BAT list: Evolution
Chapters 10 & 11

Evolution Unit Vocabulary – make sure you know what these terms mean, you do not have to write definitions.

Convergent evolution	Evolution	Divergent evolution	Embryology
Biogeography	Genetic drift	Gradualism	Charles Darwin
Natural selection	Vestigial structure	Homologous structure	Gene flow
Analogous structure	Gene pool	Comparative anatomy	Phylogeny
Punctuated equilibrium	Speciation	Coevolution	Diversity
Mutation	Allelic frequency		

Ch 10.2 Darwin's Observations (pg 290-291 in online textbook)

1. What accounts for the variations among species that Darwin observed?

2. What is an adaptation?

3. What adaptations did Darwin observe in the finches of the Galapagos Islands?

4. Explain what is meant by descent with modification.

5. Explain how the sequential nature of fossil groups found in rock strata supports Darwin's principle of descent with modification.

6. Based on your knowledge of the Law of Superposition, identify A) which fossil is the oldest and the youngest and B) what information can be learned about the environment from the fossils present.
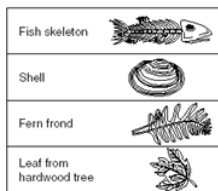
A)

B)

7. What could account for fossils of marine organisms being found on top of modern-day mountain ranges?

Ch 10.3 Theory of Natural Selection (pg 290-291 in online textbook)

8. What is natural selection?

9. What is an example of artificial selection (human caused evolution)?

10. Why must there be variation within a population for natural selection to occur?

11. How do the structural and the physiological adaptations of organisms support natural selection?

12. How does natural selection relate to adaptations and the development of diversity in and among species?

Ch 10.4 Evidence of Evolution (pg 298-304)

13. Compare homologous, analogous, and vestigial structures.

14. Identify the structures below as analogous, homologous, or vestigial.
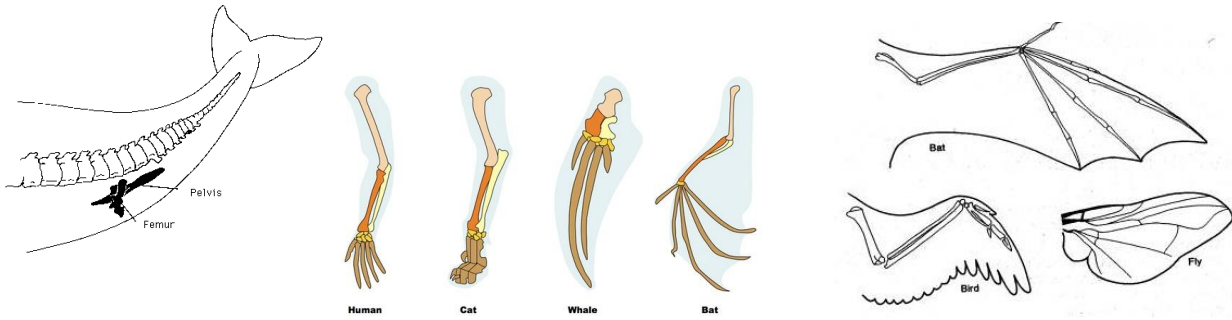
15. Given an example of a vestigial structures and explain how they are critical evidence for evolution?

16. What type of evidence of evolution is MOST accurate in terms of determining how related organisms are?

17. How has biotechnology, specifically gel electrophoresis and DNA, added to our understanding of evolution?

18. Using the DNA fingerprint below, which deer is most closely related to the common ancestor? Explain how you know.
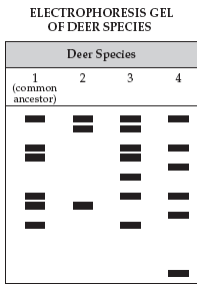
Ch 11.1 Genetic Variations within Populations (pg 316-317)

19. What is the ultimate source of genetic variation?

20. What is a gene pool?

21. What is allele frequency?

22. Why does genetic variation increase the chance that some individuals in a population will survive?

23. How does crossing over in meiosis provide a source of genetic variation?

Ch 11.2 Natural Selection in Populations (pg 318-321)

24. Sketch and label each graph for punctuated equilibrium, gradualism, divergent evolution and convergent evolution. Include a short description of each.

25. Does natural selection produce changes in populations or in individuals and why?

26. Why is it said that natural selection acts on the phenotypes rather than on the genetic material of organisms?
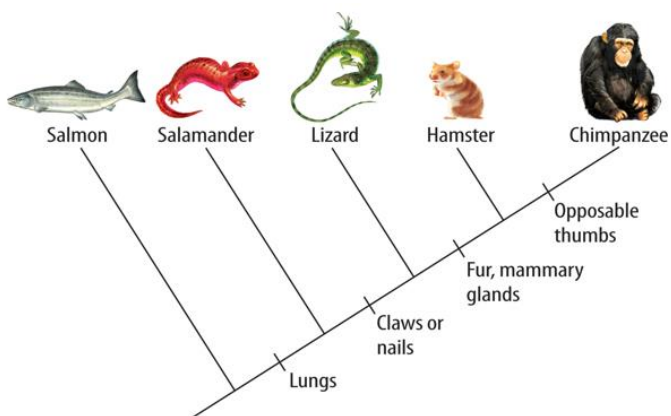
Ch 11.3 Other Mechanisms of Evolution (pg 323-325)

27. What is gene flow?

28. Describe how gene flow can increase genetic variation within two neighboring populations.

29. How can a lack of gene flow between populations lead to speciation?

30. What is genetic drift?

31. Explain why mutation and genetic drift are random events while natural selection is not.

32. How do genetic drift, gene flow, mutation and recombination affect the gene pool?

33. Would a population with a lot of genetic variation or a little genetic variation be more likely to have individuals that can adapt to a changing environment? Explain your answer.

Ch 11.6 Speciation through Isolation (pg 332-335)

34. What is convergent evolution?

35. What is divergent evolution?

36. Which type of structures (homologous or analogous) are representative of convergent evolution?

37. Which type of structures (homologous or analogous) are representative of divergent evolution?

38. What is co-evolution?

39. How are predator-prey relationships an example of co-evolution?

40. Explain the theory of gradualism.

41. Sketch the graph that represents gradualism.

42. Explain the theory of punctuated equilibrium.

43. Sketch the graph that represents punctuated equilibrium

44. Use the cladogram below to answer the questions

Salmon   Salamander   Lizard   Hamster   Chimpanzee

Opposable thumbs

Fur, mammary glands

Claws or nails

Lungs

a. Which organism(s) do not have lungs?

b. Which organism(s) have fur and mammary glands?

c. Would all of these organisms have a common ancestor? Why or why not?