation of delta 2-tubulin, a major tubulin variant that cannot be tyrosinated, in neuronal tissues and in stable microtubule assemblies.
Paturle-Lafanechère L et al. J. Cell. Sci. (1994) PubMed:7962195

Access the online factsheet including applicable protocols at https://sysy.com/product/302-21P 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.