Sociology 636b  
Ecology & Evolutionary Biology 636b  
Topics in Biosocial Science  

Wednesday 4:30–6:30 p.m.  
Spring Term 2018  
Location: Room 335, 17 Hillhouse Ave.

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Course Description:

This graduate seminar (with limited enrollment, but open to all graduate students at Yale, and undergraduates with permission) will cover topics at the intersection of the natural and social sciences, including behavior genetics, gene-environment interactions, gene-culture co-evolution, social epigenetics, and diverse other topics. We will focus on the ways in which our genes and our bodies are in a (short and long) conversation with our social environment. To what extent does our genetic makeup influence our behaviors? To what extent do our behaviors and social experiences influence our genes? To what extent do our genes increase or decrease our risk for particular outcomes given particular environmental exposures? What are the biological bases of resilience? And how does the social environment come to regulate our genome? How do social exposures reshape neural and endocrine processes? How do social exposures “get under our skin”? How are they literally embodied?

This class is a topical seminar, meaning that the material covered each year will vary, and that it will be driven by student interest and fresh scientific discoveries. We are going to run this seminar jointly, and students will suggest topics, articles, critiques, and so on, at will. Students will also lead classes, and suggest topics and readings for those classes. As a result, the syllabus will likely change as the semester progresses. Each student will lead one or more classes (depending on enrollment and topics). A set of proposed topics and readings for the first part of the course is laid out below.
Course Requirements:

- class participation (20%)
- in-class presentation(s) (30%)
- final paper (50%)

Students will sign up to lead or co-lead one or two of the classes during the semester (depending on enrollment and topics chosen).

The final paper (approximately 20 pages) may either be: 1) an actual research paper the student is working on, 2) a research proposal, or 3) a more conventional term paper or literature review. Guidelines for each will be discussed in class.

You should ensure that any written work you submit for evaluation is the result of your own research and writing, and that it reflects your own approach to the topic. You must also adhere to standard citation practices and properly cite any books, articles, websites, etc..

Remember: Academic integrity is a core institutional value at Yale. This includes, among other things, truth in presentation; diligence and precision in citing works and ideas; and acknowledging collaborations with others. In view of our commitment to maintaining the highest standards of academic integrity, the Graduate School Code of Conduct specifically prohibits the following forms of behavior, as you might easily expect: cheating on all forms of assessment; falsification or fabrication of data; plagiarism (i.e., the failure in any written exercise to acknowledge ideas, research, or language taken from others); and multiple submission of the same work without obtaining explicit written permission from both instructors before the material is submitted. Students found guilty of violations of academic integrity are subject to one of several nasty penalties, according to the rules of Yale University.

While there are no pre-requisites for this course, a year-long course in biology is recommended.
Class 1: January 17
Course Introduction

Class 2: January 24
Reductionism, Essentialism, Determinism, Positivism

along with Responses and Rejoinders, *Perspectives on Politics*, 2013; 11: 490-524

Class 3: January 31
The Social as a Cause of the Biological

L. Jin, F. Elwert, J. Freese, and N.A. Christakis, “Preliminary Evidence Regarding the Hypothesis that the Sex Ratio at Sexual Maturity May Affect Longevity in Men,” *Demography* 2010; 47: 579-586

Class 4: February 7
Animal Society and Culture


**Class 5: February 14**

**Social Networks, Social Interactions, and Friendship**

B Hare, V. Wobber, and R. Wrangham, “The Self-Domestication Hypothesis: Evolution of Bonobo Psychology Is Due to Selection Against Aggression,” *Animal Behaviour* 2012; 83; 573-585
Herrmann E, Call J, Hernàndez-Lloreda MV, Hare B, Tomasello M. “Humans have evolved specialized skills of social cognition: the cultural intelligence hypothesis.” Science 2007; 317: 1360-1366.

**Class 6: February 21**

**Behavior Genetics**


**Class 7: February 28**

**Gene-Environment Interactions**


Class 8: March 7
Social Epigenetics

Environmental and Molecular Mutagenesis 2008; 49: 46–60
D.K. Morgan, E. Whitelaw, “The Case for Transgenerational Epigenetic Inheritance in Humans”
Mammalian Genome 2008; 19: 394-397
B.G. Dias and K.J. Ressler, “Parental Olfactory Experiences Influence Behavior and Neural
M. Szfyf, “Lamarck Revisited: Epigenetic Inheritance of Ancestral Odor Fear
Methylation in Glucoregulatory Genes of Offspring Born Before Versus After Maternal
Gastrointestinal Bypass Surgery,” PNAS: Proceedings of the National Academy of Sciences
2013; www.pnas.org/cgi/doi/10.1073/pnas.1216959110
L. Lam et al., “Factors Underlying Variable DNA Methylation in a Community Cohort,” PNAS:

C.S. Moller-Levet et al., “Effects of Insufficient Sleep on Circadian Rhythmicity and Expression
Amplitude of the Human Blood Transcriptome,” PNAS: Proceedings of the National Academy of Sciences
2013; 110: E1132-E1141
A. Ost et al., “Paternal Diet Defines Offspring Chromatin State and Intergenerational Obesity,”
Cell 2014; 159: 1352-1364.

March 9–25
NO CLASS, Spring Break

Class 9: March 28
Swarm Intelligence and Animal Voting

36-43
Levin, and N.E. Leonard, “Uninformed Individuals Promote Democratic Consensus in
Animal Groups,” Science 2011; 334: 1578-1580
decision making and collective behaviour in humans,” Phil. Trans. R. Soc. B 2009; 364: 781-
789.
G. Tziralis and I. Tatsiopoulos, “Prediction Markets: An Extended Literature Review,” Journal
H. Shirado and N.A. Christakis, “Locally Noisy Autonomous Agents Improve Global Human
Coordination in Network Experiments,” Nature 2017; 545: 370-375
Ecology & Evolution 2010; 25: 28-34
During the latter part of the semester, we will pick topics to discuss. Possibilities include the following, as well as any others students may suggest:

Kin Recognition  
Gene-Culture Co-Evolution  
Partner Choice, Monogamy, and Pair Bonding  
Facial Symmetry and Beauty  
Neural correlates of social decision-making and experience (self perception, confidence, risk taking, novelty seeking, cooperation, etc.)  
Animal Cognition and Decision Making  
Neuroplasticity  
Evolution of Cooperation  
The Genetics of Personality  
Race, Caste, Groups, and Genetics  
Convergent Evolution in Social Processes  
Evolution of Music and Art  
Biological and Social Emergence  
Biologically Inspired Engineering  
Human Pheromones  
Philosophers on the “State of Nature”

Class 10: April 4

Class 11: April 11

Class 12: April 18

Class 13: April 25