

<u>Date</u>	<u>Topic</u>	<u>Lecturer</u>
1/17	Organizational Meeting	Patrick Seale
1/18	Cell lineage and fate maps; Introduction to genetics	Mary Mullins
1/22	Body plan formation: Gastrulation, germ layer formation and morphogenesis	Peter Klein
1/24	Induction of the primary germ layers	Dan Kessler
1/25	Discussion-1	PK
1/29	Morphogens in patterning	Mary Mullins
1/31	Tubulogenesis: insights from <i>C. elegans</i>	Meera Sundaram
2/1	Discussion-2	MM
2/5	Creating periodic patterns	Shawn Little
2/7	Left-right patterning	Dan Kessler
2/8	Discussion-3	DK
2/12	Topics in early mouse development and organogenesis	Ben Stanger
2/14	Establishing neuronal identity: Cilia and Shh signaling	Doug Epstein
2/15	Discussion-4	DE
2/19	Cell polarity and asymmetric cell divisions	Eric Witze
2/21	Vascular development and angiogenesis	Arndt Siekmann
2/22	Discussion-5 (Send out Midterm Exam)	
2/26	Lung development and branching	David Frank
2/28	Somite development/Muscle developmental programs	Patrick Seale
3/1	Midterm Exam Due (No Discussion)	PS
3/4 to 3/8	<i>Spring Break</i>	
3/12	Scaling in development	Matt Good
3/14	Single cell tracking and cell specification events	John Murray
3/15	Discussion-6	PS
3/19	Introduction and history of stem cell field	John Gearhart

3/21	Principles of stem cells in development	Chris Lengner
3/22	Discussion-7	PS
3/26	Hematopoietic stem cells in the embryo and adult	Nancy Speck
3/28	Adipose tissue development	Patrick Seale
3/29	Discussion-8	PS
4/2	Transcriptional memory in development	Maya Capelson
4/4	Epigenetics in development	Marisa Bartolomei
4/5	Discussion-9	PS
4/9	piRNA regulation in the germ line	Jeremy Wang
4/11	Stem cell niches in development	Steve DiNardo
4/12	Discussion-10	
4/16	Mechanosensing in cell fate and differentiation	Alex Hughes
4/18	Evo-Devo	Steve DiNardo
4/19	Discussion-11	AH
4/23	Regeneration	Faye Mourkioti
4/25	Imaging stem cell dynamics	Pantelis Rompolas
4/26	Discussion-12	PS
4/30	Metabolism and development (Send out Final Exam)	Patrick Seale
5/2	TBD	
5/9	Final Exam Due	

Course director:

Patrick Seale
Dept. of Cell and Developmental Biology
Institute for Diabetes, Obesity and Metabolism
12-105 Smilow Center for Translational Research (12th Floor)
215-573-8856
sealep@pennmedicine.upenn.edu

Course faculty:

Marisa Bartolomei, bartolom@pennmedicine.upenn.edu
Maya Capelson, capelson@pennmedicine.upenn.edu
Steve DiNardo, sdinardo@pennmedicine.upenn.edu
Doug Epstein, epsteind@pennmedicine.upenn.edu
Dave Frank, frankd@email.chop.edu
John Gearhart, gearhart@pennmedicine.upenn.edu
Matt Good, mattgood@pennmedicine.upenn.edu
Alex Hughes, ajhughes@seas.upenn.edu
Dan Kessler, kesslerd@pennmedicine.upenn.edu
Peter Klein, pklein@pennmedicine.upenn.edu
Chris Lengner, Lengner@vet.upenn.edu
Shawn Little, shlittle@pennmedicine.upenn.edu
Faye Mourkioti, fmour@pennmedicine.upenn.edu
Mary Mullins, mullins@pennmedicine.upenn.edu
John Murray, jmurr@pennmedicine.upenn.edu
Pantelis Rompolas, rompolas@pennmedicine.upenn.edu
Arndt Siekmann, arndt.siekmann@pennmedicine.upenn.edu
Nancy Speck, nancyas@upenn.edu
Meera Sundaram, sundaram@pennmedicine.upenn.edu
Ben Stanger, bstanger@upenn.edu
Jeremy Wang, pwang@vet.upenn.edu
Eric Witze, ewitze@upenn.edu

Class Schedule:

Lectures-1:30-3:00 on Tuesday and Thursday in Room 1201 BRB II/III

Discussions-Friday 1:30-2:30, in Room 1201 BRB II/III

Recommended Text:

Developmental Biology (now in 11th edition) by Scott F. Gilbert (Used on Amazon for ~\$20)

Discussions:

Each week one research article will be assigned for mandatory reading. Two students will work together to present background material for the article to the rest of the class and lead the discussion. All students will be involved in reviewing and discussing the articles at each meeting.

Exams:

The midterm and final exams will be take-home written exams in essay format.

Grading:

Grades will be based on the background presentation (20%), participation in the discussion sessions (asking questions, commentary) and attendance (20%), the midterm exam (30%), and the final exam (30%). PI

Course Website:

A course website is available at the Penn CANVAS site. The website includes the course schedule, syllabus, faculty contact information and discussion papers for download. In addition, course lectures will be posted as Powerpoint files for each lecture.