

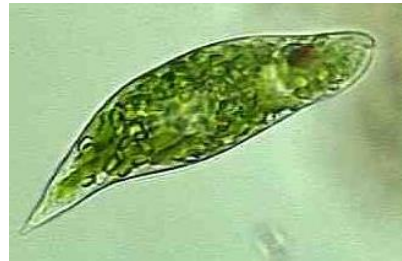
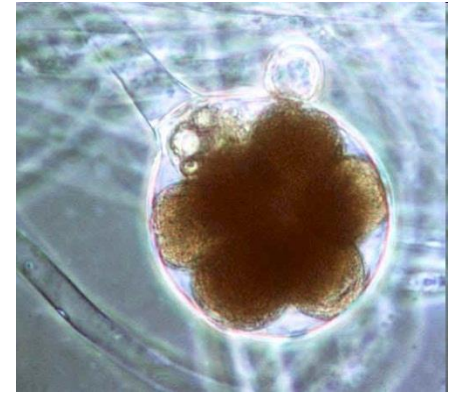
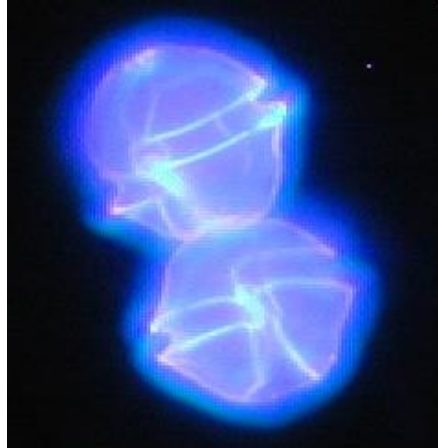
Life Science

Chapter 9 Part 1

Protista

Protista

- **Junk drawer** kingdom – a little bit of everything, some w/ cell walls (composition varies), some w/out.
- All are **Eukaryotes**, autotrophs and heterotrophs represented.
- Single cellular to multi-cellular and over 300 ft long.
- Divided into three categories:
 - **Animal-like**
 - **Plant-like**
 - **Fungus-like**



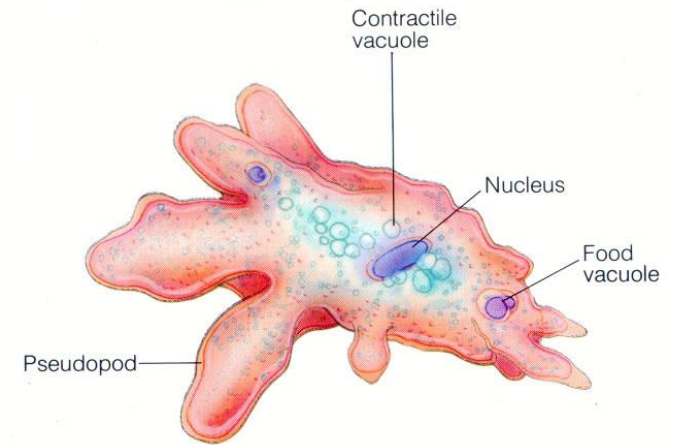
Animal-Like Protists

- AKA **Protozoans** classified based on the **way they move:**
 - Phylum **Sarcodina**: Ameba - pseudopods
 - Phylum **Ciliophora**: Paramecium- “cilia bearing”
 - Phylum **Sporozoa**: example: *Plasmodium sp.* causes Malaria –nonmobile, produce w/ spores
 - Phylum **Zoomastigina** -“flagellates”, *Giardia sp.* - Flagella

Phylum Sarcodina: Ameba

- **Reproduction**- Asexual binary fission resulting in genetically identical daughters
- **Structure**
 - **Pseudopod** – “false foot”- cell membrane bulges and cytoplasm flows and fills causing the organism to move
 - **Contractile vacuole** – used to remove excess water
 - Nucleus
 - **Food vacuole**: food is surrounded and the “food” is engulfed by pseudopods
 - **Endoplasm**- thin, runny cytoplasm that fills the cell
 - **Ectoplasm**- thin layer of thick cytoplasm just inside the cell membrane

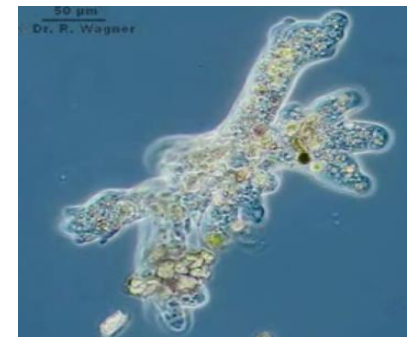
Ameba



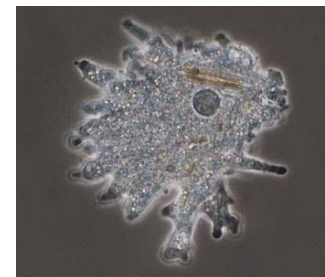
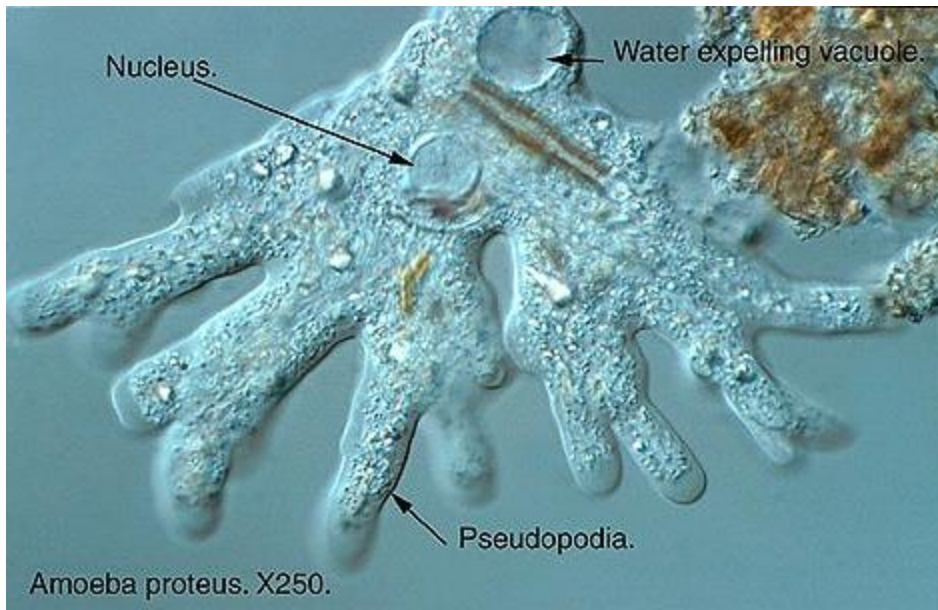
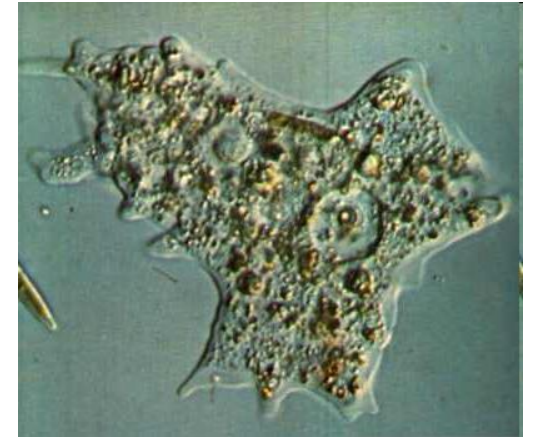
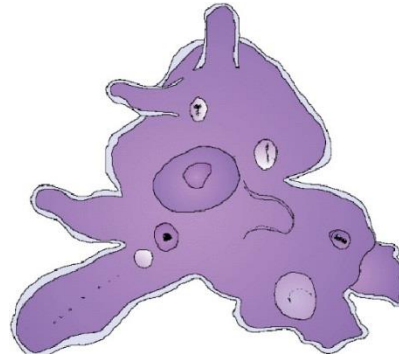
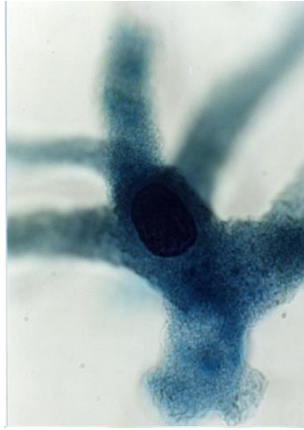
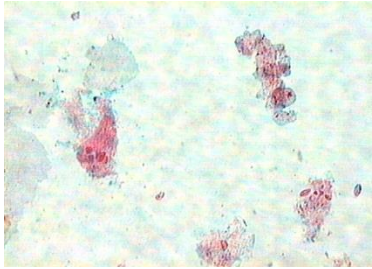
Enzymes then break down, or digest, the food so that the amoeba can use it for energy to move, grow, and reproduce.



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Sarcodina - Ameba

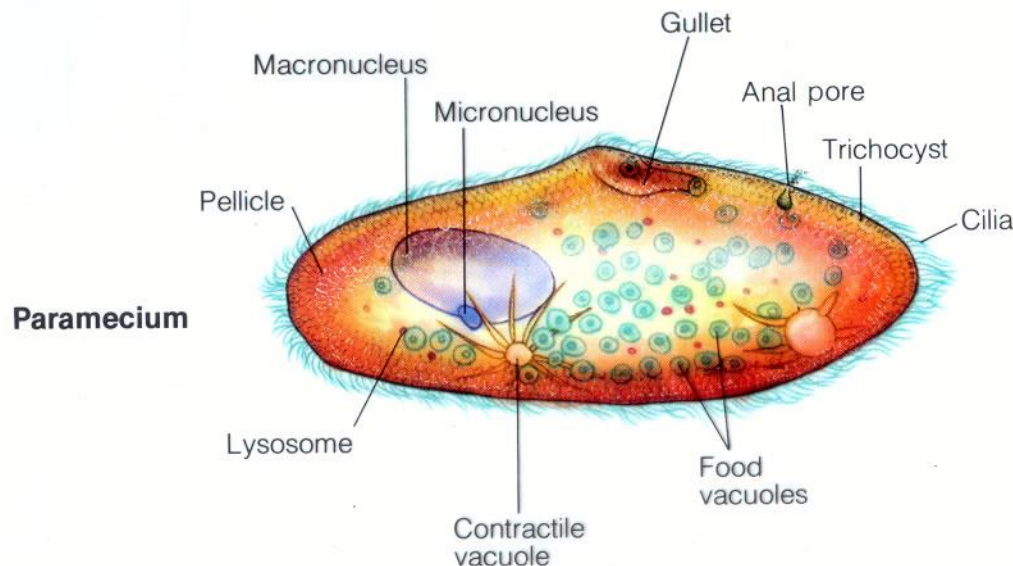


Phylum Ciliophora: Paramecium

- **Structure**

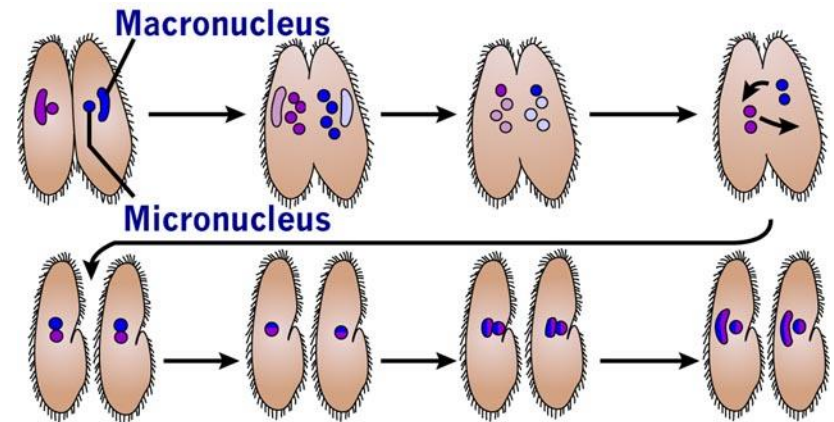
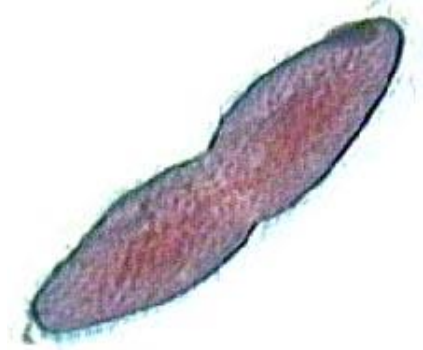
- i. **Cilia**- short hair-like projections usually covering organism used for movement
- ii. **Pellicle** – quilt-like cell membrane and underlying structures
- iii. **Trichocysts**- tiny flask-like spines used for protection
- iv. **Micronucleus and Macronucleus**- two types of nuclei used in “sexual” reproduction
- v. **Anal Pore**- area on cell membrane where used up food vacuole is discharged into the environment
- vi. **Contractile vacuole**- removes excess water from the cell
- vii. **Oral Groove** – Opening that collects food stuffs “baseball glove”
- viii. **Gullet** – Location food enters the cell “Throat”
- ix. **Mouth pore**: top of gullet connecting outside and inside

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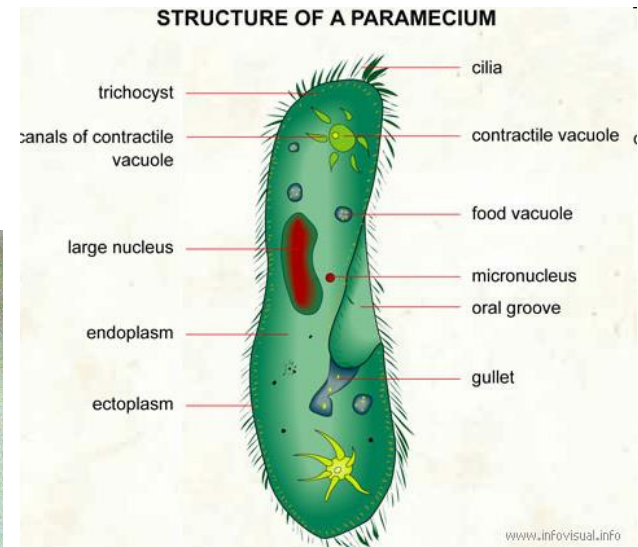
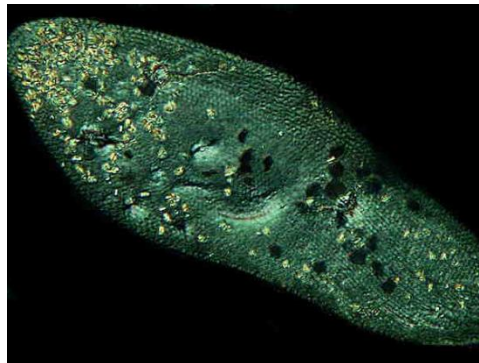
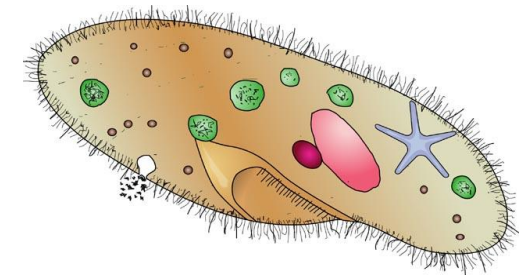
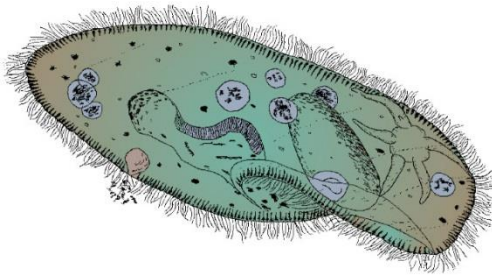
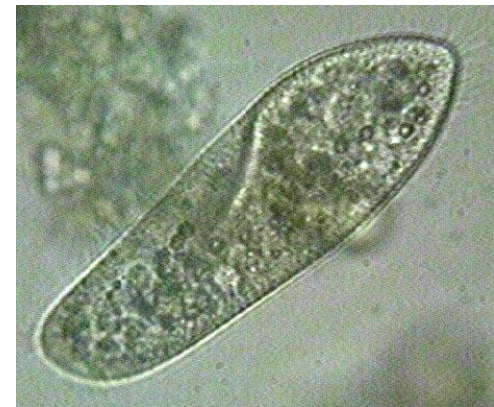
Conjunction in Paramecium

- **Reproduction**
- Asexual- **binary fission**
- Sexual -- not a true “sexual” reproduction because no new organism is formed. A multi step process:
 - 1) Two organisms join side by side.
 - 2) The Macronucleus of each paramecium dissolves
 - 3) The micronuclei of each undergo meiosis resulting in 4 haploid bodies. Three of these dissolve away leaving only one haploid body from the micronuclei.
 - 4) the haploid body divides into two haploid bodies.
 - 5) One of these bodies from each paramecium migrate across to the other and then combines with the remaining haploid body forming a new micronucleus.
 - 6) The parameciums disconnect
 - 7) This new micronucleus has info to build a new macronucleus which will then control cell functions in the paramecium.
 - * No “new” offspring are produced, only genetic material has been exchanged.



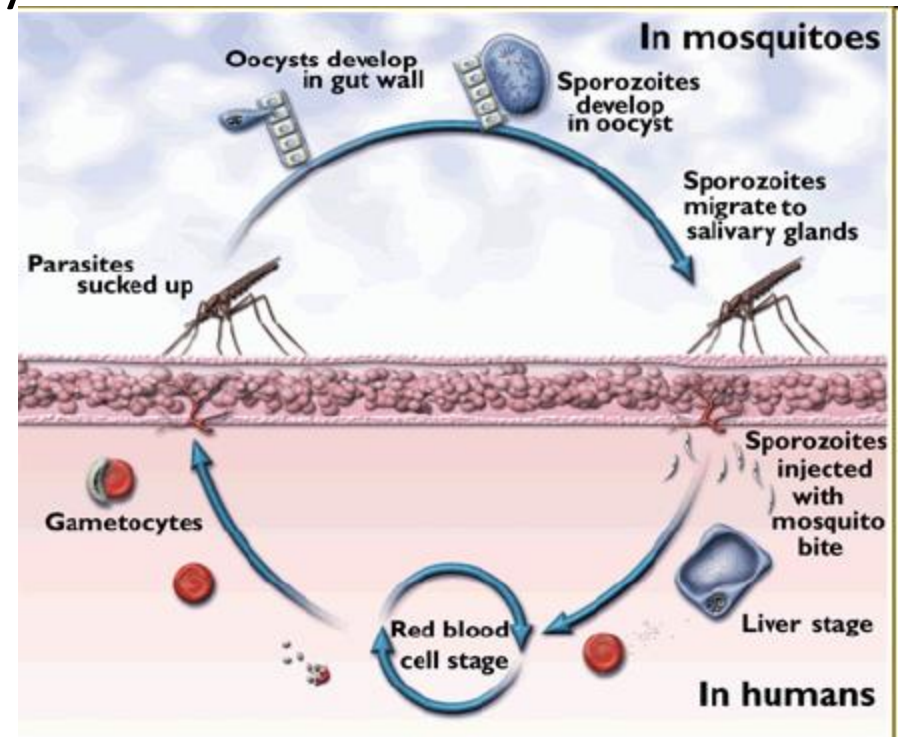
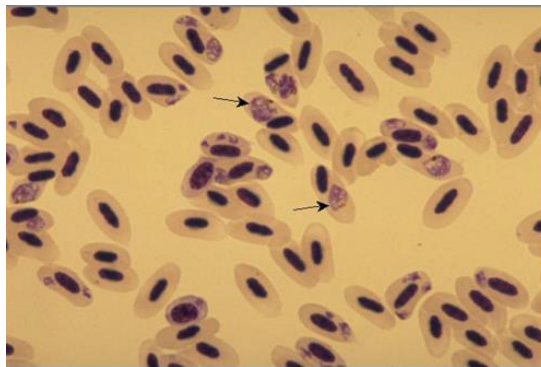
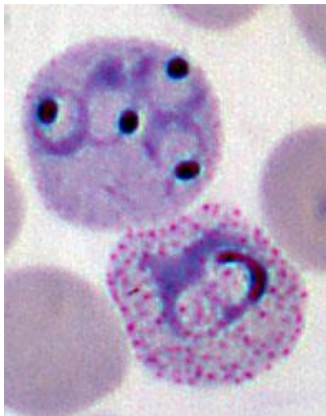
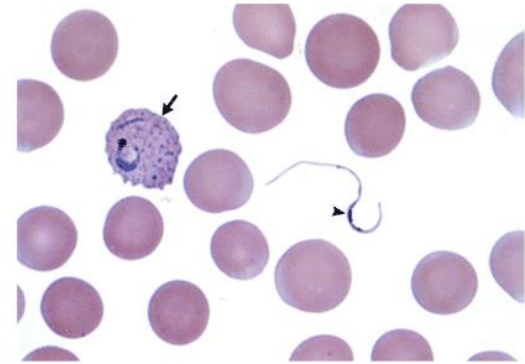
Phylum Ciliophora:

Paramecium



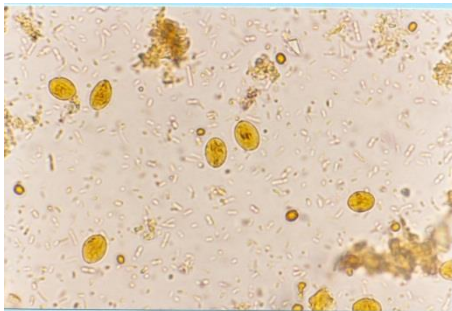
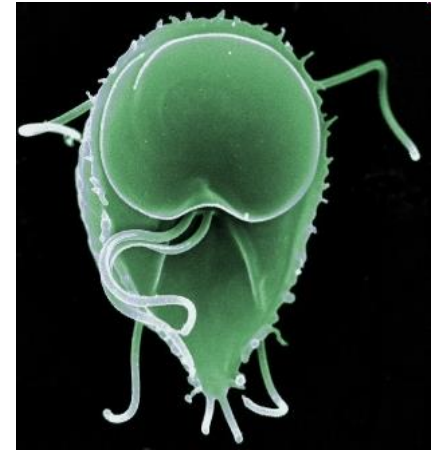
Phylum Sporozoa: *Plasmodium* sp.

- These critters are nonmobile,
- all are **Parasitic**.
- causes Malaria in humans.
- They all reproduce w/ spores.
- The organism has a two part life cycle
 - requiring a mosquito as a host and
 - then from the mosquito it infects and grows in humans.



Phylum Zoomastigina: the “flagellates”

- the “flagellates”
- they all move w/ the use of flagella.
- example is *Giardia* sp.
 - which lives in contaminated streams and rivers,
 - once ingested by humans it attaches to the intestinal walls and grows, causing intestinal cramping, fever and other flu like symptoms.
 - Under harsh conditions they form cysts



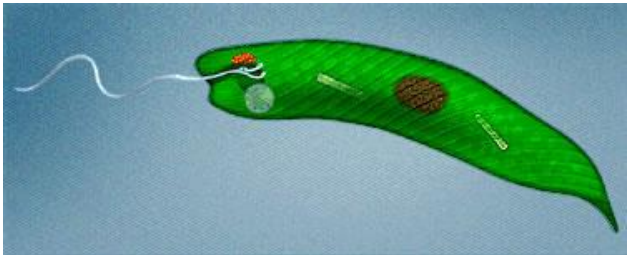
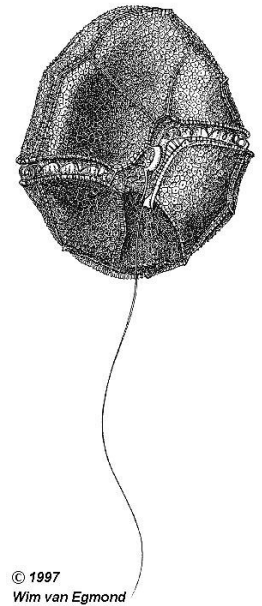
Fungus-like Protist - slime molds

- 1. Similar to Fungus, have cell wall, reproduce w/ spores; however, they are mobile during some part of their life cycle while true fungus cannot.
- 2. Example are the slime molds- they live on dead decaying material in moist areas and are able to move w/ pseudopods – similar to the way ameba moves.



Plant-Like Protists

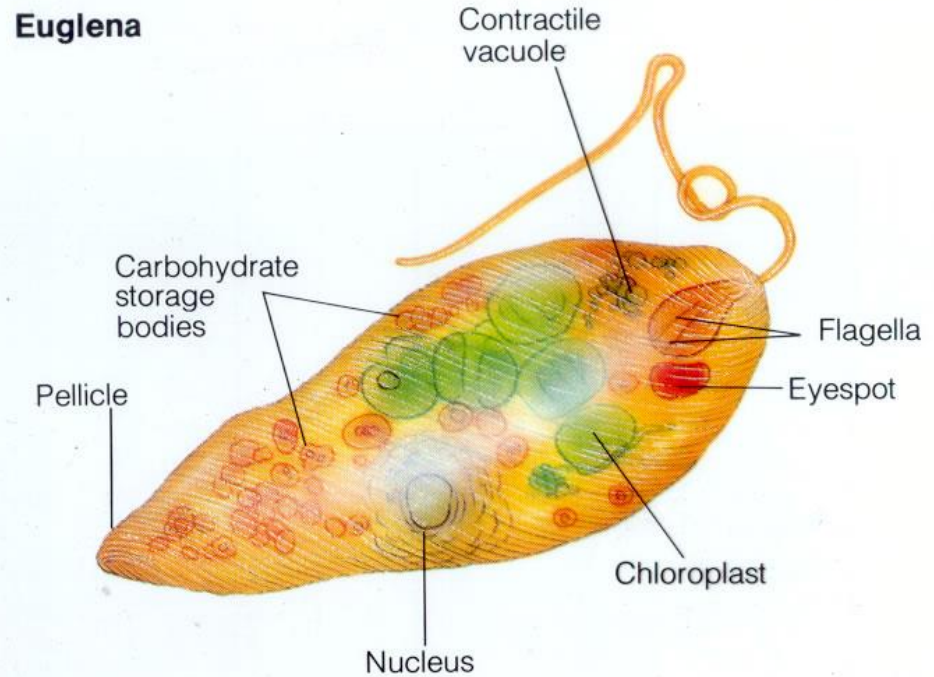
- Several types but all are unicellular and live in water or very moist areas, most are mobile and most are autotrophs w/ chlorophyll
- Phylum Euglenophyta : example is Euglena
- Phylum Pyrrophyta – the dinoflagellates
- Phylum Chrysophyta – the diatoms
- The true Algae – Red, Green and Brown Algae



Phylum Euglenophyta: Euglena

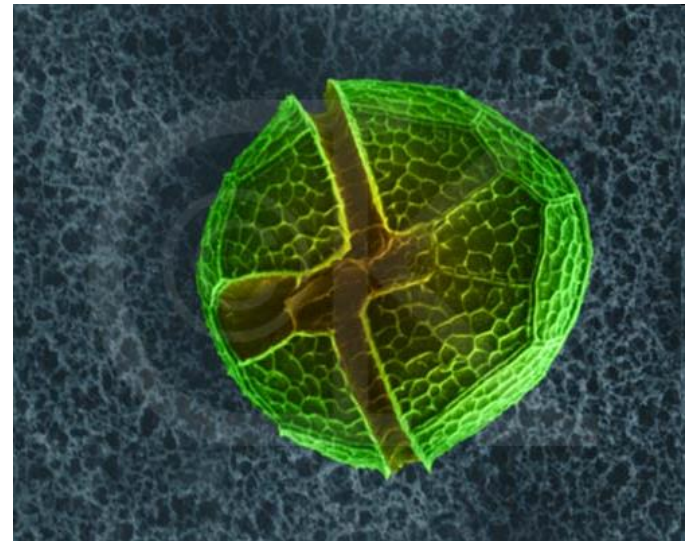
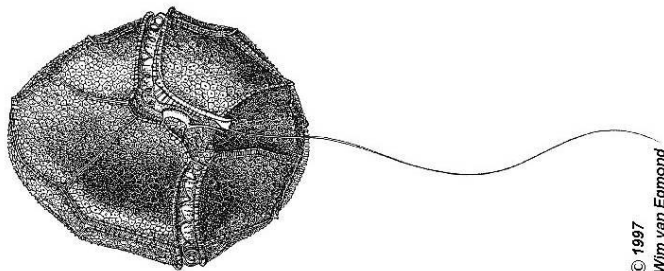
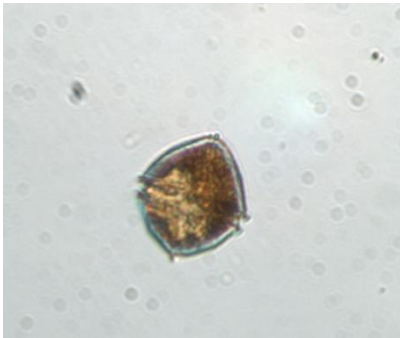
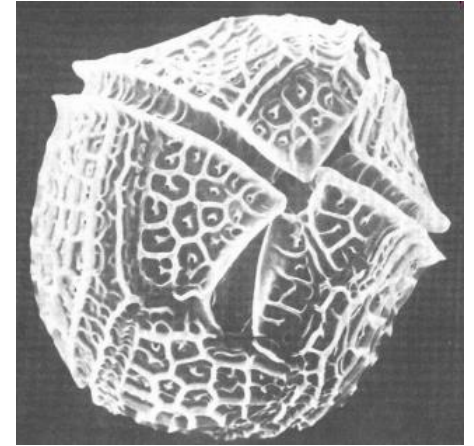
- Structures

- Pellicle
- Contractile vacuole
- Nucleus
- Two flagella,
 - one small
 - and one long
- Chloroplasts
- Carbohydrate storage vacuoles
- Eyespot- sensitive to light and dark but can't "see"



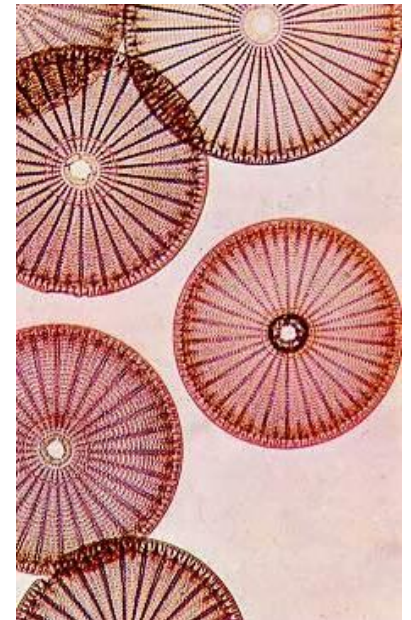
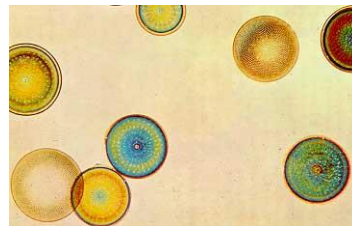
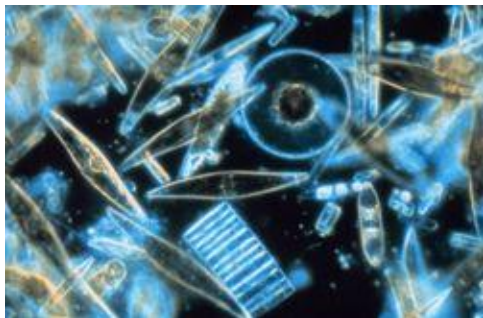
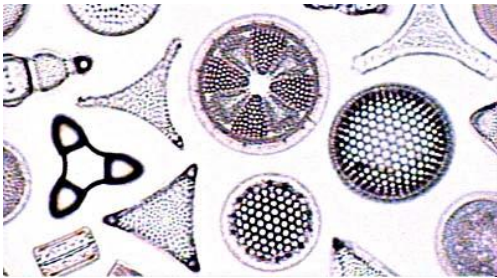
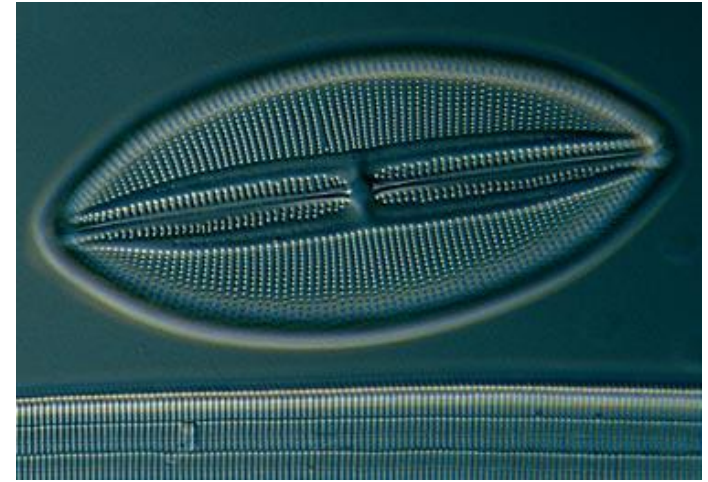
Phylum Pyrrophyta: Dinoflagellates

- Microscopic, most are autotrophs
- Reproduce asexually by binary fission
- 2 Armor plate-like covers
 - Looks like a walnut w/ a flagella
- cause Red Tide and bioluminescent



Phylum Chrysophyta – The Golden Protists

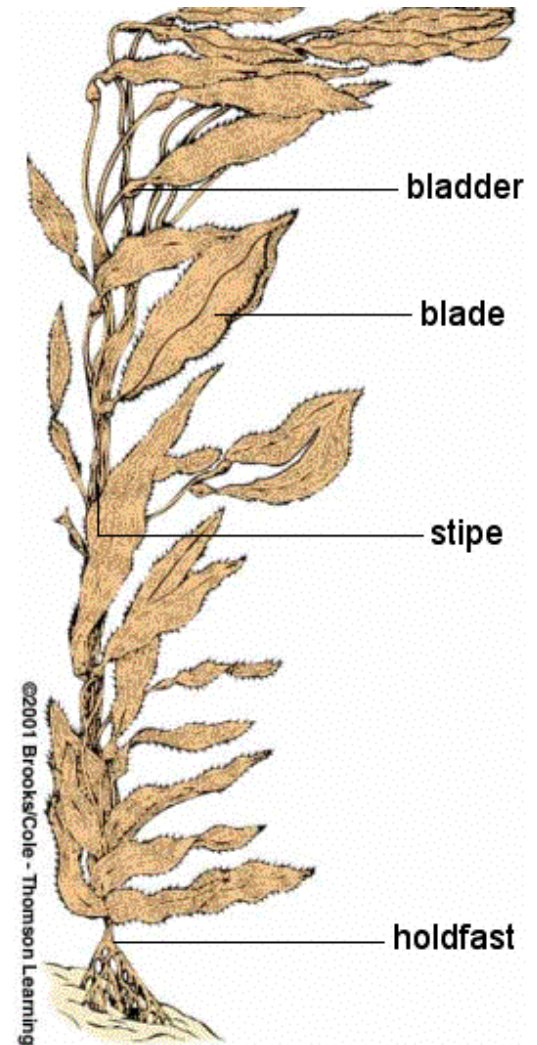
- **The Diatoms**
- **Unicellular**
- **Reproduce sexually & asexually**
- **Photosynthetic**
- **All are aquatic, most are marine**
- **Cell walls made of silica (glass)**



The True Algae

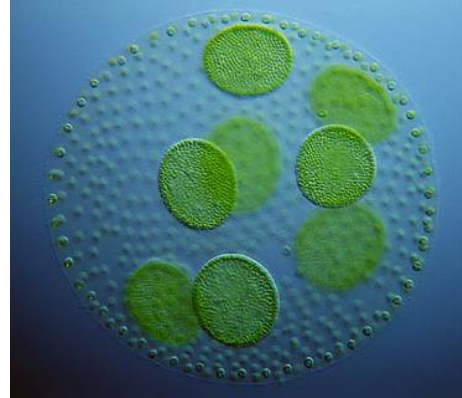
Red, Green and Brown Algae

- Some scientists classify these in the kingdom Plantae we will keep them in Protista!
- Examples include: Volvox, Kelp, sea lettuce, spirogyra
- Classified by color
- Autotrophic Unicellular & multicellular
- Aquatic or very moist environment
- Include the giant kelp – a seaweed that grows to be over 300 feet in length!! Structures include holdfast (root-like ball), stalk (trunk), blade (leaf). The kelp floats to the surface to receive sunlight for photosynthesis by the gas filled sacs (bladder) growing at the base of each blade



The True Algae

Red, Green and Brown Algae



We be done w/ the
Protists...
the Fungi will have their own
slide show!