

# HUMAN/PRIMATE EVOLUTIONARY GENETICS

ANT 388  
SPRING 2014

**COURSE INFORMATION:** Unique #31845  
Thursday 11 am - 2 pm, SAC 5.118

**COURSE INSTRUCTOR:** Dr. Deborah Bolnick  
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Office Hours: SAC 4.148, MW 1-2 pm *or by appointment*

## COURSE DESCRIPTION:

This course will examine the evolutionary history of humans and non-human primates from a genetic perspective. The beginning of the course will provide an overview of genomics, population genetics, and evolutionary genetic theory as pertains to the study of humans and other primates. We will then focus on applications of molecular data to questions and current issues in the study of human evolution/migration and primatology. Emphasis will be placed on the critical analysis and discussion of recent literature, so students are expected to complete all readings before class and come prepared to actively participate in class discussion. Students will also gain hands-on experience with laboratory techniques and the quantitative methods used to analyze genetic data.

## COURSE REQUIREMENTS:

- 1. Seminar Coordination (25%).** Each student will help organize and lead the class discussion on two days over the course of the semester. The student leader is expected to (a) help select the assigned readings, (b) briefly present the core ideas found in the readings (PowerPoint slides or handouts may be prepared if you think they would be helpful), and (c) prepare a set of topics, questions, and other relevant classroom activities to help structure the class period and guide the class discussion. You should consult with the instructor in office hours or by email as you select readings and prepare to lead the class discussion.
- 2. Class Participation (25%).** Each student is expected to complete all assigned readings before class and participate fully in all discussions. To facilitate discussion, all students must come prepared with *at least* two questions and/or observations about each assigned reading. The participation grade will also include grades for two short presentations on January 23 and January 30.
- 3. Written Commentaries (15%).** Over the course of the semester, each student will write five 1-page (double-spaced) commentaries on the readings assigned for a given week, with the commentary due in class on the day those readings are discussed. You may choose which five sets of readings you wish to focus on, although you should not write/submit a commentary when you are leading discussion or giving a presentation in class. This assignment is intended to facilitate careful, critical thought about the topic and readings before class. Your commentary may focus on one or several readings, and it may raise questions or concerns, discuss a point that seems particularly important, synthesize material from different sources, suggest additional research that is needed to resolve an issue, etc. Your commentary should not simply be a summary of the readings.

**4. Genetics Exercises (10%).** Two homework exercises will be assigned that involve the analysis of molecular data. Exercises will be graded on both accuracy and effort, and are due on February 6 and March 20.

**5. Research Proposal and Presentation (25%).** Each student will write a 10-12 page (double-spaced) research proposal on a relevant topic of your choice and in the format of a NSF Dissertation Improvement Grant proposal (guidelines will be distributed at a later date). A 1-page overview of your proposal (the Project Summary) is due on March 6 (5%). After receiving feedback on your Project Summary, you will complete your proposal and turn in the final product on May 1 (15%). Each student will also give a 15-17 minute presentation of their proposal on that day (5%).

#### **REQUIRED READINGS:**

1. Jobling M, Hollox E, Hurles M, Kivisild T, and Tyler-Smith C. 2004. *Human Evolutionary Genetics*. Second Edition. New York: Garland Science. ISBN #0815341482.
2. Other required readings will be available on the course website.

If you do not understand a concept, method, or other topic, you are expected to follow up with additional readings. Additional reading suggestions can be found at the end of each chapter in the textbook, in the references listed in the journal articles, or by talking to the instructor.

#### **COURSE WEBSITE:**

Class information, handouts, and required readings will be available at the course website on Blackboard (<http://www.courses.utexas.edu>). Course updates will also be sent to your university e-mail account. Please check both regularly.

#### **CLASSROOM POLICIES:**

(1) Attend all classes and arrive on time whenever possible. (2) Do not use your cell phone, send emails or texts, or visit websites during class. (3) Please let me know if you have any problem that is preventing you from performing satisfactorily in this class.

#### **GRADING POLICIES:**

If the research paper is turned in late, the assignment grade will be lowered by 10% for each day that it is late. If a serious issue (i.e. illness, family death, etc.) arises that may prevent you from attending class or turning in the paper on time, contact me by e-mail or phone as soon as possible to discuss a make-up assignment or deadline extension.

Final letter grades will be assigned using the following scale: A (90-100%), B (80-89%), C (70-79%), D (60-69%), F (0-59%). Plus/minus grades will be assigned.

**Re-grading Policy:** If you believe your paper was graded incorrectly, submit a written request for a re-grade within one week of when the graded paper was returned. The written request should include an explanation of your position and be attached to the graded paper.

**Academic Dishonesty:** Each student in this course is expected to abide by the University of Texas Honor Code. Any work submitted by a student in this course for academic credit must be the student's own work. Any cheating or plagiarism will be reported to the Dean of Students, and the penalty may also include failure of the course and University disciplinary action. For

more information, see <http://www.lib.utexas.edu/services/instruction/learningmodules/plagiarism> and <http://deanofstudents.utexas.edu/sjs>.

**Accommodations:** Students with disabilities or a chronic illness may request appropriate academic accommodations from the Division of Diversity and Community Engagement, Services for Students with Disabilities at <http://www.utexas.edu/diversity/ddce/ssd>, 471-6259 (voice), or 232-2937 (video phone). Please notify me as soon as possible of any accommodations that will be needed.

**Religious Holy Days:** By UT Austin policy, you should notify the instructor of your pending absence at least fourteen days prior to the date of observance of a religious holy day. If you must miss a class in order to observe a religious holy day, I will give you an opportunity to make up the missed participation points within a reasonable time after the absence.

**BEHAVIOR CONCERNS ADVICE LINE (BCAL):**

If you are worried about someone who is acting differently, you may use the Behavior Concerns Advice Line to discuss by phone your concerns about another individual's behavior. This service is provided through a partnership among the Office of the Dean of Students, the Counseling and Mental Health Center (CMHC), the Employee Assistance Program (EAP), and The University of Texas Police Department (UTPD). Call 512-232-5050 or visit <http://www.utexas.edu/safety/bcal>.

**EMERGENCY EVACUATION POLICY:**

Occupants of UT buildings are required to evacuate and assemble outside when a fire alarm is activated or an announcement is made. Please be aware of these evacuation policies:

(1) Familiarize yourself with exits to the classroom and building. The nearest exit may not be the one you used when you entered the building. (2) If you require assistance to evacuate, inform the instructor in writing during the first week of class. (3) In the event of an evacuation, follow the instructor's directions. (4) Do not re-enter a building unless you're given instructions by the Austin Fire Department, the UT Austin Police Department, or the Fire Prevention Services office.

**SCHEDULE OF TOPICS, READINGS, AND IMPORTANT DATES:**

**January 16 Introduction; DNA Extraction and PCR Lab**

Reading:

*Human Evolutionary Genetics* chapters 2 and 3.

**January 23 Studying Genetic Diversity: Laboratory Assays & Evolutionary Processes**

Reading:

*Human Evolutionary Genetics* chapters 4 and 5.

Additional articles to be announced.

**January 30 Making Genetic Inferences; DNA Sequence Analysis Lab**

Reading:

*Human Evolutionary Genetics* chapter 6.

Additional articles to be announced.

**February 6 Human/Primate Evolution; Genetic Exercise #1 Due**

Reading:

*Human Evolutionary Genetics* chapters 7 and 8.

Additional articles to be announced.

**February 13 Primate Behavioral Genetics**

Reading:

Additional articles to be announced.

**February 20 Origins and Dispersal of Modern Humans**

Reading:

*Human Evolutionary Genetics* pp. 283-306 and chapter 11.

Additional articles to be announced.

**February 27 Neandertal and Denisovan DNA**

Reading:

*Human Evolutionary Genetics* pp. 123-128 and 307-314.

Additional articles to be announced.

**March 6 Global Diversity Patterns; Research Proposal Summary Due**

Reading:

*Human Evolutionary Genetics* chapter 10.

Additional articles to be announced.

**March 13 No Class (Spring Break)**

**March 20 Prehistoric Human Migration; Genetic Exercise #2 Due**

Reading:

*Human Evolutionary Genetics* chapters 12 and 13.

Additional articles to be announced.

**March 27      Admixture**

Reading:

*Human Evolutionary Genetics* chapter 14.

Additional articles to be announced.

**April 3            Recent Human Evolution**

Reading:

*Human Evolutionary Genetics* chapter 15.

Additional articles to be announced.

**April 10          No Class (AAPA Meeting)**

**April 17          Disease and Evolution**

Reading:

*Human Evolutionary Genetics* chapters 16 and 17.

Additional articles to be announced.

**April 24          Topic To Be Determined**

Reading:

Additional articles to be announced.

**May 1            Student Presentations; Research Proposal Due**