

Biol 599: Senior Seminar

Spring 2011

Mondays 4:00 to 4:50, Haworth 3012

Professor: Dr. Justin Blumenstiel

Office: 7026 Haworth

Phone: 4-3915

Email: jblumens@ku.edu

Office hours: by appointment

GOALS: The goals of this class are two fold. The first aim is to provide an introduction to reading primary literature in organismal biology. The second goal is to provide a broad perspective on the dynamics of cooperation and conflict from an evolutionary perspective.

In this survey, we seek answers to the following question:

To what extent does conflict and cooperation shape biological systems?

This is a seminar course, meaning the primary focus is to discuss primary scientific literature. If this is your first introduction to reading the scientific literature, it might seem confusing at first. Don't worry about this. The purpose of taking a seminar is to be introduced to science as it is done at the cutting edge. As a result, it is very different than a standard lecture/textbook based course. When reading papers, remember: Google and Wikipedia are your friends.

FORMAT:

I will lead the first three classes. The first will be the introduction, the second class will be a discussion of two introductory papers that are not primary literature papers - they are more like opinion pieces. The third class will be a primary scientific paper presented by myself.

Students will lead the remaining classes. Please see the guide below for presentations.

Please pick one or two of your first picks by the second class. We will have a lottery for paper topics.

MEETINGS WITH ME: *I highly recommend that you schedule a time to meet with me prior to your presentation. I will be able to answer many of your questions about the paper if the paper is difficult.*

REQUIREMENTS/GRADES: Class discussions are central to this course. Thus, attendance and participation are important for success. The requirements are a **1) Presenting a paper, 2) submitting questions for each discussion and 3) a final mini-paper (400 to 800 words).**

Led Discussion:

This comes in two parts:

A) The week before you present you will introduce the topic to the class in a presentation that should only take 5 - 10 minutes. In this, you should introduce the background, the hypothesis being tested **AND** the major method used in the paper. Use the chalkboard for this.

B) For the presentation, you will guide the discussion. In particular, you repeat your 5 to 10 minute presentation and then spend the first 20 to 30 minutes or so walking through the figures with the class. You might not get through all the figures, but the goal is to make sure the class understands the important ones. For the last 10 to 20 minutes of the discussion, it will be "Open Skate". During this time, you should open up the discussion to determine **1)** If there were problems with the experiments **2)** if the conclusions were justified **3)** if there were alternate interpretations of the results and **4)** what further experiments could be done.

Questions:

24 Hours before each discussion, you must email me (jblumens@ku.edu) and the presenter (email to be provided) a single question you have about the paper. These will be graded with a Check or a Check Plus. This is based on whether the question asks a broad question about the subject or methods of the paper (Check plus) or a technical question that is easily answered with Wikipedia or other internet resources (Check).

Examples of Check Plus questions:

Why did they use X as a control?, Couldn't Figure 2 also be explained by Y?

Examples of Check questions:

What is viviparity?. What is eusociality?, What is DNA methylation?

Mini-paper:

A 400 to 800 word mini-paper will be handed in on the paper you present at the end of the semester. The mini-paper will review the background, the hypothesis, the results and discuss whether the conclusions were justified and whether there are alternate explanations. Feel free to cite other papers and reviews, but no need to cite a whole bunch.

A draft of the mini-paper is due in electronic form by email one week after your presentation. Submission of the draft will automatically give you 50 points, but it must be a full draft. One week after, I will submit suggested improvements. Final revised mini-papers will be due on the Thursday before Stop Day.

For those presenting in the last week, you have the option of handing in your draft early and your final version will be due at the end of exam week.

GRADES

Discussion Participation (15 points/discussion) **210 points**

7 points for attendance, up to 15 points for asking at least one question

15 points for active participation.

Discussion Questions 5 for a check plus **60 points**

Led Discussion **200 points**

50 points for explaining background. 50 points for explaining hypothesis and methods.

50 points for leading class through the figures. 50 points for leading "Open Skate".

Draft Mini-Paper **50 points**

Final Mini-Paper **200 points**

Evaluation scheme to be provided.

Total: _____ 720 points

ASSIGNMENTS AND DUE DATES

Questions: By email, 24 hours before each class.

Led Discussion Introduction: 1 week before Presentation.

Led Discussion: Assigned date based on paper selected.

Draft Mini-Paper: 1 week after presentation, by email

Final Mini-Paper: Last Day of Classes, Thursday, 5/12, by email

For those presenting in the last week, mini-paper draft is due 5/12 and final version at the end of exam week.

Resources

There are likely to be any number of review articles that will help you in your understanding of the background. Often these are review papers that can be found in Web of Science. To access **Web of Science**

Go to <http://www.lib.ku.edu>

Link to "Databases: articles and more"

Choose "W" to find Web of Science

READINGS: Readings are provided on Blackboard.

SCHEDULE:

- 1/24 Class Introduction: Karl Popper Dr. Blumenstiel**
- 1/31 Review Discussion. Dr. Blumenstiel**
The Spandrels of San Marco and the Panglossian Paradigm.
The Evolution of Cooperation.
Tutorial on Web of Science.
- 2/7 Primary Paper. Dr. Blumenstiel**
Accumulation of transposable elements in the genome of *Drosophila*
***melanogaster* is associated with a decrease in fitness**
- 2/14 Sperm competition can favor harmful males in seed beetles**
- 2/21 Safer sex with feeding females: sexual conflict in a cannibalistic spider**
- 2/28 Post-copulatory sexual selection and sexual conflict in the evolution of male pregnancy**
- 3/7 Kin discrimination increases with genetic distance in social amoeba**
- 3/14 Kin selection and cooperative courtship in wild turkeys**
- 3/28 Honey bee nest thermoregulation: Diversity promotes stability**
- 4/4 Environmentally induced responses co-opted for reproductive altruism**
- 4/11 A mechanism for the evolution of altruism among nonkin: Positive assortment through environmental feedback.**
- 4/18 Is mom in charge? Implications of resource provisioning on the evolution of the placenta**
- 4/25 Genomic imprinting is disrupted in interspecific *Peromyscus* hybrids**
- 5/2 Coevolved crypts and exocrine glands support mutualistic bacteria in fungus-growing ants.**
- 5/9 Parasites may help stabilize cooperative relationships.**