Product datasheet

Anti-Tau antibody [E178] ab32057

Recombinant RabMAb

★★★★★ 2 Abreviews 30 References 9 Images

Overview

Product name Anti-Tau antibody [E178]

Description Rabbit monoclonal [E178] to Tau

Host species Rabbit

Specificity The mouse and rat recommendation is based on the WB results. We do not guarantee IHC-P for mouse and rat.

Tested applications Suitable for: IHC-Fr, WB, IP

Unsuitable for: Flow Cyt

Species reactivity Reacts with: Mouse, Rat

Predicted to work with: Cow, Human

Immunogen Synthetic peptide within Human Tau aa 700 to the C-terminus. The exact sequence is proprietary. Database link: P10636

Positive control WB: SH-SY5Y cell lysate, Mouse brain, Human brain and Rat hippocampus tissue lysates; IP: Human fetal brain lysates; IHC-P: Human brain and cerebrum tissue; IHC-Fr: Mouse and Rat cerebrum tissue, Hu Alzheimer brain

General notes This product is a recombinant monoclonal antibody, which offers several advantages including:

- High batch-to-batch consistency and reproducibility
- Improved sensitivity and specificity
- Long-term security of supply
- Animal-free production

For more information see here.

Our RabMAb® technology is a patented hybridoma-based technology for making rabbit monoclonal antibodies. For details on our patents, please refer to RabMAb® patents.

We are constantly working hard to ensure we provide our customers with best in class antibodies. As a result of this work we are pleased to now offer this antibody in purified format. We are in the process of updating our datasheets. The purified format is designated 'PUR' on our product labels. If you have any questions regarding this update, please contact our Scientific Support team.

Properties
Form: Liquid

Storage instructions: Shipped at 4°C. Upon delivery aliquot and store at -20°C. Avoid freeze / thaw cycles.

Storage buffer:
- pH: 7.20
- Preservative: 0.01% Sodium azide
- Constituents: 59% PBS, 40% Glycerol, 0.05% BSA

Purity: Protein A purified

Clonality: Monoclonal

Clone number: E178

Isotype: IgG

Applications

Our Abpromise guarantee covers the use of ab32057 in the following tested applications.

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

<table>
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<tr>
<th>Application</th>
<th>Abreviews</th>
<th>Notes</th>
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<tbody>
<tr>
<td>IHC-Fr</td>
<td>1/500.</td>
<td>Heat mediated antigen retrieval using sodium citrate buffer (10mM citrate pH 6.0 + 0.05% Tween-20)</td>
</tr>
<tr>
<td>WB</td>
<td>1/1000.</td>
<td>Predicted molecular weight: 79 kDa. For unpurified use at 1/5000</td>
</tr>
<tr>
<td>IP</td>
<td>1/20.</td>
<td>For unpurified use at 1/100</td>
</tr>
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Application notes: Is unsuitable for Flow Cyt.

Target

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 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: Note=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). Defects in MAPT are a cause of frontotemporal dementia (FTD) [MIM:600274]; also called frontotemporal dementia (FTD), pallido-ponto-nigral degeneration (PPND) or historically termed Pick complex. This form of frontotemporal dementia is characterized by presenile dementia with behavioral changes, deterioration of cognitive capacities and loss of memory. In some cases, parkinsonian symptoms are prominent. Neuropathological changes include frontotemporal atrophy often associated with atrophy of the basal ganglia, substantia nigra, amygdala. In most
cases, protein tau deposits are found in glial cells and/or neurons. Defects in MAPT are a cause of Pick disease of the brain (PIDB) [MIM:172700]. It is a rare form of dementia pathologically defined by severe atrophy, neuronal loss and gliosis. It is characterized by the occurrence of tau-positive inclusions, swollen neurons (Pick cells) and argyrophilic neuronal inclusions known as Pick bodies that disproportionately affect the frontal and temporal cortical regions. Clinical features include aphasia, apraxia, confusion, anomia, memory loss and personality deterioration.

Note=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.

Defects in MAPT are a cause of progressive supranuclear palsy type 1 (PSNP1) [MIM:601104, 260540]; also abbreviated as PSP and also known as Steele-Richardson-Olszewski syndrome. PSNP1 is characterized by akinetic-rigid syndrome, supranuclear gaze palsy, pyramidal tract dysfunction, pseudobulbar signs and cognitive capacities deterioration. Neurofibrillary tangles and gliosis but no amyloid plaques are found in diseased brains. Most cases appear to be sporadic, with a significant association with a common haplotype including the MAPT gene and the flanking regions. Familial cases show an autosomal dominant pattern of transmission with incomplete penetrance; genetic analysis of a few cases showed the occurrence of tau mutations, including a deletion of Asn-613.

Sequence similarities
Contains 4 Tau/MAP repeats.

Developmental stage
Four-repeat (type II) tau is expressed in an adult-specific manner and is not found in fetal brain, whereas three-repeat (type I) tau 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 (PDKP: CDK1, CDK5, GSK-3, MAPK) (only 2-3 sites per protein in interphase, seven-fold increase in mitosis, and in PHF-tau), and at serine residues in K-X-G-S motifs by MAP/microtubule affinity-regulating kinase (MARK) in Alzheimer diseased brains. Phosphorylation decreases with age. Phosphorylation within tau's repeat domain or in flanking regions seems to reduce tau'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.

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.

Glycation of PHF-tau, but not normal brain tau. 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

Form
There are 9 isoforms produced by alternative splicing.
Western blot - Anti-Tau antibody [E178] (ab32057) at 1/100 dilution (Purified) + Human brain lysates at 15 µg

**Secondary**

Goat Anti-Rabbit IgG (HRP) with minimal cross-reactivity with human IgG at 1/2000 dilution

**Predicted band size:** 79 kDa  
**Observed band size:** 55-74 kDa

*why is the actual band size different from the predicted?*

The observed molecular weights are consistent with what have been described in literature PMID: 9276470

Immunohistochemistry (Frozen sections) analysis of rat cerebrum tissue sections labeling Tau with purified ab32057 at 1/500 (0.2 µg/ml). Heat mediated antigen retrieval using sodium citrate buffer (10mM citrate pH 6.0 + 0.05% Tween-20). Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) was used as the secondary antibody. Negative control: PBS instead of the primary antibody. DAPI was used as a counterstain.
Immunohistochemistry (Frozen sections) - Anti-Tau antibody [E178] (ab32057)

IHC image of Tau staining in a section of frozen normal human Alzheimer brain performed on a Leica BOND™ system using the standard protocol. The section was fixed in 10% paraformaldehyde (10 min) prior to staining. The section was incubated with ab32057, 1/1000 dilution, for 15 mins at room temperature and detected using an HRP conjugated compact polymer system. DAB was used as the chromogen. The section was then counterstained with haematoxylin and mounted with DPX. The inset secondary-only control image is taken from an identical assay without primary antibody.

For other IHC staining systems (automated and non-automated) customers should optimize variable parameters such as antigen retrieval conditions, primary antibody concentration and antibody incubation times.

Immunoprecipitation - Anti-Tau antibody [E178] (ab32057)

ab32057 (purified) at 1/20 dilution (0.5ug) immunoprecipitating Tau in Human fetal brain lysates.

Lane 1: Human fetal brain lysates 10ug
Lane 2 (+): ab32057 & Human fetal brain lysates
Lane 3 (-): Rabbit monoclonal IgG (ab172730) instead of ab32057 in Human fetal brain lysates

For western blotting, VeriBlot for IP Detection Reagent (HRP) (ab131366) was used at 1/1000 dilution.

Blocking and diluting buffer: 5% NFDM/TBST.

Western blot - Anti-Tau antibody [E178] (ab32057)

Anti-Tau antibody [E178] (ab32057) at 1/5000 dilution (Purified) + Mouse brain lysates at 15 µg

Secondary

Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/20000 dilution

Predicted band size: 79 kDa
Observed band size: 55-74 kDa why is the actual band size different from the predicted?

The observed molecular weights are consistent with what have been described in literature PMID: 9276470
Immunohistochemistry (Frozen sections) analysis of mouse cerebrum tissue sections labeling Tau with purified ab32057 at 1/500 (0.2 µg/ml). Heat mediated antigen retrieval using sodium citrate buffer (10mM citrate pH 6.0 + 0.05% Tween-20). Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) was used as the secondary antibody. Negative control: PBS instead of the primary antibody. DAPI was used as a counterstain.

**Immunohistochemistry (Frozen sections) - Anti-Tau antibody [E178] (ab32057)**

**All lanes**: Anti-Tau antibody [E178] (ab32057) at 1/1000 dilution

**Lane 1**: Untreated SH-SY5Y cell lysate

**Lane 2**: SH-SY5Y cell lysate treated with Oka/CalA. Cells are serum-starved overnight, and then treated with 1nM calyculin A and 500nM Okadaic acid for 2 hours at 37°C.

**Predicted band size**: 79 kDa

Immunohistochemistical detection of Tau antibody [E178] (ab32057) on formaldehyde-fixed paraffin-embedded human salivary gland sections. Antigen retrieval step: Heat mediated. Buffer Used: Citric acid pH6. Permeabilization: No. Blocking step: 1% BSA for 10 mins @ 21°C. ab32057 incubated at 1/1000 for 2 hours @ 21°C in TBS/BSA/azide. Secondary antibody: anti rabbit IgG conjugated to Biotin (1/200). NB: An interesting pattern of positivity that seems to be supported by the Human Protein Atlas. Coloured arrowheads in the submitted image indicate features: red for positive serous glands, blue for negative mucous glands (there is a serous demilune around this acinus), yellow for intralobular collecting ducts, green for nerve tracks in the interlobular areas, blue for positive interlobular collecting ducts. There appears to be a population of positive nuclei but this may b
Ab32057, at a dilution of 1/500, staining Tau in paraffin embedded human brain sections by Immunohistochemistry. Perform heat mediated antigen retrieval before commencing with IHC staining protocol.

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