

Week 8. (just before Spring Break). Questions on the test will be a combination of matching, fill in the blank, true or false, multiple choice. The questions below are in a different format but get at the same principles. If you can answer these, you will do well on the test.

Uses of Evolutionary Biology

Understand the difference between Patterns and Processes of Evolution.

Define Evolution

Define Adaptation

What influences the speed of evolution (i.e. allele fixation)?

Explain the definition of teleology and the danger of “teleological explanations” for evolution.

What are the five most important problems facing the world today. Choose two and list one way in which a knowledge of evolutionary biology could help ameliorate or prevent each one.

Why is the evolution of resistance (e.g. resistance of a bacterium to antibiotics or a pest to pesticides) known as a “red queen” problem (look in your text page 172)? Why is the same problem also called “an evolutionary arms race.” (These are not examples of coevolution because on one side you have humans; and rather than waiting for evolution to take its course over generations, humans are creating chemicals or getting them from nature to challenge the bacteria. To be a true “evolutionary arms race”, i.e. coevolution, two organisms are continually evolving responses to each other.

In the history of evolutionary biological thinking, what were the two major shifts in worldview?

Go to the Scopes trial website:

www.law.umkc.edu/faculty/projects/ftrials/scopes/scopes.htm

or just Google “Famous Trials”. If you don’t remember the answers to these questions from my discussion in class.

A Tennessee law was on trial. What did this law prohibit?

What is “Inherit the Wind” and what similarities and differences did it have to the trial?

Look on the Scopes trial website listed above and list the major players in the trial and their roles

What reasons have been given against teaching creationism in science classes?

According to a 2012 Gallup Poll, approximately what percentage of the American People believe that God created human beings pretty much in their present form at one time within the last 10,000 years or so.” 16%, 26%, 46%, 76% 96%?

True or False? In 1987, a US Supreme Court decision, *Edwards v. Aguillard*, 482 U.S. 578 (1987), banned teaching of the biblical story of creation in public schools as unconstitutional.

Recent school board actions (e.g. during the last 15 years) do not all prohibit the teaching of evolution, instead opponents of evolution have used different tactics to diminish its teaching. What are the tactics?

Intelligent design (ID) uses the central argument of “irreducible complexity” to argue against the theory of evolution. Read this short article on bombardier beetles at www.talkorigins.org/faqs/bombardier.html and answer these questions:

- 1) Bombardier beetles use boiling hot hydroquinones and hydrogen peroxide as a defense against predators. ID supporters say that this could not have evolved and give many reasons. What “inaccurate account of the process” was perpetuated despite the fact that the mistake was pointed out to them by scientists?
- 2) The website discusses why the evolution of the bombardier beetle is not “irreducibly complex.” What is meant by “Irreducible complexity.”
- 3) What is meant by “Reasoning by incredulity?”

What was the importance of the Kitzmiller vs. Dover case to the teaching of intelligent design in public schools? It relates to the 1987 Supreme Court ruling that prohibits the teaching of the biblical story of creation in public schools.

What example of “irreducible complexity” was used by Michael Behe in the Kitzmiller vs. Dover NOVA video “Judgement Day: Intelligent Design on Trial”

True or False. Parents in Georgia succeeded in getting warning stickers placed on school text books that taught evolution. Were they later removed? Find the answer online.

How is the scientific definition of “theory” different from the popular definition?

True or False. Humans are descended from monkeys.

True or False. Humans are descended from apes.

True or False. Humans are descended from chimps.

In the 1860 Oxford Evolution Debate, who defended Darwin? Who opposed Darwin?

The modern synthesis united 4 groups of biologists, what groups were they?

What were the major tenets of the Modern Synthesis.

Why does Google Scholar say, “Stand on the Shoulders of Giants” on the opening page?