

Bio. 3302 Introduction to Evolution
Study Guide
Lecture 3: Darwin and the Evidence for Evolution

Terminology

adaptive radiation
analogous
artificial selection
biogenetic law
biogeographic realms
blending inheritance
coelocanth
comparative anatomy
continental drift
convergent evolution
disperal
endemics
Eugenics
germ cell
germline
Asa Gray
homologous
Huxley
Lamarck
land bridge
Lysenko
living fossils
Malthus
modern synthesis
ontogeny
Pangaea
pangenesiis
phylogeny
Social Darwinism
somatic cell
struggle for existence
Tiktaalik
Vavilov
vestigial organs
vicariance
Wallace
Wallace's Line
Weismann

Questions

1. What geological books influenced Darwin greatly as he set out on his voyage?
2. What was the general route of the H.M.S. Beagle? What did Darwin see that made a big impression on him?
3. Describe some of the interests of Darwin.
4. Describe the Galapagos Islands. Discuss adaptive radiation and the finches that made such a big impression on Darwin.
5. Who was Alfred Wallace? What does Wallace's Line represent?
6. What did Malthus write that made both Darwin and Wallace independently realize the mechanism of evolution was natural selection?
7. What are the two basic themes of Darwin's Origin of Species?
8. What are the basic steps in Darwin's idea of evolution by natural selection?
9. Why did the concept of blending inheritance conflict with the concept of natural selection, and how did Darwin attempt to deal with this problem?
10. Why was the age of the earth a problem for Darwin?
11. How does the biogeographic distribution of many organisms support Darwin's ideas of common descent with modification by natural selection?
12. How do biogeographic patterns on oceanic islands support Darwin's ideas?
13. What is continental drift, and how does that help explain the distribution patterns of certain groups of organisms?
14. What do taxonomic categories represent in the light of evolutionary thinking?
15. What are homologous structures? Give some examples of structures with a common ground plan.
16. How do analogous structures differ from homologous structures? Give some examples.
17. Discuss vestigial organs. What are some vestigial organs in humans? How can you account for these in terms of evolution?

18. How do the similarities and stages that embryos go through lend support for evolution? Does ontogeny really recapitulate phylogeny?
19. Why are fossils rarely found? What was the significance of *Archeopteryx* and other transitional fossils? Give several examples of transitional fossils.
20. Why was Darwin's theory such a threat to organized religion and the orthodox clerics?
21. How did critics respond to Darwin's ideas of natural selection operating on small, gradual changes?