Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

The effect of human microtubule-associated-protein tau on the assembly structure of microtubules and its ionic strength dependence M.C. CHOI, U. RAVIV, H.P. MILLER, M.R. GAYLORD, E. KIRIS, D. VENTIMIGLIA, D.J. NEEDLEMAN, P.J. CHUNG, J. DEEK, N. LAPOINTE, UCSB, M.W. KIM, KAIST, L. WILSON, S.C. FEINSTEIN, C.R. SAFINYA, UCSB — Microtubules (MTs), 25 nm protein nanotubes, are among the major filamentous elements of the eukaryotic cytoskeleton involved in intracellular trafficking, cell division and the establishment and maintenance of cell shape. Microtubule-associated-protein tau regulates tubulin assembly, MT dynamics and stability. Aberrant tau action has long been correlated with numerous neurodegenerative diseases, including Alzheimer's, and fronto-temporal dementia with Parkinsonism linked to chromosome 17 (FTDP-17) Using synchrotron small angle x-ray scattering (SAXS) and binding assay, we examine the effects of tau on the assembly structure of taxol-stabilized MTs. We find that tau regulates the distribution of protofilament numbers in MTs as reflected in the observed increase in the average radius of MTs with increasing the tau/tubulin molar ratio. Additionally, tau-MT interactions are mediated to a large extent via electrostatic interactions: the binding affinity of tau to MTs is ionic strength dependent. Supported by DOE-BES DE-FG02-06ER46314, NSF DMR-0803103, NIH NS35010, NIH NS13560. (Ref) M.C. Choi, S.C. Feinstein, and C.R. Safinya et al. *Biophys. J.* 97; 519 (2009).

Myung Chul Choi
UCSB

Date submitted: 22 Nov 2009 Electronic form version 1.4