

DRAFT
Zoology 400/Neuro675
Special Topics: Modeling Neurodevelopmental Disease
Spring 2013
Monday/Wednesday 2:30-3:45 pm

Course Description: This new 3-credit course will systematically explore current animal models of human diseases that affect the central nervous system. Topics will include birth defects affecting brain architecture (holoprosencephaly and neural tube closure defects), birth defects affecting the visual system, iPS cells and retinal disease, and stroke. This course is designed for graduate and advanced undergraduate students.

Course Format: Lectures, delivered by faculty instructors, will alternate with journal club-style primary literature discussions led by the students. Lectures will provide students with a broad understanding of the problem and current literature. Discussions, based on primary literature, will give students an opportunity to deepen their understanding of the topics and to develop critical reading skills. A short laboratory module will be offered to illustrate how a model organism (zebrafish) can be used to understand human disease in a modern research lab.

Instructors: Jenya Grinblat, Departments of Zoology and Neuroscience
Guest lecturers: David Gamm, *Cathy Gallagher*, Mary Halloran, Peter Lipton, Luis Populin, *Vladimir Spiegelman*, Xinyu Zhao
*** have not confirmed if italicized

Prerequisites: Introductory biology and one of the following intermediate-level courses: Genetics 466, Zoology 470, Zoology 523, or Zoology 570

Class materials: There is no textbook for this class as the field is changing rapidly and assigned reading will be drawn primarily from current literature. All reading materials will be distributed via Learn@UW prior to class.

Grading: The final grade for the course will be calculated as follows:

Literature discussion summaries (weekly)	40%
Class presentation of independent research project	25%
Written review of independent research project	25%
Class participation	10%

The final letter grade assignment will likely, but not necessarily, be made using a conventional scale (A 90-100, AB 86-89, B 75-85, BC 71-74, C 60-70, D 50-59, F < 50).

Literature discussion summaries: a short (approximately 1 page) critical evaluation of the assigned readings will be due at the beginning of class on Mondays. Students should be prepared to present and defend their analysis during discussion.

Independent research projects: In consultation with the instructor, students will select a topic that is not covered in lectures, and will develop a short lecture to present to class at the end of semester. They will also prepare a review-style article on their selected topic. Students work individually or in small groups, depending on class enrollment.

Final exam: There will be no final exam.

Office hours: To schedule additional times to meet individually, please contact Jenya Grinblat (ygrinblat@wisc.edu). Regular office hours may be announced if needed.

Week	Date	Topic	Format*
1	Wed Jan 23	Course overview	L (JG)
2	Mon Jan 28	Birth defects affecting brain architecture: neural tube defects	L (JG)
	Wed Jan 30	Birth defects affecting brain architecture: holoprosencephaly	L (JG)
3	Mon Feb 4	Birth defects affecting brain architecture	D
	Wed Feb 6	Birth defects affecting the visual system	L (JG)
4	Mon Feb 11	Birth defects affecting the visual system	D
	Wed Feb 13	iPS cells and retinal disease modeling	L (DG)
5	Mon Feb 18	iPS cells and retinal disease modeling	D
	Wed Feb 20	Lab Module: zebrafish as a model system	Lab
6	Mon Feb 25	Lab Module: zebrafish as a model system	Lab
	Wed Feb 27	Postnatal neurodevelopmental disorders	L (XZ)
7	Mon Mar 4	Postnatal neurodevelopmental disorders	D
	Wed Mar 6	Neurodegenerative disorders	L (MH)
8	Mon Mar 11	Neurodegenerative disorders	D
	Wed Mar 13	<i>Cancer</i>	L (VS)
9	Mon Mar 18	<i>Cancer</i>	D
	Wed Mar 20	ADHD	L (LP)
10	Mon Mar 25	SPRING BREAK	
	Wed Mar 27	NO CLASS	
11	Mon Apr 1	ADHD	D
	Wed Apr 3	Stroke	L (PL)
12	Mon Apr 8	Stroke	D
	Wed Apr 10	<i>Clinical application of animal research findings</i>	L (CG)
13	Mon Apr 15	<i>Clinical application of animal research findings</i>	D
	Wed Apr 17	Independent project topic selection or lab module	
14	Mon Apr 22	Independent project topic selection or lab module	
	Wed Apr 24	Student presentations	
15	Mon Apr 29	Student presentations	
	Wed May 1	Student presentations	
16	Mon May 6	Student presentations	
	Wed May 8	Wrapping up	

*** Format:**

L – lecture
D – discussion

Guest lecturers:

Mary Halloran (MH)
David Gamm (DG)
Xinyu Zhao (XZ)
Vladimir Spiegelman (VS)
Luis Populin (LP)
Peter Lipton (PL)
Cathy Gallagher (CG)