

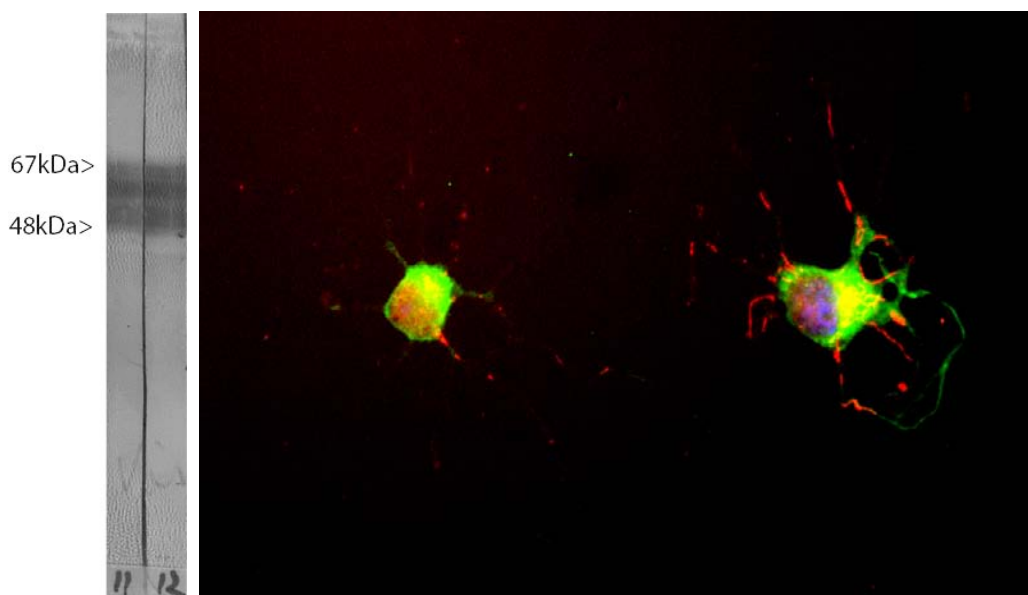
Catalogue# MCA-2E9: Mouse monoclonal antibody to microtubule associated protein tau- MAPT

The Immunogen: [Tau](#) is a relatively low molecular weight member of the [microtubule associated protein](#) or MAP family. Most of these proteins were discovered since [microtubules](#) can be polymerized in cell homogenates and pelleted out by centrifugation, typically taking MAP proteins with them (1,2). This early work showed that tau protein facilitated the polymerization of microtubules, and was therefore given the name τ , the Greek letter tau, since it promoted tubule formation. The protein is now usually referred to simply as tau or by the [HGNC](#) name which is MAPT.

Tau is heavily concentrated in axons of neurons, but may also be found in dendrites and in some non neuronal cells. Much interest has focused on tau as it is a major component of the [neurofibrillary tangles](#) of [Alzheimer's disease](#) (3,4). Tau in neurofibrillary tangles is typically heavily and aberrantly phosphorylated, and it is believed that phosphorylation may be involved in tangle formation. In addition, numerous different point mutations in the tau gene are causative of Fronto-temporal dementia with Parkinsonism linked to chromosome 17 (FTDP-17, see 5).

There is one mammalian tau gene which produces at least 9 different proteins by alternate transcription. In the central nervous system 6 isoforms predominant which either include or do not include three short exon coded inserts. These proteins range in size from 352-441 amino acids and run on [SDS-PAGE](#) gels as multiple bands ranging from 48-67 kDa. In peripheral nervous system a form called "big tau" predominates, another alternate transcript which includes a 254 amino acid insert (6). This form of tau is found in small amounts in the brain also, in cranial nerve motor nuclei and sensory processes of most sensory ganglia, and runs on SDS-PAGE with an apparent molecular weight of 100 kDa (7).

Each tau protein contains 3 or 4 copies of an 18 amino acid peptide which are responsible for binding to the microtubules and are similar to those found in MAP2 and other members of the MAP family. Tau is a highly charged acidic protein with few hydrophobic residues which belongs to the family of "[intrinsically unstructured proteins](#)". As with GAP43, MARCKS and several other similar proteins, tau isoforms run on SDS-PAGE much more slowly than expected from their actual molecular weight.



Figures: Left: Blots of crude rat brain extract stained with MCA-2E9, revealing, as expected, multiple bands in the range 48-67kDa. **Right:** We obtained [Neuromics E18 hippocampal neurons](#) and grew them for seven days following the Neuromics protocol. We fixed and immunostained with MCA-2E9 using our [standard](#)

[immunostaining protocol](#) (green), EnCor's chicken antibody to α -internexin ([CPCA-Int](#), red) and for DNA (blue). MCA-2E9 stains the neuronal perikarya and process strongly, and does not stain non neuronal cells in these cultures. The α -internexin antibody stains intermediate or 10nm filament bundles in the cytoplasm of these cells.

Suggestions for use: Try at dilutions of 1:1,000 and higher for immunofluorescence. For western blots try at 1:10,000. A suitable control tissue is rat spinal cord or peripheral nerve homogenate.

Antibody Characteristics: MCA-2E9 was raised using recombinant full length version of the shortest human Tau isoform, purified from E. coli. MCA-2E9 is an IgG1 class antibody with a κ light chain. Antibody is affinity purified and concentrated to 1 mg/mL in PBS. The preparation contains 10 mM sodium azide as a preservative. Store at 4°C or -20°C. Avoid repeat freezing and thawing.

Limitations: This product is for research use only and is not approved for use in humans or in clinical diagnosis.

References:

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