Evolution

- evolution: process where modern organisms have descended from ancient organisms
- theory: well supported testable explanation of phenomena that have occurred in the natural world

Voyage of the Beagle

- darwin joined the crew of the H.M.S. Beagle
- during his voyage, darwil made a hypothesis about the way life changes over time
- his samples of animal & plants specimen led him to a scientific explanation for the diversity of life

Darwin's Observations

- darwin was curious about how organisms were so perfectly suited to their environment and what role fossils played
- fossils: preserved remains of ancient organisms
- he noticed different shapes in bird beaks and turtle shells among different islands
- he wondered if these organisms had once been a part of the same species

Ancient, Changing Earth

- hutton & lyell discovered that the earth is many millions of years old & the processes that changed the earth in the past are the same processes that operate in the present
- hutton: layers of rock are evidence of how old earth is
- lyell: geological phenomena like volcanoes evidence of how processes shaped earth millions of years ago and still do

Lamarck's Evolution Hypothesis

- lamrack: selective use or disuse of organs -> organisms acquired or lost traits over time -> traits passed to offspring -> change in species
- discovered that environments also affect organisms

Population Growth

- malthus: if population grows & left unchecked -> fewer resources (livong space & food)

Inherited Variation & Artificial Selection

- artifical selection: nature provides variation & human selected those variations that they found useful

Evolution by Natural Selection

- struggle for existence: competition among species for resources to survive
- fitness: organism's ability to survive and reproduce in an environment
- adaption: any inherited characteristic that increases an organism's chance of survival
- survival of the fittest: individuals who survive and reproduce most successfully
- descent w/ modification: each species has descended with changes from other species over time (all organisms are related to one another)
- common descent: we could find the common ancestors of all living things

Evidence of Evolution

- darwin proposed liing things have been evolving on earth for millions of years; evidence: fossil record, geological distribution of living species, homologous structures of living organisms, & similarities in embryology
- homologous structures: structure that mature differently ut develop from the same embryonic tissues
- vestigal organs: anatomical structures that are retained in a species despite having lost their primary ancestral function

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