

## Evolution Review

### Evidence for Evolution:

Evidence	Definition	Example
Fossils	preserved remains of organisms	-amber -sedimentary
Anatomy	similarities in body structures	-homology -analogy
Embryology	similarities in the structures of early embryos	pigs: humans
Biochemistry	similarities in DNA structure / body functions	-DNA -cellular respiration -cell structure
Vestigial Organs	organs that no longer have a function	<del>tail</del> - tail bone (humans)

Type of Structure	Definition	Example
Homologous	same structure different function	human arm & whale flipper
Analogous	different structure same function	Bird & Butterfly wings

1. Which one of these is going to be the most accurate for telling you how closely two species are related?

Biochemical → similarities in DNA

2. What is important about the different strata in rock?

helps with relative dating

3. Please define natural selection.

the most fit organisms survive & reproduce

4. Who came up with the idea for natural selection?

Darwin on Galapagos Islands

5. Does evolution happen in individuals, populations or both? Defend your answer.

Populations!

6. What is Hardy Weinberg's principle?

That if certain factors are met there will be

7. What are the five factors for genetic equilibrium? genetic equilibrium

- random mating, large population, no immigration/emigration

8. Define adaptations.

no natural selection, no mutation  
inherited characteristics

### Adaptations

Type	Definition	Example
Camouflage	blending in with environment	Stick bug
Mimicry	copying colors of another organism	monarch & viceroy - octopus - flower that looks like a female bee

8. Behavioral: mating calls  
 Structural: long neck, coloration  
 Chemical: poison

9. What is the purpose of radioactive dating?

find / calculate a more specific date of a fossil

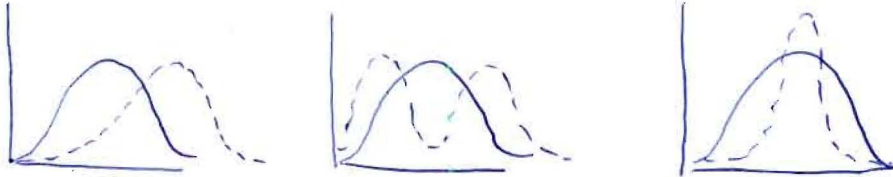
10. What is a half life?

the time it takes for half of the substance to decay

11. If a fossil initially had 12 g of carbon-14 but now only has 3 g of carbon-14 how old is the fossil? Assume that the half life of carbon-14 is 7,500 years.

2 half lives → 15,000 years

12. Draw a graph for each of the following showing what the population started with and what it ended up with: directional selection, disruptive selection, stabilizing selection

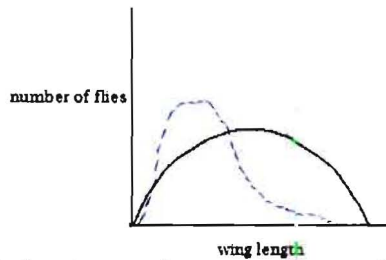


Type of selection	What does this kind of organism does this selection favor?	Which of these could be the result of geographic isolation?	Give an example of what could happen for each type (think of the second bean lab!)
Disruptive	both extremes	<del>XXXXXXXXXX</del>	see sit. 1
Directional	one extreme		see sit. 2
Stabilizing	average		see sit. 3

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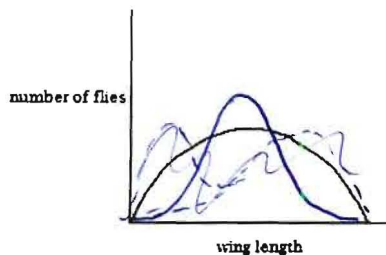
Below are two graphs. Use one of each of the following situations to graph what you think would happen. Label each graph with the kind of selection that it is.

Situation A: Prevailing wind patterns change causing a strong upper wind to blow constantly across the island. This wind blows long-winged flies out to sea where they die.



directional

Situation B: Wind patterns change as in part A. In addition a new animal arrives. It eats only flies that are close to the ground (or have short wings and can't fly higher).



stabilizing

13. Looking back at the primate lab, which species is closer to humans, the ape or the Australopithecus? Australopithecus

14. Explain what it means that apes and humans have a common ancestor? Include in your answer if humans did or did not evolve from apes.

At one point in time we were the same species but we branched off in different ways.

15. Explain why you need to take all of your antibiotic drugs even if you are starting to feel better.

so that you kill off all of the strongest bacteria

16. Discuss why you ended up with more red beans than lima beans at the end of the bean lab. Use the term natural selection in your response. (First Bean Lab!)

The kidney beans blended in with their environment. This means they were more fit for survival in their environment

which means they will reproduce more & have higher frequencies. Overall, this means natural selection

17. If we changed the lab so that instead of looking at the prey we looked at the predators, predict what would have happened. The different predators could have been a spoon, a fork, a knife, or a tweezers. Use the terms natural selection and adaptations and survival of the fittest in your response.

knife would have died out because it would be least fit to eat. Tweezers & spoons would have survived because they would have adaptation for picking out beans since natural selection is survival of the fittest

18. What does survival of the fittest mean? we would see it choose/favor those best adapted will survive those predators

19. Which era of Earth's history lasted the longest?

Pre cambrian

20. What were the main principles of natural selection? This is in your notes!!!

- struggle for existence
- some are more fit than others