PSY 621 Clinical Psychobiology
Spring 2014
Wed 9:00-11:50 am
Franklin 186

Instructor: Heidemarie Laurent *hlaurent@uoregon.edu
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Office Hours: By appointment

*I can best be reached via email and under normal circumstances will respond within 24 hours.

Course Description:
This class is meant to help graduate-level clinical psychology students appreciate how the development of neurobiological systems contributes to mental (and physical) health. As clinical scientists, we can use this knowledge to identify and intervene in problem trajectories. We will also touch on ways in which psychosocial and biomedical treatments impact neurobiology.

This class cannot cover every clinically relevant topic in psychobiology. We will focus on stress-responsive neural and neuroendocrine systems, and a select group of associated health outcomes and treatments. There will, however, be opportunities for students to contribute to the readings and course topics.

Although this class will begin with a brief review of stress-related neurobiology, it is not a neuroanatomy/physiology/methods class, and we will move fairly quickly into primary research content. If you do not have a strong neurobiology background coming into this class, you may find it advantageous to draw on other resources such as *The Human Brain Coloring Book* (available on Amazon, etc.), introductory cognitive neuroscience textbooks, and online tools such as the brain section of UW's Digital Anatomist (http://www9.biostr.washington.edu/cgi-bin/DA/imageform).

Course Objectives:
By the end of this class, students should be able to

1. Understand the basic structure and function of key stress regulatory neural and peripheral physiological systems.

2. Be familiar with research methodology and measures used to assess functioning in these neurobiological systems, and be able to articulate advantages and disadvantages of different approaches.

3. Show awareness of bidirectional links between biology and behavior, as well as the dynamic and contextual nature of stress adaptation.

4. Use knowledge of psychological theory and science to critically evaluate the research in stress neurobiology.

5. Develop skill writing an NIH format research proposal applying neurobiological methods to a clinical topic.

Format:
Class periods will typically start with lecture, followed by a discussion of the week's readings to which all students actively contribute.

One week will involve a grant-writing workshop in which students have time to work on developing grant topics, and the final week of class will be devoted to presentations of grant proposals.

Course Requirements and Grading:

Attendance and participation (20%): Students are expected to be in class and ready to participate in class discussion. If you have any unavoidable conflicts (i.e., a conference presentation), let me know as soon as possible.

Discussion questions (20%): Each student is expected to submit 2 questions based on the week's readings by 7pm the day before class (Tues) on the Blackboard journal. Questions need not be long, but should aim to go beyond surface-level clarification of the articles to probe underlying issues and/or connect across readings. During the discussion portion of class, students are responsible for raising and engaging in discussion of their questions.

Student-driven topics (30%): Each student will nominate additional readings for one of the student-selected topics in weeks 8-9. By the third class meeting, the 4 topics to be covered in those weeks will be finalized, and students will be assigned to one of those topics (based as much as possible on preference).

Students will lead a brief presentation followed by discussion during the class period associated with their topic. This means preparing a 10-15 minute slide presentation, and using knowledge of the topic and other students' questions to structure and stimulate class discussion.

Grant proposal and presentation (30%): Students will work on a grant proposal that addresses a topic relevant to clinical psychobiology, formatted as an NIH R21 (1p Specific Aims + 6p Research Strategy). Further guidelines for the proposal are posted on Blackboard. Class time during week 5 is reserved for discussing the grant

content and review criteria, and for formulating ideas. Each student will turn in a grant application before the final class and will present it during week 10.

Grades will be assigned based on the following overall percentages:

A = 90-100
B = 80-89
C = 70-79
D = 60-69
F = < 60

If you are concerned about your performance in the course, please feel free to contact me to discuss this further and, if needed, what you can do to improve – the sooner, the better, but certainly before the last week of classes.

Support for Students:
If you have a documented disability and anticipate needing accommodations in this course, please make an appointment with me during the first week of the term to discuss what you will need. You should also request that the Counselor for Students with Disabilities send a letter verifying your disability. Disabilities include (but are not limited to) neurological impairment, orthopedic impairment, traumatic brain injury, visual impairment, hearing impairment, chronic medical conditions, emotional/psychological disabilities, and learning disabilities. The University of Oregon is an equal-opportunity, affirmative-action institution committed to cultural diversity and compliance with the Americans with Disabilities Act.

Academic Misconduct:
At this stage of training, I do not expect this to be an issue, but just to be clear, you are expected to do your own work in this class. This means that while you are allowed (even encouraged) to discuss ideas with others and to solicit feedback from classmates and/or professors on your written work, the discussion questions and papers you turn in should represent your own thinking, with appropriate citations for sources you have used. Any cases of suspected misconduct, including plagiarism or cheating, will result in a "0" grade for that assignment, and will be reported to the Office of Student Conduct. For further information about definitions of misconduct and conduct code violations, see
http://uodos.uoregon.edu/StudentConductandCommunityStandards/StudentConductCode/tabid/69/Default.aspx

Class Schedule

4/2 Basics of Stress Neurobiology

Joëls, M., & Baram, T. Z. (2009). The neuro-symphony of stress. *Nature Reviews Neuroscience, 10,* 459-466.

Andrews, J., Ali, N., & Pruessner, J. C. (2013). Reflections on the interaction of psychogenic stress systems in humans: The stress coherence/compensation model. *Psychoneuroendocrinology, 38, 947-961.*

Ellis, B. J., Jackson, J. J., & Boyce, W. T. (2006). The stress response systems: Universality and adaptive individual differences. *Developmental Review, 26,* 175-212.

4/9 Genetics and Early Adversity

Anda, R. F., Felitti, V. J., Bremner, J. D., Walker, J. D., Whitfield, C., Perry, B. D., . . . & Giles, W. H. (2006). The enduring effects of abuse and related adverse experiences in childhood: A convergence of evidence from neurobiology and epidemiology. *European Archives of Psychiatry and Clinical Neuroscience, 256,* 174-186.

Kim-Cohen, J., & Gold, A. L. (2009). Measured gene-environment interactions and mechanisms promoting resilient development. *Current Directions in Psychological Science, 18,* 138-142.

Champagne, F. A. (2010). Early adversity and developmental outcomes: Interaction between genetics, epigenetics, and social experiences across the life span. *Perspectives on Psychological Science, 5,* 564-574.

Labonté, B., Suderman, M., Maussion, G., Navaro, L., Yerko, V., Mahar, I., . . . & Turecki, G. (2012). Genome-wide epigenetic regulation by early-life trauma. *JAMA Psychiatry, 69,* 722-731.

4/16 Sensitivity to Context and Adaptive Calibration

Boyce, W. T., & Ellis, B. J. (2005). Biological sensitivity to context: I. An evolutionary-developmental theory of the origins and functions of stress reactivity. *Development and Psychopathology, 17,* 271-301.

Del Giudice, M., Ellis, B. J., & Shirtcliff, E. A. (2011). The adaptive calibration model of stress responsivity. *Neuroscience and Biobehavioral Reviews, 35,* 1562-1592.

Ellis, B. J., & Del Giudice, M. (2014). Beyond allostatic load: Rethinking the role of stress in regulating human development. *Development and Psychopathology,* 1-20.

Hostinar, C. E., & Gunnar, M. R. (2013). The developmental effects of early life stress: An overview of current theoretical frameworks. *Current Directions in Psychological Science, 22,* 400-406.

4/23 Psychological Effects of Stress – Mood Disorders and Treatments

Mahar, I., Bambico, F. R., Mechawar, N., & Nobrega, J. N. (2014). Stress, serotonin, and hippocampal neurogenesis in relation to depression and antidepressant effects. *Neuroscience and Biobehavioral Reviews, 38,* 173-192.

Petrik, D., Lagace, D. C., & Eisch, A. J. (2012). The neurogenesis hypothesis of affective and anxiety disorders: Are we mistaking the scaffolding for the building? *Neuropharmacology, 62,* 21-34.

DeRubeis, R. J., Siegle, G. J., & Hollon, S. D. (2008). Cognitive therapy vs. medications for depression: Treatment outcomes and neural mechanisms. *Nature Reviews Neuroscience, 9,* 788-796.

Paul, N. A., Stanton, S. J., Greeson, J. M., Smoski, M. J., & Wang, L. (2013). Psychological and neural mechanisms of trait mindfulness in reducing depression vulnerability. *Social Cognitive and Affective Neuroscience, 8,* 56-64.

4/30 Grant Workshop

5/7 Somatic Effects of Stress – Inflammation and Metabolic Syndrome
(Josh Snodgrass guest lecture)

Singh, R. B., Gupta, S., Dherange, P., De Meester, F., Wilczynska, A., Alam, S. E., Pella, E., & Wilson, D. W. (2012). Metabolic syndrome: A brain disease. *Canadian Journal of Physiological Pharmacology, 90,* 1171-1183.

Silverman, M. N., & Sternberg, E. M. (2012). Glucocorticoid receptor regulation of inflammation and its functional correlates: From HPA axis to glucocorticoid receptor dysfunction. *Annals of the NY Academy of Sciences, 1261,* 55-63.

Wentworth, B. A., Stein, M. B., Redwine, L. S., Xue, Y., Taub, P. R., Clopton, P., Nayak, K. R., & Maisel, A. S. (2013). Post-traumatic stress disorder: A fast track to premature cardiovascular disease? *Cardiology Review, 21,* 16-22.

Groesz, L. M., McCoy, S., Carl, J., Saslow, L., Stewart, J., Adler, N., . . . & Epel, E. (2012). What is eating you? Stress and the drive to eat. *Appetite, 58,* 717-721.

5/14 Executive Function Training
(Elliot Berkman guest lecture)

Braver, T. S., Paxton, J. L., Locke, H. S., & Barch, D. M. (2009). Flexible neural mechanisms of cognitive control within human prefrontal cortex. *Proceedings of the National Academy of Sciences of the United States of America*, *106*, 7351–7356.

Diamond, A., & Lee, K. (2011). Interventions Shown to Aid Executive Function Development in Children 4 to 12 Years Old. *Science*, *333*, 959–964.

Hakamata, Y., Lissek, S., Bar-Haim, Y., Britton, J. C., Fox, N. A., Leibenluft, E., et al. (2010). Attention bias modification treatment: A meta-analysis toward the establishment of novel treatment for anxiety. *Biological Psychiatry*, *68*, 982–990.

Teper, R., Segal, Z. V., & Inzlicht, M. (2013). Inside the Mindful Mind: How Mindfulness Enhances Emotion Regulation Through Improvements in Executive Control. *Current Directions in Psychological Science*, *22*, 449–454.

5/21 Student-Nominated Topics

5/28 Student-Nominated Topics

6/4 Grant Presentations