1135-92-721 **Pak-Wing Fok*** (pakwing@udel.edu), 412 Ewing Hall, Department of Mathematical Sciences, University of Delaware, Newark, DE 19716. *Mucosal Folding and Growth Instabilities in a Finite Element Model of an Atherosclerotic Artery.* Preliminary report.

Atherosclerosis is a disease that involves inflammation and remodeling of blood vessel walls. In this paper, we present a displacement-based finite element model of a growing arterial cross section, based on morphoelasticity theory. The model uses an anisotropic strain energy function to account for the presence of collagen fibers in the media and adventitia, and represents the intima as a growing, isotropic, Neo-Hookean solid.

We show through numerical simulations that intima growth for pseudo-realistic arterial cross sections results in a buckling instability, giving rise to mucosal folding at the lumen-intima interface. This type of growth is consistent with photomicrographs of diseased arteries and makes direct connections with the experimental results of Glagov, New England Journal of Medicine (1987). (Received September 25, 2017)