

1077-VH-2882

**Falko Ziebert** and **Sumanth Swaminathan\*** (sovereign620@gmail.com), 3513 N Sheffield Ave, Chicago, IL 60657, and **Igor Aronson**. *Model for self-polarization and motility of keratocyte fragments.*

Computational modeling of cell motility on substrates is a formidable challenge; regulatory pathways are intertwined and forces that influence cell motion are not fully quantified. Additional challenges arise from the need to describe a moving deformable cell boundary. Here, we present a simple mathematical model coupling cell shape dynamics, treated by the phase field approach, to a vector field describing the mean orientation (polarization) of the actin filament network. The model successfully reproduces the primary phenomenology of cell motility: discontinuous onset of motion, diversity of cell shapes, and shape oscillations. The results are in qualitative agreement with recent experiments on motility of keratocyte cells and cell fragments. The asymmetry of the shapes is captured to a large extent in this simple model, which may prove useful for the interpretation of experiments. (Received September 22, 2011)