Metabolism - total of all processes that use energy/matter into energy to sustain
Anabolism - biosynthesis processes
Autotrophs - produce own food
Heterotroph - rely on others
Asexual reproduction - duplication, no M/F
Scientific Law - Theory tested by generations of data
Species - unit of one or more pops. of indivs., reproduce, produce fertile offspring, reproductively isolated
Mutation - marked change in DNA between child and parent
Taxonomy - science of classification
Prokaryotic - no membrane-bounded organelles
- extracellular digestion - digestion happens outside cell
- fermentation - anaerobic breakdown of sugars into smaller molecules
- stolon - aerial hypha used in asexual
- mycelium - main body, extracellular digestion and absorption
- zygospore - half and half dna in hard shell
- hypha - filament of fungal cells
- membrane - thin covering of tissue
- sporophore - aerial hypha that produces spores
- antibiotic - natural chemical that kills other organisms
- matter - has mass and takes up space
- hydrolysis - water breaks down
- diffusion - random movement of particles
- biosynthesis - builds molecules
- semipermeable membrane - some but not other molecules
- catalyst - speeds reaction
- hydrophobic - hates water
- element - group of atoms
- Hydrogen bond - strong attraction between hydrogen and (O, N)
- pathogen - organism causing disease
- saprophyte - feeds off dead matter
- Logistic growth - growth controlled by limited resources
- plasmid - "feature update" section of DNA
- endospore - DNA and essentials in hard covering
- strains - different type
- parasite - feeds off living host
- pseudopod - foot, used to engulf food
- spore - reproductive cell with hard coating
- flagellate - propeller
- chloroplast - photosynthesis
- symbiosis - relationship
    - mutualism - both benefit
    - commensalism - on benefits, other neutral
    - parasitism - one benfits, one harmed
- parasitism - one benefits other harmed
- holdfast - special structure used t hold onto surface
- cilia - hairlike things from membrane used in movement
    - zooplankton - floating organisms, either animal or protozoa
    - eyespot - sees brightness
    - pellice - firm flexible coating outside membrane
    - absoprtion - intake of dissolved substance
    - digestion - breakdown of substance to energy
    - homeostasis - status quo
    - chromatin
    - phospholipid - lipid with phosphate group replaced
    - ribosomes - protein makers
    - excretion - soluble waste
    - cytoskeleton - fibers reinforcing
    - plasma membrane - semiperm. memb. outside cytoplasm
    - active transport - breaks membrane, needs energy
    - leucoplasts - stores starch and oils
    - golgi bodies - stores and modifies fats and proteins

4 Criteria for life
- Contain DNA
- extract energy from surroundings
- Sense and respond to changes
- Reproduce

Spontaneous generation
- Abiogenesis
- Aristotle - formed from similar matter, eels, bottom river
- disproved by Francesco Redi

Biological Classification
- King Philip Cried Out For Goodness Sake
- Way to split up the data in biology into organized system
- Need to organize
- 5 kingdoms
    - Protista
    - Monera
    - Fungi
    - Plantae
    - Animalia
- Binomial nomeclature: name by *genus species*

Prokaryotic vs eukaryotic
- Pro has no membrane-bounded organelles
    - Only DNA, ribosomes. No nucleus
- Eu has all the things
    - Nucleus, ribosomes, golgi bodies, etc

Figure 2.1 (bacteria outline)
- "shell"
    - plasma membrane (inside) - substance intake
    - cell wall - shape and water intake
    - capsule - sticky
- Innards:
    - DNA floating around
    - Ribosomes chillin
- extremities
    - Fimbria (like hairs)
    - Flagellum (long tail, propeller), order in to out
    - Basal body
    - Hook
    - Filament

Genetic recombination
- transformation - dead → alive
- transduction - virus forced transfer
- Conjugation - alive → alive

Gram Staining
- Cell wall retains stain, blue. No retention, red
- Gracilicutes - red, negative
- Firmicutes - blue, positive
- Tenericutes - no cell wall
- Mendosicutes - exotic cell wall

Fulfillment of 4 criteria
- does haz dna
- photosynthesis, chemosynthesis
- Chemosynthesis - promotes chem reaction and uses the energy
- binary fission
    - duplicate dna
    - enlarge
    - split

Algae:
- Chlorophyta
    - Habitat: fresh water
    - organization: single
    - wall: cellulose
    - genus Cosmarium
- Chrysophota
    - Habitat: both
    - organization: single, some colonies
    - cell wall: silicon dioxide
    - diatoms
- Pyrrophyta
    - Habitat: marine
    - organization: single
    - cell wall: cellulose or atypical
    - genus peridinium
- Phaeophyta
    - habitat: cold marine
    - organization: multiple
    - wall: cellulose and alginic acid
    - genus macrocystis
- Rhodophyta
    - habitat: warm marine
    - organization: multiple
    - wall: cellulose
    - genus corallina

Figure 4.1 (characteristics of phyla)
Basidiomycota - sexual spores, club basidia
Ascomycota - sexual spores, sac asci
Zygomycota - sexual spores where hyphae fuse
Chytridiomycota - spore with flagella
Deuteromycota - no known sexual
Myxomycota - look like protozoa

Figure 4.2 (septate vs nonseptate)
- septate has cell walls, pores
- nonseptate is everything everywhere

Reproduction
- forms fruiting bodies
- stolons just form new mycelium
- mushroom is basidiomycota

Figure 4.3 (specialized hyphae)
- conidiophores are NOT covered, sporangiophores are
- rhizoid is imbedded
- haustorium - parasitic hypha in cells of host, steals nutrients

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  (eee)   (eee)
    ||----------|
___|_______|__
Rhizoid|||||| R
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Subkingdoms
Protozoa:
- Sarcodina
    - Locomotion: psuedopods
    - Genus amoeba
- Mastigophora
    - Locomotion: flagellum
    - genus euglena
- Sporozoa
    - Locomotion: none
    - genus plasmodium
- Ciliophora
    - Locomotion: cilia
    - genus paramecium

Carbohydrates
- made of carbon chain
- struct form diff, numbers same
- mono: 3<x<10 carbon atoms
- di: 2 mono
- poly: >2 mono

Proteins and Enzymes
- Proteins made up of amino acids
- Amino acids made up of 20-40 atoms
- Enzymes break down proteins
- Lock and key: specific shape only works for certain protein

Lipids
- Glycerol + 3 fatty acids
- sat fat: no double

Physical Change: appearance but not arrangement of atoms
Chemical change: atoms