

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Test Date \_\_\_\_\_\_\_\_\_\_\_ Period \_\_\_

**Bio Ch15&16**

**Adaptations, Natural Selection, & Speciation**

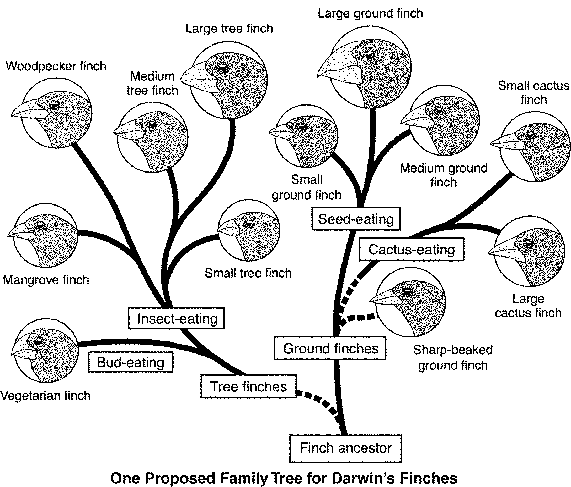
**Things to Know**

**Vocabulary to know** *(must define for full bonus points)*

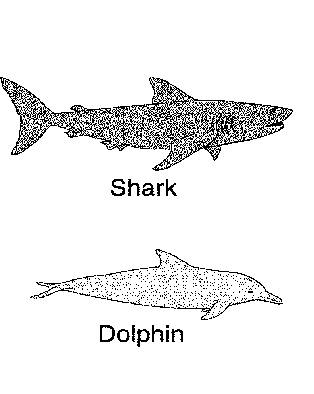
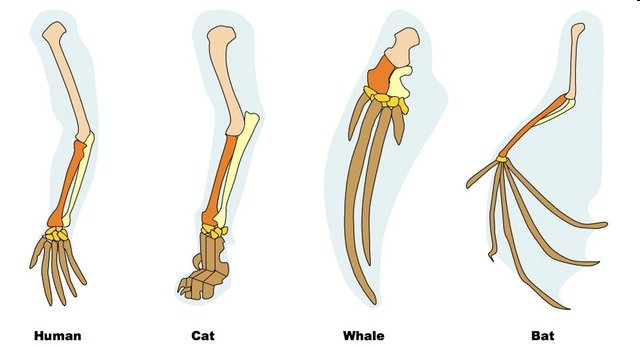
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| --- | --- | --- |
| Acquired Characteristics  Adaptation  Analogous Structures  Artificial Selection/Selective Breeding  Convergent Evolution  Directional selection  Disruptive selection  Divergent Evolution | Evolution  Gene pool  Genetic Drift  Genetic Equilibrium  Genotype  Geographic Isolation  Fitness  Homologous Structures  Inherited Characteristics | Mutation  Natural Selection  Phenotype  Population  Reproductive Isolation  Speciation  Stabilizing Selection  Temporal Isolation  Vestigial Structure |

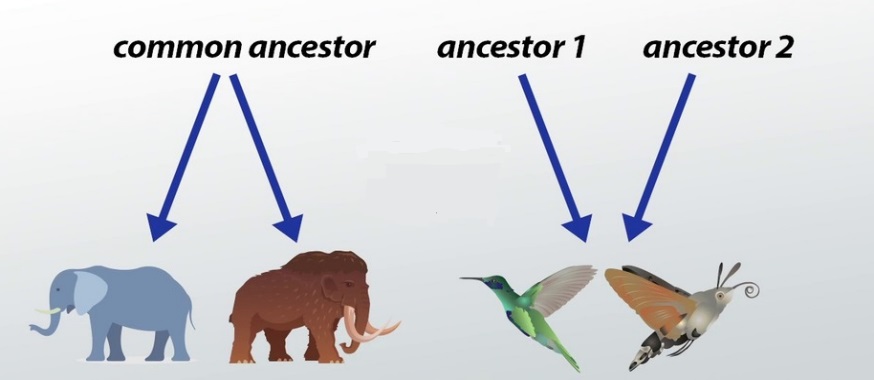
**Concepts to Understand**

**Part I Natural Selection**

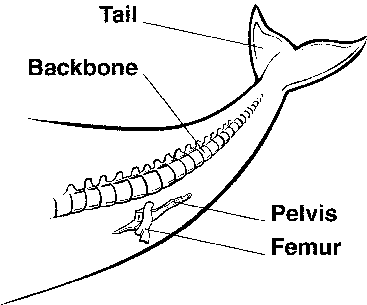
1. **Darwin Background and Influences**
2. What did James Hutton and Charles Lyell add to Darwin’s understanding?
3. Jean-Baptiste Lamarck had some right ideas and some wrong. List two of each.
4. What is the difference between acquired and inherited characteristics?
5. Who was Thomas Malthus and how did his theories relate to Darwin’s?
6. Where did Darwin go and when?
7. What was the name of his ship?
8. What was the title of Darwin’s book and when was it published?
9. What did Alfred Russell Wallace have to do with Darwin publishing his book?

**B. Darwin’s Finches**

1. Describe how Natural Selection helps species adapt to their environment.
2. Compare Darwin’s finches to those on mainland South America.
3. What structural adaptation did see among finches in the different islands?
4. What did Darwin mean by “Survival of the Fittest”?
5. What does Darwin’s theory say about the number of offspring produced?
6. What does Darwin say about how quickly evolution takes place?
7. Describe the process Rosemary and Peter Grant observed among the finches.
8. **Anatomical Evidence for Evolution**
9. ****Describe the difference between homologous and analogous structures.
10. Which pictures to the left shows which? Label them.

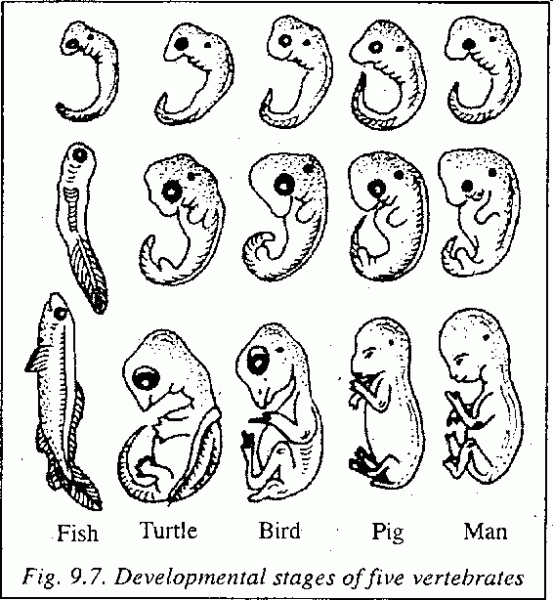
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1. Also label which show convergent and divergent evolution.
2. Describe vestigial structures.

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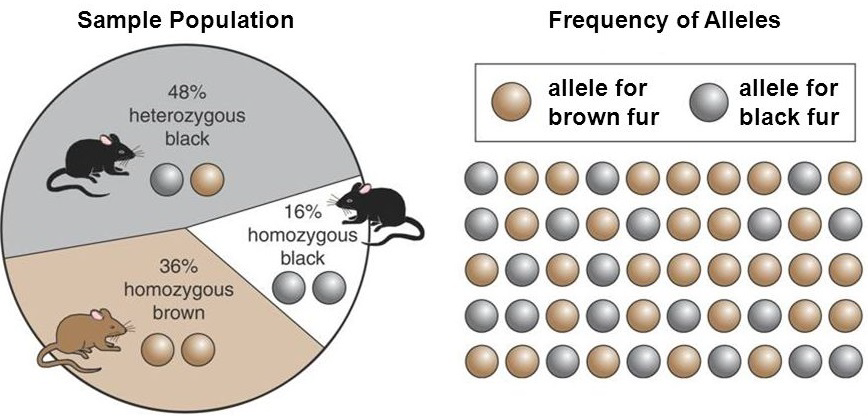
1. How does is this whale an example of a vestigial structure?
2. Give an example of a vestigial structure in humans.

7.How does embryology support evolution?

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8.How does the study of fossils support evolution?

1. **Genetic Evidence for Evolution**

1. Define/Describe what is meant by gene pool.

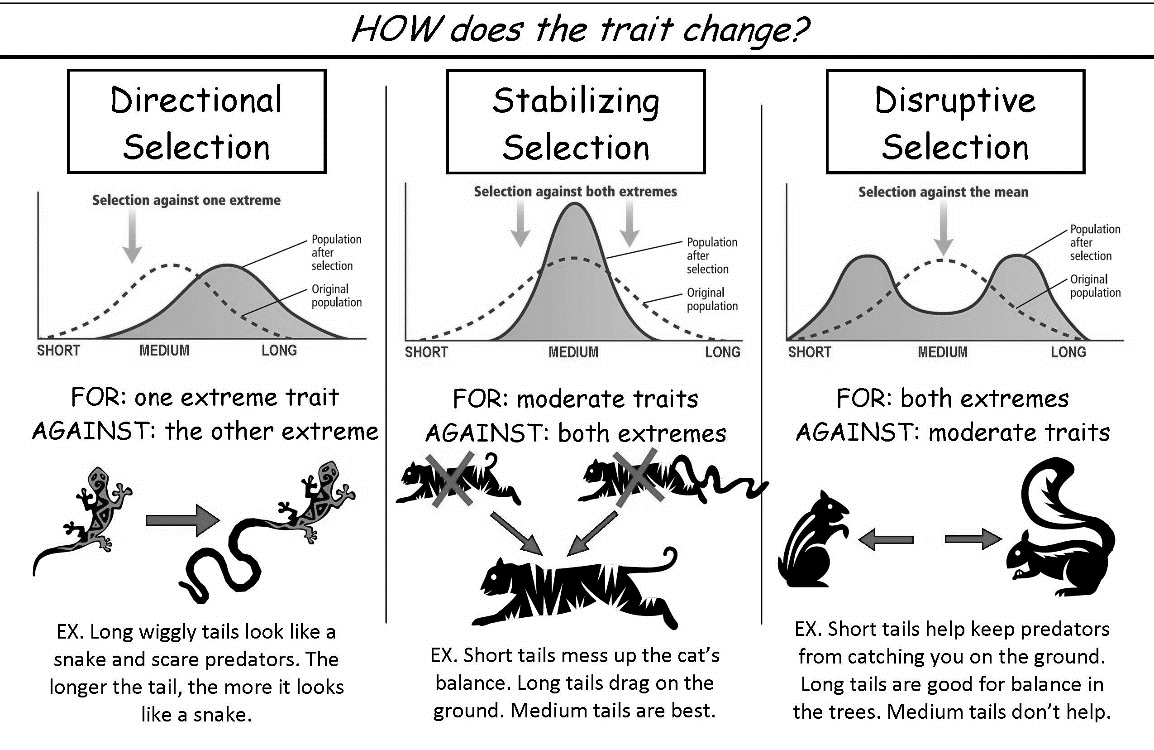
2. Define a population.

3. What do we mean by the frequency of alleles?

4. What are the two main sources of genetic variation?

5. If you know how to shuffle cards to play a game, then what do you think is meant by genetic shuffling?

1. Define Mutation



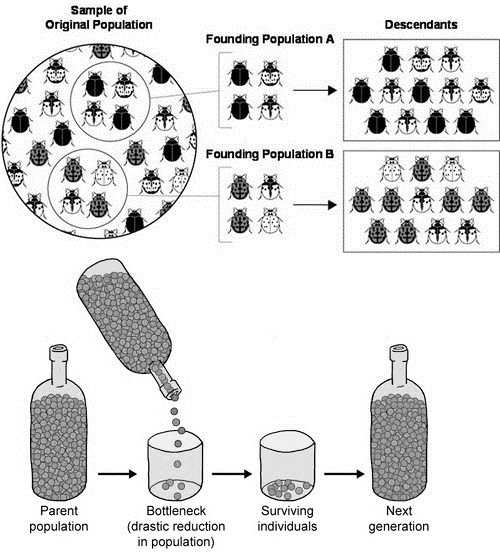
**Part II Speciation**

1. **Genetic Drift** 
   * + 1. What is meant by directional selection?
       2. Define stabilizing selection.
       3. Describe disruptive selection
       4. If individuals at only one end of a bell curve of phenotype frequencies have high fitness, the result is which type of selection?
       5. The many different forms of beak among a population of finches is probably a result of what type of selection?
       6. If most human are average height which type of selections would that show?

7.Describe the Hardy-Weinberg Principle.

8. What is it called when allele frequencies don’t change, and remain constant?

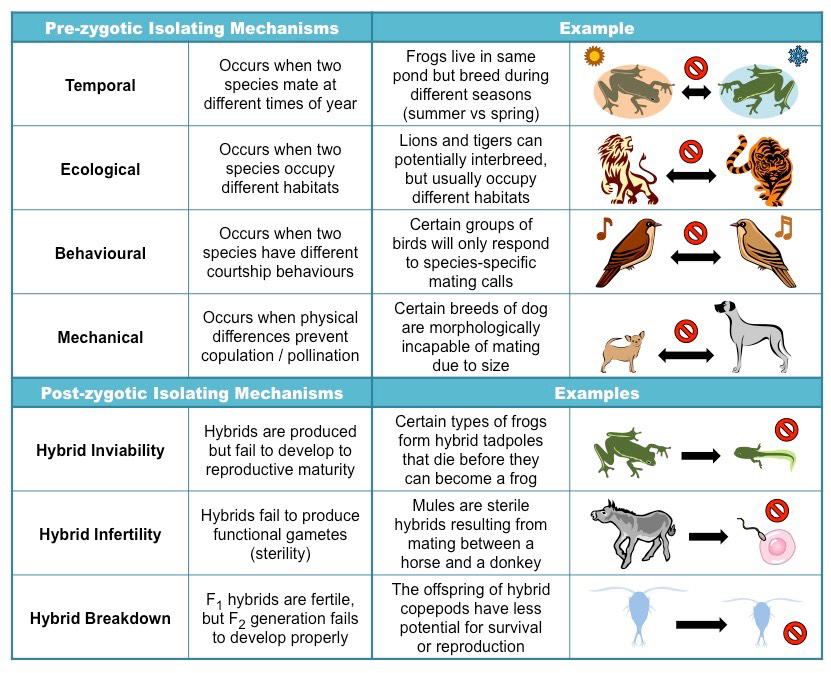
1. What 5 things must happen for the above to take place?



1. Describe Genetic Drift, is it ordered or random?
2. What size of populations are associated with genetic drift?

1. Describe the founder effect shown to the left.

1. What is the bottleneck effect?
2. **Reproductive Isolation**



1. What factor is necessary for the formation of a new species?
2. How does geographic (aka ecological) isolation between two species cause increased differences in their gene pool?
3. Which of the above may develop in a group of plants whose flowers open early in the morning and others that open late in afternoon?