Day 6 Review

Evolution

What You Must Know:

1. How Lamark’s view of the mechanism of evolution differed from Darwin’s
2. Several examples of evidence for evolution and how they each support how organisms have changed over time: direct observations, homology, fossils and biogeography
3. The difference between structures that are homologous and those that are analogous, and how this relates to evolution
4. The role of adaptations, variation, time, reproductive success, and heritability in evolution
5. How mutation and sexual reproduction each produce genetic variation
6. The conditions for Hardy-Weinberg equilibrium
7. How to use the Hardy-Weinberg equation to calculate allele frequencies to test whether a population is evolving
8. What effects genetic drift, migration or selection may have on a population and analyze data to justify your predictions
9. The biological concept of species
10. Prezygotic and postzygotic barriers that maintain reproductive isolation in natural populations
11. A description of similar species that are maintained separate by each type of isolating barrier
12. How allopatric and sympatric speciation are similar and different
13. How a change in chromosome number can lead to sympatric speciation
14. Why speciation rates are often rapid in situations when adaptive radiation occurs or during time of ecological stress
15. The connection between a change in gene frequency, a change in the environment, natural selection or genetic drift and speciation
16. How punctuated equilibrium and gradualism describe two different tempos of speciation
17. A scientific hypothesis about the origin of life on Earth
18. The age of the Earth and when prokaryotic and eukaryotic life emerged
19. Characteristics of the early planet and its atmosphere
20. How Miller and Urey tested the Oparin-Haldane hypothesis and what they learned
21. Methods used to date fossils and rocks and how fossil evidence contributes to our understanding of changes in life on Earth
22. Evidence for endosymbiosis
23. How continental drift can explain the current distribution of species (biogeography)
24. How extinction events open habitats that may result in adaptive radiation
25. The taxonomic categories and how they indicate relatedness
26. How to construct a phylogenetic tree that represents processes of biological evolution
27. Using data to construct a cladogram and use cladograms to infer relatedness