

# Phospho-Specific Antibodies

## MICROTUBULE DESTABILIZATION CAUSED BY HYPERPHOSPHORYLATION OF TAU PROTEIN:

Although phosphoproteins are a only small subdivision of proteomics, they are often the key, functionally regulated proteins in the proteome. Many phosphoproteins are believed to be critical elements in neurological diseases such as Alzheimer's and in cancer. One phospho protein which has been identified as a major contributor to the degeneration of neurons in Alzheimer's Disease brains is the Tau protein.

Tau is a neuronal microtubule-associated protein found predominantly on axons. The function of Tau is to promote tubulin polymerization and stabilize microtubules, but it also serves to link certain signaling pathways to the cytoskeleton. Both normal and pathological functions of this protein are regulated by phosphorylation. Hyperphosphorylation impairs the microtubule binding function of Tau, resulting in the destabilization of microtubules in AD brains, ultimately leading to the degeneration of the affected neurons.

In its hyperphosphorylated form, Tau is the major component of paired helical filaments (PHF), the building block of neurofibrillary lesions in the Alzheimer's disease (AD) brain. In addition to Alzheimer's Disease, hyperphosphorylated Tau is also found in neurofibrillary lesions in a range of other central nervous system disorders.

The peptide sequence used to generate the phosphorylation state specific antibody to the threonine 217 site of human tau, is also present in mouse and rat.  
**Product:** anti-Tau [phospho-S217]  
**Cat. No.:** XBP-4286

Serine 214 is phosphorylated by GSK3 $\beta$  and cdk5 in AD brain.  
**Product:** anti-Tau [phospho-S214]  
**Cat. No.:** XBP-4275

Threonine 212 is phosphorylated by GSK-3 $\beta$ , cdk5 and PKA *in vitro* and *in vivo*, and has been shown to be specific for processes found in neurodegenerative diseases.  
**Product:** anti-Tau [phospho-T212]  
**Cat. No.:** XBP-4285

Microtubule-dependent phosphorylation of threonine 205 is catalyzed by GSK-3 $\beta$  and cdk5 *in vitro*.  
**Product:** anti-Tau [phospho-T205]  
**Cat. No.:** XBP-4284

Serines 199 and 202 are phosphorylated by GSK-3 $\beta$ , and have been linked to hereditary frontotemporal dementia. Serine 202 phosphorylation by cdk5, stimulated by the presence of microtubules, has been linked to hereditary neurodegenerative disease.  
**Product:** anti-Tau [phospho-S199/202]  
**Cat. No.:** XBP-4283

Phosphorylation of serine 199 is catalyzed by GSK-3 $\beta$  *in vitro*, and has been linked to frontotemporal dementia.  
**Product:** anti-Tau [phospho-S199]  
**Cat. No.:** XBP-4273

Serine 262 and Serine 356 can be phosphorylated by GSK-3 $\beta$ , PKA, CamKII and MARK, and have been found to be major sites in AD brain. ProSci's Tau [pS262] antibody (XBP-4276) combined with the Tau [pS356] antibody (XBP-4277), enables one to distinguish between phosphorylation at the two distinct residues, rather than a combined epitope as detected by 12E8 antibody.  
**Product name:** anti-Tau [phospho-S262]  
**Cat. No.:** XBP-4276

**Product name:** anti-Tau [phospho-S356]  
**Cat. No.:** XBP-4277

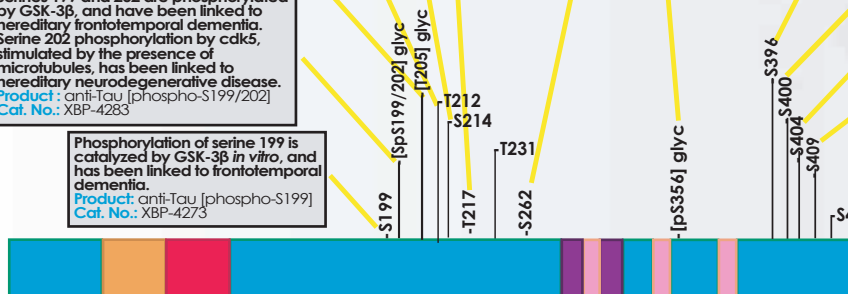
Serine 396 is phosphorylated by GSK-3 $\beta$  *in vitro* and *in vivo*.  
**Product:** anti-Tau [phospho-S396]  
**Cat. No.:** XBP-4278

Serine 400 is phosphorylated on Tau by GSK-3 $\beta$  *in vitro* and *in vivo*.  
**Product:** anti-Tau [phospho-S400]  
**Cat. No.:** XBP-4279

Serine 404 is phosphorylated by GSK-3 $\beta$  and cdk5 *in vitro* and *in vivo*.  
**Product:** anti-Tau [phospho-S404]  
**Cat. No.:** XBP-4280

Serine 409 is phosphorylated by PKA *in vitro*, and has been shown to be phosphorylated in AD brain.  
**Product:** anti-Tau [phospho-S409]  
**Cat. No.:** XBP-4281

Serine 422 can be phosphorylated by members of the MAP kinase (MAPK) family.  
**Product:** anti-Tau [phospho-S422]  
**Cat. No.:** XBP-4282



## Products:

TARGET NAME	CAT.NO.	TARGET NAME	CAT.NO.
CaMKII (p-p-Thr305)	XPS-1001	PKC $\nu$ IpT6551	XBP-4221
CaMKII (p-Thr286)	XPS-1000	PKC $\nu$ IpT6741	XBP-4222
CaMKII Ip-T2861 alvc	XBP-4053	PKC $\delta$ IpS6451	XBP-4215
cdk1 IpToY14/151	XBP-4055	PKC $\delta$ IpS6641	XBP-4211
cdk2	XAV-8338	PKC $\delta$ IpY3111 (murine)	XBP-4216
cdk4	XAV-8339	PKC $\epsilon$ IpS7291 alvc	XBP-4217
cdk4	XAV-8579	PKC $\eta$ IpS6741	XBP-4218
cdk4	XW-7098	PKC $\eta$ IpT6551	XBP-4219
cdk6	XAV-8340	PKC $\theta$ IpS6761	XBP-4224
cdk7	XAV-8341	PKC $\theta$ IpS6951	XBP-4225
GSK-3 $\alpha$	XW-7232	PKC $\theta$ IpT5381	XBP-4226
GSK-3 $\alpha/\beta$	XBP-4007	PKC $\iota$ IpT5551/PKC $\lambda$ IpT5631	XBP-4212
GSK-3 $\alpha/\beta$ -Y2791/B1a-Y2161	XBP-4125	PKC $\mu$ /PKD IpSpS738/7421 alvc	XBP-4223
GSK-3 $\beta$	XBP-4012	Tau	4057
GSK-3 $\beta$	XW-7233	Tau Ip-S1991	XBP-4273
GSK-3 $\beta$ Ip-S91 alvc	XBP-4126	Tau Ip-S2141	XBP-4275
MAP3K7IP2	XAV-8496	Tau Ip-S2621	XBP-4276
MAPKAPK2	XAV-8432	Tau Ip-S3561 alvc	XBP-4277
MAPKAPK2	XBP-4016	Tau Ip-S3961	XBP-4278
MAPKAPK-2 Ip-T3341 alvc	XBP-4162	Tau Ip-S4001	XBP-4279
MAPKAPK-3	XW-8045	Tau Ip-S4041	XBP-4280
PKA cat. $\alpha/\beta$ IpT1971	XBP-4206	Tau Ip-S4091	XBP-4281
PKA $\beta$ IpS3381	XBP-4208	Tau Ip-S4221	XBP-4282
PKA $\beta$ II IpS1141	XBP-4207	Tau Ip-SS199/2021 alvc	XBP-4283
PKC $\alpha$ IpT6381	XBP-4213	Tau Ip-T2051 alvc	XBP-4284
PKC $\beta$ I / II IpT5001	XBP-4209	Tau Ip-T2121	XBP-4285
PKC $\beta$ I IpT6421 alvc	XBP-4214	Tau Ip-T2171	XBP-4286
PKC $\beta$ II IpT6411	XBP-4210	Tau Ip-T2311	XBP-4287
PKC $\nu$ IpT5141	XBP-4220		

### ANTIBODIES

Neurobiology  
Apoptosis  
Growth Factors  
Cytokines  
Signal Transduction  
Chemokines  
Immunology  
Infectious Diseases  
p53 Network  
TLR Related  
Phospho-Specific  
Control Immunoglobulin  
Secondary Antibodies

### CUSTOM ANTIBODIES

Polyclonal  
Monoclonal

### LYSATES

Cell Lines  
Tissue  
Nuclear Fractions  
Cytoplasmic Fractions  
Membrane Fractions  
Human, Mouse, Rat

### PROTEINS

Recombinant Proteins

### PEPTIDES

Custom Synthesis  
Blocking Peptides

### IMMUNOBLOTS

Human Cell Lines  
Human Tissue  
Mouse Tissue  
Rat Tissue

### SLIDES

Human Tissue  
Human Cell Lines  
Mouse Cell Lines  
Cell Line Arrays  
Tissue Arrays  
Human Tissue Panels

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