

Eukaryotic Kingdoms

Pop Quiz !

1. What are the universal cell components?
2. List the three Domains of life.
3. About how old is the universe believed to be?

Classification of Humans

Kingdom

Animalia

Phylum

Chordata

Class

Mammalia

Order

Primates

Family

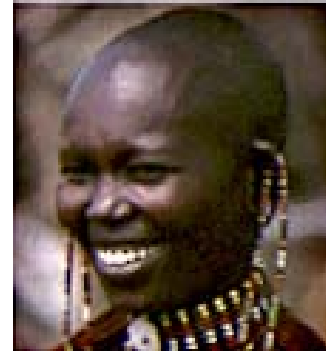
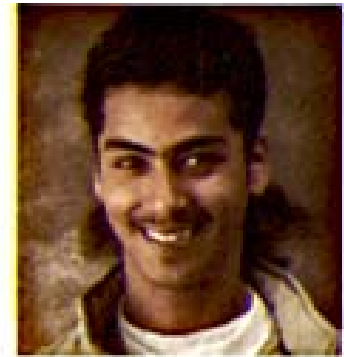
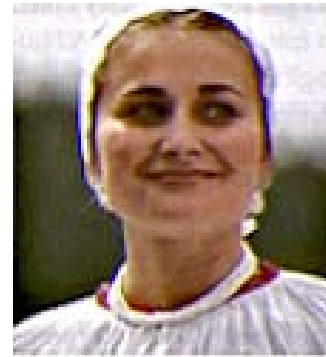
Hominidae

Genus

Homo

Species

Homo sapiens

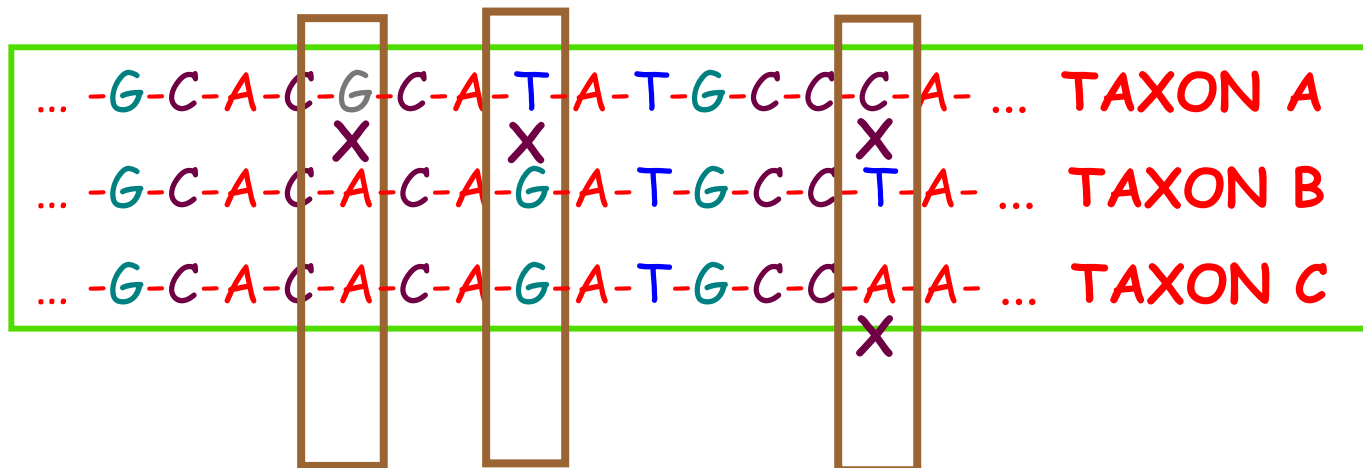


Phylogeny

- Branch of biology concerned with evolutionary origins and kinship
- Most zoologists favor classifications based on phylogeny.

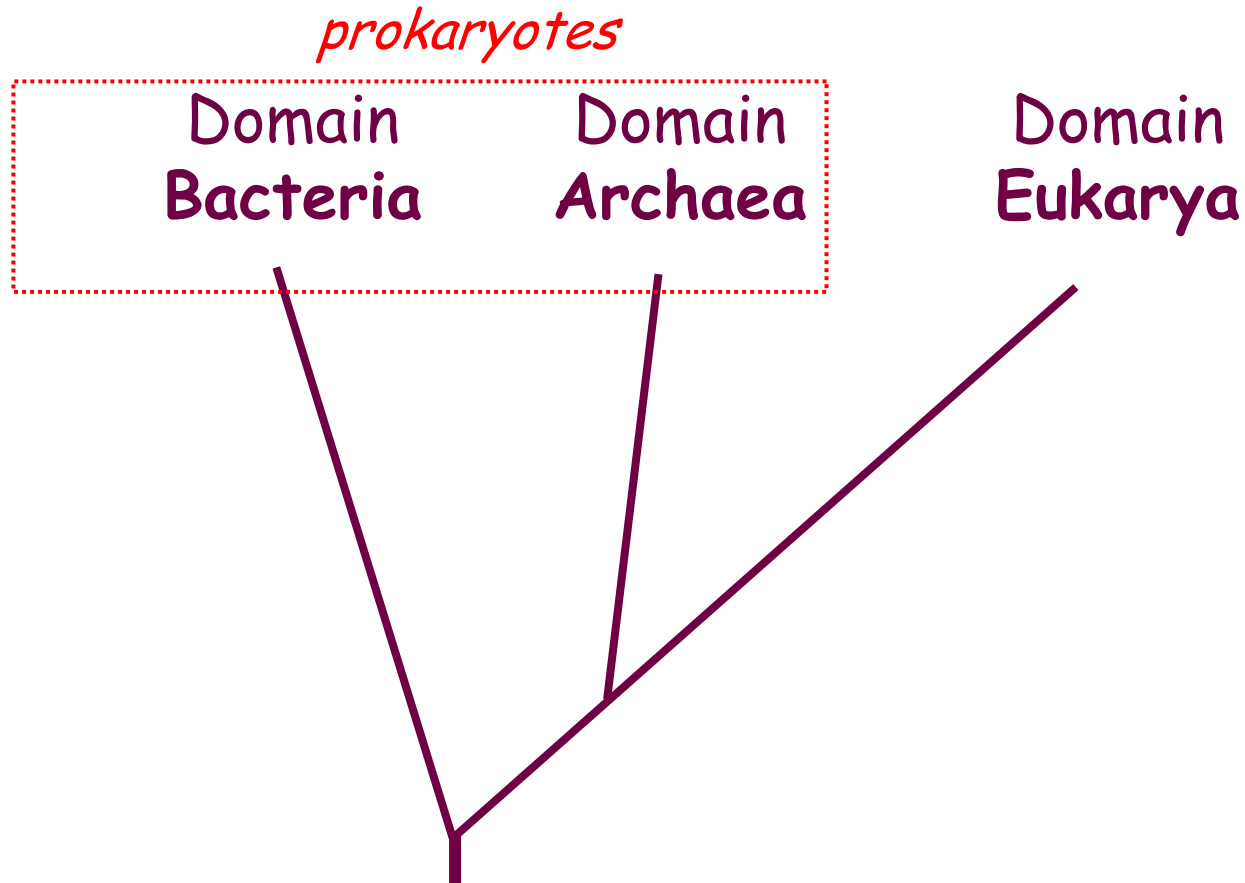
Phylogenetic Classification

- Each lower taxon is supposed to have evolved from its next higher taxon
- Older classifications based on superficial similarities are being revised
- New evidence comes from comparisons of DNA and RNA nucleotide sequences



Phylogeny of Domains

compare Campbell Fig. 15.14B



Campbell pg 312

How many kingdoms are there?

Domain Eukarya - 8 Kingdoms

- Archezoa
- Euglenozoa
- Stramenopila
- Alveolata
- Rhodophyta
- Plantae
- Fungi
- Animalia

Eukarya Kingdom Contrasts

- Mode of nutrition
 - Photoautotrophic
 - Absorptive heterotrophic
 - Ingestive heterotrophic
 - mixotrophic
- Uni- or multi-cellular
- Special organelles or locomotion

Uni- and Multi-Cellular

- A unicellular organisms may be 1-celled
 - Or colonial - many cells living together, all identical (except reproductive cells)
- A multicellular organism is composed of several different kinds of cells
 - besides those involved in reproduction

Archezoa

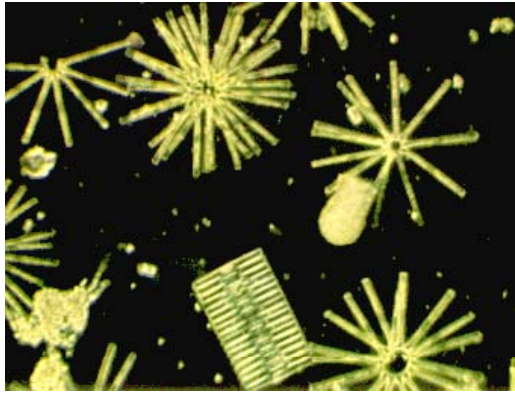
Campbell Fig. 16.22A

- Proper nucleus
- No mitochondria
 - all other eukaryotes have mitochondria
- Unicellular, ingestive and absorptive heterotrophs
- Locomotion: ameboid and flagellar



Giardia

diatoms



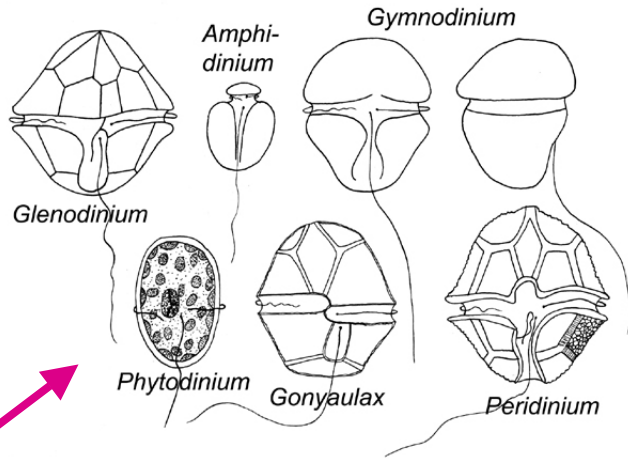
compare Campbell Fig. 16.25 A,B

Kingdom Stramenopila

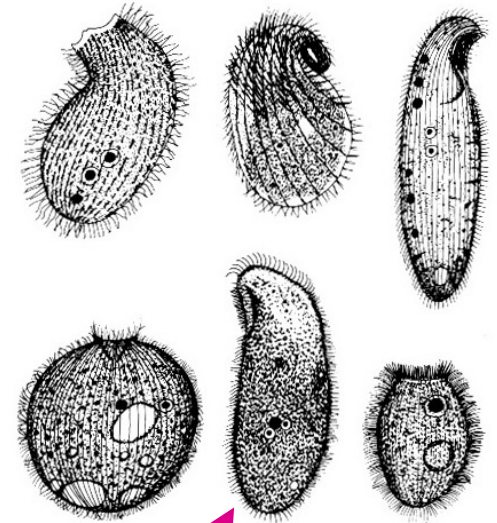


kelp - brown seaweed
Campbell Fig. 16.26A

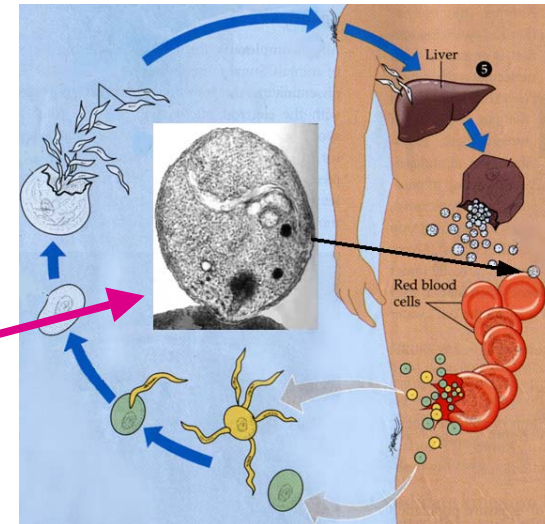
- flagellum, if present, "hairy"
- photoautotrophic (diatoms, sea weeds)
- mixotrophic (golden-brown algae)
- absorptive heterotrophic (water molds)
- mostly unicellular, but kelps are multicellular



Alveolata

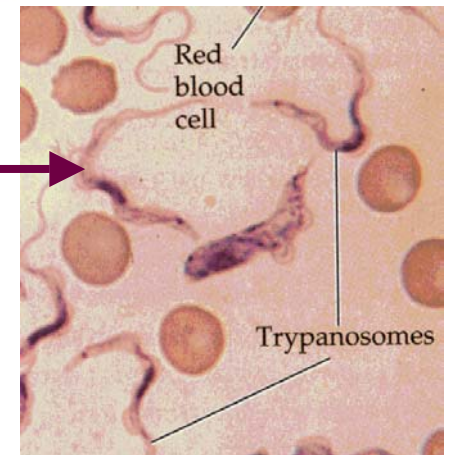
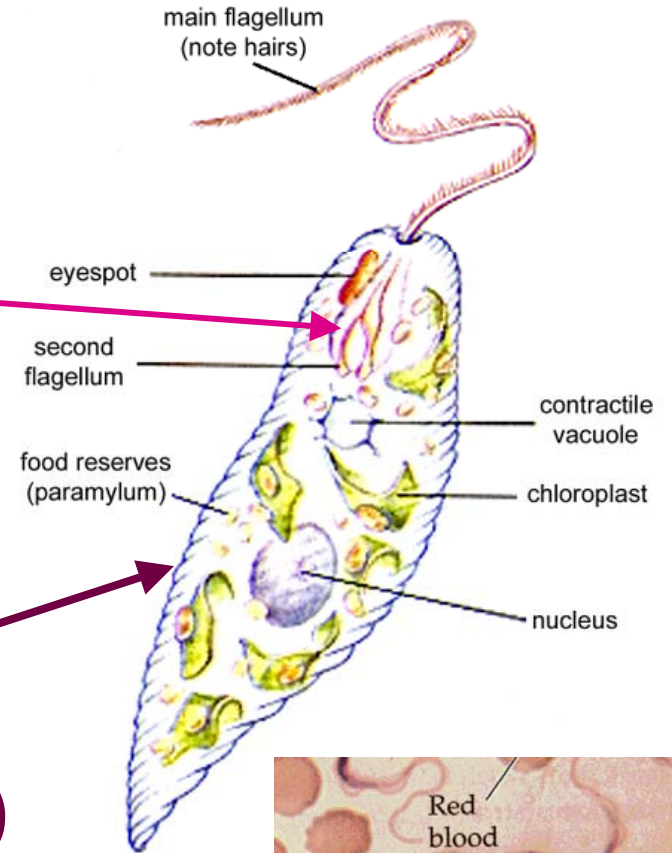


- internal layers of vacuoles (alveolae)
- cilia, flagella, or ameboid locomotion
- ingestive heterotrophs (ciliates)
- mixotrophs (dinoflagellates)
- absorptive heterotrophs (malaria organism)



Euglenozoa

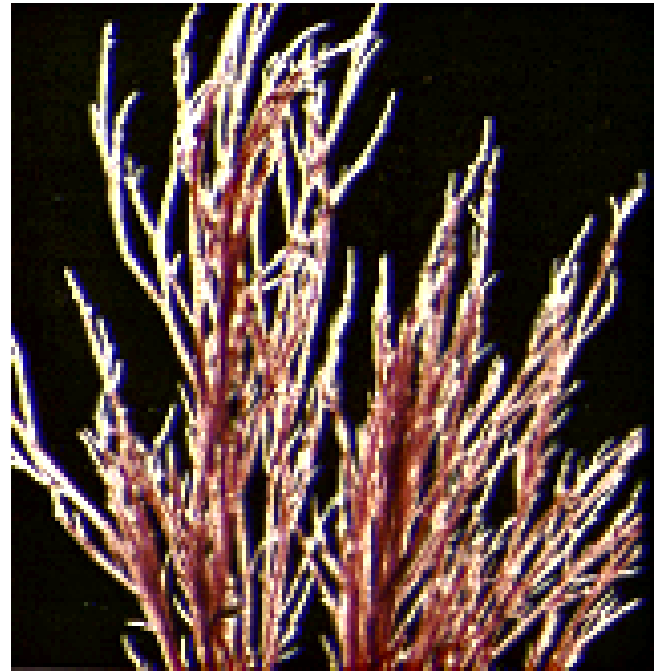
- organelles or pits close to flagellum
- nutrition varied
 - mixotrophs (*Euglena*)
 - ingestive heterotrophs
 - parasites (*Trypanosoma*)
 - some amebas
- entirely unicellular, not colonial



Campbell Fig. 16.22 A

Rhodophyta

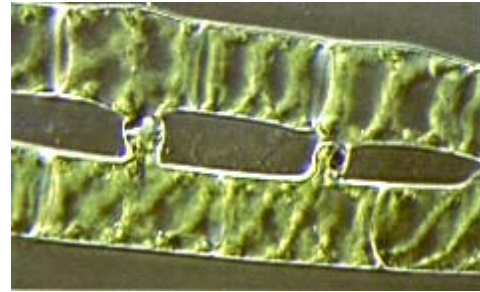
- no flagella
- photoautotrophic
- double-membraned chloroplasts
- reddish pigments



Campbell Fig. 16.26 b

Plantae

- photoautotrophic
- cellulose cell walls
- unicellular ones called green algae
- multicellular ones called plants



compare Campbell Fig. 17.3 C

Fungi

- multicellular, coenocytic, absorptive heterotrophs with chitinous cell walls
- most lack flagella

Animalia

- multicellular, ingestive heterotrophs without cell walls
- many have flagella and cilia

Phylogeny of 10 Kingdoms

