

Genetics and Evolution IB 201 06- Lecture 1

Evidence for Evolution

I. Definitions of Evolution

- broad definition
- Darwin's definition
- population genetic definition

II. Darwin's special insight

- see Darwin's tree from *Origin of Species*, 1859
- Western World view before 1859

III. Evidence for Evolution

A. Fossil evidence

- extinct organisms
- Law of Succession
- transitional fossil forms

B. Relictual evidence from living organisms

- vestigial organs

C. Ecological evidence from living organisms—change in ecological time

- Examples abound in scientific literature; see e.g., the soapberry bug in F&H, Ch 2 (Fig. 2.1)

IV. Evidence that organisms are descended from common ancestors

A. Mapping trait differences onto evolutionary tree diagrams (phylogenetic trees)

- Examples

B. Homologous structures

- definition of homologous morphological structures

Ref: Freeman & Herron, 2004, 3rd edition (Chap. 2)