1077-92-2431 **Matthew K Fox*** (fox07210@stthomas.edu), 2115 Summit Ave, Mail 6197, St Paul, MN 55105, and **Benjamin Dellaria** and **Magdalena Stolarska**. *Modeling Cell Movement using the Level Set Method.* Preliminary report.

Cell movement is an important topic of research since it affects different biological processes including wound healing, immune response, and the spread of cancer. Experimentally, the usual method of viewing motile cells is on a flat, two-dimensional surface, and as a result most mathematical models are formulated with this assumption. In the body, cells move through a three dimensional array of collagen, filaments, and other proteins. With this in mind, we are modeling cell movement through a series of deformable obstacles meant to represent the collagen network. We use the level set method to track the membrane of the cell, the velocity of which depends on membrane surface tension, a force for volume preservation, and protrusive and retractive forces. We borrow concepts from the theory of beams to model the deformable collagen network. In our initial simulations we consider a two dimensional slice of the cell and collagen network, and our goal is to use the simulations to more accurately model the cell environment within the body and to investigate the effects of collagen stiffness and the presence of multiple cells on the movement of each cell. (Received September 22, 2011)