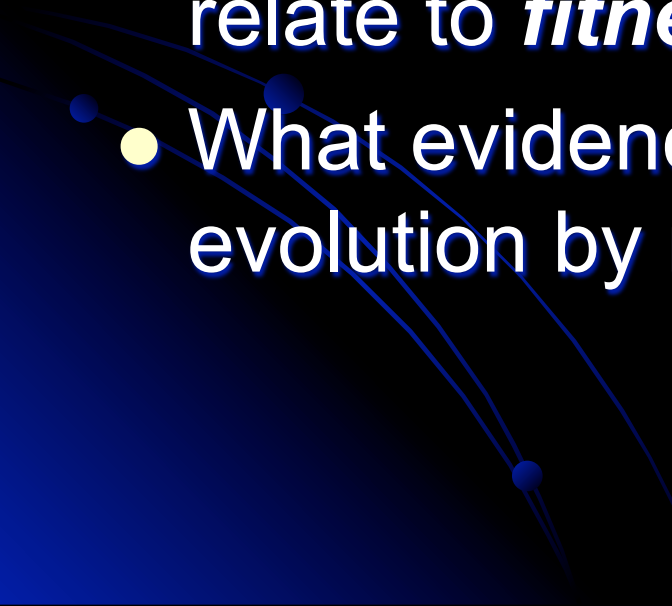
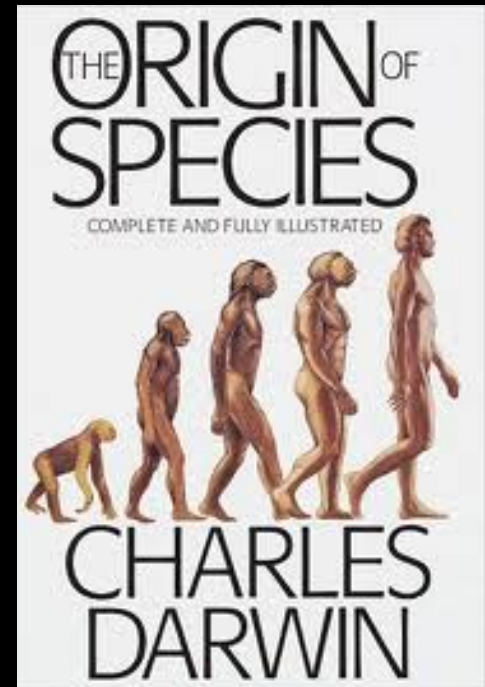


# Chapter 15-3: Darwin Presents His Case

## Essential Questions:

- How does *natural variation* relate to *artificial selection*?
  - What is *natural selection* and how does it relate to *fitness*?
  - What evidence did Darwin present for evolution by natural selection?
- 

- Publication of *On the Origin of Species*
  - 1858: Alfred Wallace comes up with same idea
  - Darwin publishes 1859



- Natural variation and *artificial selection*
  - Humans select desired traits from variation found in nature
  - Over time, can change species



- Evolution by *natural selection*

- Struggle for existence

- High birth rate means not enough resources for all

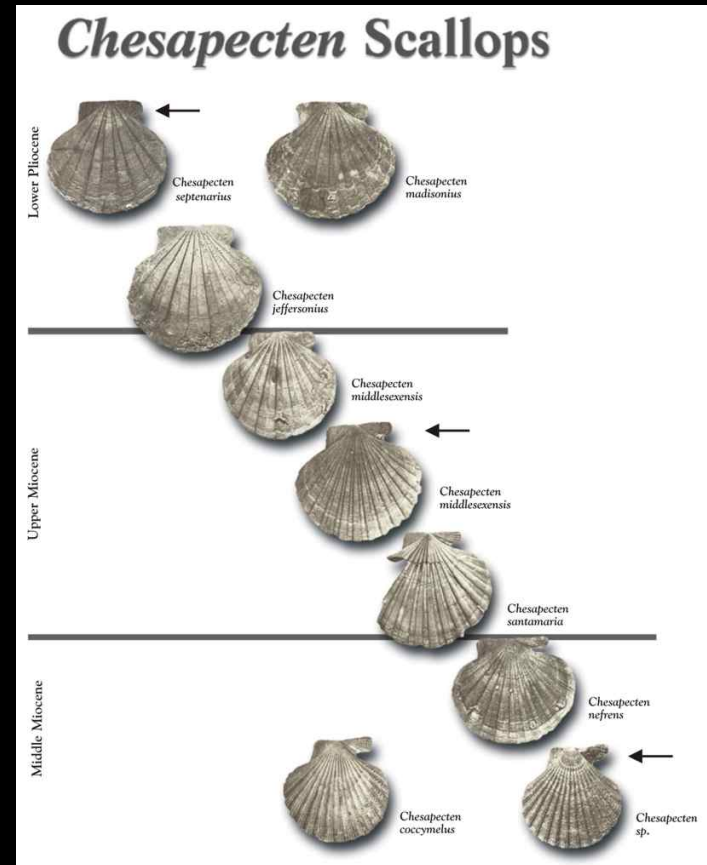
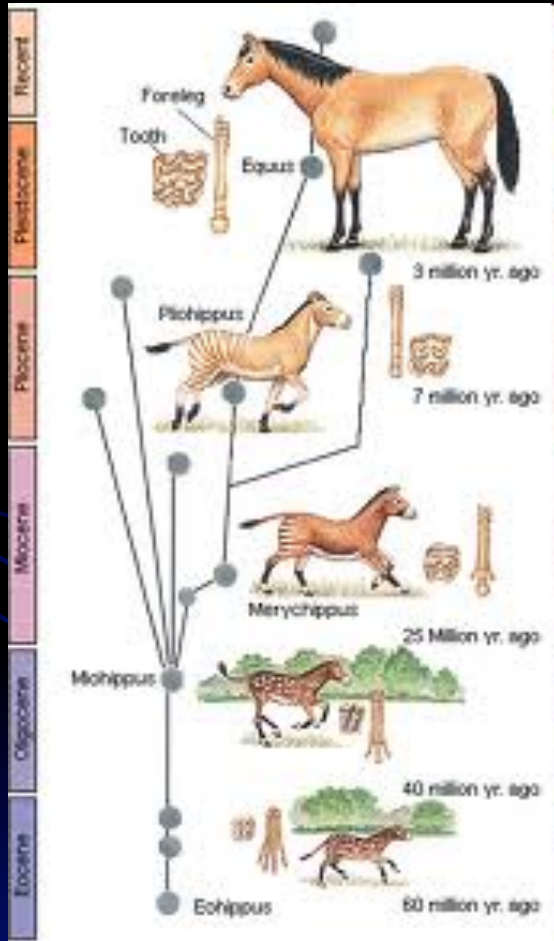
- Survival of the fittest

- Fitness: how well suited org. is to its environment
- Adaptation: trait that increases fitness
- Over time, *natural selection* causes changes in inherited traits

- Descent with modification

- Each species descends, with modification, from other species
- Common descent

- Evidence of evolution by nat. selection
  - Fossil record

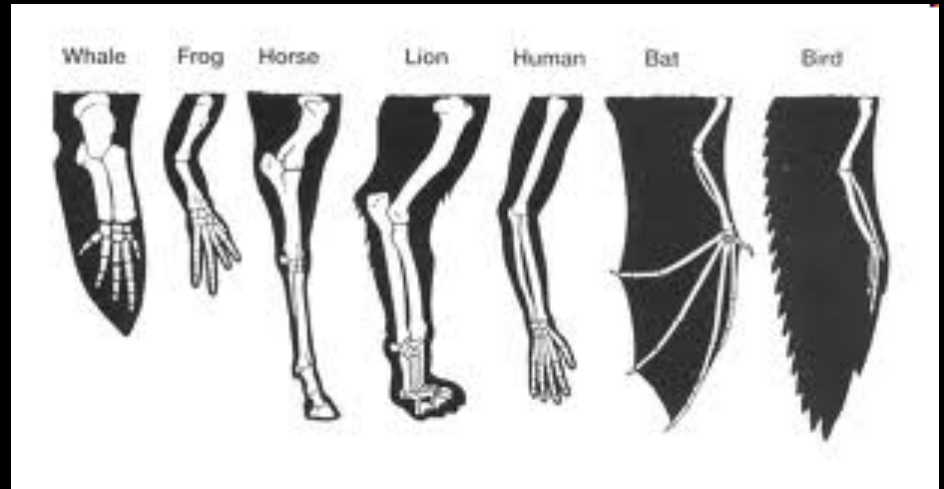
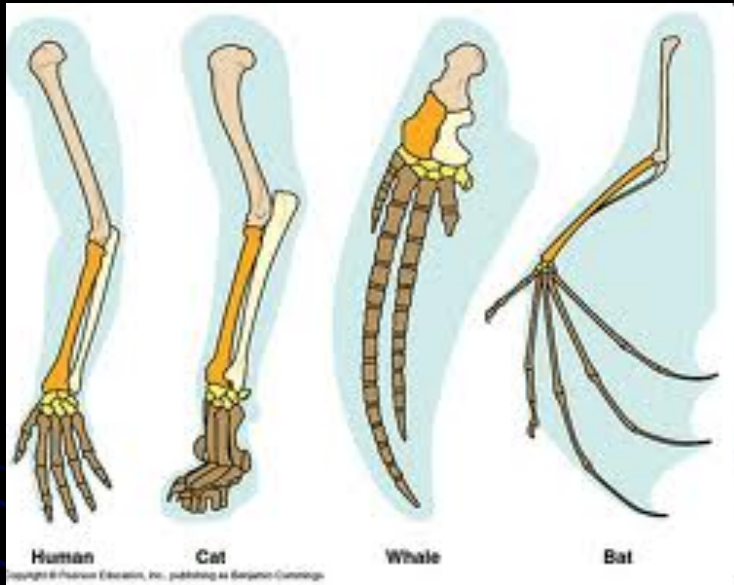




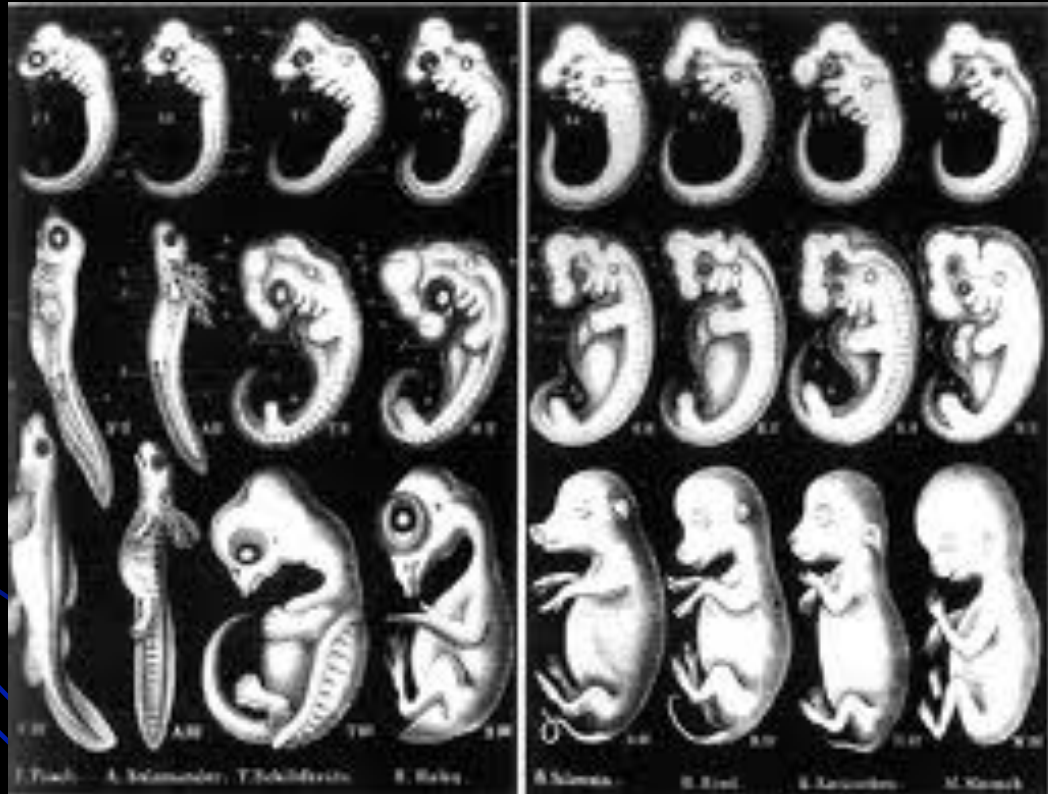
- Geographic distribution of living species



- Homologous body structures



- Similarities in early development





# ● Summary of Darwin's Theory (p. 386)

1. Variation exists
2. More offspring produced than can survive
3. Therefore, competition for limited resources
4. b/c of #1, each org. has advantages & disadvantages in struggle to survive
5. Most fit individuals survive/reproduce most successfully
  1. Most fit traits get passed on most often
  2. Less fit traits passed on less often
6. Species change over time due to *natural selection*, new species appear & other species disappear
7. Species alive now descended, with modification, from past species
8. All orgs. are united in a single tree of life by common descent