

1038-92-168

Maria E Gracheva* (gracheva@uiuc.edu), University of Illinois at Urbana-Champaign, Beckman Institute, 405 N. Mathews Ave, Urbana, IL 61801. *A model of fibroblast motility on substrates with different rigidities.*

We developed a model of cell motion of a fibroblast on a two-dimensional substrate with a gradient in rigidity. The cell cytoskeleton is modeled as series of elastic springs and viscous dash-pots in parallel. The cell protrusions and cell-substrate attachments are considered as separate elements. The stochastic model for a cell orientation and the cell force regulation by cell-substrate adhesion is studied. The model reproduces experimentally observed behavior of fibroblasts: the model cell shows preference for locomotion over stiffer side of the substrate when approaches the boundary between the "soft" and the "stiff" sides of the substrate, similar to experimentally observed phenomenon in (Lo, Wang, Dembo and Wang (2000), Cell movement is guided by the rigidity of the substrate, *Biophys. J.* 79, 144-152.) The model suggests the existence of a feed back regulation of protrusion and cell active force generation via the cell-substrate interaction. (Received February 07, 2008)