



Seminar/Talk

Membrane potential mediates the cellular response to mechanical pressure – insights from simulations

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Host: Edouard Hannezo

Mechanical forces influence cellular decisions to grow, die, or differentiate, through largely mysterious mechanisms. Separately, changes in resting membrane potential have been observed in development, differentiation, regeneration, and cancer. We demonstrate that membrane potential is an important mediator of cellular response to mechanical pressure. We show that mechanical forces acting on the cell change cellular biomass density, which, in turn, alters membrane potential. Membrane potential then regulates cell number density in epithelia by controlling cell growth, proliferation, and cell elimination. I will present the experimental evidence that lead to the discovery, but mainly focus on the physical mechanism based on osmotic stresses and charge balance. I will introduce simulations based on this mechanism, and show their predictions and experimental verification.[1] Mukherjee, Huang, Elgeti, Basan. Cell 189, 143 (2026)

Tuesday, February 10, 2026 11:00am - 12:00pm

Sunstone Bldg / Ground floor / Big Seminar Room B / 63 seats (I23.EG.102)



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