

# 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

## B

<u>Date</u>	<u>Topic</u>	<u>Faculty</u>
1. Th 1/13	<b>Introduction</b> to the course, sign up for sessions <b>Lecture:</b> Introduction to cell mechanics	Mauck/Wells Janmey
<b><u>PART I: The Matrix and its Receptors</u></b>		
2. Tu 1/18	<b>Lecture:</b> The mechanics of the ECM <b>Lecture:</b> Cell/tissue mechanics	Wells Janmey
3. Th 1/20	<b>Lecture:</b> 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	<b>Roundtable:</b> Integration of Part I	Wells/Mauck
<b><u>PART II: Forces on Cells and Mechanotransduction</u></b>		
11. Th 2/17	<b>Lecture:</b> Fluidics and microfabrication (incl. micro-contact printing) <b>Lecture:</b> Biomaterials	Huh 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	<b>Roundtable:</b> Integration of Part II	Wells/Mauck
<b><u>Part III: Translational Biomechanics and Disease</u></b>		
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	<b>Roundtable:</b> Integration of course material	Wells/Mauck