CAMB 511: Principles of Development **Winter/Spring 2023**

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

CAMB 511: Principles of Development cont'd **Winter/Spring 2023**

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

CAMB 511: PRINCIPLES OF DEVELOPMENT 2023

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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) includes the course schedule, syllabus, faculty contact information, discussion papers for download, discussion board.