

OEB 57  
Spring 2011

# ANIMAL BEHAVIOR

## GENERAL INFORMATION

### TEACHING STAFF

**Professor Bence Ölveczky (BPO)**

NORTHWEST LABORATORIES 219.30  
[olveczky@fas.harvard.edu](mailto:olveczky@fas.harvard.edu)

OFFICE HOURS BY APPT.  
(617) 496-9114

**Professor Naomi Pierce (NEP)**

MUSEUM OF COMPARATIVE ZOOLOGY 426  
[npierce@oeb.harvard.edu](mailto:npierce@oeb.harvard.edu)

OFFICE HOURS BY APPT.  
(617) 495-2576

**Levi Yant, Head TF**

BIOLOGICAL LABORATORIES 1119  
[lyant@oeb.harvard.edu](mailto:lyant@oeb.harvard.edu)

OFFICE HOURS BY APPT.  
(617) 384-7820

**Chris Baker, TF**

MUSEUM OF COMPARATIVE ZOOLOGY 406B  
[cbaker@oeb.harvard.edu](mailto:cbaker@oeb.harvard.edu)

(617) 496-4089

**Shermin de Silva TF**

MUSEUM OF COMPARATIVE ZOOLOGY 401C  
[shermin@elephantresearch.net](mailto:shermin@elephantresearch.net)

(617) 495-3820

**Jeanette Lim, TF**

MCZ LABS 105  
[jlum@oeb.harvard.edu](mailto:jlum@oeb.harvard.edu)

(617) 496-7199

**Hillery Metz, TF**

MCZ LABS 219  
[hmetz@fas.harvard.edu](mailto:hmetz@fas.harvard.edu)

(617) 496-9054

**Martha Muñoz, TF**

MCZ LABS 214  
[mmunoz@oeb.harvard.edu](mailto:mmunoz@oeb.harvard.edu)

(617) 496-9099

**Jon Sanders, TF**

MUSEUM OF COMPARATIVE ZOOLOGY 219  
[jsanders@oeb.harvard.edu](mailto:jsanders@oeb.harvard.edu)

(617) 496-4089

**Adrian Young, TF**

MUSEUM OF COMPARATIVE ZOOLOGY 401B  
[aryoung@oeb.harvard.edu](mailto:aryoung@oeb.harvard.edu)

(617) 495-9023

### COURSE WEB SITE

The OEB 57 web site (<http://my.harvard.edu/course/fas-2539/2011/spring>) carries information about the course, copies of all lecture handouts, and required readings for section.

### REQUIRED TEXTBOOK

**AB:** Alcock, J. 2009. *Animal Behavior: An Evolutionary Approach*. 9th Ed. Sinauer, Sunderland, MA

### LECTURES

Tuesdays and Thursdays from 10 – 11 AM in Northwest Labs B103

### GUEST LECTURES

Wednesdays at 7:30 – 9:00 PM in Northwest Labs B103

### SECTIONS

Students planning to take the course must enroll in a section by 5:00PM Sunday, Jan. 29, using the FAS sectioning web site (<http://www.section.fas.harvard.edu/>). Section assignments will be emailed to you by Monday, Jan. 30. Sections will meet for 60 minutes once each week. Attendance at all sections is required, and students may not ordinarily attend a section meeting other than the one in which they are enrolled. The section format is varied, but many sections have required readings that are available on the course web site's "Readings" section.

**GRADING**

Course grades are based on a total of 1000 points:	
Final exam	350 points
Section	350 points
Midterm exam	200 points
Guest lecture nights	100 points

**SYLLABUS**

(INFORMATION SUBJECT TO CHANGE)

**PART I. ETHOLOGY AND MECHANISMS OF BEHAVIOR****WEEK 1**

<b>LECTURE</b>	<b>Jan. 25</b>	TU	Course overview; BPO
		WE	No guest lecture this week
<b>LECTURE</b>	<b>Jan. 27</b>	TH	Behavioral Genetics I BPO <b>READING</b> Animal Behavior (AB): Ch 3 (64-87); Ch 6 (183-195)
<b>SECTION</b>	No section this week <b>SIGN UP FOR SECTIONS BY 5 PM FRI JAN. 28</b>		

---

**WEEK 2**

<b>LECTURE</b>	<b>Feb. 1</b>	TU	Behavioral Genetics 2 BPO <b>READING</b> Special Section in Science Magazine November 2008, Vol 322: From genes to Social Behavior, pp. 891-911. (See course web site Readings section.)
<b>GUEST LECTURE</b>	<b>Feb. 2</b>	WE	Hopi Hoekstra Digging for the genes contributing to behavioral variation in mice
<b>LECTURE</b>	<b>Feb. 3</b>	TH	Sensing the environment I BPO <b>READING</b> AB: Ch 4 (107-134)
<b>SECTION</b>	SECTION INTRODUCTION; EXPERIMENTAL DESIGN		

---

**WEEK 3**

<b>LECTURE</b>	<b>Feb. 8</b>	TU	Sensing the environment II BPO <b>READING</b> Lettvin, JY et al. 1959. What the frog's eye tells the frog's brain. (See course web site Readings section.)
<b>GUEST LECTURE</b>	<b>Feb. 9</b>	WE	Bevil Conway Seeing in color
<b>LECTURE</b>	<b>Feb. 10</b>	TH	Motor commands BPO <b>READING</b> von Holst, E and U. St. Paul. 1960. On the functional organization of drives. (See course website Readings section.)
<b>SECTION</b>	GENETICS AND EVOLUTION OF BEHAVIOR		

---

**WEEK 4**

<b>LECTURE</b>	<b>Feb. 15</b>	TU	Signals and Communication I BPO <b>READING</b> AB: Ch 9 (287-309)
----------------	----------------	----	--

**GUEST LECTURE** **Feb. 16** WE Florian Engert  
Turning behavior in zebrafish

**LECTURE** **Feb. 17** TH Signals and Communication II BPO  
**READING** AB: Ch 2 (29-60); Ch7 (238-247); Ch 9 (309-327);

**SECTION** BEHAVIORAL EXPERIMENT

---

**WEEK 5**

**LECTURE** **Feb. 22** TU Learning I BPO  
**READING** AB: Ch 9 (97-105) + Kandel ER. 2001. Molecular Biology of Memory Storage: A Dialogue Between Genes and Synapses (See course web site Readings section.)

**GUEST LECTURE** **Feb. 23** WE Takao Hensch  
Experience-dependent brain development

**LECTURE** **Feb. 24** TH Learning II BPO  
**READING** Brainard, M.S. & A.J. Doupe. 2002. What songbirds teach us about learning. *Nature* **417**: 351-358. (See course web site Readings section.)

**SECTION** COMMUNICATION

---

**WEEK 6**

**LECTURE** **Mar. 1** TU Motivation/Behavioral Endocrinology BPO  
**READING** AB: Ch 5: 168-181

**GUEST LECTURE** **Mar. 2** WE Cheryl Knott  
Reproductive Behaviors of Orangutans

**LECTURE** **Mar. 3** TH Chronobiology and Migration BPO  
**READING** AB: Ch 5 (150-167); Ch 8 (261-273)

**SECTION** LEARNING

---

**WEEK 7**

**LECTURE** **Mar. 8** TU Navigation BPO  
**READING** AB: Ch 5 (137-147); R. Wehner. 2003. Desert ant navigation: how miniature brains solve complex tasks.

**GUEST LECTURE** **Mar. 9** WE Review session for exam  
7:30 pm in Northwest Labs B103

**LECTURE** **Mar. 10** TH **FIRST HOUR EXAM IN CLASS**  
Covers material up to March 9th

**SECTION** ORIENTATION AND NAVIGATION

---

**WEEK 8**

**SPRING BREAK**

---



---

## PART II. BEHAVIORAL ECOLOGY, COOPERATION, & SOCIAL BEHAVIOR

**WEEK 9**

**LECTURE** **Mar. 22** TU Contingency theory NEP  
**READING** AB: Ch 7 (220-228)

**GUEST** **Mar. 23** WE Nao Uchida  
**LECTURE** Neural basis for decision making

**LECTURE** **Mar. 24** TH Marginal value theory NEP  
**READING** AB: Ch 7 (228-238)

**SECTION** OPTIMALITY

**WEEK 10**

**LECTURE** **Mar. 29** TU Evolutionary stable strategies NEP  
**READING** AB: Ch 8 (274-284)

**GUEST** **Mar. 30** WE Steve Reppert  
**LECTURE** How monarch butterflies migrate

**Mar. 31** TH Evolution of Sex NEP  
**READING** AB: Ch 10 (329-359)

**SECTION** EVOLUTIONARILY STABLE STRATEGIES (ESSs)

**WEEK 11**

**LECTURE** **Apr. 5** TU Sex Ratios NEP  
**READING** AB: Ch 10 (329-359)

**GUEST** **Apr. 6** WE Catherine Dulac  
**LECTURE** Sex and smell

**LECTURE** **Apr. 7** TH Sexual Selection NEP  
**READING** AB: Ch 10 (360-376)

**SECTION** SEXUAL SELECTION

**WEEK 12**

**LECTURE** **Apr. 12** TU Evolution of groups and families NEP  
**READING** AB: Ch 12 (421-454)

**GUEST** **Apr. 13** WE Iain Couzin  
**LECTURE** Information transfer and the evolution of collective animal behavior

**Apr. 14** TH Mating systems NEP  
**READING** AB: Ch 11 (379-404)

**SECTION** KIN SELECTION

---

**WEEK 13**

**LECTURE** **Apr. 19** TU Eusociality NEP  
**READING** AB: Ch 13 (457-504)

**GUEST** **Apr. 20** WE Martin Nowak  
**LECTURE** Evolution of cooperation  
7:30 pm in Northwest Labs B103

**LECTURE** **Apr. 21** TH Reciprocal altruism NEP  
**READING** AB: Ch 14 (507-537)

**SECTION** REVIEW

---

**WEEK 14**

**LECTURE** **Apr. 26** TU Overview NEP

END OF COURSE

**SECTION** NO SECTION THIS WEEK

---