Evidence of Evolution

1. Anatomy

a. Homologous Structures

Traits inherited by two different organisms from a common ancestor

Similar anatomy, different function

Example: elephant tusks and beaver teeth..incisors from common ancestor

Divergent Evolution creates Homologous structures:

A common ancestor evolves into new species, which continue to evolve and become less and less alike over time due to differences in their environments

b.Analogous Structures

Similarity due to **convergent evolution** (evolved to the same environment)

Not common ancestry

CONVERGENT Evolution creates Analogous Structures:

When two separate groups of animals evolve to have similar structures because they have evolved in a similar Environment

Similar function, different anatomy

Example: sugar gliders & flying squirrels

c. Vestigial Structures

Structures or organs that seem to serve no useful function. Vestigial organs are often homologous to organs that are useful in other species

For example: snakes have tiny pelvic bones and limb bones
eyes on cave salamanders (blind)
rear leg bones in whales

2. Embryology

Developmental similarities can be seen when Comparing the early embryos of many species

3. Cellular/Molecular

Related organisms **have similar chemical processes, chemicals and proteins**.

Ex: photosynthesis, hemoglobin, DNA ...

Related organisms share large % of similar DNA sequences (lots of genes in common)

4. Fossils

Preserved remains of ancient organisms

Fossils preserve anatomical structures that provide evidence of evolutionary history of an organism