

**CAMB 511: Principles of Development Winter/Spring 2024**

<u>Date</u>	<u>Topic</u>	<u>Lecturer</u>
1/12	Organizational Meeting	<i>Patrick Seale</i>
1/16	Cell lineage and fate maps; Introduction to genetics	<i>Bushra Raj</i>
1/18	Single cell analyses and cell fate	<i>Bushra Raj</i>
1/23	Embryonic gene activation	<i>Matt Good</i>
1/25	Induction of the primary germ layers	<i>Dan Kessler</i>
1/30	Body plan formation: Gastrulation, germ layer formation and morphogenesis	<i>Peter Klein</i>
2/1	Left-right patterning	<i>Dan Kessler</i>
2/6	Journal club discussion-1	
2/8	Morphogens in patterning	<i>Mary Mullins</i>
2/13	Journal club discussion-2	
2/15	Tubulogenesis in worms	<i>Meera Sundaram</i>
2/20	Single Molecule Imaging, Nuclear Organization and Transcription	<i>Mustafa Mir</i>
2/22	Journal club discussion-3	
2/27	Journal club discussion-4	
2/29	Mouse molecular genetic models and approaches	<i>Patrick Seale</i>
3/4 - 3/8	<i>Spring Break (no classes)</i>	
3/12	Journal club discussion-5	
3/14	Principles of stem cells in development Send out take home problem set	<i>Chris Lengner</i>
3/19	Modeling human development and disease using iPS cells	<i>Wenli Yang</i>
3/21	Journal club discussion-6	

<u>Date</u>	<u>Topic</u>	<u>Lecturer</u>
3/26	Biological rhythms and development	<i>Juan Alvarez</i>
3/28	Journal club discussion-7	<i>JA</i>
4/2	Journal club discussion-8	
4/4	Hematopoietic stem cell formation and renewal	<i>Nancy Speck</i>
4/9	Metabolic regulation of development	<i>Patrick Seale</i>
4/11	Skeletal development and mechanical cues	<i>Joel Boerckel</i>
4/12	Take home problem set due (No class)	
4/16	Cytoskeleton, cell shape and embryogenesis	<i>Nicolas Plachta</i>
4/18	Journal club discussion-9	
4/23	Retrotransposon reactivation in development and disease	<i>Andrew Modzelewski</i>
4/25	Journal club discussion-10	
4/30	Review of take home problem set	
5/2	Regeneration	<i>Faye Mourkioti</i>

**Course director:**

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**Class Schedule (SCTR 9-146, unless otherwise noted):**

1:45-3:15 on Tuesdays and Thursdays

Check on Canvas for changes/updates

**Lectures:**

Review articles and other relevant resources will be posted on Canvas for each lecture. Please review the material before class and come prepared with questions/discussion points. We want the lectures to be interactive.

**Journal Club Discussions:**

Pairs of students will be assigned to lead a journal club discussion of a research paper. The presenting students are responsible for providing background/context for the paper, presenting the key figures (not necessarily every figure/panel), answering questions, encouraging participation, and moderating the discussion. All students should read the main paper carefully and submit 1-2 prepared questions/comments/discussion points before class.

**Take home problem set:**

Will be sent out on 3/14, and due on 4/12. Students will work in pairs to complete the questions.

**Grading:**

1. Presentation (35)
2. Participation (35)
  - Attendance
  - Engagement in class: asking questions, contributing to discussions,
  - Submitted comments/questions
3. Take home problem set (30)

**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.