

## UNIT 6 Test Review:

### Evolution: Points to Review. *\*ALSO REVIEW THE 'EVOLUTION REVIEW WS' GIVEN BEFORE QUIZ*

1. Charles Darwin: is given credit for the Theory of Evolution.
2. Darwin: Natural Selection; Differential Reproductive Success
3. Adaptations: genetically coded traits that occur in organisms and enable them to be more successful in their environment.
4. Natural Selection: the mechanism that explains changes in a population that occur when organisms with favorable variations for that particular environment survive, reproduce, and pass these variations on to the next generation.
5. Reproductive isolation: when organisms become reproductively isolated from other organisms of the same species.
6. Allopatric speciation- a species that becomes geographically isolated (ex-river forms) and diverges into new species
7. Adaptive radiation: species diverges into many different species due to unoccupied niches. (Ex- finches)
8. Convergent evolution: unrelated species independently evolve similarities in structure because of adapting to similar environments (analogous). Divergent evolution: more closely related species (homologous)
9. Ecosystem diversity: includes the variety of habitats, living communities and ecological processes in the living world.
10. Species diversity: includes the vast number of different organisms on Earth.
11. Genetic diversity: refers to the sum total of all the different forms of genetic information carried by all living organisms on Earth.
12. Molecular clocks: uses the # of accumulated mutations to determine relatedness and approximate time event occurred
13. Speciation: the evolution of a new species (macroevolution); 'large scale' final result of change in allele frequencies.  
Reasons for speciation: Prezygotic barriers (ex- temporal, behavioral, etc.) vs. Postzygotic (ex- hybrids)
14. Microevolution- 'small scale' change in allele frequencies: nat selection, gene flow, genetic drift, sexual selection, mutation
15. Gradualism: evolution over a long period of time (Darwinian).
16. Punctuated equilibrium: speciation occurs 'quickly' in rapid bursts, with long periods of stability afterwards.
17. Radioisotope/Radiometric/Absolute dating: used to determine relative ages of fossils (half-life), Carbon 14 used most often.
18. Relative dating: determining the age of fossils as compared to other fossils from the layers of sedimentary rock where fossils were found. Newer species in upper layers & older in lower layers
19. Extinction: the permanent loss of a species. Endangered- low variability. \*FYI- Extant means 'living'
20. Stabilizing selection: maintains the status quo for an organism's genetic makeup in an environment. Common in environments that have not changed in a long time. Intermediates favored by natural selection (\*go over graphs)
21. Directional Selection: involves 'shifting' from one phenotypic characteristic to a new one. Common in environments that have changed to some degree.
22. Disruptive Selection: extreme phenotypes are favored over intermediates
23. Hardy Weinberg Equilibrium: What 5 factors must exist? **\*Know how to work 1-2 Hardy-Weinberg problems**

### Evolution Review Sheet Questions

1. Define the following terms:

Evolution	Acquired characteristics
Common descent	Niche
Vestigial Structures	Survival of the fittest
Diversity	Extinct

2. What contributions did the following scientists make to the theory of evolution?

Darwin          Lamarck

3. How are fitness and adaptation related?

4. Contrast homologous structures with analogous structures. Give examples of each.

5. Contrast convergent evolution with divergent evolution. Give examples of each.
6. What is co-evolution? Give an example.
7. What is artificial selection? Compare this to natural selection.
8. Remember the story of England's peppered moths. How does this support the concept of evolution?
9. Define adaptive radiation (and how is this an exp of divergent evolution?).
10. What is a gene pool? How can gene pools be kept 'separate' or independent?
11. What steps must occur for a new species to develop?
12. What is reproductive isolation? Causes or reasons?
13. Organisms will experience the most rapid evolutionary change under what conditions?
14. How are gradualism and punctuated equilibrium different?
15. Describe the five pieces of evidence scientists consider as support for macroevolution.
  - Fossil record
  - Molecular record
  - Homologous structures
  - Embryonic structures
  - Vestigial structures
16. How can DNA sequences be used to determine relationships between organisms?
17. How can bacteria evolve resistance to an antibiotic? How can a pest evolve resistance to a pesticide?
18. How would Darwin explain the evolution of the giraffe as compared to Lamarck?  
Include variation and selection in your response.
19. How can an evolutionary tree (or cladogram) be used to infer relationships between organisms?
20. Compare/contrast Abiogenesis (spontaneous generation) to Biogenesis
21. Describe Miller and Urey's experiment. Be sure to include what gases made up earth's early atmosphere.
22. What are some hypotheses of the origin of life? (\*think- endosymbiotic theory). Explain.

## **Mechanisms of Evolution:**

**Objective: Compare and contrast the many mechanisms by which evolutionary change occurs.**

Use this page to check your understanding of the content.

### **Vocabulary**

1. Evolution.
2. Natural selection
3. Mutation
4. Gene flow
5. Genetic drift
6. Sexual selection

### **Study Guide Questions**

1. Be able to identify, compare, contrast, and discuss the various mechanisms of microevolution, including:
  1. Mutation
  2. Gene flow
  3. Genetic drift
  4. Sexual selection
  5. Natural selection
1. What are the observations that led to Darwin's conclusions regarding natural selection?
2. Compare and contrast sexual selection and natural selection.
3. What is the difference between microevolution and macroevolution? Please don't just memorize the definitions...be able to APPLY your definitions to different scenarios! For good practice, think of examples of each!
4. Clearly explain HOW speciation occurs...
5. Clearly describe each of the following forms of reproductive isolation. Be able to compare and contrast each form.
  1. Geographic (allopatric)
  2. Temporal
  3. Behavioral
  4. Mechanical
  5. Gametic isolation
  6. Hybrid inviability (post-zygotic)

## Classification and the Domains and Kingdoms Review Sheet Questions

1. In the name *Felis concolor*, the first term of the name refers to the \_\_\_\_\_ & the second term refers to the \_\_\_\_\_.
2. A kingdom is a broad taxonomic category composed of similar \_\_\_\_\_; A Phylum is a taxonomic category that is composed of similar \_\_\_\_\_; A Class is a taxonomic category that consists of similar \_\_\_\_\_; An Order is a taxonomic category made up of similar \_\_\_\_\_; A Family is a taxonomic category that is made up of similar \_\_\_\_\_; A Genus is made up of \_\_\_\_\_; And \_\_\_\_\_ - is the most specific category that refers to organisms that can produce fertile offspring.
3. \_\_\_\_\_ analysis considers the characteristics that have arisen as lineages have evolved over time.
4. List the six kingdoms of life.
5. Biologists use a classification system to group organisms in part because organisms are very \_\_\_\_\_ & \_\_\_\_\_.
6. The study of organisms requires the use of both large & small \_\_\_\_\_ of organisms.
7. Scientists assign each kind of organisms a universally accepted name in the system known as \_\_\_\_\_.
8. For many species, there are often regional differences in their \_\_\_\_\_ names.
9. In taxonomy, a group at any level of organization is referred to as a \_\_\_\_\_.
10. In the scientific version of a species name, which of the terms is capitalized?
11. How do binomial, or two-part, names compare with early versions of scientific names?
12. Often the second part of a scientific name is a Latinized \_\_\_\_\_ of a particular trait.
13. Why were scientific names problematic during the days of Linnaeus's days?
14. Linnaeus's system of classification contained \_\_\_\_\_ taxonomic categories.
15. Which 2 kingdoms did Linnaeus recognize?
16. \_\_\_\_\_ - is the most general & largest category in Linnaeus's system.
17. Traditional classifications tended to take into account primarily \_\_\_\_\_.
18. The procedure of grouping organisms based on their evolutionary history, which includes DNA & protein similarities is called \_\_\_\_\_.
19. What kind of analysis focuses on the order in which derived characters appeared in organisms?
20. An analysis of derived characters is used to generate a \_\_\_\_\_.
21. Similar genes are evidence of common \_\_\_\_\_.
22. All organisms use \_\_\_\_\_ & \_\_\_\_\_ to pass on information.
23. How is the "degree of relatedness" for very dissimilar organisms such as a yeast & cow determined?
24. What is the main idea behind the model of the molecular clock?
25. All organisms in the kingdoms Protista, Plantae, Fungi, & Animalia are \_\_\_\_\_.
26. \_\_\_\_\_ is the domain that corresponds to the Kingdom Eubacteria.
27. What does a cladistic analysis show about organisms?
28. \_\_\_\_\_ - the domain that contains unicellular organisms that live in extreme environments.
29. \_\_\_\_\_ & \_\_\_\_\_ are the only domains that are composed of only unicellular organisms.
30. The 3-Domain system arose when scientists grouped organisms according to how long they have been \_\_\_\_\_.
31. List the 7 taxonomic levels from largest to smallest.
32. Be able to answer questions from a cladogram.
33. How does traditional classification differ from modern day evolutionary classification?
34. What are 2 examples of mutualistic symbiotic organisms? How do they benefit each other?
35. What is meant by the term phylogeny? (\*go over cladograms & phylogenetic trees)

## Classification- Part 2

1. Define the following vocabulary:

Homeostasis  
Metabolism  
Prokaryote  
Eukaryote  
Heterotroph  
Autotroph

Unicellular  
Multicellular  
Invertebrate  
Vertebrate  
Virus

2. Know how to use a dichotomous key (like the salamander key).

3. What is the hierarchy of classification from most general to most specific?

4. What makes up the scientific name of each organism? How do you correctly write a scientific name?

5. What are the characteristics of the three domains? Give examples of organisms in each domain.

6. What are the general characteristics of the kingdoms (through K. Fungi)? Give 'general' examples of organisms in each kingdom. \*Use the chart you filled in

7. What are general characteristics of bacteria?; Know the general structure of bacteria; What are reproductive methods in bacteria?; What is transformation?; How do antibiotics work?

8. Why are bacteria (and fungi) ecologically important?

7. Describe the following terms as they relate to protists:

Cilia  
Flagella  
Pseudopods  
Contractile Vacuole

8. What are characteristics of protozoans? What is the basis for classifying protozoans?

9. What are characteristics of algae? Slime molds?

10. Go over the alternation of generations life cycle.

11. Why are viruses not 'classified'?; State the general characteristics of viruses; What are viruses composed of?; How do viruses make more copies of themselves?

12. Distinguish between lytic cycle and lysogenic cycle.

13. Go over the classification chart you filled in!

Practice Quizzes:

[https://www.biologycorner.com/quiz/qz\\_evolution.html](https://www.biologycorner.com/quiz/qz_evolution.html)

[https://www.biologycorner.com/quiz/qz\\_evolution01.html](https://www.biologycorner.com/quiz/qz_evolution01.html)

[https://www.biologycorner.com/quiz/qz\\_taxonomy.html](https://www.biologycorner.com/quiz/qz_taxonomy.html)

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