



# NIMBioS

National Institute for Mathematical  
and Biological Synthesis



## NIMBioS Interdisciplinary Seminar

3:30 p.m.\*, **Wednesday**, April 30, 2014

**Dr. Leah Edelstein-Keshet\***

**Mathematics, Univ. of British Columbia**

**\*NIMBioS Postdoctoral Fellows Invited Distinguished Visitor**

### **Modeling Chemical Patterns in Cell Motility**

In order to fight infection or heal wounds, mammalian cells such as white blood cells (neutrophils or macrophages) crawl in response to chemical signals, a process termed chemotaxis. To do so, they rearrange their internal structure (actin cytoskeleton) to become polarized. Then the front protrudes and the rear retracts to produce motility. How is this process coordinated? Regulating this process are proteins (small GTPases) that form a chemical "prepattern" inside the cell. Interactions and crosstalk between these proteins results in the spontaneous self-organization of the intracellular patterns, and thence the polarization and motility. In this seminar I will describe modeling work in my group that addresses this topic in a sequence of models of various levels of detail. I will also present some computational techniques for understanding what the models predict and examples of work with experimental colleagues to validate the models.

***Location: Tom Hallam Auditorium, Room 206 at NIMBioS, Claxton Education Bldg,  
1122 Volunteer Blvd.***

*\*Join us for refreshments at 3 p.m. in the Auditorium.*

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