

Chapter 27-31

Prokaryotic Diversity

- Prokaryotes dated at 3.5 billion years old
- Modern Prokaryotes are most abundant, lacking sexual reproduction

Domain Bacteria

- Proteobacteria
 - "true bacteria"
- Cyanobacteria
 - "Blue-Green bacteria"

Domain Archaea

- Have an "almost" nucleus
- specialized membranes
- surrounded by a cell wall
- old, can live in extreme conditions

Eukaryotic Diversity (Ch 28)

Kingdom Protista

- Earliest eukaryotes in fossil record
- most are microscopic and found in moist environments
- DNA many separate groups
- Most artificial category
 - "catch-all" category

Subgroups

Algae

- Plant-like organisms
- 10 groups
- autotrophic (self-feeding)
 - most are photosynthetic
 - few ingest food
- cell wall with

Protozoans

- Animal-like
- mostly netraotrophic (food-eating)

Slime Molds

- Fungal-like Protist
- Mostly saprothrophic (absorb-feeding)
- mostly multicellular

Kingdom Fungi (Ch 31)

- Conspicuous portion of the organism in the mushroom/yeast/mold/etc
- Saprothrophic (some are heterotrophic)
- Natures recyclers
- Composed of:
 - Mycelium
 - compacted mass of tubular filaments called hyphae
 - Fruiting body
 - site of spore production
 - Cell wall
 - composed of muramic acid/chitin

Kingdom Plantae (Ch 29 & 30)

- >330,000 species
- eukaryotic and multicellular
- autotrophic (mostly) self-feeding

- capture sunlight to produce energy by photosynthesis
- Food storage compound
 - starch
- cell wall
 - cellulose
- Are referred to as "land plants"
- fossils dated to ~400mybp (million years before present)
- Ancestor stock
 - probably a group of algae (green)
- Life on land requires special innovation
 - Must be able to get water
 - ROOTS!

Phyla (divisions)

- 10 phyla
- Typically combine these into 4 broad categories for convenience

Bryophytes

- Phylum Hepatophyta
 - Liverworts
 - ~6500 species
- Phylum Anthoceroophyta
 - Hornworts
 - ~100 species
- Phylum Bryophyta
 - Mosses
 - ~12,000 species

Referred to as "mosses and their friends"

Characteristics

- Reproduce by spores (not seeds)
- non-vascular plants
 - lack conducting tissues
 - xlem and phloem
- Small plants
- Require external H₂O for reproduction

Pteridophytes

- Phylum Lycopodiophyta
 - lychophytes

- 1000 species
- Phylum Pteridophytes
 - Ferns and allies
 - 12,000 species

Characteristics

- Sporangia
 - Where the spores are produced
- Reproduce by spores
 - no seeds
- vascular plants
 - xylem
 - water and minerals
 - phloem
 - food and solutes
- true roots, stem, and leaves
 - due to being vascular
- vascular allows for larger size
- Require external H₂O for reproduction

Gymnosperms

- Phylum Cycadophyta
 - cycads
 - 300 species
- Phylum Ginkophyta
 - Ginko
 - 1 species
- Phylum Gnetophyta
 - gnetophytes
 - 300 species
- Phylum Coniferophytes
 - conifers
 - 500 species

Means "Naked seeds"

Seeds are not enclosed

Biggest group are the conifers
(Cone bearing trees)

- Oldest
 - Bristle cone pine
 - Over 4600 years
- Biggest

- Giant Sequoia
 - estimated 600 tons
- Tallest
 - Coastal Redwood
 - 180 meters in height

Characteristics

- Vascular
 - more advanced than Pteridophytes
- Advance seed
 - It has more survival value
 - Contains:
 - Embryo
 - Offspring
 - Stored food
 - Integument
 - Seed coating
- Does not require external H₂O for reproduction
 - Pollen tubes deliver sperm to egg location

Angiosperms

- Phylum Anthophyta
 - 300,000 species

Characteristics

- Enclosed seed
- produces flowers and fruits
- most advanced vascular tissues
- Seeds advanced
 - Enclosed in a vessel (fruit)
 - no survival value
 - Embryo
 - Stored food
 - 2 integuments
 - Seed coats
- Does not require external H₂O for reproduction
- Flowers
 - Attract pollinators
- Fruit
 - Enclose and protect the seed
 - assist with seed dispersal

