

## Symmetry Breaking and Cellular Polarization in Motile Cells

**William Holmes**

e-mail: [wrholmes@math.ubc.ca](mailto:wrholmes@math.ubc.ca)

Chemotaxis is the process by which cells undergo directed motion toward an external signal. In Eukaryotic cells, a precursor to such motion is a symmetry breaking event where proteins responsible for cytoskeletal remodelling and motility self organize to form a front and back. A model developed in collaboration with an experimental group of these regulatory proteins and their associated kinetics is presented. It is shown that this model accounts for observed characteristics not found in other models and provides new insights into the physiologically responsible processes. Novel pseudo-analytic methods for analysing such models will be briefly discussed and connections with experimental observations will be highlighted.