**BIOLOGY 2022-23 February 16, 2023**

**Today’s Agenda (Day 111)**

1. HOUSEKEEPING ITEMS

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1. Homework Check:

🡪 Ch 14 Reading Guide

1. Class Activity:

🡪 Day 40: Science Fair

\*CONT’D - **Week 4 of your experiment**

\*Begin SF Report Draft – Due THURSDAY 🡪 see p. 2 of doc

🡪 UPON RETURN FROM BREAK: CONT’D**:** PRESENTATION: How Many CATs – DNA Profiling Simulation

🡪 **TEST: Ch 14**

HOMEWORK:

* READ: Chapter 14 – The History of Life
* COMPLETE: SF Report Draft
* **STUDY**: Chapter 14 Test

REMINDERS:

* **TEST: Ch 14 🡪 Thursday, Feb. 16**

Chapter 15 – Evolution

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| Adaptive radiation | Allopatric speciation | Analogous structure | Ancestral trait | Artificial selection | Biogeography |
| Bottleneck | Camouflage | Derived trait | Directional selection | Disruptive selection | Embryo |
| Evolution | Fitness | Founder effect | Genetic drift | Gradualism | Hardy-Weinberg principle |
| Homologous structure | Mimicry | Natural selection | Post-zygotic isolating mechanism | Pre-zygotic isolating mechanism | Punctuated equilibrium |
| Sexual selection | Stabilizing selection | Sympatric speciation | Vestigial structure |  |  |

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**BIOLOGY 2022-23 READING GUIDE**

**Chapter 15 Evolution**

DIRECTIONS: Refer to your textbook to respond to the following questions.

1. What did Darwin suspect happen to species on the Galapagos Islands?
2. What did Thomas Malthus suggest would happen to the human population?
3. How did Darwin take Malthus’ ideas to help describe what he had seen in the Galapagos Islands?
4. Describe the process of natural selection.
5. Darwin’s theory of evolution by natural selection has four basic principles that explain how traits of a population can change over time. List the four principles.
6. Define evolution. What is the driving mechanism behind evolution?
7. How does the fossil record provide evidence to support evolutionary change?
8. What is the significance of Archaeopteryx? What organisms did it evolve from?
9. Compare derived traits and ancestral traits.
10. Explain why all of the bones of human, horse, cat, porpoise, and bat (as shown on p.425 of textbook) share a similar structure? How did they develop different functions?
11. Which of the forelimbs mentioned in #10 would most likely resemble a whale’s fin?
12. What are vestigial structures?
13. How does evolutionary theory predict vestigial structures?
14. Eagles and May beetles are not closely related, yet they both have wings. How can this be explained?
15. How does comparative embryology provide support for evolutionary theory?
16. What does the graph below suggest?

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1. Would the cytochrome c of a reptile or a bird be expected to have more amino acid differences when compared to that of a human? Explain (use the graph for this question).
2. What is an adaptation? How are adaptations related to fitness?
3. Compare and contrast camouflage and mimicry.
4. Give an example of how an organism uses mimicry to increase its chances of survival.
5. How is the helplessness of a human baby a consequence of adaptation rather than an evolutionary advantage?
6. Describe what natural selection explains in terms of evolution.
7. Explain the Hardy-Weinberg principle.
8. How does the Hardy-Weinberg principle help explain the following picture?
9. According to the Hardy-Weinberg principle, what are the five conditions that a population in genetic equilibrium must meet to remain that way?
10. What is the consequence of a non-random mating population of organisms (according to H-W)?
11. What is the consequence of a small population of organisms (according to H-W)?
12. Describe the founder effect. Whys is this an example of genetic drift?
13. What effect has the bottleneck had on the reproductive rate of cheetahs?
14. How can mutations benefit a population?
15. List the three main ways in which natural selection alters phenotypes.
16. Give an example of stabilizing selection in humans.
17. Describe 2 examples of directional selection (don’t just list them).
18. Describe one example of disruptive selection.
19. How can sexual selection change the frequency of a trait in a population?
20. Describe an example of how sexual selection has resulted in a different appearance for males and females of a species.
21. Compare and contrast prezygotic and postzygotic isolating mechanisms.
22. Describe an example of a prezygotic isolating mechanism.
23. Describe an example of a postzygotic isolating mechanism.
24. Compare and contrast allopatric speciation and sympatric speciation.
25. Describe and provide an example of adaptive radiation.
26. Give an example of coevolution and explain why your example illustrates the concept.
27. What is the driving force behind convergent evolution?
28. Describe an example of convergent evolution.