

# Tubulin, actin, and tau protein interactions and the study of their macromolecular assemblies

Farias, Gustavo A.

Munoz, Juan P.

Garrido, Jorge

Maccioni, Ricardo B.

The intracellular polymerization of cytoskeletal proteins into their supramolecular assemblies raises many questions regarding the regulatory patterns that control this process. Binding experiments using the ELISA solid phase system, together with protein assembly assays and electron microscopical studies provided clues on the protein protein associations in the polymerization of tubulin and actin networks. In vitro reconstitution experiments of these cytoskeletal filaments using purified tau, tubulin, and actin proteins were carried out. Tau protein association with tubulin immobilized in a solid phase support system was inhibited by actin monomer, and a higher inhibition was attained in the presence of preassembled actin filaments. Conversely, tubulin and assembled microtubules strongly inhibited tau interaction with actin in the solid phase system. Actin filaments decreased the extent of in vitro tau-induced tubulin assembly. Studies on the morphological aspects of microtubules and