

I. Scientific Evidence and Evolution

A. Evidence shows evolution results from four factors:

- a. Genetic variation of Species
- b. Overproduction of Offspring
- c. Differential Survival for Existence
- d. Differential Reproduction

B. The results of these four factors are a process called

= natural selection = organisms that are better suited to their environment will survive and produce more offspring

* C. Natural selection and evolution are the same thing.

II. Evolution of Populations

A. Populations are the smallest unit that can **evolve** (adapt.)

B. Adaptation = a characteristic that makes an individual suited to its environment

C. Speciation of a species

III. Genetic Variation of Species (Driving Force # 1)

A. Natural selection can only occur if there is genetic variation and differential survival among members of the same species.

B. Variation in individuals of a species is caused by:

- a. Mutation in DNA (creates new variation)
- b. Crossing over of chromosomes and independent assortment during meiosis
- c. Random combination of gametes during fertilization

IV. Overproduction of Offspring (Driving Force # 2)

A. Many organisms produce more offspring than the environment can support, which increases the chance that some will survive.

B. Species produce more offspring than the environment can support.

C. Carrying capacity is the probability that a population will increase under ideal environmental conditions.

D. Most organisms do not reach their biotic potential because they live under limiting environmental conditions.

E. Overproduction of offspring leads to competition for resources.

- a. Limited resources results in an environmental struggle for survival
- b. This leads to competition and a struggle for survival