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### **New Proposed Mechanism for Actin-Polymerization-Driven Motility<sup>1</sup>**

ANDREA LIU, University of Pennsylvania

When a cell crawls, its shape re-organizes via polymerization and depolymerization of a network of actin filaments. The growing ends of the filaments are localized near the leading edge of the crawling cell, and their polymerization, regulated by a host of proteins, pushes the cell membrane forwards in a biological model known as the dendritic nucleation model. We have performed Brownian dynamics simulations to see how the dendritic nucleation model leads to motion. Our results are not consistent with previous models of motility, and suggest a new picture for the physical mechanism underlying this form of motility.

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