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Nanotopography guides and directs cell migration in amoeboid and epithelial cells RACHEL LEE, Department of Physics, University of Maryland, College Park, SATARUPA DAS, Institute for Physical Science and Technology, University of Maryland, College Park, MATTHEW HOURWITZ, XIAOYU SUN, Department of Chemistry and Biochemistry, University of Maryland, College Park, Maryland, CAROLE PARENT, Laboratory of Cellular and Molecular Biology, Center for Cancer Research, National Cancer Institute, JOHN FOURKAS, Department of Chemistry and Biochemistry, University of Maryland, College Park, Maryland, WOLFGANG LOSERT, Department of Physics, University of Maryland, College Park — Cell migration plays a critical role in development, angiogenesis, immune response, wound healing, and cancer metastasis. In many cases, cells also move in the context of a matrix of collagen fibers, and the alignment of these fibers can both affect the migration phenotype and guide cells. Here we show that both fast and slow migrating cells – amoeboid HL-60 and epithelial MCF10A – are affected in similar ways by micro/nanostructures with dimensions similar to those of collagen fibers. Cell alignment enhances the efficiency of migration by increasing directional persistence.

Rachel Lee
Univ of Maryland-College Park

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