

<u>Date</u>	<u>Topic</u>	<u>Lecturer</u>
1/14	Organizational Meeting	<i>Patrick Seale</i>
1/18	IRM Symposium (No Class)	
1/20	Cell lineage and fate maps; Introduction to genetics	<i>Bushra Raj</i>
1/21	Body plan formation: Gastrulation, germ layer formation and morphogenesis	<i>Peter Klein</i>
1/25	Morphogens in patterning	<i>Joe Zinski</i>
1/27	Induction of the primary germ layers	<i>Dan Kessler</i>
1/28	Discussion-1	
2/1	Establishment of the AP and DV axes in Drosophila	<i>Shawn Little</i>
2/3	Creating periodic patterns	<i>Shawn Little</i>
2/4	Discussion-2	
2/8	Establishing neuronal identity: Cilia and Shh signaling	<i>Doug Epstein</i>
2/10	Left-right patterning	<i>Dan Kessler</i>
2/11	Discussion-3	
2/15	Notch signaling/lateral inhibition	<i>Meera Sundaram</i>
2/17	Tubulogenesis: insights from <i>C. elegans</i>	<i>Meera Sundaram</i>
2/18	Discussion-4	
2/22	Scaling in development	<i>Matt Good</i>
2/24	Single Molecule Imaging, Nuclear Organization and Transcription	<i>Mustafa Mir</i>
2/25	Discussion-5 ( <b>Send out Midterm exam</b> )	
3/1	Single cell tracking and cell specification events	<i>John Murray</i>
3/3	Vascular development and angiogenesis	<i>Arndt Siekmann</i>
3/4	No Discussion ( <b>Midterm due</b> )	
3/7 - 3/11	<i>Spring Break</i>	

**CAMB 511: PRINCIPLES OF DEVELOPMENT cont'd**

Winter/Spring 2022

<u>Date</u>	<u>Topic</u>	<u>Lecturer</u>
3/15	Principles of stem cells in development	<i>Chris Lengner</i>
3/17	Stem cell niches in development	<i>Steve DiNardo</i>
3/18	Discussion-6	
3/22	Lung development and branching	<i>Jarod Zepp</i>
3/24	Lineage reprogramming in development	<i>Ken Zaret</i>
3/25	Discussion-7	
3/29	Circadian regulation of tissue homeostasis and maturation	<i>Juan Alvarez</i>
3/31	Cytoskeleton, cell shape and embryogenesis	<i>Nicolas Plachta</i>
4/1	Discussion-8	
4/5	Adipose tissue development	<i>Patrick Seale</i>
4/7	Hematopoietic stem cell formation and renewal	<i>Nancy Speck</i>
4/8	Discussion-9 (N&V articles due)	
4/12	TBD	
4/14	Imaging stem cell dynamics	<i>Pantelis Rompolas</i>
4/15	Discussion-10	
4/19	Skeletal development and mechanical cues	<i>Joel Boerckel</i>
4/21	Mechanosensing in cell fate and differentiation	<i>Alex Hughes</i>
4/22	Discussion-11 (Send out Final exam)	
4/26	X chromosome inactivation in development and disease	<i>Montserrat Anguera</i>
4/28	Metabolic regulation of development	<i>Patrick Seale</i>
4/29	Discussion-12	
5/3	Evo-Devo	<i>Steve DiNardo</i>
5/5	Regeneration	<i>Faye Mourkioti</i>
5/6	Discussion-13 (Final Exam due)	

**Course director:**

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**Class Schedule:**

Lectures-1:45-3:15 on Tuesday and Thursday

Discussions-Friday 1:45-2:45

**Discussions:**

Each week one research article will be assigned for mandatory reading. One student will present the article to the rest of the class and lead the discussion.

**News & Views Paper:**

Students not doing a presentation will write a **“News & Views”** article for one of the selected discussion papers. The “News & Views” should put the paper in the context of its field, highlighting the research advance, and should not simply be a summary of the paper. It is a viewpoint, so personal opinions can be included, including your views regarding significance and weaknesses/caveats.

**Discussion Boards:**

A discussion board will be available on Canvas for each assigned paper (active for one-week Fri-Fri). Non-presenting students should post at least one comment per paper. You can choose a figure from the paper to explain in your own words, comment on the significance of a particular result, raise questions about a method, etc.

**Grading:**

1. Discussion presentation or N&V article (30)
2. Participation and attendance (30)
  - Discussion boards in Canvas
  - Participation during lectures and discussions (engagement in class, asking questions, contributing to discussions)
3. Midterm and Final take home exams (20 each, total 40)

**Course Website:**

Our class site on Canvas ([canvas.upenn.edu](https://canvas.upenn.edu)) includes the course schedule, syllabus, faculty contact information, discussion papers for download, discussion board.