Name\_\_\_\_\_\_\_\_Key\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Period\_\_\_\_\_\_\_

**Evolution Reading Guide pages 451-473 (old book pages 369-386)**

1. What is evolution?

The process of change over time

2. Who was Charles Darwin? What did he do?

Charles Darwin was born in England and developed a scientific theory of biological evolution that explains how modern organisms evolved.

3. What was the Beagle?

It was a ship that Darwin took on a voyage to the Galapagos Islands

4. What 3 distinctive patterns did Darwin notice about biological diversity?

1. Species vary globally 2. Species vary locally 3. Species vary over time.

5. What species that were living in European grasslands, did Darwin notice were missing from the grasslands of South America and Australia?

He noticed that rabbits were missing from the grasslands.

6. What was different about the tortoises on each island of the Galapagos?

Their shells varied from island to island.

7. What did glyptodonts resemble?

Glyptodonts resembled armadillos.

8. What did Hutton and Lyell conclude about Earth’s history?

They concluded that the Earth is extremely old and that the processes that changed Earth in the past are the same processes that operate in the present.

9. What is uniformitarianism?

Geological processes we see in action today must be the same ones that shaped the Earth millions of years ago.

10. How did Lyell’s understanding of geology influence Darwin?

Darwin realized that he had seen evidence that Lyell was correct. If Earth can change over time, then possibly life could change too.

11. What did Lamarck believe? Were his ideas correct?

Lamarck believed that organisms can change and pass on acquired traits. His ideas were not correct.

12. What was Malthus’s view of population growth?

Malthus reasoned that if the human population grew unchecked, there wouldn’t be enough living space and food for everyone.

13. What is artificial selection?

Selective breeding (breeding for specific traits). Nature provides the variations and humans select those they find useful.

14. Darwin wrote up a complete draft of his ideas but didn’t publish for another 20 years. Why not?

Darwin knew that many scientists had ridiculed Lamarck’s ideas. He knew his theory was just as radical so he wanted to gather as much evidence as he could to support his ideas.

15. Why did Darwin decide to publish?

He didn’t want to get scooped by Alfred Wallace who came up with the same idea.

16. What is an adaptation?

Any heritable characteristic that increases an organism’s ability to survive and reproduce in its environment.

17. What is fitness?

How well an organism can survive and reproduce in its environment.

18. If an organism produces many offspring, but none of them reach maturity, do you think the organism has high or low fitness? Explain your answer.

It has a low fitness because it needs to reproduce and be able to pass those adaptations on to the next generation.

19. What is natural selection?

The process by which organisms with variations most suited to their local environment survive and leave more offspring.

20. Give at least two reasons why the following statement is NOT true: “The goal of natural selection is to produce perfect organisms.”

Natural selection is simply a process that enables species to survive and reproduce. If environment changes, they may no longer be able to survive.

21. According to the principle of common descent, what does Darwin suggest about living and extinct species?

Living and extinct species are descended from ancient common ancestors.

22. What is biogeography?

The study of where organisms live now and where they and their ancestors lived in the past.

23. How old is the earth (according to radioactive dating)?

The earth is 4.5 billion years old.

24. Use Figure 16-13 to answer the following question: Describe the body structure of Basilosaurus.

Basilosaurus had a streamlined body and reduced hind limbs.

25. What are homologous body structures? Give an example.

Structures that are shared by related species and that have been inherited from a common ancestor. The front limbs of reptiles and birds are more similar to each other.

26. What are analogous structures? Give an example.

Body parts that share common function but not structure. Example: Bee’s wing and wing of a bird.

27. What are vestigial structures? Give an example.

They are inherited from ancestors but have lost much or all of their original function due to different selection pressures acting on the descendant. Example: hipbones in dolphins.

28. How can molecular biology (DNA discoveries) be used to trace the process of evolution?

The universal genetic code and homologous molecules provide evidence of common descent. DNA is similar in all living things. We all have the same code.

29. What genes are found in almost all multicellular animals (from fruit flies to humans).

The hox genes.

30. Describe the finches on the Galapagos Islands and how they adapted (use figure 16-17 to help you answer this question).

Finches on the different islands had different beak sizes and shapes because of the different foods that were on the different islands. They all originated from a common ancestor.

31. Summarize Darwin’s Theory of Evolution in 5-6 sentences.

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Period\_\_\_\_\_\_\_

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