abcam

ab174065

Recombinant Human Tau441 (deleted K280) protein

Key facts

Purity	>90% Densitometry
Expression system	Escherichia coli
Tags	Tag free
Applications	SDS-PAGE, WB
Biologically active	No
Accession	P10636-1
Animal free	No
Species	Human
Concentration	0.2 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →
Storage buffer	pH: 7.5 Constituents: 0.88% Sodium chloride, 0.79% Tris HCl, 0.31% Glutathione, 0.004% (R*,R*)-1,4-Dimercaptobutan-2,3-diol, 0.002% PMSF

Reactivity data

Application	SDS-PAGE
Reactivity	Reacts
Dilution info	-
Notes	-

Application	WB
Reactivity	Reacts

Dilution info	-
Notes	-

Sequence info

Amino acid sequence

M A E P R Q E F E V M E D H A G T Y G L G D R K D Q G G Y T M H Q D Q E G D T D A G L K E S P L Q T P T E D G S E E P G S E T S D A K S T P T A E D V T A P L V D E G A P G K Q A A A Q P H T E I P E G T T A E E A G I G D T P S L E D E A A G H V T Q A R M V S K S K D G T G S D D K K A K G A D G K T K I A T P R G A A P P G Q K G Q A N A T R I P A K T P P A P K T P P S S G E P P K S G D R S G Y S S P G S P G T P G S R S R T P S L P T P P T R E P K K V A V V R T P P K S P S S A K S R L Q T A P V P M P D L K N V K S K I G S T E N L K H Q P G G G K V Q I I N K L D L S N V Q S K C G S K D N I K H V P G G G S V Q I V Y K P V D L S K V T S K C G S L G N I H H K P G G G Q V E V K S E K L D F K D R V Q S K I G S L D N I T H V P G G G N K K I E T H K L T F R E N A K A K T D H G A E I V Y K S P V V S G D T S P R H L S N V S S T G S I D M V D S P Q L A T L A D E V S A S L A K Q G L

Accession	P10636
Protein length	Full Length
Predicted molecular weight	63 kDa
Amino acids	1 to 441
Nature	Recombinant

Specifications

Form	Liquid

General info

Function	Promotes microtubule assembly and stability, and might be involved in the establishment and maintenance of neuronal polarity (PubMed:21985311). 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 (PubMed:21985311, PubMed:32961270). 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.

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, MARK2, MARK3 or MARK4), causing detachment from microtubules, and their disassembly (PubMed:23666762, PubMed:7706316). 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 (PubMed:7706316). 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.
Subcellular localisation	Cytoskeleton

Target data

See full target information MAPT deleted K280 deleted K280

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Storage

Shipped at conditions	Dry Ice
Appropriate short-term storage conditions	-80°C
Appropriate long-term storage conditions	-80°C
Aliquoting information	Upon delivery aliquot

Storage information	Avoid freeze / thaw cycle

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	Tau441 also known as microtubule-associated protein tau (MAPT) plays an important role in stabilizing microtubules within neuronal cells. This protein has a molecular weight of approximately 50 kilodaltons. Tau441 is most highly expressed in neurons of the central nervous system. It assists in maintaining neuronal structure and due to its microtubule-binding domains contributes to proper axonal transport. The proper function of Tau441 is essential for neuronal health and function.
Biological function summary	Tau441 is an important component in the assembly and stability of microtubule structures. It associates with other tau isoforms to form a microtubule lattice complex important for neuron polarization and intracellular transport. Tau441 influences cell signaling and synaptic function by regulating microtubule dynamics. It also interacts with motor proteins to facilitate the transport of organelles playing a significant role in maintaining neuron structure and functionality under physiological conditions.
Pathways	Tau441 is involved in the MAP kinase signaling pathway and the regulation of cytoskeleton organization. It interacts with proteins like kinases that phosphorylate tau affecting its microtubule-binding capability highlighting its role in intracellular transport processes. Tau441 modulates the structure and dynamics of microtubules enabling effective transmission of cellular signals and materials throughout the neuron which is vital in maintaining neuronal integrity and function.
Associated diseases and disorders	Tau441 is notably associated with Alzheimer's disease and frontotemporal dementia. Abnormal phosphorylation of Tau441 results in the formation of neurofibrillary tangles a hallmark of Alzheimer's disease. The dysregulated interaction between Tau441 and kinases like glycogen synthase kinase-3β (GSK-3β) leads to tau hyperphosphorylation contributing to neuronal degeneration. These pathological changes in Tau441 are linked to the onset and progression of neurodegenerative diseases emphasizing the importance of studying and targeting Tau441 in clinical research and therapeutics.

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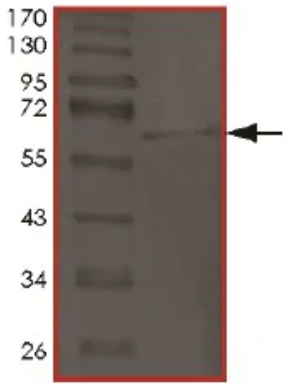
Terms & Conditions.

1 product image



SDS-PAGE - Recombinant Human Tau441 (deleted K280) protein (ab174065)

SDS-PAGE showing ab174065