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Microtubule Self- Assembly YONGSEOK JHO, M.C. CHOI, UCSB/KAIST, O. FARAGO, BGU, MAHNWON KIM, P.A. PINCUS, UCSB/KAIST — Microtubules are important structural elements for neurons. Microtubules are cylindrical pipes that are self-assembled from tubulin dimers, These structures are intimately related to the neuron transport system. Abnormal microtubule disintegration contributes to neuro-disease. For several decades, experimentalists investigated the structure of the microtubules using TEM and Cryo-EM. However, the detailed structure at a molecular level remain incompletely understood. . In this presentation, we report numerically studies of the self-assembly process using a toy model for tubulin dimers. We investigate the nature of the interactions which are essential to stabilize such the cylindrical assembly of protofilaments. We use Monte Carlo simulations to suggest the pathways for assembly and disassembly of the microtubules.

YongSeok Jho
UCSB

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