

Subpopulations of tau interact with microtubules and actin filaments in various cell types

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It has been demonstrated that microtubule-associated proteins (MAPs) interact with tubulin in vitro and in vivo. However, there is no clear evidence on the possible roles of the interactions of MAPs in vivo with other cytoskeletal components in maintaining the integrity of the cell architecture. To address this question we extracted the neuronal cytoskeleton from brain cells and studied the selective dissociation of specific molecular isospecies of tau protein under various experimental conditions. Tau, and in some cases MAP2, were analysed by the use of anti-idiotypic antibodies that recognize epitopes on their tubulin binding sites. Fractions of microtubule-bound tau isoforms were extracted with 0.35 M NaCl or after the addition of nocodazole to allow microtubule depolymerization. Protein eluted with this inhibitor contained most of the assembled tubulin dimer pool and part of the remaining tau and MAP2. When the remaining cytoskeletal pellet was treated with cytochalasin D to allo