

Tau

Cat.No. 314 002; Polyclonal rabbit antibody, 200 µl antiserum (lyophilized)

Data Sheet

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|-------------------------|---|
| Reconstitution/ Storage | 200 µl antiserum, lyophilized. For reconstitution add 200 µl H ₂ O, then aliquot and store at -20°C until use. For detailed information, see back of the data sheet. |
| Applications | WB: 1 : 1000 (AP staining) IP: yes ICC: 1 : 1000 IHC: yes IHC-P/FFPE: not tested yet |
| Immunogen | Recombinant protein corresponding to AA 3 to 214 from mouse Tau-D (UniProt Id: P10637-5) |
| Reactivity | Reacts with: rat (P19332), mouse (P10637). Weaker signal: human (P10636). Other species not tested yet. |
| Specificity | Specific for tau. Sequence used for immunization is present in all splice variants. |
| Matching control | 314-OP |
| Remarks | The antibody binds phosphorylated and non-phosphorylated tau proteins. For human tissue antibody 2, cat.no. 314 012, is highly recommended. |

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

Access the online factsheet including applicable protocols at <https://susy.com/product/314002> or scan the QR-code.



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 314 002

The frontotemporal dementia mutation R406W blocks tau's interaction with the membrane in an annexin A2-dependent manner.

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The role of ubiquitin ligase E3A in polarized contact guidance and rescue strategies in UBE3A-deficient hippocampal neurons.
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Molecular autism (2019) 10: 41. . **ICC; tested species: mouse**

Proteolytically released Lasso/teneurin-2 induces axonal attraction by interacting with latrophilin-1 on axonal growth cones.
Vysokov NV, Silva JP, Lelianova VG, Suckling J, Cassidy J, Blackburn JK, Yankova N, Djamgoz MB, Kozlov SV, Tonevitsky AG, Ushkaryov YA, et al.
eLife (2018) 7: . . **ICC; tested species: rat**

HuD is a Neural Translation Enhancer Acting on mTORC1-Responsive Genes and Counteracted by the Y3 Small Non-coding RNA.
Tebaldi T, Zuccotti P, Peroni D, Köhn M, Gasperini L, Potrich V, Bonazza V, Dudnakova T, Rossi A, Sanguinetti G, Conti L, et al.
Molecular cell (2018) 712: 256-270.e10. . **ICC; tested species: mouse**

Biocompatibility of a Magnetic Tunnel Junction Sensor Array for the Detection of Neuronal Signals in Culture.
Moretti D, DiFrancesco ML, Sharma PP, Dante S, Albisetti E, Monticelli M, Bertacco R, Petti D, Baldelli P, Benfenati F
Frontiers in neuroscience (2018) 12: 909. . **ICC; tested species: rat**

CRMP1 and CRMP2 have synergistic but distinct roles in dendritic development.
Makihara H, Nakai S, Ohkubo W, Yamashita N, Nakamura F, Kiyonari H, Shioi G, Jitsuki-Takahashi A, Nakamura H, Tanaka F, Akase T, et al.
Genes to cells : devoted to molecular & cellular mechanisms (2016) 219: 994-1005. . **ICC; tested species: mouse**

Mammalian target of rapamycin (mTOR) activation increases axonal growth capacity of injured peripheral nerves.
Abe N, Borson SH, Gambello MJ, Wang F, Cavalli V
The Journal of biological chemistry (2010) 28536: 28034-43. . **ICC**

Selected General References

Missorting of tau in neurons causes degeneration of synapses that can be rescued by the kinase MARK2/Par-1.
Thies E, Mandelkow EM
The Journal of neuroscience : the official journal of the Society for Neuroscience (2007) 2711: 2896-907. .

Tau phosphorylation, aggregation, and cell toxicity.
Avila J, Santa-María I, Pérez M, Hernández F, Moreno F
Journal of biomedicine & biotechnology (2006) 20063: 74539. .

Alpha-synuclein induces hyperphosphorylation of Tau in the MPTP model of parkinsonism.
Duka T, Rusnak M, Drolet RE, Duka V, Wersinger C, Goudreau JL, Sidhu A
FASEB journal : official publication of the Federation of American Societies for Experimental Biology (2006) 2013: 2302-12. .

Tau is enriched on dynamic microtubules in the distal region of growing axons.
Black MM, Slaughter T, Moshiah S, Obrocka M, Fischer I
The Journal of neuroscience : the official journal of the Society for Neuroscience (1996) 1611: 3601-19. .

A spatial gradient of tau protein phosphorylation in nascent axons.
Mandell JW, Banker GA
The Journal of neuroscience : the official journal of the Society for Neuroscience (1996) 1618: 5727-40. .

Tau proteins: the molecular structure and mode of binding on microtubules.
Hirokawa N, Shiomura Y, Okabe S
The Journal of cell biology (1988) 1074: 1449-59. .

Immunofluorescent staining of cytoplasmic and spindle microtubules in mouse fibroblasts with antibody to tau protein.
Connolly JA, Kalnins VI, Cleveland DW, Kirschner MW
Proceedings of the National Academy of Sciences of the United States of America (1977) 746: 2437-40. .

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 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.