Colloquium

Shaping a fly wing

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Host: Gasper Tkacik

A fundamental question in Biology is to understand the morphogenetic rocesses by which an organism of complex shape forms from a fertilized egg. This morphogenesis involves the dynamic remodeling of tissues consisting of many cells that grow and divide. The fly wing is an important model system for the study of multicellular dynamics during tissue morphogenesis. During pupal stages, the early fly wing undergoes a spectacular dynamic reorganization that involves cell flows, cell divisions and cell shape changes. This dynamic process generates the final shape of the wing. We characterize tissue remodeling by the contributions of specific cellular
processes such as cell shape changes and cell neighbor exchanges to macroscopic shear at different times. We discuss the dynamics and the mechanics of this tissue using theoretical approaches that capture the essential physics of tissue remodeling.
Our work suggests that local tissue contraction together with anisotropic active processes drive tissue remodeling in the fly wing. We show that mechanical boundary conditions play a key role in determining the final tissue shape.

Monday, March 13, 2017 04:00pm - 05:15pm
Raiffeisen Lecture Hall, Central Building

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