BIOLGY 1

WORKSHEET III

(GENETICS, EVOLUTION, ECOLOGY)
1. What is a karyotype?

2. What are homologous chromosomes? How many pairs of homologous chromosomes are found in humans?

3. Label the diagrams below:

How many chromosomes are in this cell?_____

4. Label the diagrams below:  

How many chromosomes are in this cell?_____

5. Label the diagrams below:
5. What is the functional significance of the cell cycle (mitosis)?

6. What is the functional significance of meiosis?

7. What are two ways that meiosis contributes to genetic variation?

8. What is the functional significance of crossing over? (This happens in prophase of meiosis. Look this up in your text.)

9. Discuss two ways in which meiosis differs from mitosis.
10. Define:
   a. Somatic Cell
   b. Gamete
   c. Haploid
   d. Diploid
   e. Fertilization
   f. Zygote
   g. Mitosis
   h. Cytokinesis

11. What is asexual reproduction?

12. What are the advantages of sexual reproduction?

13. Define the following terms:
   a. Phenotype
   b. Genotype
   c. Heterozygous
   d. Codominance
14. A person with AB blood is crossed with a person with blood type O.
   a. What are the genotypes and phenotypes of the parents and possible children?
   b. Which blood type exemplifies codominance?
   c. What is the recessive blood type?
   d. Is this an example of multiple alleles? Explain.

15. A woman of normal vision whose father was color-blind marries a man of normal vision whose father was also color blind. What types of vision will be expected among their offspring?

16. A woman with type A blood whose father had type O blood marries a man with type B blood whose father was AB and whose mother was type O. What are the genotypes of this man and woman? Would it be possible for this couple to have a type O child? Explain.
17. Rough coat (R) is dominant over smooth coat (r) in guinea pigs, and black coat (B) is dominant over white (b). The F₁ from a mating of homozygous individuals for rough black and smooth white is mated with a smooth white guinea pig. What is the phenotypic ratio of their offspring?

18. What is the Cretaceous - Tertiary Boundary? What event happened at this boundary? How long ago did this event happen?
19. The age of mammals is the ________________________________.
20. The age of reptiles is the _________________________________.
21. The age of fishes and amphibians is the ____________________.

22. How did the following people, places, or things influence Darwins’ thinking?
   a. Charles Lyell:
   b. Lamark:
   c. Animal breeders:
   d. Galapagos finches:
   e. Alfred Wallace
   f. Thomas Malthus

23. List an explain 4 different lines of evidence in support of evolution. (See you text)
   A.
   B.
   C.
   D.

24. What are four ways that changes in gene frequencies can occur?
25. What is genetic drift?

26. What is the Bottleneck Effect? What are three animal populations that have experienced population bottlenecks?

27. What is the Founder Effect? (See your text)

28. Explain the events that led to allopatric speciation of:
   a. Flightless birds:
   b. Squirrels at the Grand Canyon:
   c. Pupfish

29. Define the term Adaptive Radiation.

30. How does natural selection result in changes in gene frequencies in a population?

31. Define the term Homology.

32. Define the following terms:
   A. Biological species:
   B. Allopatric speciation:
   C. Polyploidy:
D. Sympatric speciation

E. Carrying capacity

33. Define the following terms:
   A. Abiotic
   B. Biotic
   C. Producer
   D. Primary Consumer

34. Define **and give an example** of the following:
   A. Ecological island
   B. Extirpation
   C. Inbreeding
   D. Endemic species
   E. MVP

35. Thomas Lovejoy worked in Brazil on the project called *The Minimum Critical Size of Ecosystems Project*. What were the results of his study?
36. List at least two reasons that mountain lions in the Santa Ana Mountains are at risk of extinction.

37. What are some of the problems associated with inbreeding?

38. Draw a **Species - Area Curve**. Label the X and Y axis. Discuss some of the reasons why large islands have more species.

39. What is **Biological Magnification**? Name a chemical that has been biologically magnified and an animal it has affected.

40. What are some of the problems associated with inbreeding?

41. Name two animals that have specialized feeding habits. What do they eat?

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<tr>
<th>Animal</th>
<th>Diet</th>
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42. Name two animals that have specific habitat requirements. What type of habitat do they require?

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<tr>
<th>Animal</th>
<th>Habitat</th>
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43. What is a *Keystone Species?* Give two examples of keystone species

**Definition:**

Examples: ____________________ ____________________

44. Define

A. Epiphyte

B. Mycorrhizal Fungi

C. Lichen

D. Cavity Nester

E. Snag

45. List three bird species found in old growth forests.

46. List three mammal species found in old growth forests.

47. Describe at least 8 characteristics of old growth forests.

A.   E.

B.   F.

C.   G.

D.   H.
48. Why are downed logs important to old growth forests?

49. What is meant by “slash and burn agriculture”. Why did it work in the past, yet it is a major cause of tropical deforestation today?

50. List at least 5 consequences of deforestation
   A.
   B.
   C.
   D.
   E.

51. List 5 characteristics of Tropical Rainforests
   A.
   B.
   C.
   D.
   E.

52. Clear-cutting is associated with forest fragmentation. What is clear-cutting? What are some of the problems associated with forest fragmentation?