

<u>Date</u>	<u>Topic</u>	<u>Lecturer</u>
1/10	Organizational Meeting	Mary Mullins
1/12	Fertilization to midblastula transition, cell lineage and fate maps	Mary Mullins
1/13 1:30-3:00	Establishment of polarity: Cortical rotation and inductive signals Room 1201	Peter Klein
1/17	Body plan formation: Gastrulation, germ layer formation and morphogenesis	Dan Kessler
1/19	Induction of the primary germ layers	Dan Kessler
1/20	Discussion	DK
1/24	Classical embryology of insects: Determinants and morphogens before genetics and molecular biology	Mary Mullins
1/26	Creating periodic patterns: The complexity revealed after genetics and molecular biology	Mary Mullins
1/27	Discussion	MM
1/31	Establishment of the AP and DV axes in Drosophila	Amin Ghabrial
2/2	DV patterning Drosophila and vertebrates	Mary Mullins
2/3	Discussion	MM
2/7	Morphogens and pattern	Mary Mullins
2/9	The vertebrate dorsal organizer and neural induction	Mary Mullins
2/10	Discussion	MM
2/14	The neural crest and DV patterning of the neural tube	Mary Mullins
2/16	Somite patterning and bone differentiation	Shannon Fisher
2/17	Discussion	MM
2/21	Muscle developmental programs and satellite cells	Patrick Seale
2/23	Left-right asymmetry and patterning of the body axes	Dan Kessler
2/24	Discussion – MIDTERM EXAM	DK
2/28	Early development and genetics of the mouse	Ben Stanger
3/1	Topics in mammalian organogenesis	Ben Stanger
3/2	Midterm Exam DUE	

3/5-3/9	Spring Break	
3/13	Epithelial appendage development	Sarah Millar
3/15	Development and genetics of C elegans: vulval specification and Notch signaling	Meera Sundaram
3/16	Discussion	SM
3/20	Stem Cells I: Embryonic Stem Cells	John Gearhart
3/22	Stem Cells II: Adult Stem Cells	John Gearhart
3/23	Discussion	MM
3/27	Development and genetics of zebrafish: the pluripotent germ line	Mary Mullins
3/29	Epigenetics in Development	Marisa Bartolomei
3/30	Discussion	MM
4/3	Branching morphogenesis in organogenesis	Amin Ghabrial
4/5	Cellular polarity and asymmetric cell division	Fabrice Roegiers
4/6	Discussion	AG
4/10	Phase change in plant development	Scott Poethig
4/12	Master regulatory genes: regulating the switch to reproductive development in plants	Doris Wagner
4/13	Discussion	MM
4/17	Evo-Devo	Steve DiNardo
4/19	Evo-Devo	Steve DiNardo
4/20	Discussion FINAL EXAM	SD
4/27	FINAL EXAM Due	

Course director:

Mary Mullins
Dept. of Cell and Developmental Biology
1211 BRBII/III
898-2644
mullins@mail.med.upenn.edu

Course faculty:

Marisa Bartolomei, bartolom@mail.med.upenn.edu
Steve DiNardo, sdinardo@mail.med.upenn.edu
Shannon Fisher, sfisher4@mail.med.upenn.edu
John Gearhart, gearhart@upenn.edu
Amin Ghabrial, ghabrial@mail.med.upenn.edu
Dan Kessler, kesslerd@mail.med.upenn.edu
Peter Klein, pklein@mail.med.upenn.edu
Sarah Millar, millars@mail.med.upenn.edu
Mary Mullins, mullins@mail.med.upenn.edu
Scott Poethig, spoethig@sas.upenn.edu
Fabrice Roegiers, Fabrice.roegiers@fcc.edu
Patrick Seale, sealep@mail.med.upenn.edu
Ben Stanger, bstanger@mail.med.upenn.edu
Meera Sundaram, sundaram@mail.med.upenn.edu
Doris Wagner, wagnerdo@sas.upenn.edu

Class Schedule:

Lectures-Tuesday and Thursday 1:30-3:00, **Room 1101** BRBII/III
Discussions-Friday 1:30-2:30, **Room 1201** BRB II/III (**exceptions** noted on the syllabus in **bold**)

Highly Recommended Text:

Developmental Biology (9th edition) by Scott F. Gilbert

Discussions: Each week 1-2 research articles will be assigned for mandatory reading. One student each week will be required to present background material to the article to the rest of the class and lead the discussion. All students will be involved in presenting the articles at each meeting.

Students not doing a presentation of background material (if more than 12 students are enrolled) will be required to do a "News & Views" paper (only for MM Discussions), which will be due to Mary Mullins the day of the Discussion. The "News & View" will put the Discussion 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 view of potential deficiencies and advances of the article.

Guidance for writing the "News & View":

- The main finding presented by the paper should be mentioned in a succinct opening paragraph to attract the attention of those who are not experts in the field.
- More detail, background and explanation should follow, including your own views. Finish off with comments on the implications of the new work and on future research directions.
- No more than 1000 words; 1 figure (optional). Most readers will have a general scientific background, so specialized terminology should be avoided.

Exams:

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

Grading:

Grades will be based on the background presentation (or N&V paper) (20%), participation in the discussion sessions and attendance (20%), the midterm exam (30%), and the final exam (30%).

Course Website:

A course website (courseweb.library.upenn.edu/) is available at the Penn Blackboard 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 following each lecture.