

Macroevolution

Read Chapter 7.3

Fill in the blanks

1. One of the main types of organisms that Darwin studied was _____. Variations in the expression of the BMP4 gene and calmodulin gene results in variations in the shape and size of their _____.
2. A _____ is defined as a group of organisms that can interbreed and produce viable offspring.
3. Evolution can occur gradually in a process called _____, or it can occur intermittently over time in a process called _____.
4. Not all organisms go through extensive evolution; an _____ is an example of a species that has not changed much in about 200 million years.
5. There are three main lines of evidence suggesting that existing species came from a common ancestor.
 - a. _____
 - b. _____
 - c. _____
6. _____ are considered the most direct evidence of macroevolution.
7. Structures that can become fossils contain _____ that are not degraded by microorganisms, a few examples include _____, _____, _____, and _____.
8. Homo sapiens have existed for approximately _____ years.
9. Modern Humans have existed for approximately _____ years.
10. Humans have been the only existing species of the Homo genus for approximately _____ years when the _____ became extinct.
11. Humans are in the family as (apes/ monkeys) _____.
12. The non-human primate most closely related to humans is the _____.
13. Homo _____ was the longest living species of the homo genus that lived for 2 millions years.
14. Based on anatomical structure similarities between organisms, would a human be more closely genetically related to a bat or a crocodile? _____

15. Molecular sequences are used to compare how closely related difference species are, the molecules that can be compared are _____ or _____ sequences.
16. The more closely related the species are to each other, the more (similar or different) _____ their anatomy, DNA, and proteins are.
17. There are five major factors that affect evolution:
- Natural Selection
 - _____
 - _____
 - _____
 - _____
18. There are 3 types of natural selection:
- _____ - when extremes of a population are eliminated and the intermediate traits survive
 - _____ - when the extremes of a trait survive and the intermediate trait is eliminated
 - _____ - when one extreme is favoured and the opposite extreme is eliminated
19. State the type of natural selection for each of the following examples:
- Sickle-cell anemia where heterozygotes are more likely to survive in areas where malaria is prevalent _____
 - Antibiotic resistance in bacteria _____
 - Birds with very large or very small beaks survive because of food availability but birds with medium-sized beaks cannot get enough food and don't survive _____
20. _____ are considered the ultimate source of new alleles and genetic variation in every population.
21. The movement of individuals to new locations is called _____ and this movement can affect the allele frequencies in various populations.
22. _____ is the transfer of alleles from one population to another, such as when groups of people or animals join other populations.
23. Plants have (random or non-random mating) _____
24. Animals have (random or non-random mating) _____

25. A _____ is an example of a bird that has very specific sexual selection traits that increase its likelihood of reproducing.

26. _____ is the process of random changes in allele frequencies that are not due to the “fitness” of an organism. For example, a hurricane may wipe out a large number of a population and the individuals that survive may not have the most beneficial genes. This is also called a _____.