

NEUROBIOLOGY 724
DEVELOPMENTAL NEUROBIOLOGY
Fall Semester 2009

Course summary: NBIO 724 is a course that provides a comprehensive and detailed examination of contemporary research and concepts about vertebrate and invertebrate developmental neuroscience. The course is restricted to graduate students and class time is divided between lectures and discussion of the current literature.

Course Director: Dr. Franck Polleux, NRB 8109C, 966-1449, polleux@med.unc.edu

Instructors: Dr. Stephen Crews, steve_crews@unc.edu
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Dr. Benjamin Philpot, benjamin_philpot@med.unc.edu

Lectures: Tue & Thu 10:30-12:30AM in NRB 3118.

Suggested Textbook: Development of the Nervous System by Sanes et al. (2nd ed.). Supplementary readings on specific topics will also be assigned; these will be available as PDF files on Blackboard.

E-mail contact: You are free to send e-mail to your instructors, but please be aware that the instructors receive an enormous number of messages each day and cannot always respond promptly. A face-to-face conversation remains the most reliable and effective mode of communication and should be used whenever possible.

Office Hours: Please also schedule appointments by Email for additional discussion.

Grading: Grading will be based on the following:
One take-home written assignment.....100 points
In class exam100 points
Final take-home Exam.....200 points
In Class participation.....100 points
Total Points.....500 points

Please be aware that the final exam can only be taken at the designated time. This is UNC policy.

LECTURE SCHEDULE:

August

Tue 25 Lecture 1: Introduction to the developing nervous system, genetic model systems, animal models and imaging techniques (FP)
Thu 27 Lecture 2: Induction and patterning of the mammalian central nervous system-1 (LP)

September

Tue 1 Lecture 3: Induction and patterning of the mammalian central nervous system-2 (LP)
Thu 3 Lecture 4: Neurogenesis - *Drosophila* (SC)
Tue 8 Lecture 5: Cell fate specification and differentiation- *Drosophila* (SC)
Thu 10 Lecture 6: Cell fate specification and differentiation- Vertebrate (LP)
Tue 15 Lecture 7: Neuronal migration (EA)
Thu 17 Lecture 8: Glial development: radial glia and astrocytes (EA)
Tue 22 Lecture 9: Glial development: oligodendrocytes (MB)
Thu 24 Lecture 10: Neural stem cells: potential clinical applications (LP)
Tue 29 Lecture 11: Establishment of neuronal polarity (FP)

October

Thu 1 Lecture 12: Axon guidance-1 (FP)
Tue 6 Lecture 13: Axon guidance-2 (SC); **Written assignment posted on BB at 5pm.**
Thu 8 **General discussion: workgroups and problem solving**
Tue 13 **Written assignment due at 5pm.**
Thu 15 Lecture 14: Target selection and establishment of topographic maps (FP)
Tue 20 No Class: SFN meeting
Thu 22 No Class: Fall break
Tue 27 Lecture 15: Dendrite development-1 (FP)
Thu 29 Lecture 16: Dendrite development-2 (SC)

November

Tue 3 **In class exam**
Thu 5 Lecture 17: Synapse formation: cellular and molecular mechanisms (MB)
Tue 10 Lecture 18: Synaptic maintenance and elimination (BP)
Thu 12 Lecture 19: Neurotrophins: developmental functions (MD)
Tue 17 Lecture 20: Molecular mechanisms controlling neuronal cell death and survival (MD)
Thu 19 Lecture 21: Cortical development: areal specification and connectivity (FP)
Fri 27 **Final exam posted on BB at 12pm (due back Friday Dec. 4 at 5pm)**