

G4440x Topics in Neurobiology and Behavior (seminar)

Professor Rae Silver

Fall 2013. 4 pts

Monday 2:10-4 PM

Room 200C Schermerhorn

Behavioral Neuroendocrinology

Challenges related to sex, gender and behavior are appearing in the news media and the courts with unprecedented frequency. What is the science based evidence upon what decisions are made with respect to homosexuality, gender dysphoria, sex typical behaviors and abilities? How can we distinguish evidence from strong inference and from weak inference? Where does science provide insight, and where must decisions be made in the absence of scientific evidence? These are the challenges we will discuss in class based on informed understanding of scientific experiments, results and methodologies.

This course will provide a comprehensive overview of behavioral endocrinology beginning with hormone production and actions on target tissues and continuing with an exploration of a variety of behaviors and their hormonal regulation. We will use a comparative approach to examine the reciprocal interactions between the neural and endocrine systems and behavior, considering the effects of hormones on development, puberty, and adult behavior in addition to how behavior regulates endocrine physiology. While the best evidence on mechanisms of action of hormones often comes from comparative studies, we will also explore translational research and relevance to humans, where appropriate. Topics include: sexual differentiation and sex differences in behavior, reproductive, parental, and aggressive behaviors, and hormonal and behavioral homeostatic regulation.

Weekly Discussion/Questions (20% of grade). All students are required to actively participate in the course, engaging in stimulating, thought-provoking ideas and questions. Students will be assigned weekly readings related to the topic of discussion for that week and will be expected to be prepared with explanations and discussion questions related to the reading. To ensure informed and interesting discussion, students will prepare questions or issues about the readings, to be submitted at the start of each session

Student Presentations (20% of grade). Each week, two related papers will be discussed. Each paper will be presented by a student (see syllabus for the schedule), who will have 30 minutes to describe the rationale for the study, the hypothesis tested, the experimental design/methodology, and the results and conclusions drawn by the authors. Students are requested to use PowerPoint for their presentations.

Papers (60% of grade). A major portion of the student's grade for the course will be based on a paper carefully comparing and evaluating data from studies of laboratory animals and human research participants investigating current topics in behavioral neuroendocrinology, their historical roots and likely future directions. .

The body of the papers should be about 10-15 pages (12 point Times Roman font and double-spaced) and references must be included (the reference list will not be counted as

part of the 10-15 page limit). In your paper, it will be necessary to incorporate topics that are covered in the text or in class. When reviewing research studies, students should ask questions such as the following: What was the problem being studied, what was the method used to solve the stated problem, have the authors satisfied the criteria for determining causation? Can the question be addressed in human studies? If not, why not? If so, what tools would be needed?

Students are expected to make an appointment to see Prof. Silver before November 4 2013 (Election day holiday) to discuss their topics. Papers are due on the last day of classes, December 9 2011 at 5pm, both online as a word document and in a paper version. Submitted papers will be reduced one third of a letter grade for each day that they are late.

Textbook: The textbook is an excellent reference source for background material. A part of the weekly reading assignments will be drawn from the textbook. It is available at a reasonable price from online vendors.

Introduction to Behavioral Endocrinology by *Randy J. Nelson*

Synopsis of textbook. Intended for graduate students & upper level undergraduates, this textbook describes the interaction of hormones and behavior from diverse perspectives. It draws on a historical perspective, presenting current hypotheses and theories in context of their historical origins, and gives detailed information about the scientists who laid the foundation for modern studies. While the subject involves genetic, molecular, and cellular levels of analysis, Nelson has kept discussion of endocrine physiology & biochemistry down to a minimum to make the text more accessible to a wider range of readers. Each chapter ends with a summary, questions for discussion, and a short list of suggested readings. Now in full colour, this Fourth Edition retains all the features of the bestselling prior editions, and provides an integrated study of hormone--behavior--brain interactions, emphasizing a comparative approach. The text contains over 2,000 references and is accompanied by animations, video, sound files, and graphics to aid in understanding. Annotation ©2005 Book News, Inc., Portland, OR

If you would rather order directly from the website than buy the book at the Columbia bookstore, you can order from the following website for a 15% discount from the suggested list price and free standard shipping to U.S. addresses.

<http://www.sinauer.com/catalog/neuroscience/an-introduction-to-behavioral-endocrinology.html>

There is also a website available to you containing tutorials and other helpful study aids for the course. This site is available to anyone and I encourage you to look it over. Here is the link: <http://sites.sinauer.com/nelson4e/index.html>