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Cell migration at the edge of a cliff[1] WOLFGANG LOSERT, COLIN MCCANN, RAEL KOPACE, TESS HOMANN, MEGHAN DRISCOLL, University of Maryland — Migrating cells face several decisions about when to move and where to move during chemotaxis, i.e. migration guided by chemical signal. Though the behavior of individual cells varies widely, chemotaxis works remarkably reliably for key processes such as wound healing and development, indicating that the process is well controlled. Here we study how chemotaxing cells, specifically the simple model organism *Dictyostelium discoideum* responds mechanically and biochemically when faced with obstacles, in particular cliffs or ridges. The cliffs (and ridges) were fabricated using multiphoton absorption polymerization. As the cells encounter these topographical features, we track their overall motion, cell shape and dynamic changes in shape, as well as the surface adhesion and location of intracellular signals. We find that cells do not fall off the cliff, but extend over the edge with a characteristic motion of the freely suspended part of the cell that appears distinct from the migration characteristics of cells moving along the surface.

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