

AN408: Hormones and Behavior

Fall 2011

Instructor: Benjamin Campbell

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Office Hours: M& Weds: 2:30 – 4:30

Course Description

This course provides an overview of the dynamic field of human hormones and behavior. Basic neuroendocrine mechanisms are presented. The reciprocal role between hormones and behavior is highlighted throughout the course. Emphasis is given to human naturalistic and clinical populations. Examples cover a range of topical interests, including sexual behavior, parenting, aggression, and the stress response. Research methods are highlighted, especially the development of a research question and research design.

Course Objectives: Students will grapple with current theoretical and empirical evidence concerning human hormones and behavior. The value of comparative research, especially experimental findings from non-human rodents and primates, will also be emphasized. Through readings, students will develop critical thinking skills to assess research on human hormones and behavior. Particular attention will be paid to the design of research concerning human hormones and behavior.. Through a research paper, students have the opportunity to apply course concepts and examples to a topic of particular interest. An aim of this course is to foster undergraduate and graduate research projects here at UWM focused on some facet of human hormones and behavior.

Course Requirements and Grading

Assigned reading: Nelson, R. 2009. *An Introduction to Behavioral Endocrinology*, 4th edition. Sunderland, MA: Sinauer. Additional assigned readings will be available on the course web-site.

Exams and grading: Two exams are given in the course, a midterm (20%) and a cumulative final (35%). Summary of the weekly journal reading (25%). There will also be an end of the semester presentation (15%).

GENERAL POLICIES:

You should always feel free to ask questions, share ideas, and express your opinions. At the same time, I expect all students to be courteous and respectful at all times. Behavior that may be distracting to other students in the class will not be tolerated. All noise-making electronic devices should be turned off in class. Laptops are acceptable, but only to take notes—NOT to surf the web, check your email, etc. Please refrain from reading the paper, chatting with your neighbors, or coming late or leaving early (unless you notify me ahead of time that this will be necessary). If you miss a class meeting, it is your responsibility to borrow notes from another student.

Cheating, plagiarism, or any other form of academic dishonesty will not be tolerated. No exceptions. The following web page provides more information about your rights and responsibilities as a student: www.uwm.edu/Dept/SecU/SyllabusLinks.pdf. Also, please contact me as soon as possible if you require any special accommodations in order to complete the requirements for this course.

Course Outline

Week 1 (Sept 7): Introduction and course overview

Principles of the central nervous and endocrine systems). (*Chapter 1*) Bribiescas, RG & Muehlenbein MP. Evolutionary Endocrinology In: Muehlenbein, M., ed. *Human Evolutionary Biology*. New York: Cambridge University Press.

Week 2 (Sept. 12, 14): Varieties of hormones: releasing hormones, trophic hormones, protein and steroid hormones; Circadian, seasonal and circannual rhythms; Methods of study of hormonal systems: experimental models, use of bodily fluids, receptor study (*Chapters 2, 10*).

Week 3 (Sept. 19,21): Sexual differentiation; organizational and activating influences (*Chapter 3*); Pasterski V, Hindmarsh P, Geffner M, Brook C, Brain C, Hines M. 2007. Increased aggression and activity level in 3- to 11-year-old girls with congenital adrenal hyperplasia (CAH). *Horm Behav.* 2007 Sep;52(3):368-74.

Week 4 (Sept. 26, 28): Sex Differences in Behavior

(*Chapter 4*). Correia HR, Balseiro SC, de Areia ML. 2005 Are genes of human intelligence related to the metabolism of thyroid and steroids hormones? - endocrine changes may explain human evolution and higher intelligence. *Med Hypotheses.* 65:1016-23.

Week 5 (Oct. 3, 5): Life history organization of hormone systems; pregnancy, birth and lactation in females; growth, maturation and senescence

Campbell, BC 2011. Adrenarche and Middle Childhood *Human Nature* in press

Week 6 (Oct 10, 12): Ovarian cycles; ovarian steroids and female cognition; adult female reproductive behavior (*Chapter 6*); Videan EN, Fritz J, Heward CB, Murphy J. 2006. The effects of aging on hormone and reproductive cycles in female chimpanzees (Pan troglodytes). *Comp Med.* 56:291-9.

Week 7 (Oct 17, 19): Adult male steroid hormones and reproductive behavior

(*Chapter 5*); Wobber V, Hare B, Maboto J, Lipson S, Wrangham R, Ellison PT. 2010. Differential changes in steroid hormones before competition in bonobos and chimpanzees. *Proc Natl Acad Sci U S A.* 107:12457-62.

Week 8 (Oct. 26,28): Aggression and affiliative behavior

(*Chapter 8*); Taylor, SE, Cousing Klein, L, Lewis, BP, Gruenewald, TL, Gurung, RAR, Updegraff, JA. 2000. Biobehavioral responses to stress in females: tend-and-befriend, not fight-or-flight. *Psychological Review* 107: 411-429.

Week 9 (Oct 31, Nov 2): Parenting behavior

(Chapter 7) Gray, PB, Parkin JC, Samms-Vaughan, ME. 2007. Hormonal correlates of human paternal interactions: A hospital-based investigation in urban Jamaica. *Hormones and Behavior* 52: 499-507.

Week 10 (Nov 7,9): Homeostasis and behavior; energetic factors and behavior

(Chapter 9); Spiegel, K, Leproult, R and Van Cauter, E. 1999. Impact of sleep debt on metabolic and endocrine function. *The Lancet* 354: 1435-1439.

Week 12 (Nov 14,16): Stress response system

(Chapter 11); Emery Thompson M, Muller MN, Kahlenberg SM, Wrangham RW. 2010. Dynamics of social and energetic stress in wild female chimpanzees. *Horm Behav.* 58:440-9.

Week 13 (Nov. 21, 23): Learning and memory; Hormones and mood (Chapters 12, 13);

Bloch, M., Daly, R.C. and Rubinow, D.R. 2003. Endocrine factors in the etiology of postpartum depression. *Comprehensive Psychiatry* 44: 234-246.

Week 14 (Nov 28, 30): Student Presentations

Week 15 (Dec 5, 7): Student Presentations

Week 16 (Dec. 12, 14) Presentation Summary and Course Review

FINAL EXAM Dec. 19th 12:30-2:30