

Microtubule-associated protein 1B interaction with tubulin tyrosine ligase contributes to the control of microtubule tyrosination

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Microtubule-associated protein 1B (MAP1B) is the first microtubule-associated protein to be expressed during nervous system development. MAP1B belongs to a large family of proteins that contribute to the stabilization and/or enhancement of microtubule polymerization. These functions are related to the control of the dynamic properties of microtubules. The C-terminal domain of the neuronal β -tubulin isotype is characterized by the presence of an acidic polypeptide, with the last amino acid being tyrosine. This tyrosine residue may be enzymatically removed from the protein by an unknown carboxypeptidase activity. Subsequently, the tyrosine residue is again incorporated into this tubulin by another enzyme, tubulin tyrosine ligase, to yield tyrosinated tubulin. Because neurons lacking MAP1B have a reduced proportion of tyrosinated microtubules, we analyzed the possible interaction between MAP1B and tubulin tyrosine ligase. Our results show that these proteins indeed interact and that the i