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Product datasheet

Recombinant Human Tau316 protein ab151872

1 References 2 Images

Description

Product name	Recombinant Human Tau316 protein
Purity	> 90 % SDS-PAGE. assessed by densitometry
Expression system	Escherichia coli
Accession	P10636-3
Protein length	Full length protein
Animal free	No
Nature	Recombinant
Species	Human
Sequence	MLRALQQRKREAGIGDTPSLEDEAAGHVTQARMVSKSKD GTGSDDKKAKG ADGKTKIATP RGAAPPGQKGQANATRIPAKTPPAPKTPPSSGEPPKSG DRSGYSSPGSPGTPGSRSRTPSLPTPPTREPKKVAVVRT PPKSPSSAKSR LQTAPVPMPDLKNVKSKIGSTENLKHQPGGGKVQIVYKPV DLSKVTSKCG SLGNIHHKPGGGQVEVKSEKLDFKDRVQSKIGSLDNITHV PGGGNKKIET HKLTFRENAKAKTDHGAEIVYKSPVVSGDTSPRHLSNVSS TGSIDMVDSP QLATLADEVSASLAKQGL
Predicted molecular weight	33 kDa
Amino acids	1 to 316
Additional sequence information	Isoform 3 of P10636 is full-length from aa 1 to 316.

Specifications

Our **Abpromise guarantee** covers the use of **ab151872** in the following tested applications.

The application notes include recommended starting dilutions; optimal dilutions/concentrations should be determined by the end user.

Applications	Western blot
	SDS-PAGE
	Functional Studies

Form	Liquid
Additional notes	This protein is Tau-316 (Isoform Tau-A). This isoform is full-length from aa 1-316.

Preparation and Storage

Stability and Storage	Shipped on dry ice. Upon delivery aliquot and store at -80ºC. Avoid freeze / thaw cycles. pH: 7.50 Constituents: 0.002% PMSF, 0.04% DTT, 0.79% Tris HCl, 25% Glycerol (glycerin, glycerine), 0.88% Sodium chloride

General Info

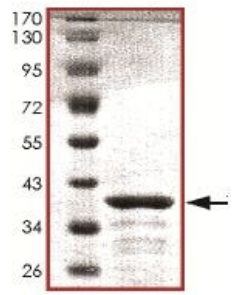
Function	Promotes microtubule assembly and stability, and might be involved in the establishment and maintenance of neuronal polarity. The C-terminus binds axonal microtubules while the N-terminus binds neural plasma membrane components, suggesting that tau functions as a linker protein between both. Axonal polarity is predetermined by TAU/MAPT localization (in the neuronal cell) in the domain of the cell body defined by the centrosome. The short isoforms allow plasticity of the cytoskeleton whereas the longer isoforms may preferentially play a role in its stabilization.
Tissue specificity	Expressed in neurons. Isoform PNS-tau is expressed in the peripheral nervous system while the others are expressed in the central nervous system.
Involvement in disease	In Alzheimer disease, the neuronal cytoskeleton in the brain is progressively disrupted and replaced by tangles of paired helical filaments (PHF) and straight filaments, mainly composed of hyperphosphorylated forms of TAU (PHF-TAU or AD P-TAU). O-GlcNAcylation is greatly reduced in Alzheimer disease brain cerebral cortex leading to an increase in TAU/MAPT phosphorylations. Frontotemporal dementia Pick disease of the brain Defects in MAPT are a cause of corticobasal degeneration (CBD). It is marked by extrapyramidal signs and apraxia and can be associated with memory loss. Neuropathologic features may overlap Alzheimer disease, progressive supranuclear palsy, and Parkinson disease. Progressive supranuclear palsy 1 Parkinson-dementia syndrome
Sequence similarities	Contains 4 Tau/MAP repeats.
Developmental stage	Four-repeat (type II) TAU/MAPT is expressed in an adult-specific manner and is not found in fetal brain, whereas three-repeat (type I) TAU/MAPT is found in both adult and fetal brain.
Domain	The tau/MAP repeat binds to tubulin. Type I isoforms contain 3 repeats while type II isoforms contain 4 repeats.
Post-translational modifications	Phosphorylation at serine and threonine residues in S-P or T-P motifs by proline-directed protein kinases (PDPK1: CDK1, CDK5, GSK3, MAPK) (only 2-3 sites per protein in interphase, seven-fold increase in mitosis, and in the form associated with paired helical filaments (PHF-tau)), and at serine residues in K-X-G-S motifs by MAP/microtubule affinity-regulating kinase (MARK1 or MARK2), causing detachment from microtubules, and their disassembly. Phosphorylation decreases with age. Phosphorylation within tau/MAP's repeat domain or in flanking regions seems to reduce tau/MAP's interaction with, respectively, microtubules or plasma membrane components. Phosphorylation on Ser-610, Ser-622, Ser-641 and Ser-673 in several isoforms during mitosis. Phosphorylation at Ser-548 by GSK3B reduces ability to bind and stabilize

microtubules. Phosphorylation at Ser-579 by BRSK1 and BRSK2 in neurons affects ability to bind microtubules and plays a role in neuron polarization. Phosphorylated at Ser-554, Ser-579, Ser-602, Ser-606 and Ser-669 by PHK. Phosphorylation at Ser-214 by SGK1 mediates microtubule depolymerization and neurite formation in hippocampal neurons. There is a reciprocal down-regulation of phosphorylation and O-GlcNAcylation. Phosphorylation on Ser-717 completely abolishes the O-GlcNAcylation on this site, while phosphorylation on Ser-713 and Ser-721 reduces glycosylation by a factor of 2 and 4 respectively. Phosphorylation on Ser-721 is reduced by about 41.5% by GlcNAcylation on Ser-717. Dephosphorylated at several serine and threonine residues by the serine/threonine phosphatase PPP5C.
Polyubiquitinated. Requires functional TRAF6 and may provoke SQSTM1-dependent degradation by the proteasome (By similarity). PHF-tau can be modified by three different forms of polyubiquitination. 'Lys-48'-linked polyubiquitination is the major form, 'Lys-6'-linked and 'Lys-11'-linked polyubiquitination also occur.
O-glycosylated. O-GlcNAcylation content is around 8.2%. There is reciprocal down-regulation of phosphorylation and O-GlcNAcylation. Phosphorylation on Ser-717 completely abolishes the O-GlcNAcylation on this site, while phosphorylation on Ser-713 and Ser-721 reduces O-GlcNAcylation by a factor of 2 and 4 respectively. O-GlcNAcylation on Ser-717 decreases the phosphorylation on Ser-721 by about 41.5%.
Glycation of PHF-tau, but not normal brain TAU/MAPT. Glycation is a non-enzymatic post-translational modification that involves a covalent linkage between a sugar and an amino group of a protein molecule forming ketoamine. Subsequent oxidation, fragmentation and/or cross-linking of ketoamine leads to the production of advanced glycation endproducts (AGES). Glycation may play a role in stabilizing PHF aggregation leading to tangle formation in AD.

Cellular localization

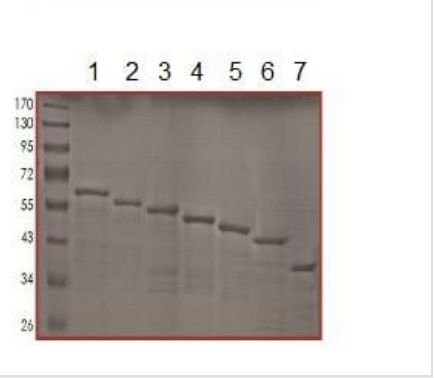
Cytoplasm > cytosol. Cell membrane. Cytoplasm > cytoskeleton. Cell projection > axon. Mostly found in the axons of neurons, in the cytosol and in association with plasma membrane components.

Images



SDS-PAGE - Recombinant Human Tau316 protein (ab151872)

SDS-PAGE analysis of ab151872 which was determined to be >90% pure by densitometry.



Western blot - Recombinant Human Tau316 protein (ab151872)

Western blot analysis of 7 Tau proteins; ab151872 is in lane 7.

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