Kingdoms and Domains

Section 18-3

Key Idea: Biologists have added complexity and detail to classification systems as they have learned more.

Updating Classification Systems

- In the 1800s, scientists added Kingdom Protista
- By the 1950s, Kingdoms Monera, Protista, Fungi, Plantae, and Animalia were used.
- In the 1990s, genetic data suggested two major groups of prokaryotes.

Key Idea: Today, most biologists tentatively recognize three domains and six kingdoms.

Bacteria are prokaryotes that have a strong exterior wall and a unique genetic system.

Archaea are bacteria that have a chemically unique cell wall and membranes and a unique genetic system.

A eukaryote is an organism that have cells with a nucleus and other internal compartments.

Major characteristics used to define kingdoms include:

cell type

cell walls

body type

mode of nutrition

Major Characteristics

- Organisms may have a unique system of DNA, RNA, and proteins.
- Related groups of organisms will also have similar genetic material and systems of genetic expression.

Domain Bacteria

- Equivalent to Kingdom Eubacteria.
- The common name for members of this domain is *bacteria*.
- Bacteria are the most abundant organisms on Earth and are found in every environment.

Domain Archaea

- Equivalent to Kingdom Archaebacteria.
- Examples are *extremophiles* found in extreme environments and *methanogens* live in oxygen-free environments.

The major groups of eukaryotes include:

- Plantae
- Animalia
- Fungi
- Protista

Domain Eukarya

- Organisms composed of eukaryotic cells.
- These cells have a complex inner structure that enabled cells to become larger than the earliest cells.