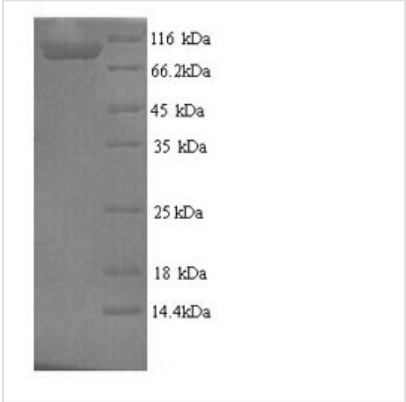
Recombinant Rat Microtubule-associated protein tau (Mapt)

Product Code	CSB-YP013481RA
Relevance	Promotes microtubule assbly 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 mbrane components, suggesting that tau functions as a linker protein between both. Axonal polarity is predetermined by tau 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.
Abbreviation	Recombinant Rat Mapt protein
Storage	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.
Uniprot No.	P19332
Alias	Neurofibrillary tangle protein;Paired helical filament-tau ;PHF-tau
Product Type	Recombinant Protein
Immunogen Species	Rattus norvegicus (Rat)
Purity	Greater than 90% as determined by SDS-PAGE.
Sequence	AEPRQEFDTMEDQAGDYTMLQDQEGDMDHGLKESPPQPPADDGSEEPGSE TSDAKSTPTAEDVTAPLVEERAPDKQATAQSHTEIPEGTTAEEAGIGDTPNME DQAAGHVTQEPQKVEIFSQSLLVEPGRREGQAPDSGISDWTHQQVPSMSGA PLPPQGLREATHQPLGTRPEDVERSHPASELLWQESPQKEAWGKDRLGSEE EVDEDITMDESSQESPPSQASLAPGTATPQARSVSASGVSGETTSIPGFPAEG SIPLPADFFSKVSAETQASPPEGPGTGPSEEGHEAAPEFTFHVEIKASAPKEQ DLEGATVVGAPAEEQKARGPSVGKGTKEASLLEPTDKQPAAGLPGRPVSRVP QLKARVAGVSKDRTGNDEKKAKTSTPSCAKTPSNRPCLSPTRPTPGSSDPLIK PSSPAVCPEPATSPKYVSSVTPRNGSPGTKQMKLKGADGKTGAKIATPRGAA TPGQKGTSNATRIPAKTTPSPKTPPGSGEPPKSGERSGYSSPGSPGTPGSRS RTPSLPTPPTREPKKVAVVRTPPKSPSASKSRLQTAPVPMPDLKNVRSKIGST ENLKHQPGGGKVQIINKKLDLSNVQSKCGSKDNIKHVPGGGSVHIVYKPVDLS KVTSKCGSLGNIHHKPGGGQVEVKSEKLDFKDRVQSKIGSLDNITHVPGGGNK KIETHKLTFRENAKAKTDHGAEIVYKSPVVSGDTSPRHLSNVSSTGSIDMVDSP QLATLADEVSASLAKQGL
Research Area	Others
Source	Yeast
Target Names	Mapt
Protein Names	Recommended name: Microtubule-associated protein tau Alternative name(s):

	Neurofibrillary tangle protein Paired helical filament-tau Short name= PHF-tau
Expression Region	2-752aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	N-terminal 6xHis-tagged
Mol. Weight	80.4kDa
Protein Length	Full Length of Mature Protein

Image



(Tris-Glycine gel) Discontinuous SDS-PAGE (reduced) with 5% enrichment gel and 15% separation gel.

Description

Recombinant Rat Microtubule-associated protein tau (Mapt) gets expressed in yeast and includes the full-length mature protein spanning amino acids 2 to 752. The product comes with an N-terminal 6xHis-tag, which makes purification and detection more straightforward. SDS-PAGE analysis indicates the protein reaches high purity levels—over 90%—suggesting it should work well for research applications that demand precise protein interactions and analysis.

Microtubule-associated protein tau (Mapt) appears to play a critical role in keeping microtubules stable. These structures form essential parts of the cellular cytoskeleton. Tau proteins seem crucial for maintaining neuronal architecture and helping with axonal transport. They're involved in cellular processes tied to microtubule assembly and stabilization, which likely makes them important for neurobiological research and studies examining neurodegenerative diseases.

Potential Applications

Note: The applications listed below are based on what we know about this protein's biological functions, published research, and experience from experts in the field. However, we haven't fully tested all of these applications ourselves yet. We'd recommend running some preliminary tests first to make sure they work for your specific research goals.

1. In Vitro Microtubule Binding and Stabilization Assays

This recombinant rat tau protein may prove useful for studying how proteins bind to microtubules and the mechanisms behind stabilization in controlled laboratory

settings. The full-length protein (2-752aa) contains what appears to be the complete microtubule-binding domain, potentially making it suitable for investigating tau's role in microtubule dynamics. Scientists might run co-sedimentation assays or fluorescence microscopy-based binding studies to characterize how tau and purified tubulin interact. The N-terminal His-tag should help with protein purification and detection while staying out of the way of the C-terminal microtubule-binding regions.

2. Protein-Protein Interaction Studies

The His-tagged recombinant tau protein could serve as a solid tool for finding and characterizing proteins that interact with tau through pull-down assays and co-immunoprecipitation experiments. High purity levels (>90%) suggest minimal background interference when studying interactions with brain lysates or purified protein partners. Scientists can probably use this protein to map binding domains and explore how different cellular conditions might affect tau's protein interaction network. Yeast expression systems typically provide properly folded protein that maintains interactions similar to those found in nature.

3. Antibody Development and Validation

This recombinant rat tau protein might work as an immunogen for creating tau-specific antibodies or as a standard for testing existing ones. Having the full-length protein means access to all potential epitopes present in native tau, which could enable development of antibodies targeting different functional domains. The His-tag allows for relatively easy purification and surface immobilization for ELISA-based antibody screening and characterization. Scientists may find this protein helpful for establishing specificity profiles and cross-reactivity patterns when developing tau antibodies for research.

4. Biochemical Characterization and Post-Translational Modification Studies

The recombinant tau protein offers a well-defined substrate for investigating post-translational modifications like phosphorylation, acetylation, and ubiquitination in controlled biochemical assays. Scientists can work with purified kinases, phosphatases, or other modifying enzymes to study site-specific modifications and their effects on tau structure and function. High purity and defined composition should make it suitable for mass spectrometry analysis to map modification sites and measure modification levels. The His-tag makes recovery and purification of modified protein relatively straightforward for downstream analysis.

5. Structural and Biophysical Analysis

This purified recombinant tau protein could work for structural studies including circular dichroism spectroscopy, dynamic light scattering, and NMR analysis to investigate tau conformation and aggregation properties. High purity and the yeast expression system likely provide protein suitable for biophysical characterization without contaminating proteins that might interfere with measurements. Scientists can study tau's intrinsically disordered nature and

	investigate how different buffer conditions, pH, or ionic strength affect protein conformation. The defined protein concentration and purity should make quantitative biophysical measurements and comparative studies more feasible.
Reconstitution	We recommend that this vial be briefly centrifuged prior to opening to bring the contents to the bottom. Please reconstitute protein in deionized sterile water to a concentration of 0.1-1.0 mg/mL.We recommend to add 5-50% of glycerol (final concentration) and aliquot for long-term storage at -20°C/-80°C. Our default final concentration of glycerol is 50%. Customers could use it as reference.
Shelf Life	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.