

Honor 2500
Tue 2–5 PM
Prof: Alan Rogers

April 5, 2019
Rm 5490, Gardner Commons

<http://www.anthro.utah.edu/~rogers/evidevolcrs/index.html.php>

The Evidence for Evolution

Description It is easy to understand why people argued about evolution in the 19th century. They knew nothing about genetics, continental drift, or the age of the earth. No one had ever seen a species change or knew whether it was even possible for one to split in two. There were few transitional fossils and almost no human fossils. The absence of this evidence left room for skepticism.

But why do we still argue today? According to one side, evolution is a theory in crisis, unsupported by evidence. According to the other, it is a scientific triumph—an idea confirmed beyond any plausible doubt by many converging lines of evidence.

This course will trace the history of this debate, focusing on several issues that are listed at the end of this syllabus. We will read the literature relating to each issue, both early and recent, and discuss it in class. Our goal is to discover how (and whether) the debate has shifted in response to emerging evidence.

Students will do library research on two issues and write a short essay on each.

Textbook Rogers, Alan R. 2011. *The Evidence for Evolution*, University of Chicago Press. ISBN: 0-226-72382-8.

Readings and class discussion Reading assignments and reading guides are on the course website (see above). We will discuss the readings in class on the date shown in the schedule below. Students should prepare to discuss all the readings and to lead the discussion of one or two, which will be assigned four days in advance. Use the “reading guides” (see website) to organize your preparations for discussion.

During class discussions, everyone is encouraged to contribute. In addition, I call on students in a random order to lead sections of the discussion.

Essays Each essay should consist of roughly 1200 words—2 single-spaced pages—and should cover one of the issues listed at the end of this syllabus. Summarize both sides of the argument. Explain when it first appeared in the literature and how (or whether) the debate about it has shifted in response to evidence between 1859 and the present. In the first paragraph of your essay, please say which topic you will address.

Aim to cite 5–10 references, some of which are not included in the required readings. Cite references within the text, using any standard format. The list of references (at the end of your essay) should not include anything that isn’t cited in the text.

All essays must be submitted through Canvas.

Grading Grades will be based on class discussion (33%), and two essays (33% each). Late essays will be penalized 3 points per day (out of the 33-point total), down to a minimum of 50% of the maximum grade.

Contact PHONE: 801–581–5529 (w), 801–910–3398 (m); EMAIL: rogers@anthro.utah.edu; OFFICE: by appointment, room 4428 Gardner Commons.

Plagiarism Any cheating or plagiarism will result in a failing grade for the course. See sections II and V of the student code (<http://www.saff.utah.edu/code.html>) for details.

Syllabus The schedule below is provisional and may change during the semester. The current version can be found on the web page. The schedule lists topics only. Reading assignments for each topic are on the course website.

Provisional Syllabus

Date	Topic
Jan 08 T	Introduction to course
	Do species change?
15 T	How to research and write an essay
	Jenkin's swamping argument
22 T	Can evolution make big changes?
29 T	Lecture: Hierarchy
	Discussion: Nested similarities 1
Feb 05 T	PRELIMINARY BIBLIOGRAPHY FOR ESSAY 1 DUE
	Lecture: Molecular evolution
	Nested similarities 2
12 T	Has there been enough time?
19 T	ESSAY 1 DUE
	Did humans evolve?
	Are we still evolving?
26 T	Geographical distribution
Mar 05 T	Complex adaptations
12 T	*** NO CLASS
19 T	Irreducible complexity
26 T	*** NO CLASS
Apr 02 T	Is adaptive evolution improbable? 1
09 T	Is adaptive evolution improbable? 2
16 T	Video: Your Inner Fish
23 T	ESSAY 2 DUE
	Video: Intelligent design on trial

Issues in the argument about evolution Students will write two essays. Each essay should discuss the intellectual history of one issue (from the list below) between 1859 and today. Several of the issues in the list will also be discussed in class. The website contains links to literature on these topics, but I hope you will seek out additional references on your own. In the first paragraph of your essay, please say which of these topics you plan to address.

1. Do species change?
2. Do species split in two?
3. Does evolution make big changes?

4. Can natural selection construct complex adaptations, with multiple interacting parts?
5. Is the geographical distribution of organisms consistent with evolution?
6. Are rare genetic variants swamped by interbreeding with the common type?
7. Organisms are conventionally classified in nested groups: individuals within species, species within genera, genera within families, and so on. Are such classifications arbitrary, or do they reflect something fundamental? Is the pattern of nested similarities consistent with evolution?
8. Has there been enough time?
9. Does evolution require events of very low probability?
10. Is the fossil record consistent with gradual change?
11. Is the “Cambrian explosion” consistent with evolution?
12. Did humans evolve?