Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Yeast mitochondrial fission proteins induce antagonistic Gaussian membrane curvatures to regulate apoptosis MICHELLE LEE, GHEE HWEE LAI, NATHAN SCHMIDT, WUJING XIAN, GERARD C. L. WONG, Dept. of Bioengineering, University of California at Los Angeles — Mitochondria form a dynamic and interconnected network, which disintegrates during apoptosis to generate numerous smaller mitochondrial fragments. This process is at present not well understood. Yeast mitochondrial fission machinery proteins, Dnm1 and Fis1, are believed to regulate programmed cell death in yeast. Yeast Dnm1 has been previously shown to promote mitochondrial fragmentation and degradation characteristic of apoptotic cells, while yeast Fis1 inhibits cell death by limiting the mitochondrial fission induced by Dnm1 [Fannjiang et al, *Genes & Dev.* 2004. 18: 2785-2797]. To better understand the mechanisms of these antagonistic fission proteins, we use synchrotron small angle x-ray scattering (SAXS) to investigate their interaction with model cell membranes. The relationship between each protein, Dnm1 and Fis1, and protein-induced changes in membrane curvature and topology is examined. Through the comparison of the membrane rearrangement and phase behavior induced by each protein, we will discuss their respective roles in the regulation of mitochondrial fission.

Michelle Lee
UCLA

Date submitted: 18 Nov 2012 Electronic form version 1.4