The ECM, Adhesion Receptor Signaling, and Translational Biomechanics (CAMB703/BE640)

Course Directors: Wells/Mauck

Spring 2022, Tu/Th 3:30-5:00 PM, BRB 701

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Date	Topic	Faculty
1. Th 1/13	***Introduction*** to the course, sign up for sessions	Mauck/Wells
	Lecture: Introduction to cell mechanics	Janmey
PART I: The Matrix and its Receptors		
2. Tu 1/18	***Lecture:*** The mechanics of the ECM	Wells
	Lecture: Cell/tissue mechanics	Janmey
3. Th 1/20	***Lecture:*** Cell signaling: cell surface to nucleus	Mauck
4. Tu 1/25	The ECM I	Wells
5. Th 1/27	The ECM II: long-range signaling	Mauck/Wells
6. Tu 2/1	Mechanically sensing the substrate	Janmey
7. Th 2/3	Mechanical memory	Mauck
8. Tu 2/8	Signaling and force transduction	Wells
9. Th 2/10	Adhesion receptors (integrins and cadherins)	Mauck
10. Tu 2/15	***Roundtable:*** Integration of Part I	Wells/Mauck
PART II: Forces on Cells and Mechanotransduction		
11. Th 2/17	***Lecture:*** Fluidics and microfabrication (incl. micro-contact printing)	Huh
	Lecture: Biomaterials	Guvendiren
12. Tu 2/22	Primary cilia as mechanotransducers	Drivas
13. Th 2/24	Interstitial/3D cell migration	Petrie (Drexel)
14. Tu 3/1	Mechanics and cell assembly	Hughes
15. Th 3/3	Force modulation and the cytoskeleton	Ostap
(Spring Break)		
16. Tu 3/15	Visiting moderator	Nelson (Princeton)
17. Th 3/17	Force and ion channels	Mourkioti
18. Tu 3/22	Nuclear mechanics and mechanotransduction	Mauck
19. Th 3/24	Mechanics and nuclear organization	Heo
20. Tu 3/29	Mechanoepigenetics	Lakadamyali
21. Th 3/31	Integrating complex mechanical systems	Shenoy
22. Tu 4/5	***Roundtable:*** Integration of Part II	Wells/Mauck
Part III: Translational Biomechanics and Disease		
23. Th 4/7	Developmental mechanobiology	Boerckel
24. Tu 4/12	Mechanotransduction in musculoskeletal tissues	Dyment
25. Th 4/14	Mechanics and cancer	Janmey
26. Tu 4/19	Mechanotransduction in cardiac tissues	Prosser
27. Th 4/21	Fibrosis and wound healing	Wells
28. Tu 4/26	***Roundtable:*** Integration of course material	Wells/Mauck