Purified anti-Tau, 210-230 Antibody (Previously Covance catalog# SIG-39413)

Catalog# / Size	806404 / 50 µL 806401 / 200 µL 806402 / 500 µL 806403 / 1 mL
Clone	Tau 5
Regulatory Status	RUO
Other Names	Microtubule-associated protein tau, PHF-tau, paired helical filament-tau, neurofibrillary tangle, microtubule-associated protein tau, isoform 4, G protein beta1/gamma2 subunit-interacting factor 1, DDPAC, FTDP-17, MAPTL, MSTD, MTBT1, MTBT2, PPND
Previously	Signet Catalog# 9413-02 Signet Catalog# 9413-05 Signet Catalog# 9413-10 Covance Catalog# SIG-39413
Isotype	Mouse IgG1
Description	Tau proteins are microtubule-associated protein (MAPs) which are abundant in neurons of the central nervous system, but are also expressed at very low levels in CNS astrocytes and oligodendrocytes and elsewhere. One of tau's main functions is to modulate the stability of axonal microtubules. Tau is active primarily in the distal portions of axons providing microtubule stabilization as well as flexibility. Pathologies and dementias of the nervous system such as Alzheimer's disease feature tau proteins that have become defective and no longer stabilize microtubules properly. As a result, tau forms aggregates with specific structural properties referred to as Paired Helical Filaments (PHFs) that are a characteristic of many different types of dementias, known as tauopathies. Tau has two primary ways of controlling microtubule stability: isoforms and phosphorylation. Six tau isoforms exist in human brain tissue, and they are distinguished by the number of binding domains. Three isoforms have three binding domains and the remaining three have four binding domains. The binding domains are located in the carboxy-terminus of the protein and are positively-charged (for binding to the negatively-charged microtubule). Tau isoforms with four binding domains are better at stabilizing microtubules than those with three binding domains. Thus, in the human brain, the tau proteins constitute a family of six isoforms with the range from 352-441 amino acids. They also differ in either zero, one or two inserts of 29 amino acids at the N-terminal part (exon 2 and 3), and three or four repeat-binding regions at the C-terminus. So, the longest isoform in the CNS has four repeats (R1, R2, R3 and R4) and two inserts (441 amino acids total), while the shortest isoform has three repeats (R1, R3 and R4) and no insert (352 amino acids total). Tau is also a phosphoprotein with 79 potential Serine (Ser) and Threonine (Thr) phosphorylation sites on the longest tau isoform. Phosphorylation has been reported on approximately 30 of these sites in normal tau proteins. Mechanisms that drive tau lesion formation in the highly prevalent sporadic form of AD are not fully understood, but appear to involve abnormal post-translational modifications (PTMs) that influence tau function, stability, and aggregation propensity.

Product Details

Verified Reactivity	Human
Antibody Type	Monoclonal
Host Species	Mouse
Formulation	Phosphate-buffered solution (no preservatives or carrier proteins).
Preparation	The antibody was purified by affinity chromatography.
Concentration	0.5 mg/mL
Storage & Handling	Do not store antibody diluted below 50 µg/mL. The antibody solution should be stored undiluted between 2°C and 8°C. Please note the storage condition for this antibody has been changed

from -20°C to between 2°C and 8°C. You can also check your vial or your CoA to find the most accurate storage condition for this antibody.

Application

WB - *Quality tested*
IHC-P - *Verified*

Recommended Usage

Each lot of this antibody is quality control tested by Western blotting. For Western blotting, the suggested use of this reagent is 0.5 - 1.0 µg/mL. For immunohistochemistry on formalin-fixed paraffin-embedded tissue, a concentration range of 5.0 - 10 µg/mL is suggested. It is recommended that the reagent be titrated for optimal performance for each application.

Application Notes

This antibody is specific for an epitope that lies between amino acids 210-230 of human Tau.

Application References

1. Lasagna-Reeves CA, et al. 2012. FASEB J. 26:1946. (WB, IHC-P) Pubmed
2. Horowitz PM, et al. 2004. J Neurosci. 24:7895. (WB)

Product Citations

1. Guix FX, *et al.* 2018. Int J Mol Sci. 13:e0199785. PubMed
2. Franklin W, *et al.* 2019. Sci Rep. 9:8228. PubMed
3. Kim HS, *et al.* 2017. Mol Med Rep. 15:3301. PubMed
4. Lo Cascio F, *et al.* 2019. Sci Rep. 9:19011. PubMed
5. Sengupta U, *et al.* 2020. Mol Neurobiol. 57:2741. PubMed
6. Puangmalai N, *et al.* 2020. Cell Death Dis. 11:314. PubMed
7. Sengupta U, *et al.* 2017. Ann Clin Transl Neurol. 10.1002/acn3.382. PubMed
8. Montalbano M, *et al.* 2020. Neurobiol Dis. 146:105130. PubMed
9. Lo Cascio F, *et al.* 2020. J Biol Chem. 295:14807. PubMed
10. Choi YB, *et al.* 2021. Alzheimers Res Ther. 13:32. PubMed

RRID

AB_2715857 (BioLegend Cat. No. 806404)
AB_2564705 (BioLegend Cat. No. 806401)
AB_2564706 (BioLegend Cat. No. 806402)
AB_2564704 (BioLegend Cat. No. 806403)

Antigen Details

Structure

Unmodified Tau isoforms have an apparent molecular weight ranging from 33-79 kD. Additional high and low molecular weight Tau species have been observed in brain tissues.

Distribution

Tissue distribution: Central nervous system, peripheral ganglia and nerves, kidney, skeletal, and heart muscle.
Cellular distribution: Cytoskeleton, nucleus, plasma membrane, and cytosol.

Function

Tau promotes microtubule assembly and stability. The short tau isoforms allow plasticity of the cytoskeleton whereas the longer isoforms may preferentially play a role in its stabilization.

Interaction

Tau interacts with: Sequestosome-1, Peptidyl-prolyl cis-trans isomerase FKBP4, Casein kinase I isoform delta, Serine/threonine-protein kinase Sgk1, Laforin, and alpha-synuclein.

Cell Type

Neurons

Biology Area

Cell Biology, Cell Proliferation and Viability, Neurodegeneration, Neuroscience, Protein Misfolding and Aggregation, Synaptic Biology

Molecular Family

Tau

Gene ID

4137

Related Protocols

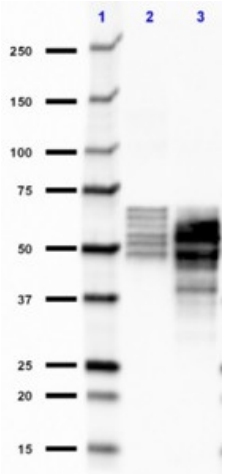
Western Blotting Protocol

Immunohistochemistry Protocol for Paraffin-Embedded Sections

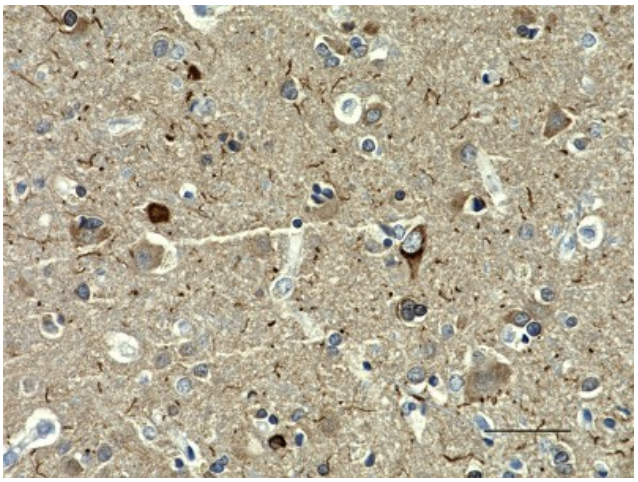
Other Formats

Purified anti-Tau, 210-230, HRP anti-Tau, 210-230, Alexa Fluor® 594 anti-Tau, 210-230, Biotin anti-Tau, 210-230, Alexa Fluor® 488 anti-Tau, 210-230, Alexa Fluor® 647 anti-Tau, 210-230

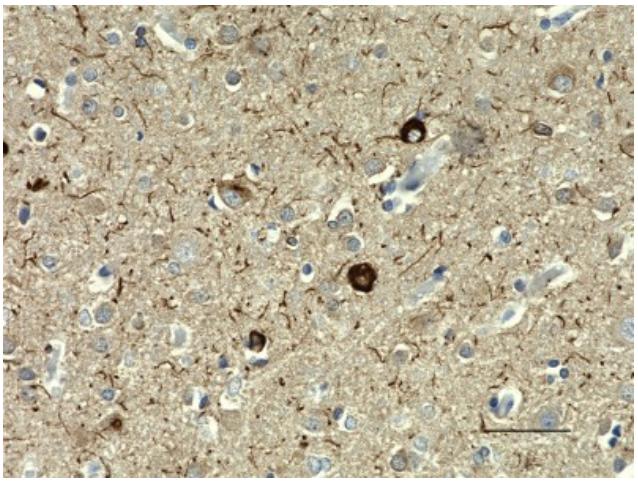
Product Data



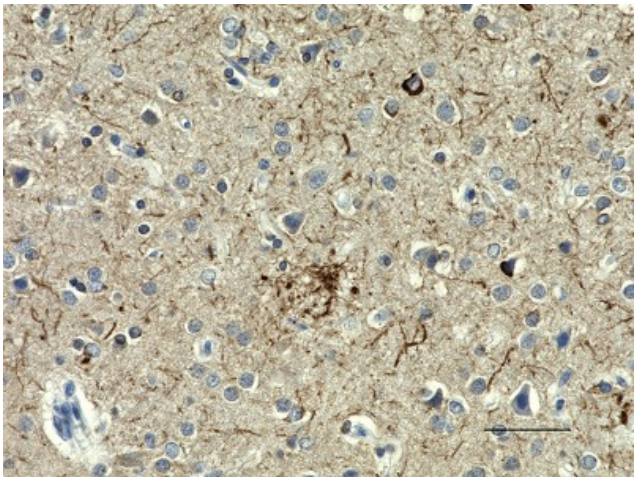
Western blot of purified anti-Tau, 210-230 antibody (clone Tau 5). Lane 1: Molecular weight marker; Lane 2: 2 µl of recombinant tau ladder Lane 3: 20 µg human brain frontal cortex lysate. The blot was incubated with 0.5 µg/mL of the primary antibody for 60 minutes at room temperature, followed by incubation with HRP labeled goat anti-mouse IgG (Cat. No. 405306). Enhanced chemiluminescence was used as the detection system.



IHC staining of purified anti-Tau, 210-230 antibody (clone Tau 5) on formalin-fixed paraffin-embedded Alzheimer's disease human brain tissue. Following antigen retrieval using Sodium Citrate H.I.E.R., the tissue was incubated with 5 µg/mL of the primary antibody for 60 minutes at room temperature. BioLegend´s Ultra-Streptavidin (USA) HRP kit (Multi-Species, DAB, Cat. No. 929901) was used for detection followed by hematoxylin counterstaining, according to the protocol provided. The image was captured with a 40X objective. Scale bar: 50 µm



IHC staining of purified anti-Tau, 210-230 antibody (clone Tau 5) on formalin-fixed paraffin-embedded Alzheimer's disease human brain tissue. Following antigen retrieval using Sodium Citrate H.I.E.R., the tissue was incubated with 10 µg/mL of the primary antibody for 60 minutes at room temperature. BioLegend´s Ultra-Streptavidin (USA) HRP kit (Multi-Species, DAB, Cat. No. 929901) was used for detection followed by hematoxylin counterstaining, according to the protocol provided. The image was captured with a 40X objective. Scale bar: 50 µm



IHC staining of purified anti-Tau, 210-230 antibody (clone Tau 5) on formalin-fixed paraffin-embedded Alzheimer's disease human brain tissue. Following antigen retrieval using Sodium Citrate H.I.E.R., the tissue was incubated with 10 µg/mL of the primary antibody for 60 minutes at room temperature. BioLegend´s Ultra-Streptavidin (USA) HRP kit (Multi-Species, DAB, Cat. No. 929901) was used for detection followed by hematoxylin counterstaining, according to the protocol provided. The image was captured with a 40X objective. Scale bar: 50 µm

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