1163-92-1342 **Andreas Buttenschoen*** (`abuttens@math.ubc.ca`), 1984 Mathematics Road, Vancouver, BC V6T1Z2. *A 3D cell-based model of cell migration in the extracellular matrix, facilitated by filopodia, degradation, and cell deformation.*

Cell migration in the extracellular matrix (ECM) or ECM-like environments is driven by cells attaching filopodia to ECM fibers and pulling on them. At the same time, however, high densities of the ECM act as a mechanical barrier for cell migration. To migrate effectively, cells maneuver through the ECM, finding holes through which they can squeeze, or mechanically adapt the elastic ECM by deformation or degradation. The combination of these mechanisms results in cells that move optimal in medium dense ECM environments. Here we ask whether these three space negotiation mechanisms in combination with migration via pulling are sufficient to explain larger scale observations in cell migration, namely directed migration in microtrack assays, single cell ECM invasion and multicellular coordinated migration. To answer these questions, we built a computational cell-based model of cell migration using cells that can adapt their shape, mechanically interact with an elastic ECM, and degrade the ECM.

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