GENERAL BIOLOGY Lecture 20 - Viruses, Monerans*, and Protistans

I. Overall scheme to evolution - important because it helps us understand life
Note that viruses are defined as non-living

Monerans* =====> Protistans =====> Fungi
(bacteria) (single celled) Animals Plants
---------- "microbes" ----------

From single cells ==========> multicelled organisms with division of labor

II. Viruses - important because of their role in disease and biotechnology
- **A. They are not alive, but do affect the 5 (or 6, depending on the classification system) kingdoms**
- **B. Characteristics of viruses**
  1. **Nucleic acid core (DNA or RNA) surrounded by a protective protein**
  2. **Replicates only after genetic material enters a specific host**
- **C. Structure of a virus (T4 Phage)**
  1. **Head - has DNA with protein coat**
  2. **Sheath**
  3. **Tail fibers**
- **D. Examples of important viruses**
  1. **RNA viruses**
     - **a) Rhinoviruses - common colds**
     - **b) Influenza viruses - cause worldwide epidemics (winter flu, Asian flu, etc.)**
     - **c) Retroviruses - tumors, leukemia, and AIDS**
  2. **DNA viruses**
     - **a) Herpes viruses - fever blisters (type I) and genital infections (type II)**

III. Monerans - prokaryotic
- **A. Bacteria are the sole members of the Kingdom Monera***
  1. ***E. coli, Streptococcus, Staphylococcus,* blue-green algae**
- **B. Characteristics of bacteria**
  1. **Prokaryotic**
  2. **Have a single chromosome**
  3. **Most have a cell wall composed of peptidoglycan**
  4. **Most reproduce by binary fission**
  5. **Bacteria show metabolic diversity**
- **C. Types of bacteria**
  1. **Photosynthetic autotrophs - use sunlight as energy to drive synthesis of biological molecules**
  2. **Chemosynthetic autotrophs - use simple inorganic compounds as energy source to drive synthesis of organic molecules**
  3. **Heterotrophs (majority of bacteria) - like us - rely on other organisms to obtain food energy**

IV. Protistans - single-celled eukaryotes
- **A. Examples**
  1. **Slime mold - moves along decaying logs, twigs, etc., engulfing food**
  2. **Euglenids - little organisms found in lakes, etc. and have a flagellum**
  3. **Protozoans - highly motile predators or parasites**
  4. **Green algae, brown algae, golden algae, red algae**

The Kingdom Monera, under the new classification scheme, has been divided into the Kingdoms Archaebacteria and Eubacteria