

EVOLUTION LAB

Objectives

- To develop an understanding of the primary biotic and abiotic factors at play in natural selection.
- To become familiar with a classic example of evolution via natural selection.
- Simulate how genetically correlated traits, assortative mating, and a variable environment can lead to incipient (emerging) speciation.

Getting Started

Week 1 – We will first view a video entitled “*What Darwin Never Saw.*” This excellent video, produced by Bill Kurtis, will provide important background for understanding the experiments involving the evolution of beak size in Darwin’s finches.

Week 2 – We will begin with an introduction by Dr. Jordan to the ***SimBio: Finches and Evolution simulation model***. Then we will go to the computer labs to allow you and your partner time to conduct several experiments. **Please do NOT print out the pdf file** accompanying the SimBio Lab. It is 24 pages long and would waste a lot of paper. Instead, please read it on the screen and note the answers to questions in your lab notebook.

Please DO read all of the introductory text in the *Finches and Evolution* lab pdf document before the actual lab period. This includes all text for all five exercises that is not preceded by a number. This will make the lab period pass much more easily, and you will understand much more.

Please **refer to your email for instructions on creating a SimBio account** and downloading the software.

ASSIGNMENT AND WRITE-UP FOR WEEK 2:

The write-up for Week 2 is due at the start of lab next week. Remember to submit an electronic copy to Turnitin via Moodle before coming to lab. There is no need to print a copy of the lab.

- A. Perform all of the tasks described for Exercises 1-5 in the Finches and Evolution lab handout (pdf file on Biology 208 lab website or through the SimBio software). Write the answers to questions in your personal lab notebook, or in an electronic file. Review Section C below to see which of these answers will be turned in.
- B. After finishing all the exercises, proceed to the **Graded Questions** in the SimBio software. Answer these questions alone, **without** input from your lab partner. They will account for 50% of your grade.
- C. Write a brief lab report answering the following questions:

Exercise 1: What factors influence selection strength? and Questions 11.3, 12.1, 13.1

Exercise 2: Questions 5.1, 7.1, 7.2, 10.4, 10.5, 11.1, 12.1, 12.2, 12.3

Exercise 3: Questions 10.1, 10.2

Exercise 4: Questions 3.2, 3.3

Exercise 5: Questions 3.2, 3.3

Please bear in mind the following points as you do the lab write-up:

- Write this report **alone**, properly citing any external sources (including the SimBio handout).
- **Submit your lab report via Moodle.**
- Not all questions need to be answered in complete sentences, **though some definitely should be.**
- Answers should all be grammatically correct and free of typos and other errors.
- Please do not restate or copy the question unless necessary.
- **Be sure to write your name and your partner’s name**, the date, and an informative title at the top of the page.