



CDB SEMINAR

Gaudenz Danuser

Laboratory for Computational Cell Biology, Department of Cell Biology,
The Scripps Research Institute

Thursday, May 31, 2007

16:00~17:00 A7F Conference Room

Integration of mechanical and chemical signals in cell protrusion

Summary

Cells move by forces associated with the assembly of an actin polymer network which are balanced by adhesive coupling of the polymer to the extracellular domain and counteracted by polymer contraction powered by molecular motors. The forces are orchestrated in space and time by feedback signals that process the mechanical and chemical states of the cell. Our goal is to decipher the largely unknown design principles and modes of operation of this complex molecular system; first by reconstructing the spatiotemporal distribution of intracellular forces using inverse dynamics; and then by perturbation of specific signals in order to determine the input-output relationships between signals and forces. This presentation will describe an experimental and computational framework to extract from live cell fluorescence images rates of actin polymer network assembly, deformation, elastic properties, and polymer-adhesion coupling and to correlate subcellular fluctuations in these parameters to the migration activity of the cell.

Host:

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