1058-92-96 **Magdalena A Stolarska*** (mastolarska@stthomas.edu), 2115 Summit Ave., Mail # OSS 201, St. Paul, MN 55105. *A model of cellular movement and its effect on substrate traction patterns.*

Mechanical interactions between a cell and the substrate are vital for cell migration and are involved in various cellular processes, such as wound healing, embryonic development, and metastasis of cancerous tumors. As a result, understanding the nature of force generation by single cells and the mechanical interaction of a cell with the substrate is extremely important, and mathematical models are being used in furthering this understanding. In this talk, we present a continuum model of the mechanics of single cell motility in which the stresses that result from the active deformation of the cell are transmitted to a deformable substrate via adhesion sites that are modeled as either fixed connections or frictional interaction between the cell and the substrate. A finite element implementation of this model is used to numerically examine the nature of the stresses generated by the cell and the resulting traction patterns that occur at the substrate. We use the model to better understand what are the local active deformation profiles and the adhesion types necessary to replicate experimentally observed motion and traction patterns of different cell types. (Received February 07, 2010)