SYSY Antibodies

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Tau

Cat.No. 314 011; 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) (see remarks) **IP**: yes **ICC**: 1 : 200 up to 1 : 500 **IHC**: 1 : 100 **IHC-P**: 1 : 500
Clone	248E5
Subtype	IgG2a (κ light chain)
Immunogen	Recombinant protein corresponding to the N-terminal half of mouse Tau-D (UniProt Id: P10637-5)
Reactivity	Reacts with: rat (P19332), mouse (P10637). Weaker signal: human (P10636). No signal: zebrafish. Other species not tested yet.
Specificity	This antibody binds phosphorylated and non-phosphorylated tau proteins. The sequence used for immunization is present in all splice variants except human TauA (UniProt Id: P10636-3)
Matching control	314-0P
Remarks	For human tissue cat.no. 314 012 and 314 111 are highly recommended. **WB**: Detects the mouse protein with much greater sensitivity than the rat protein. The antibody binds phosphorylated and non-phosphorylated tau proteins.

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

Background

There are two major classes of heat stable microtubule associated proteins (MAPS): MAP 2 (280 kD), and **tau** (55-65 kD). Both protein classes are involved in the regulation of microtubule polymerization in cells. Tau is a neuronal protein that mainly localizes to axons. Hyperphosphorylated tau has been shown to be a major element of paired helical filaments in Alzheimer's disease.

Selected References for 314 011

Functional neuronal cells generated by human parthenogenetic stem cells.
Ahmad R, Wolber W, Eckardt S, Koch P, Schmitt J, Semechkin R, Geis C, Heckmann M, Brüstle O, McLaughlin JK, Sirén AL, et al.
PloS one (2012) 78: e42800. . **ICC**

Hemisynapse Formation Between Target Astrocytes and Cortical Neuron Axons in vitro.
Teng Z, Gottmann K
Frontiers in molecular neuroscience (2022) 15: 829506. . **ICC; tested species: mouse**

Postnatal expression profiles of atypical cadherin FAT1 suggest its role in autism.
Frei JA, Brandenburg C, Nestor JE, Hodzic DM, Plachez C, McNeill H, Dykxhoorn DM, Nestor MW, Blatt GJ, Lin YC
Biology open (2021) : . . **ICC; tested species: mouse**

Design of Cultured Neuron Networks in vitro with Predefined Connectivity Using Asymmetric Microfluidic Channels.
Gladkov A, Pigareva Y, Kutyina D, Kolpakov V, Bukatin A, Mukhina I, Kazantsev V, Pimashkin A
Scientific reports (2017) 71: 15625. . **ICC; tested species: mouse**

The intermediate filament protein vimentin is essential for axonotrophic effects of Clostridium botulinum C3 exoenzyme.
Adolf A, Leondaritis G, Rohrbeck A, Eickholt BJ, Just I, Ahnert-Hilger G, Höltje M
Journal of neurochemistry (2016) 1392: 234-244. . **ICC**

Novel application of stem cell-derived neurons to evaluate the time- and dose-dependent progression of excitotoxic injury.
Gut IM, Beske PH, Hubbard KS, Lyman ME, Hamilton TA, McNutt PM
PloS one (2013) 85: e64423. . **ICC; tested species: mouse**

Selected General References

Missorting of tau in neurons causes degeneration of synapses that can be rescued by the kinase MARK2/Par-1.
Thies E et al. J. Neurosci. (2007) PubMed:17360912

Tau phosphorylation, aggregation, and cell toxicity.
Avila J et al. J. Biomed. Biotechnol. (2006) PubMed:17047313

Alpha-synuclein induces hyperphosphorylation of Tau in the MPTP model of parkinsonism.
Duka T et al. FASEB J. (2006) PubMed:17077307

Tau is enriched on dynamic microtubules in the distal region of growing axons.
Black MM et al. J. Neurosci. (1996) PubMed:8642405

A spatial gradient of tau protein phosphorylation in nascent axons.
Mandell JW et al. J. Neurosci. (1996) PubMed:8795628

Tau proteins: the molecular structure and mode of binding on microtubules.
Hirokawa N et al. J. Cell Biol. (1988) PubMed:3139677

Immunoflourescent staining of cytoplasmic and spindle microtubules in mouse fibroblasts with antibody to tau protein.
Connolly JA et al. Proc. Natl. Acad. Sci. U.S.A. (1977) PubMed:329285

Tubulin requires tau for growth onto microtubule initiating sites.
Witman GB et al. Proc. Natl. Acad. Sci. U.S.A. (1976) PubMed:1069293

Access the online factsheet including applicable protocols at https://sysy.com/product/314011 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.