



# CDB SEMINAR

## Philippe Marcq

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Monday, November 21, 2011

16:00~17:30 C1F CDB Auditorium

### Modeling ablation experiments at the cell and tissue level

#### Abstract

Laser photoablation stands out as a powerful and versatile tool, widely used to reveal the distribution, orientation, and relative intensity of stress in living cells and tissues.

At the cell level, we identify the time scale for retraction of a contractile actomyosin bundle as a viscoelastic time, where the dissipation (viscosity coefficient) is due to (internal) protein friction. This result is supported by an exactly solvable model of a retracting bundle as a three dimensional, active, viscoelastic solid.

At the tissue level, we sever a disk-shaped tissue domain from the surrounding epithelium in the dorsal thorax of fruitfly pupae. This novel method allows to precisely measure in situ the local strain tensor. Fitting to experimental data a spatio-temporal model of the relaxing epithelium domain, we estimate a material property of the tissue: the dimensionless ratio of external friction to internal viscosity, found to decrease during metamorphosis. Interestingly, the retraction time scale of the tissue domain is consistent with that of individual actomyosin bundles at cell-cell junctions.

#### Host:

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