

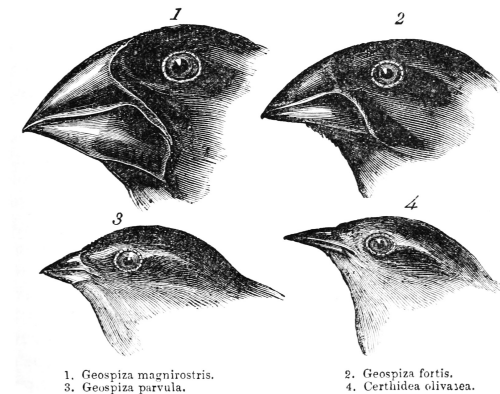
CONCEPT: OVERVIEW OF EVOLUTION

● **Evolution** is a process through which variation in individuals makes it more likely for them to survive and reproduce

□ There are _____ principles to the theory of evolution

- *Variation*: Individuals within a population have variation in morphology, physiology, and behavior
- *Heredity*: Offspring resemble their parents more than they resemble unrelated individuals
- *Selection*: Some forms are more successful at surviving and reproducing than other forms

EXAMPLE:



● The **neutral theory** of evolution states that evolution is caused by genetic drift of _____ mutations

□ Most mutations that occur, and are kept in a population are neutral mutations

- *Synonymous mutations* change one codon to an alternative codon, so there is no change in amino acid
- *Nonsynonymous mutations* cause a change in amino acid

□ There are two ideas of how these mutations lead to evolution

- **Single step selection**: In a single step, random mutation or arrangement causes a selection for that trait
- **Cumulative selection**: Multiple single steps are accumulated that lead to selection for that trait

EXAMPLE: Infinite monkey hypothesis explains cumulative selection



PRACTICE:

1. The neutral theory of evolution states that which of the following is most responsible for evolution?
 - a. National Selection
 - b. Allele creation through mutation
 - c. Gene Flow
 - d. Genetic Drift
 - e. Random mating

2. Which of the following is not one of the three main principles of evolution?
 - a. Variation
 - b. Heredity
 - c. Mutation
 - d. Selection