

<u>Date</u>	<u>Topic</u>	<u>Lecturer</u>
1/13	Organizational Meeting	<i>Patrick Seale</i>
1/17	Cell lineage and fate maps; Introduction to genetics	<i>Bushra Raj</i>
1/19	Single cell analyses and cell fate	<i>Bushra Raj</i>
1/20	Body plan formation: Gastrulation, germ layer formation and morphogenesis	<i>Peter Klein</i>
1/24	IRM Symposium (No class)	
1/26	Induction of the primary germ layers	<i>Dan Kessler</i>
1/27	Discussion-1	
1/31	Morphogens in patterning	<i>Mary Mullins</i>
2/2	Left-right patterning	<i>Dan Kessler</i>
2/3	Discussion-2	
2/7	Single cell tracking and cell specification events	<i>John Murray</i>
2/9	Developmental patterning in plants	<i>Aman Husbans</i>
2/10	Discussion-3	
2/14	Notch signaling/lateral inhibition	<i>Helen Schmidt</i>
2/16	Retrotransposon reactivation in development and disease	<i>Andrew Modzelewski</i>
2/17	Discussion-4	
2/21	Scaling in development	<i>Matt Good</i>
2/23	Single Molecule Imaging, Nuclear Organization and Transcription	<i>Mustafa Mir</i>
2/24	Discussion-5	
2/28	Signal processing - insights from Ciona, an invertebrate chordate	<i>Bradley Davidson</i>
3/2	Vascular development and angiogenesis	<i>Arndt Siekmann</i>
3/3	Discussion-6	
3/6 - 3/10	<i>Spring Break (no classes)</i>	

**CAMB 511: Principles of Development cont'd**

Winter/Spring 2023

<u>Date</u>	<u>Topic</u>	<u>Lecturer</u>
3/14	Principles of stem cells in development	<i>Chris Lengner</i>
3/16	TBD	
3/17	Discussion-7	
3/21	Modeling human development and disease using iPS cells	<i>Wenli Yang</i>
3/23	Stem cell niches in development	<i>Steve DiNardo</i>
3/24	Discussion-8	
3/28	Circadian regulation of tissue homeostasis and maturation	<i>Juan Alvarez</i>
3/30	Lung development and branching	<i>Jarod Zepp</i>
3/31	Discussion-9	
4/4	Imaging stem cell dynamics	<i>Pantelis Rompolas</i>
4/6	Hematopoietic stem cell formation and renewal	<i>Nancy Speck</i>
4/7	Discussion-10 (N&V articles due)	
4/11	Adipose tissue development	<i>Patrick Seale</i>
4/13	Metabolic regulation of development	<i>Patrick Seale</i>
4/14	Discussion-11 (Class held in SCTR 8-146) (send out Exam)	
4/18	Skeletal development and mechanical cues	<i>Joel Boerckel</i>
4/20	Mechanosensing in cell fate and differentiation	<i>Alex Hughes</i>
4/21	Discussion-12	
4/25	X chromosome inactivation in development and disease	<i>Montserrat Anguera</i>
4/27	Cytoskeleton, cell shape and embryogenesis	<i>Nicolas Plachta</i>
4/28	Discussion-13	
5/2	Evo-Devo	<i>Steve DiNardo</i>
5/4	Regeneration	<i>Faye Mourkioti</i>
5/5	Discussion-14 (Exam due)	

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**Class Schedule (SCTR 12-146):**

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 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 posted on Canvas for each assigned paper. 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 (35)
2. Participation and attendance (30)
  - Participation during lectures and discussions (engagement in class, asking questions, contributing to discussions)
  - Contribution to discussion boards on Canvas
3. Take home exam (35)

**Course Website:**

The 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.