

## Tau 3R Antibody



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For Research Use Only. Not for Use in Diagnostic Procedures.

Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
W	H M R	Endogenous	50-80	Rabbit	#P10636-2, #P10636-5, #P10636-4	4137

### Product Usage Information

#### Application

Western Blotting

#### Dilution

1:1000

### Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA and 50% glycerol. Store at -20°C. *Do not aliquot the antibody.*

### Specificity/Sensitivity

Tau 3R Antibody recognizes endogenous levels of isoforms 2, 4, and 5 of human tau protein.

### Source / Purification

Polyclonal antibodies are produced by immunizing animals with a synthetic peptide corresponding to residues surrounding His210 of isoform 2 of human tau protein. Antibodies are purified by protein A and peptide affinity chromatography.

### Background

Tau is a heterogeneous microtubule-associated protein that promotes and stabilizes microtubule assembly, especially in axons. Six isoforms with different amino-terminal inserts and different numbers of tandem repeats near the carboxy terminus have been identified, and tau is hyperphosphorylated at approximately 25 sites by Erk, glycogen synthase kinase-3 (GSK-3), and CDK5 (1,2). Phosphorylation decreases the ability of tau to bind to microtubules. Neurofibrillary tangles are a major hallmark of Alzheimer's disease (AD); these tangles are bundles of paired helical filaments (PHFs) composed of hyperphosphorylated tau. In particular, phosphorylation at Ser396 by GSK-3 or CDK5 destabilizes microtubules. Furthermore, research studies have shown that inclusions of tau are found in a number of other neurodegenerative diseases, collectively known as tauopathies (1,3).

Alternative splicing of exon 10 results in the expression of two groups of Tau-repeat proteins, the three-repeat tau that expresses microtubule binding domains of isoforms 2, 4, and 5 (Tau 3R), and the four-repeat tau that expresses microtubule-binding domains of isoforms 6, 7, and 8 (Tau 4R) (4). Tau 3R is more abundant in the fetal and postnatal brain compared to Tau 4R, and expresses equal levels compared to Tau 4R (5,6). Tau 3R and 4R are found in aggregates and NFT in Alzheimer's disease brains, whereas other tauopathies selectively express Tau 4R, including in Cortico-Basal Degeneration (CBD) and Progressive Supranuclear Palsy (PSP) (4,7). Tau 3R contributes to the aggregation and NFT formation in tauopathies, including Pick's disease, that develops tau pathology (8,9). A similar pattern occurs in a tauopathy called Frontotemporal Dementia, where Tau 3R and 4R contribute to the pathology, where Tau 3R is slightly elevated compared to Tau 4R (10).

### Background References

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- Liu, C. and Götz, J. (2013) *PLoS One* 8, e84849.
- Weismiller, H.A. et al. (2018) *J Biol Chem* 293, 17336-48.
- Goedert, M. et al. (2019) *Cold Spring Harb Symp Quant Biol* pii: 037580. doi: 10.1101/sqb.2018.83.037580.
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- Hogg, M. et al. (2003) *Acta Neuropathol* 106, 323-36.

### Species Reactivity

Species reactivity is determined by testing in at least one approved application (e.g., western blot).

### Western Blot Buffer

IMPORTANT: For western blots, incubate membrane with diluted primary antibody in 5% w/v BSA, 1X TBS, 0.1% Tween® 20 at 4°C with gentle shaking, overnight.

### Applications Key

**W:** Western Blotting

**Cross-Reactivity Key**

**H:** Human **M:** Mouse **R:** Rat

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