Anatomical and Molecular Homologies

Homology is similarity resulting from common ancestry.

Homologous structures are anatomical resemblances that represent variations of a structure present in a common ancestor.

• an example of this would be an arm and hand in a human, a leg and paw in a cat, the fin of a whale and the wing of a bat.

Vestigial structures are remnants of features that served important functions in the organism's ancestors.

• examples of homologies at the molecular level are genes shared among organisms inherited from a common ancestor.

Linking Homologies to Darwin

The Darwinian concept of an **evolutionary tree** can be used to explain such incidents.

Evolutionary trees represent hypotheses about the relationships among different groups and can be made using therent types of rata, e.g. anatomical and DNA sequence data.

• fol a visual example of this, see slide 22 in the lecture slides

Convergent Evolution

This is the evolution of similar (analogous) features in distantly related groups.

Analogous traits arise when groups **independently adapt to similar environments** in similar ways.

• an example of this would be the sugar glider native to Australia, and the flying squirrel native to North America.

Biogeography

This is the geographic distribution of species.