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

Course Directors: Wells/Mauck
Spring 2020, Tu/Th 2:30-4:00 PM, BRB 1101

Date	Topic	Faculty
1. Th 1/16	***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 1/21	***Lecture:*** The ECM	Wells
	Lecture: Cell/tissue mechanics	Alisafaei
3. Th 1/23	***Lecture:*** Adhesion Receptors and Signaling	Assoian
	Lecture: Mechanotransduction	Mauck
4. Tu 1/28	The ECM I	Assoian
5. Th 1/30	The ECM II: long-range signaling	Shenoy
6. Tu 2/4	Controversies in Substrate Sensing	Jamney
7. Th 2/6	Mechanical memory	Mauck
8. Tu 2/11	Signaling and force transduction	Wells
9. Th 2/13	Adhesion receptors (integrins)	Mauck
10. Tu 2/18	***Roundtable:*** Integration of Part I	Wells/Mauck
PART II: Forces on Cells and Mechanotransduction		
11. Th 2/20	Adhesion receptors (cadherins)	Assoian
12. Tu 2/25	***Lecture:*** Fluidics and microfabrication (incl. micro-contact printing)	Huh
	Lecture: Biomaterials	Davidson
13. Th 2/27	Interstitial/3D cell migration	Petrie (Drexel)
14. Tu 3/3	Mechanics and cell assembly	Hughes
15. Th 3/5	Nuclear mechanics and mechanotransduction	Mauck
(Spring Break)		
16. Tu 3/17	Stem cells and morphogenesis	Gerecht (Hopkins)
17. Th 3/19	Integration of soluble and mechanical factors	Wells
18. Tu 3/24	Gradients vs. maxima/minima	Wells
19. Th 3/26	Force modulation and the cytoskeleton	Ostap
20. Tu 3/31	Fluid flow and cells	Huh
21. Th 4/2	Plasticity of mechanical signaling	Wells/Mauck
22. Tu 4/7	***Roundtable:*** Integration of Part II	Wells/Mauck
Part III: Translational Biomechanics and Disease		
23. Th 4/9	Mechanotransduction in cardiac tissues	Prosser
24. Tu 4/14	Mechanotransduction in musculoskeletal tissues	Mauck
25. Th 4/16	Mechanics and cancer	Cukierman (Fox Chase)
26. Tu 4/21	Developmental mechanobiology	Boerckel
27. Th 4/23	Fibrosis and wound healing	Loebel
28. Tu 4/28	***Roundtable:*** Integration of course material	Wells/Mauck