



As part of our "Nano & Micro-environments for Cell Biology" seminar series, we are delighted to invite you to attend this seminar to be given in english by :

Nir GOV

Department of Chemical Physics
Weizmann Institute of Science, Israel

Friday 28 June 2013
2pm



Shape as a cue: coupling membrane shape, curved protein complexes and the forces of the cytoskeleton

Lecture room C - 1st floor
Building C - Grenoble INP
46 avenue Felix Viallet - 38000 GRENOBLE

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Shape as a cue: coupling membrane shape, curved protein complexes and the forces of the cytoskeleton

Cells utilize the forces produced by the cytoskeleton to control their shapes, in a dynamical way. These forces include the protrusive force of actin polymerization and the contractile forces of myosin-II.

We have proposed that curved protein complexes at the membrane, that recruit the actin cytoskeleton, can be used to spontaneously induce the formation of various cellular patterns: from cellular protrusions, to propagating membrane waves.

I will review some of these results, which indicate that cells can use the membrane shape as a cue for self-organization.

Research interests: Theoretical modeling of cellular shapes and dynamics

We have so far worked on developing a unified model to describe the mechanical properties of the membrane of the red-blood cell (RBC). Being one of the simplest cells in the body, it has been extensively studied by biophysicists over the past 20 years. What makes this system complex and interesting is the fact that its membrane has a two-dimensional cytoskeleton attached to the outer bilayer. The cytoskeleton determines the elastic properties of the membrane, which in turn control the amplitude of thermal fluctuations and overall cell shape. In our work we focus on the dynamics of the cytoskeleton, that are driven by ATP-induced processes.

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