Genes and Behavior, IB432, Spring 2018
Course Information and Policies

Class: NHB 2083, Tues. and Thurs. 2:00-3:20 PM
Instructor: Prof. Charlie Whitfield; email: cww@illinois.edu
Office Hours: 11 - 12 Tuesdays and by appointment; 422 Morrill Hall

Course Objectives

1. Learn how to read primary research papers. For each paper, we can dissect it with a set of questions: what is the main question/hypothesis? how did they set about testing this? etc. When describing a topic, we should be able to answer: what do we know? and how do we know it?

2. Become familiar with how accurate descriptions of animal behavior are obtained.

3. Understand both mechanistic (proximate) and evolutionary (ultimate) explanations of behavior.

4. Learn about the latest research that links genes to behavior, with an appreciation of the complex physiological processes that mediate gene action on behavior, in the appropriate ecological context.

5. Appreciate the scientific and ethical controversies surrounding the study of genes and behavior, and issues related to public understanding of this research.

Topics by Week

Introduction: What is a Behavioral Gene?
Dominance in Cichlid Fish
Courtship in Fruit Flies
Aggression and Gene x Environment Interactions in Humans
From Eugenics to Consumer Genomics to Gene Editing
Acoustic Communication in Song Birds
Speech in Humans and its Roots in Animals
Maternal Care and Epigenetics in Rats
Social Monogamy in the Prairie Vole
Novelty Seeking in Mammals and Honey Bees
Human Genome Variation and Behavior
[Students suggest and vote on topic for this week]
[Professor picks timely topic for the last full week]

Online Resources
The class has a Moodle page at: https://learn.illinois.edu/course/view.php?id=28182. There are several things to find here:
• **Reading assignment (each class).** Each day we will cover one or more readings. Usually these will consist of one research paper and possibly associated reviews and/or newspaper or blog articles.

• **Pre-class discussion forum (each class).** You will be required to discuss papers with your group before each class. There will be study questions to help get your discussion going.

• **Additional resources / in the news / fun stuff (at the bottom of each week).** I’ll post links relevant to understanding the week’s material here, including to basic reference material, newspaper articles or media that seems relevant for the week.

• **Glossary of important terms (at the top).** This is an optional assignment where I list vocabulary terms for each week. You supply definitions. I suggest you look at these before you read the week’s papers, looking up terms you don’t know. It’s best if you write definitions in your own words from your own understanding rather than copying from somewhere.

• **Participation/extra credit activities (at the top).** This section contains links to several forums you need to go for full participation and extra credit, including a place to record when you are group leader, discussion for student selected topic (week 14), in the news, and after-the-paper questions and discussion forum.

**Reading Assignments**

As a frontier area in biology, the best way to approach the topic is to read the gene-behavior papers themselves. We will read a lot of papers over the semester! Your assigned readings are mostly key papers from the primary scientific literature. These will include older “landmark” papers, newer controversial or possibly ground-breaking papers (not all of these will stand the test of time), and some papers from local UIUC genes and behavior researchers. I also have tried to find well-written and accurate newspaper articles for some topics to make your entrée to the primary literature a bit less painful. There will be other newspaper reading that will be useful in discussing/understanding public perception and scientific communication to the public.

Read all papers before class. For discussion, you must have the paper in hand at class time. This can be on old fashioned paper, laptop or tablet. Please don’t try to read papers on a small phone screen! Contact me if you need special arrangement for a paper printout.

**Class Discussion and Attendance**

This is a paper reading and discussion class. **Attendance and participation are essential!** Most classes will be held as relatively informal paper discussions, with ample time for questions as they arise. Because the class is too large for open discussion format, we will break up into groups of 5 – 6 students for discussion. Each group will have a “discussion leader” (rotated each week) to
make sure important points are covered and to help move things along. I will ask discussion leaders to present to the class some part of the paper. I will make the class shuffle groups once half-way through the course.

Students in the class are from a variety of backgrounds (the class is listed under IB, NEURO, PSYC and ANTH) so I support an environment where questions can be asked at any level, from basic concepts to methods to big picture. I will give occasional “mini-lectures” to cover some foundational material. However, more often I will point to external optional reading where you can brush up on fundamental concepts.

25% of your grade will be based on quizzes, which are given at the beginning of many classes. There will be roughly 15 quizzes and I will allow you to drop the lowest score. The quizzes are in part an attendance check and in part a reading test. They should be fairly easy if you have made a good attempt at reading and understanding the paper. I will let you make up quizzes if you have a legitimate excuse for absence. I will not let you make them up if you miss one because you were 5 minutes late to class.

An additional 10% “extra credit” (basically, a whole letter grade) can be earned by active participation in the class. This includes acting as discussion leader for your group and generally being engaged, both asking and answering questions. You can also gain points by engaging in extra online activities, including posting in the Current Genes and Behavior News forum and in the Student Topic selection forum. (However, you’ll still need good class participation to get full credit here.)

Online Pre-Class Discussion Forum
25% of your grade will be based on participation in the online pre-class discussion forums. For each class I will post a set of study questions for you to answer based on the day’s assigned reading. After you post your answers, you can view answers from other students in your group and post additional questions or discussion points. You will be graded for both your answers and your responses to other’s posts. WARNING: Moodle will not let you see or post additional comments for 30 minutes after your initial answers post, and I won’t give credit for anything posted after class starts -- please plan your time accordingly. (I’d prefer to see all posts finished the day before class, but don’t require it.)

Exams
There will be one midterm exam given in class on Tuesday, March 6. It will include a list of vocabulary terms for you to define (about 20% of total points) and about 6 essay questions (about 80%). The midterm will be worth 25% of your class grade. There will be an in-class final given on the last day of class, May 1, covering primarily the second half of the class. It will be the same format as the midterm and also will be worth 25% of your class grade. Make
up exams can be given for anyone who gives prior notification and has a legitimate exam conflict. If you are absent without prior notification and legitimate conflict then you will receive zero for that exam.

**Grades**

If you score perfect grades, your point total would be:

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online discussion</td>
<td>25</td>
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<tr>
<td>Quizzes</td>
<td>25</td>
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<tr>
<td>Midterm</td>
<td>25</td>
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<tr>
<td>Final Exam</td>
<td>25</td>
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<tr>
<td>Plus extra credit:</td>
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<tr>
<td>Participation (in-class discussion + extra online)</td>
<td>10</td>
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The course grade will be derived directly from your overall numerical average, without the use of a curve:

- $\geq 100$ and * = A+
- $\geq 93 = A$
- $90-92.99 = A-$
- $87-89.99 = B+$
- $83-86.99 = B$
- $80-82.99 = B-$
- $77-79.99 = C+$
- $73-76.99 = C$
- $70-72.99 = C-$
- $67-69.99 = D+$
- $63-66.99 = D$
- $60-62.99 = D-$
- 55-59.99% F or D-; depending on any possible extenuating circumstances
- 83-89.99% B- to A+
- 77-79.99% C+ to A+
- 70-72.99% C- to A-
- 67-69.99% D+ to B+
- 63-66.99% D to B
- 60-62.99% D- to B-

*excellent participation

**Special needs**

If you need accommodations for any sort of physical or learning disability, please speak to me after class, make an appointment to see me, or see me during my office hours.