**MAP–τ (Tau), mouse mAb**

**MCA-2E9**

**Applications**
- WB, IF/ICC, IHC

**Host**
- Mouse

**Isotype**
- IgG1

**Molecular Wt.**
- 48-67kDa

**Species Cross-Reactivity**
- Hu, Rt, Ms, Bo, Po, Ho

**Western blot analysis of different tissue lysates using mouse mAb to MAP–τ, MCA-2E9, dilution 1:2,000 in green:**

**Background:**

**Tau** is a low molecular weight member of the microtubule associated protein family. Several serious human diseases are associated with accumulations of tau protein, most notably the neurofibrillary tangles of Alzheimer's disease. Accumulations of tau in neurons are also characteristic of chronic traumatic encephalopathy, Pick's disease and several other neurodegenerative diseases. Together these disorders are known as "taupathies". The single mammalian tau gene produces at least 9 different proteins by alternate transcription. In the central nervous system 6 isoforms ranging from 48-67kDa by SDS-PAGE predominate, though larger isoforms are seen mostly in the peripheral nervous system. The tau molecules are very heavily charged and run on SDS-PAGE much more slowly than predicted from their real molecular size. For example the smallest human tau isoform runs at 48kDa on SDS-PAGE but the real molecular weight is 32kDa. Tau proteins are substrates for ser/thr phosphorylation and other post-translational modifications.

The MCA-2E9 antibody was raised against a recombinant form of one of the lower molecular weight human tau isoform, specifically the human 441 amino acid htau40 form described by Goedert et al. The epitope for this antibody is located in the peptide KDRVQSKIGSLNTHVPQG, amino acids 347-366 of the sequence in NP 005901.2. This corresponds to most of the ultimate microtubule binding peptide repeat. This sequence is expressed in all known human tau isoatypes and is totally conserved in all mammals. As a result the antibody will have wide applicability. We have another mouse monoclonal antibody raised against the same form of human tau, MCA-5B10, which binds the peptide HVPGGNNKIEHTKLTREN, immediately C-terminal to the epitope for MCA-2E9. This is within the ultimate microtubule binding peptide. Both antibodies recognize the unphosphorylated forms of tau. We have not to date examined the effect of tau phosphorylation on binding of either antibody, MCA-2E9 works well on western blots and IF, but has not to date been tested on paraffin sections.

**Immunofluorescent analysis of cortical neuron-glia culture from E20 rat stained with mouse mAb to MAP–τ, MCA-2E9, dilution 1:1,000 in green, and costained with chicken pAb to MAP2, CPCA-MAP2, dilution 1:5,000 in red. The blue is DAPI staining of nuclear DNA. MCA-2E9 antibody stains perikarya, dendrites and axons of neurons, while MAP2 antibody labels only dendrites and perikarya. As a result, perikarya and dendrites appear orange-yellow, since they contain both proteins.**

**Abbreviation Key:**

- mAb—Monoclonal Antibody
- pAb—Polyclonal Antibody
- WB—Western Blot
- IF—Immunofluorescence
- ICC—Immunocytochemistry
- IHC—Immunohistochemistry
- ELISA—Human Mo—Monkey
- Doe—Dog
- Rt—Rat
- Ms—Mouse
- Pi—Pig
- Ho—Horse
- Ch—Chicken
- Dr—Dr. rerio
- Sm—M. mutans
- C. elegans
- S. cerevisiae
- S. aureus
- E. coli.