



OEB 217: WHAT MAKES A RODENT?



Instructor: Dr. Stephanie E. Pierce

TF: Blake V. Dickson

Guests: Dr. Larry Flynn, Dr. Caroline Hu, Mark Omura

Seminar: Mon, 3:00-5:00, Room MCZ 100 (Oceanography seminar room)

Dissection: 3 days scheduled, Room NWBldg BSL2

Description: A student directed course that explores rodent biology and evolution through a mixture of literature discussions, cadaveric dissection and specimen observation. Discussion topics will be broad and far reaching, including such things as: evolutionary dynamics, genetics & behavior, ecology, disease, domestication or even use as a model organism. Alongside in class discussions, students will participate in dissecting a capybara – the world’s largest rodent! – with the aim to build hands-on anatomical knowledge. They will also develop a number of other skills as set forth in the learning objectives.

Learning objectives:

- Develop musculoskeletal knowledge through hands-on dissection and specimen observation
- Become familiar with collecting, analyzing, and interpreting musculoskeletal data
- Gain experience using and implementing the statistical program R (<https://www.r-project.org/>)
- Improve proficiency researching, distilling, and disseminating scientific information

Assessment: This course is primarily assessed on class participation which includes (but is not limited to): regular class attendance, engagement in activities/discussions, getting dirty with dissection, analyzing dissection data, presenting a seminar on topic of choice, and presenting a group poster on dissection results. There are no written exams or essays. Student feedback on group participation and seminars will be incorporated into final grades.

- Engagement in activities/discussions (including paper summaries): 25%
- Student led seminar and discussion on topic of choice: 25%
- Capybara dissection participation and data analysis (including R script): 25%
- Group poster presentation of capybara dissection results: 25%

All participation/assignments will be assessed on a 1–5 Likert Scale and scaled to % contribution.

poor **1** **2** **3** **4** **5** *excellent*

Student led seminars: Being a good communicator is an essential lifelong skill. A major objective of this class is to provide students with a platform to develop their presentation skills by developing a seminar on a topic of their choice (related to rodents!). The seminar should be 40-45min in duration (similar to an undergraduate lecture), followed by a 15 min student led discussion. One week before the seminar, the student presenter should provide a ‘starter’ paper to the class so everyone can come prepared to learn and engage. Participating students will be required to write a 200-300 word summary of the paper

and develop 2 probing questions that can form the basis for discussion; these should be uploaded to canvas by noon on the Monday of the corresponding seminar.

Dissection: A big component of this course is to participate in the dissection of a capybara – the world’s largest rodent. Unlike a traditional anatomy class, which usually systematically dissects organ by organ in preserved specimens, we are going to focus on performing a detailed dissection of the appendicular muscles in a fresh specimen. The aim is to identify all the fore/hindlimb muscles, remove them one at a time, and measure them in order to calculate their physiological properties. The data collected in the dissection will be analyzed using the R statistical environment and presented on the last day of class. There will be two dissection groups (3 students each), one focusing on the forelimb and one on the hindlimb. Stephanie will provide dissection guides and the students will be required to read/study the guides in the weeks prior to the dissection. Come prepared!

Poster presentation: Designing and presenting posters are a great way to disseminate information. Students will work with their dissection group to analyze and interpret their dissection data and then translate this to a poster to present on the last day of class. Posters are like mini papers, they should have an Introduction, Materials/Methods, Results, and Discussion/Conclusion. Each poster should have at least 1 figure, 1 table, and 1 graph. One figure should be a photograph + line drawing of an aspect of the muscle dissection (e.g. superficial muscles). Dimensions of the posters should be: 63 inches wide x 42 inches tall. Posters can be printed in the Ernst Mayr Library and expensed to the course. A copy of the poster (and the final R script with associate files used to analyze dissection data) should be uploaded to canvas by noon on the last day of class.

Further details on assignments/assessments/due dates can be found at the end of this document.

COURSE WEEKLY STRUCTURE

Monday 22 January 2018

3:00-4:00pm: Getting to know each other, rodents are cool, structure of course (MCZ 100)

4:00-5:00pm: Capybara skinning with Mark Omura, health and safety (NWBldg BSL2)

Monday 29 January 2018

3:00-4:00pm: MCZ Mammalogy Collection with Mark Omura, observe rodent diversity (NWB B215.30)

4:00-5:00pm: Become familiar with rodent skeletal anatomy (NWBldg B311)

Friday 2 – Sunday 4 February 2018

****Group dissection of capybara, gross, smelly, tiring, and tones of run! (food provided)****

Monday 5 February 2018

****Well Earned Rest Day – no class****

Monday 11 February 2018

3:00-4:00pm: Guest Lecturer Dr. Larry Flynn (HEB) – Indo-Chinese fossil rodents (MCZ 100)

4:00-5:00pm: Trip to HEB Paleo to examine cool fossils first hand (Peabody Museum 40)

Monday 19 February 2018

****Presidents Day – no class****

Monday 26 February 2018

3:00-5:00pm: Introduction to the R statistical environment with Blake (MCZ 100)

[Last day to submit seminar topics to Stephanie](#)

[\(Dissection data in Xcel format due Friday 2nd March 2018\)](#)

Monday 5 March 2018

3:00-5:00pm: Data analysis in R with Blake and how to make a poster (MCZ 100)

[Submit draft R script\(s\) at the end of class](#)

Monday 11 March 2018

****Spring Recess – no class****

Monday 19 March 2018

3:00-4:00pm: Guest Lecturer Dr. Caroline Hu – Behavioral genetics of rodent digging (MCZ 100)

4:00-5:00pm: Behind the scenes of a behavior genetics lab (TBD)

Monday 26 March 2018

3:00-5:00pm: Owl pellet dissection and skeletal identification (NWBldg B311)

[Must meet with Blake to discuss R script and poster this week](#)

Monday 2 April 2018

3:00-4:00pm: Student led seminar (topic TBD)

4:00-5:00pm: Student led seminar (topic TBD)

Monday 9 April 2018

3:00-4:00pm: Student led seminar (topic TBD)

4:00-5:00pm: Student led seminar (topic TBD)

Monday 16 April 2018

3:00-4:00pm: Student led seminar (topic TBD)

4:00-5:00pm: Student led seminar (topic TBD)

[\(Submit final R script by Friday 20th April 2018!\)](#)

Monday 23 April 2018

3:00-5:00pm: Poster presentation of dissection results and class wrap up, yay!

[Submit final poster by noon!](#)
