Behravlor Neuroendocrinology
PSY 376S/NEUROSCI 366S
Tues-Thurs 4:40-5:55
Perkins LINK 2-087
classroom 3

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COURSE DESCRIPTION:

How do hormones alter behavior, and how does behavior affect an individual’s hormonal state? Have you ever wondered whether there is a scientific basis for statements like: “men and women are biologically destined to differ in mathematical and language skills”, “athletes taking anabolic steroids can become dangerously aggressive”, “mood swings during the menstrual cycle are caused by hormone changes”, or “people are born with a homosexual orientation”? This seminar will examine these issues by studying a variety of topics in the field of behavioral endocrinology including: sexual differentiation and reproductive behavior, parental behavior, aggression, biological rhythms, stress and emotions, neural plasticity, and learning & memory. We will critically evaluate both human and animal research in each of these areas as well as discuss the clinical and societal implications of the findings.

COURSE ORGANIZATION:

Be aware that this is a very interactive and writing intensive seminar (thus the “W” designation). Many of the classes will be run in a team-based learning mode. You will be expected to have read each assignment and study it prior to coming to class. In class, you will be asked to answer several questions based on the assigned material. You will answer these questions individually and then as a team, and then we will discuss the answers. Classes will also incorporate short lectures, discussion of course material and writing assignments, as well as some guest speakers and lectures.

You will be writing and talking about (and hopefully thinking, laughing and enjoying) the course material almost every day of the semester. The best part is that we get to explore topics that are both intellectually stimulating as well as bizarre, funny, and sometimes downright mind-boggling. I hope you are all willing to jump in and get involved with this class.

Short Writing assignments: There will be a number of short writing assignments due throughout the semester. These assignments should be approximately 500-600 words in length and when complete, should be posted on Sakai (instructions to come later). Each assignment will ask you to use the course material (as well as any additional research you might wish to do) to take a position or offer an opinion. You will get feedback on these assignments mainly via an Assessment Rubric that will evaluate your assignment and provide feedback on its mechanics, argument, research and creativity/complexity. These writing assignments will allow you to practice and improve your scientific writing.

Group Writing Project: Each student will be required to write a 10-15-page research paper, which will become part of a 4 chapter “book” to be turned in at the end of the semester. These papers will be written by individual students but will also involve a collaborative component. Potential paper topics in the field of behavioral neuroendocrinology will be discussed in class on 9/25 and you and your co-authors will be asked to choose a topic for your book. Each member of the group will write about the same topic but each of you will be asked to take a different “perspective” on that topic. That is, one of you will approach the topic as a behavioral neuroscientist; one of you might be a molecular or cellular neuroscientist; one of you may be a physician; one of you may be asked to consider what a psychologist/psychiatrist would have to say or an animal behaviorist or an expert on ethics, or someone from the pharmaceutical industry. Because this is a “Writing in the Discipline” class, you will work on your paper in an iterative fashion, first passing in an abstract and reference section, then a rough draft, followed by a working draft, and then the final polished paper. Along the way you will get feedback on your writing from Professor Williams, TA-Tina Tognoni, and from the other members of your team. Expect to write, rewrite, and improve your organization, critical thinking and writing. Jointly you will write an introduction to your “book” and cross-reference each other within each chapter. Final books must be turned on Friday, Dec. 7th. You should make copies of the book for
each member of the group. A more detailed description of this assignment and its format will be discussed in class on Sept. 25.

**Project Presentations:** During the last 4 classes of the semester, each group will present their book material and perspectives to the class. Each book chapter will be made available to the entire class. Your job is to present your points of view and engage the class in the topic you have been reading and writing about all semester.

**EVALUATIONS:**

- **Team based learning:** 30% (this grade will be modified by team assessments made twice during the semester)
- **Participation in class discussion:** 5%
- **Short writing assignments:** 30%
- **Group writing project:** 30%
  - 20% - your chapter
  - 10% - the quality of your teamwork assessed by the Introduction, cohesiveness of the project and team assessments.
- **Final presentations:** 5%

Note that you must attend class, participate, and produce thoughtful writing assignments if you expect a good grade. If you miss class, miss assignments, or turn in late assignments, your grade will be lowered for this portion of the class. There will be no exams, per se.

**TEXTS:**

2. Empirical papers and reviews will be available for download via Sakai.

**COURSE SCHEDULE**

<table>
<thead>
<tr>
<th>Class Meeting</th>
<th>Seminar Topics</th>
<th>Assignment</th>
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<tbody>
<tr>
<td>8/28</td>
<td>Introductions and a little history</td>
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<tr>
<td>8/30</td>
<td>How to study hormone-behavior interaction (team based learning class exercise)</td>
<td>C-1 (not section on techniques)</td>
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<tr>
<td>9/4</td>
<td>Glands, hormones and how they work (team based learning class)</td>
<td>C-2</td>
</tr>
<tr>
<td>9/6</td>
<td>Techniques to study hormones and behavior* (team based learning class)</td>
<td>C-1 (section on techniques)</td>
</tr>
<tr>
<td>9/11</td>
<td>Writing assignment #1 due at noon – Use your knowledge of sexual determination of brain and behavior to propose guidelines for separation of males and females for Olympic events. Who is female? Who is male? Sexual differentiation/sex determination (team based learning class)</td>
<td>C-3</td>
</tr>
<tr>
<td>9/13</td>
<td>Mechanism of brain differentiation from 1959-2012 (Class discussion)</td>
<td></td>
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</tbody>
</table>
9/18 Sexual orientation and gender related behaviors (team based learning class)


9/20 Neuroendocrine basis of sexual orientation and gender related behaviors (Class discussion)


9/25 Discussion of paper topics and writing – choice of paper topic

9/27 - Writing assignment #2 due at noon – Use your knowledge of the neuroendocrine control of male sexual behavior to propose whether there is a neuroendocrine treatment that could be used to treat rapists or pedophiles.

Hormonal control of male sexual behavior (team based learning class)

10/2 Roles of experience and hormones in male sexual behavior (class discussion)


10/4 Hormonal control of female sexual behavior (team based learning class)

10/9 Abstract/ref. section due (please bring to class)

Roles of testosterone and progesterone in female sexuality (class discussion)


10/11 - Assignment due at noon – Find a SfN abstract/author and ask a question/relevant for paper topic Parental Behavior (team based learning class)

10/16 Fall Break-no class

10/18 Discussion of SfN answers to questions

10/23 Aggression/Social Behavior (team based learning class)

10/25 Rough draft of paper (bring to class)

What we can learn about love and attachment from the vole (discussion class)


10/26 (optional)  **Monika R. Fleshner, Ph.D.**  “Stress, Neuroimmunune and Neuroendocrine function”
03:00PM - 04:00PM Zener Auditorium, Room 130, Sociology-Psychology Building

10/30  **Oxytocin and trust/Social reinforcement – Guest Lecturer – Steve Chang**

11/1  **Writing Assignment #3 due at noon – Using your knowledge of the neuroendocrine basis of biological rhythms, would you recommend that melatonin be taken for insomnia?**
Biological Rhythms (team based learning class)

11/2 (recommended)  **Randy Nelson**  "Effects of Light at Night on Neuroinflammation, Metabolism, and Mood"
02:30PM - 04:00PM, Love Auditorium, LSRC

11/6  **Stress**
(team based learning class)

11/8  **Stress in health and disease**
(discussion class)

11/13  **Working draft of paper due (bring to class)**
Learning and Memory (team based learning class)

11/15  **Hormones and cognition**
(discussion class)

11/20  **Group meetings (in our classroom) to discuss integration of book chapters**

11/22  **Thanksgiving Break**

11/27  **Project presentations**

11/29  **Project presentations –**

12/4  **Project presentations –**

12/6  **Project presentations –**

12/7  **Final books due**
Name: ______________________________________________________

Major: ____________________________________________________

Minor: ____________________________________________________

Concentration: _____________________________________________

Year of Graduation: _______________________________________

Current career goals and interests (please don’t just say physician, indicate what areas of medicine interest you and why)

Please rank order your interest and background in the following topics neuroendocrine topics:

____ feeding
____ neuroprotection/repair
____ parental behavior
____ sex differences in addiction
____ social behaviors – aggression, affiliation, territoriality, bonding
____ stress

Please rank order your interest in approaching topics from the following perspectives:

_____ Molecular Neuroscience
_____ Cellular Neuroscience
_____ Neural circuits
_____ Behavioral (understanding normal behavior)
_____ Evolutionary/Ecological
_____ Social - Policy

Are you more interested in understanding aberrant systems or understanding normal behavior? (circle one or the other)

Are you likely to speak up in a group setting and contribute or are you rather shy about stating your opinion? (circle one or the other)

Do you live on campus or off campus? (circle one or the other)

Are any members of the class good friends of yours—if so, please name them.

Please list all courses you have previously taken which provide a relevant background to this course, include relevant classes in neuroscience, psychology, pharmacology, biology, chemistry, evolutionary anthropology or others. List names not numbers, please.