

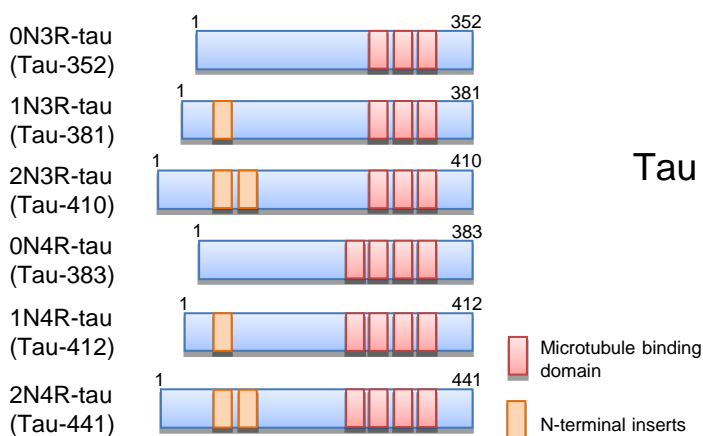
For Dementia Research

Anti Tau Monoclonal Antibodies

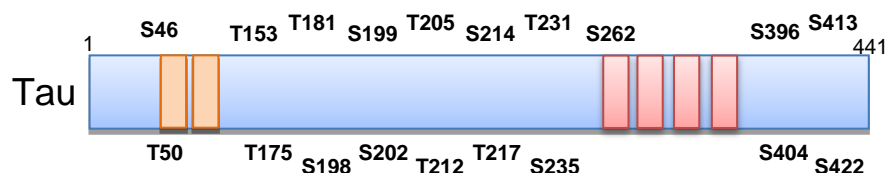
Total tau/Phospho tau/3R-tau/4R-tau/2N-tau

Tau is a microtubule-associated protein, mainly expressed in neurons in the central nervous system, which regulate stabilization of microtubules. Tau has 6 isoforms by alternative splicing of exon 2, exon 3, exon 10. Alternative splicing of tau exon 10 results in tau isoforms containing either three or four microtubule-binding domains (3R-tau and 4R-tau, respectively). The ratio of 3R-tau/4R-tau is altered in the brains in several tauopathies. Also, the accumulated phosphorylated forms of tau are a major component of neurofibrillary tangles in the brains of Alzheimer's disease (AD) patients. The degree of these tangles correlates to the severity of dementia. Based on this finding, anti-tau antibodies are ideal for investigation to find out the etiology and to discover drugs for AD. Wako provides 10 kinds of anti tau monoclonal antibodies.

6 isoforms of tau



Phosphorylation sites of tau



Reactive tau	Antibody profile	Clone No.	Applications*	Cross-reactivity	Subtype	Epitope	Concentration
Total tau	Recognizes with mouse, rat and human total tau.	RTM38	IHC, WB, ICC	Mouse Rat Human	Rat IgG2a•κ	Tau (417-441 a.a.)	1.0-1.2 mg/mL
Total tau (Human specific)	Recognizes with specifically human total tau, no-cross reaction to mouse, rat tau.	RTM49	IHC, WB, ICC	Human	Rat IgG1•κ	Tau (2-44a.a.)	1.0-1.2 mg/mL
Total tau (Mouse specific)	Recognizes with specifically total tau, no-cross reaction to human, rat tau.	RTM47	IHC, WB, ICC	Mouse	Rat IgG2b•κ	Unknown	1.0-1.2 mg/mL
Phospho-tau T181	Recognizes tau protein phosphorylated at threonine181(T181)	2E2-A6	WB, IHC	Human	Rat IgG2b•κ	Tau pT181	1.0-1.1 mg/mL
Phospho-tau S199	Recognizes tau protein phosphorylated at Serine 199(S199)	5B8-1E2	WB, IHC	Human	Rat IgG2a•κ	Tau pS199	1.0-1.1 mg/mL
Phospho-tau S262	Recognizes tau protein phosphorylated at Serine 262(S262)	TIP1-35	WB, ICC, ELISA	Human	Rat IgG1•λ	Tau pS262	0.9 mg/mL
Phospho-tau S422	Recognizes tau protein phosphorylated at Serine 422(S422)	AP422	WB, IHC	Human Mouse	Mouse IgG1•κ	Tau pS422	1.0 mg/mL
2N-tau	Recognizes with 2N4R and 2N3R tau isoforms	2C2	WB, IHC	Human	Rat IgM•κ	Tau (74-103 a.a.)	1.0 mg/mL
3R-tau	Recognizes with 0N3R, 1N3R and 2N3R tau isoforms	2A1-1F4	WB, IP	Human	Rat IgG2b•λ	Tau (267-274,306-313a.a.)	1.0-1.1 mg/mL
4R-tau	Recognizes with 0N4R, 1N4R and 2N4R tau isoforms	3E8-1A6	WB, IP	Human	Mouse IgG1•κ	Tau (273-291a.a.)	1.0-1.1 mg/mL

Applications* WB: Western blotting, IHC: Immunohistochemistry, ICC: Immunocytochemistry IP: Immunoprecipitation

Application data

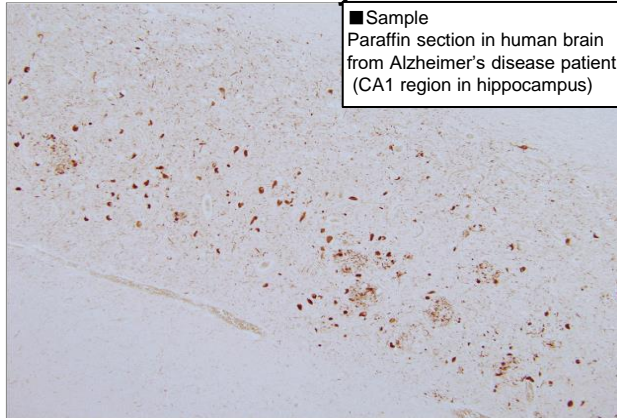
■ Anti phospho-tau T181 antibody (Clone No. 2E2-A6)

Recognizes tau protein phosphorylated at threonine 181 (phospho-tau T181).



Tau T181

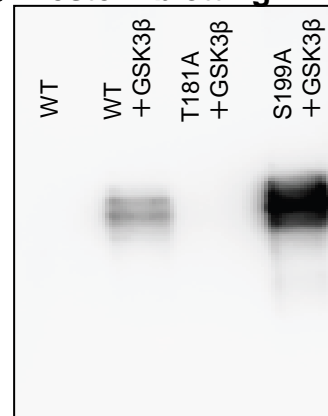
○ Immunohistochemistry



■ Sample
Paraffin section in human brain from Alzheimer's disease patient (CA1 region in hippocampus)

→ Neurofibrillary tangles containing phospho-tau T181 were immunostained.

○ Western blotting



■ Sample
Cell extracts that express the indicated proteins. (total protein: 25ug)

○ Human tau WT
○ Human tau WT + GSK3β
○ Human tau mutant T181A + GSK3β
○ Human tau mutant S199A + GSK3β

→ the bands for phospho-tau T181 was scarcely detected in tau mutant T181A

The data were provided by Miyasaka, T., Doshisha University in Japan.

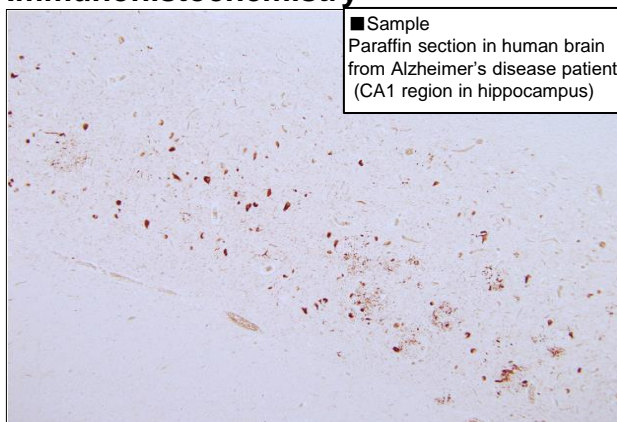
■ Anti phospho-tau S199 antibody (Clone No. 5B8-1E2)

Recognizes tau protein phosphorylated at serine 199 (phospho-tau S199).



Tau S199

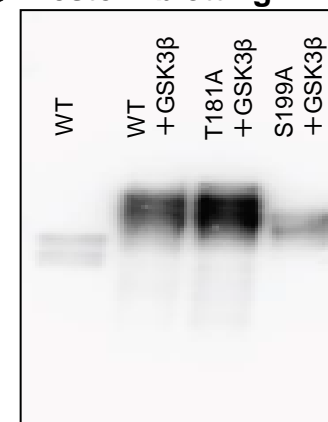
○ Immunohistochemistry



■ Sample
Paraffin section in human brain from Alzheimer's disease patient (CA1 region in hippocampus)

→ Neurofibrillary tangles containing phospho-tau S199 were immunostained.

○ Western blotting



■ Sample
Cell extracts that express the indicated proteins. (total protein: 25ug)

○ Human tau WT
○ Human tau WT + GSK3β
○ Human tau mutant T181A + GSK3β
○ Human tau mutant S199A + GSK3β

→ the bands for phospho-tau S199 was scarcely detected in tau mutant S199A.

The data were provided by Dr. Miyasaka, T., Doshisha University in Japan.

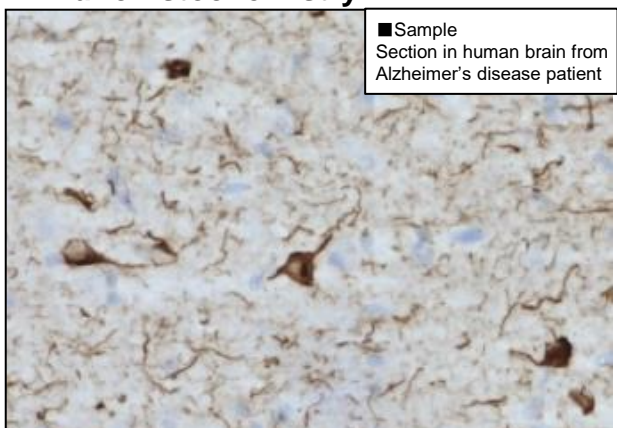
■ Anti phospho-tau S422 antibody (Clone No. AP422)

Recognizes tau protein phosphorylated at serine 422 (phospho-tau S422)¹⁾.



Tau S422

○ Immunohistochemistry



■ Sample
Section in human brain from Alzheimer's disease patient

→ Neurofibrillary tangles containing phospho-tau S422 were immunostained.

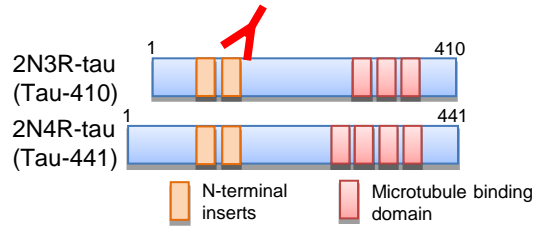
■ Reference

- 1) Hasegawa, M., et al.: *FEBS Lett.*, 384, 1, 25(1996).
- 2) Goedert, M., et al.: *FEBS Lett.*, 409, 1, 57(1997).
- 3) Buee-Scherrer, V., et al.: *FEBS Lett.*, 515, 1, 151(2002).
- 4) Delobel, P., et al.: *J. Neurochem.*, 83, 2, 412(2002).
- 5) Bellucci, A., et al.: *Am. J. Pathol.*, 165, 5, 1643(2004).
- 6) Sylvie, L. C., et al.: *PNAS*, 103, 25, 9673(2006).
- 7) Schindowski, K., et al.: *Am. J. Pathol.*, 169, 2, 599(2006).
- 8) Audouard, E., et al.: *Am. J. Pathol.*, 186, 10, 2709(2016).

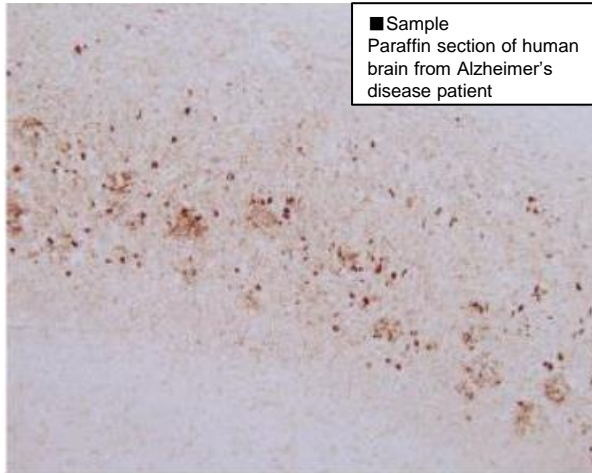
The data were provided by Dr. Hasegawa, M., Tokyo Metropolitan Institute of Medical Science in Japan.

■ Anti 2N-tau antibody (Clone No.2C2)

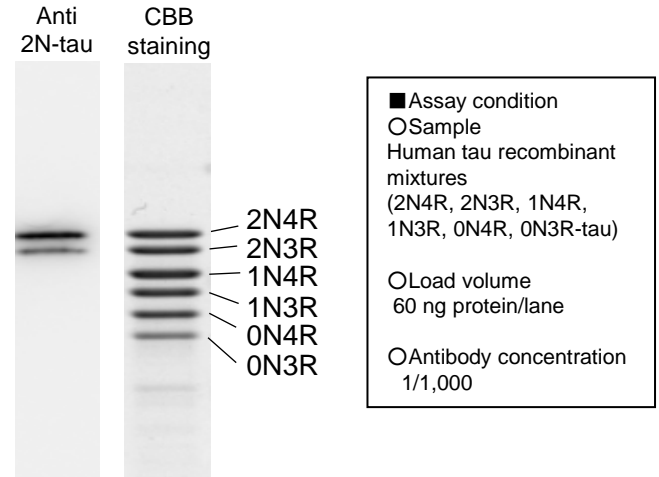
Recognizes with 2N4R and 2N3R tau isoforms



○ Immunohistochemistry



○ Western blotting



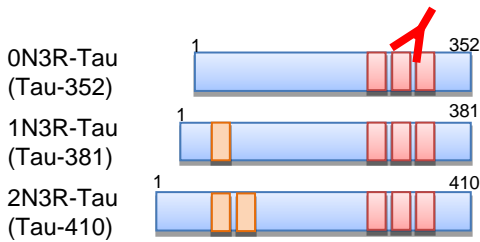
→ Neurofibrillary tangles containing 2N-tau were immunostained.

→ 2 bands for 2N-tau were detected.

The data were provided by Dr. Miyasaka, T., Doshisha University in Japan.

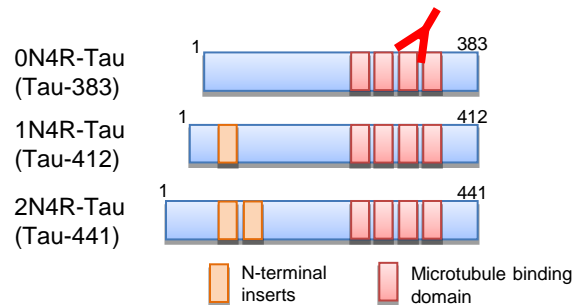
■ Anti 3R-tau antibody (Clone No.A1-1F4)

Recognizes with 0N3R, 1N3R and 2N3R tau isoforms.

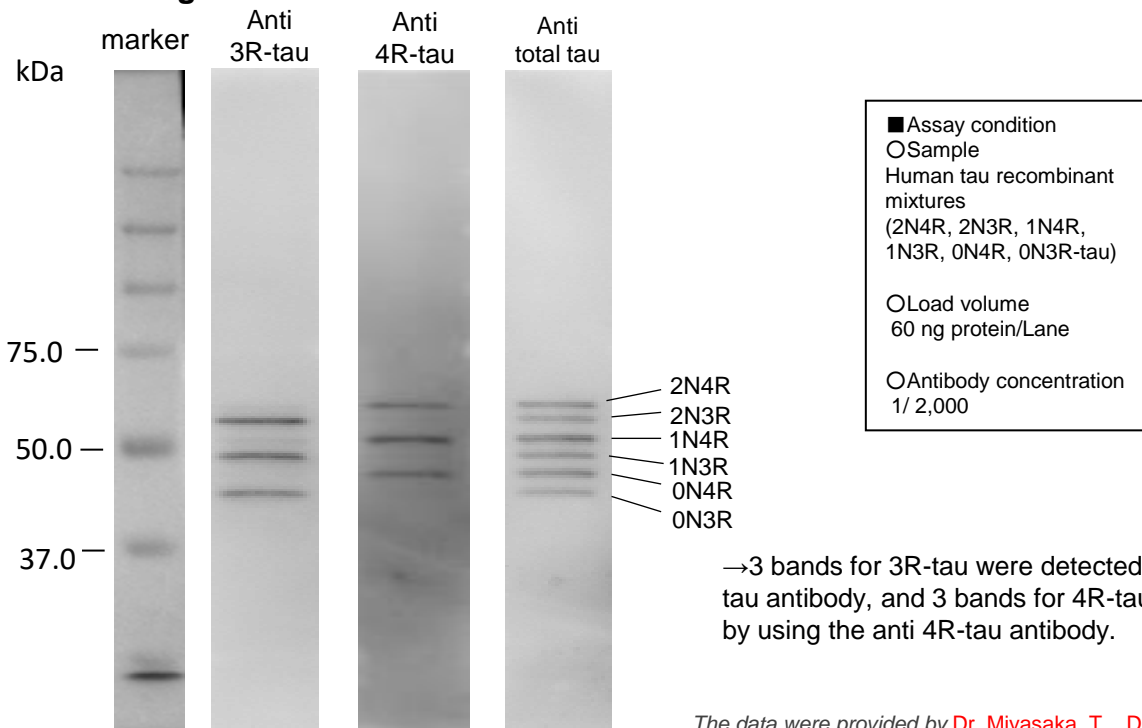


■ Anti 4R-tau antibody (Clone No.3E8-1A6)

Recognizes with 0N4R, 1N4R and 2N4R tau isoforms.



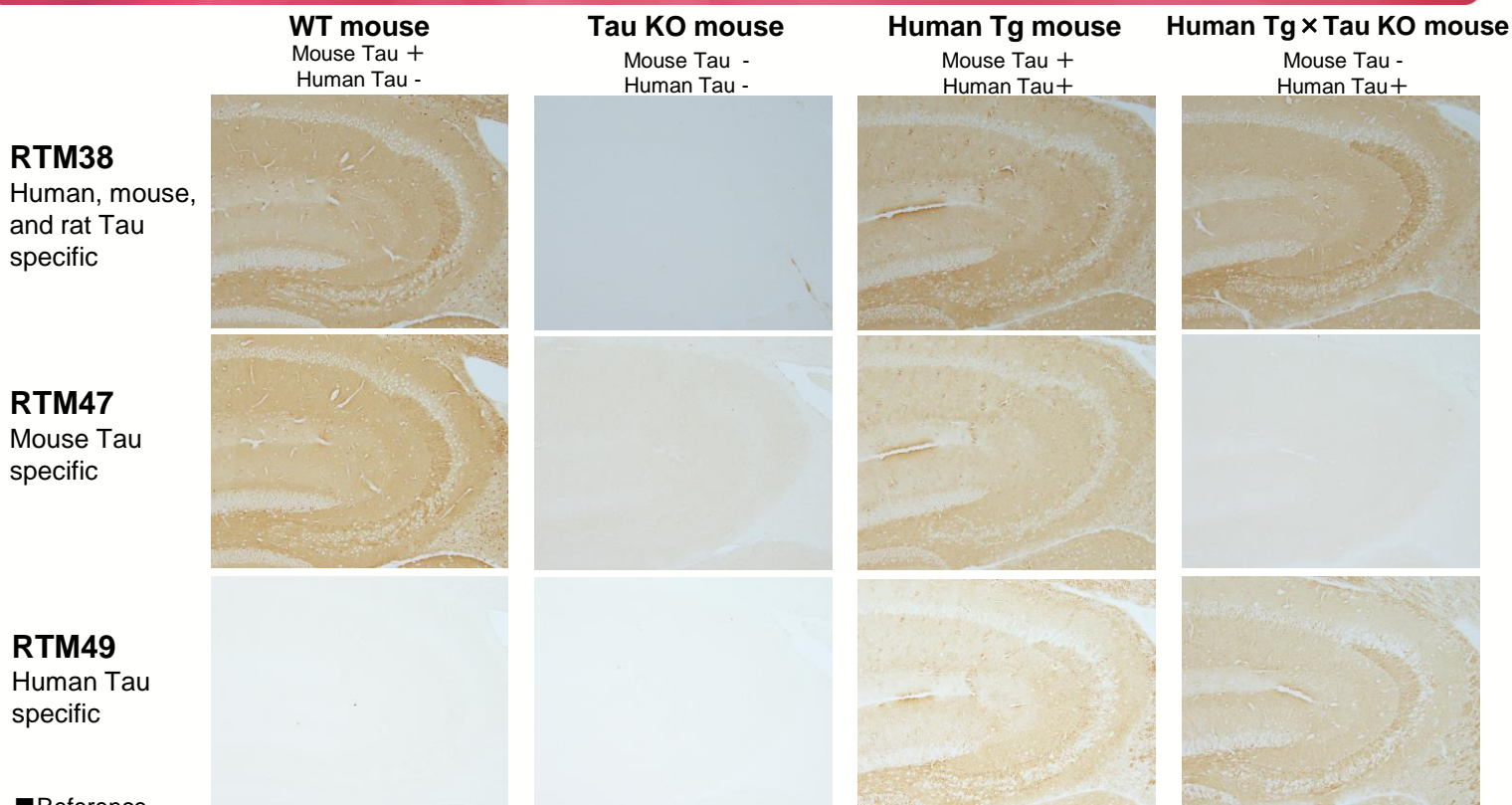
○ Western blotting



→ 3 bands for 3R-tau were detected by using anti 3R-tau antibody, and 3 bands for 4R-tau were detected by using the anti 4R-tau antibody.

The data were provided by Dr. Miyasaka, T., Doshisha University in Japan.

Total Tau antibody(RTM38, RTM47, RTM49) immunohistostaining



Reference

- 1) Kubo, A., et al.: *J. Comp. Neurol.*, **527**, 985 (2019).
- 2) Kubo, A., et al.: *J. Neurosci.*, **39**, 34, 6781(2019).

The data were provided by Dr. Miyasaka, T., Doshisha University in Japan.

Reactive Tau	Product Name	Wako Cat. No.	Pkg. Size	Grade	Storage Condition
Total tau	Anti Human/Mouse/Rat Tau, Rat Monoclonal Antibody(RTM38)	011-26891 017-26893	10μL 50μL	For Immunochemistry	Keep at -20°C
Total tau (Human specific)	Anti Human Tau, Rat Monoclonal Antibody (RTM49)	019-26951 015-26953	10μL 50μL	For Immunochemistry	Keep at -20°C
Total tau (Mouse specific)	Anti Mouse Tau, Rat Monoclonal Antibody (RTM47)	016-26961 012-26963	10μL 50μL	For Immunochemistry	Keep at -20°C
Phosho-tau T181	Anti Phosphorylated Tau T181, Rat Monoclonal Antibody (2E2-A6)	012-26603 016-26601	10μL 50μL	For Immunochemistry	Keep at -20°C
Phosho-tau S199	Anti Phosphorylated Tau S199, Rat Monoclonal Antibody (5B8-1E2)	019-26613 013-26611	10μL 50μL	For Immunochemistry	Keep at -20°C
Phosho-tau S262	Anti Phosphorylated Tau S262, Rat Monoclonal Antibody (TIP1-35)	014-27121 010-27123	10μL 50μL	For Immunochemistry	Keep at -20°C
Phosho-tau S422	Anti Phosphorylated Tau S422, Monoclonal Antibody(AP422)	016-27681 012-27683	10μL 50μL	For Immunochemistry	Keep at -20°C
2N-tau	Anti 2N-Tau, Rat Monoclonal Antibody (2C2)	017-27351 013-27353	10μL 50μL	For Immunochemistry	Keep at -20°C
3R-tau	Anti 3R-Tau, Rat Monoclonal Antibody (2A1-1F4)	012-26583 016-26581	10μL 50μL	For Immunochemistry	Keep at -20°C
4R-tau	Anti 4R-Tau, Monoclonal Antibody (3E8-1A6)	019-26593 013-26591	10μL 50μL	For Immunochemistry	Keep at -20°C

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