

BiophysTO Lunchtime Talks

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An actomyosin-Arf-GEF negative feedback loop for tissue elongation under stress

With pulling force, a material can elongate, hold or fracture. During animal development, multicellular contraction often stretches neighbouring tissues. Such contraction occurs by induced actomyosin activity, but molecular mechanisms for altering the physical properties of connected tissues are unknown. I will discuss how cytohesins, and their Arf small G protein guanine nucleotide exchange activity, are required for tissues to elongate under stress in both *Drosophila* and zebrafish. In *Drosophila*, the cytohesin Steppke reduces tissue tension by inhibiting actomyosin activity at adherens junctions. Without Steppke, embryogenesis fails with epidermal tears. Remarkably, actomyosin assembly recruits Steppke within minutes, forming a negative feedback loop for rapid actomyosin regulation. This loop provides a molecular mechanism for attenuating the elastic element of a viscoelastic tissue, thus allowing tissue elongation under stress.

Host: Dr. Rodrigo Fernandez-Gonzalez

(Refreshments and pizza will be provided)

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Thursday, January 12, 2017 – 12:00 pm, noon
McLennan Physical Laboratories, Room MP606
(and via streaming to DV3129 at UTM)