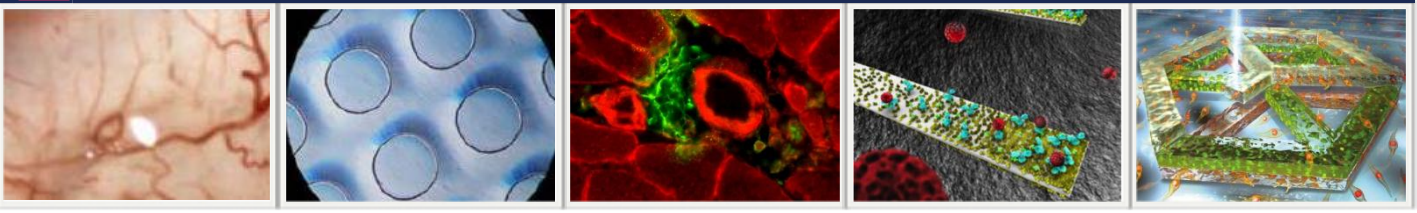
BioNanotechnology Seminar Series

Fall 2011



Mechanotransduction at Cell-Cell Contact

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Date: **Tuesday, October 4, 2011**

Time: **12:40 – 1:00 p.m. CDT (10:40 – 11:00 a.m. PDT)**

Location: **1000 MNTL at Illinois (KL 232 at UC Merced)**

Abstract:

Differential adhesion between cadherin subtypes expressed on cell surfaces is postulated to direct cell segregation during tissue morphogenesis. The studies described here used magnetic twisting cytometry and traction force microscopy to test the impact of cadherin binding selectivity on mechanotransduction and substrate rigidity sensing at cadherin-based adhesions. Micropipette measurements in turn quantified the binding affinities of different cadherin subtypes. Here we present evidence that the ability to transduce mechanical information across cadherin junctions depends on the identity of the ligand, such that only homophilic bonds between identical cadherins support force-activated junction remodeling. Mechanical stimulation with dissimilar cadherins or with anti-cadherin antibodies failed to elicit any response to force. Surprisingly, this behavior does not correlate with protein binding affinities, suggesting that mechanical differences may supercede protein-binding affinities in controlling intercellular organization during development.

Seminar Presented by:

Center for Cellular Mechanics
University of Illinois at Urbana-Champaign

IGERT Integrative Graduate Education and Research Traineeship
Cellular and Molecular Mechanics and BioNanotechnology

M-CNTC NCI Alliance for Nanotechnology in Cancer
Midwest Cancer Nanotechnology Training Center

CNST University of Illinois Center for Nanoscale Science and Technology