Section 19-1: The World of Protists

Considered the "***Catch-all***" or "***Trash***" Kingdom, Kingdom Protista contains organisms that are almost impossible to tell apart from animals, plants, or fungi. It is a very diverse kingdom with organisms that **move** like ***animals, photosynthesizes*** like **plants**, or produce ***spores*** like a **fungus.**

I. What is a protist?

- May be ***unicellular*** or **multicellular, microscopic** or ***very large***, **heterotrophic**, or ***autotrophic***.
- All are ***eukaryotic***.

- Animal-like protists are called protozoa (singular, protozoan), which means "***first animal"***, unlike animals all protozoa are unicellular.

- Plant-like protists are called ***algae***, unlike plants algae do not have roots, stems, or leaves.

- Unicellular algae produce much of the ***oxygen*** in the Earth's atmosphere and are the basis of ***aquatic food chains***.

- Fungi-like protists can decompose like fungus, but are able to ***move***, but do not have cell walls made of ***chitin***.

I. What is a Protozoan?

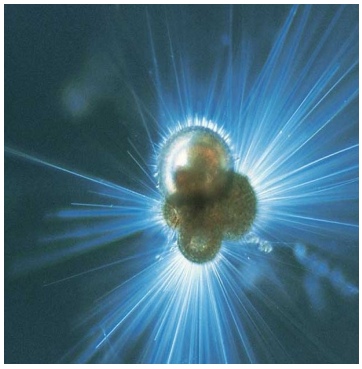
- Protozoans are ***unicellular heterotrophs*** that feed on other organism or dead organic matter.
- Usually reproducing asexually, under stress reproduce ***sexually***.

II. Diversity of Protozoans

- Many protozoans are grouped according to the way they ***move***. Ex: **Cilia, flagella, pseudopodia**
- Pseudopodia = ***cytoplasm-containing extensions*** **of the plasma membrane**.
- There are four main groups of protozoan: ***amoebas, flagellates, ciliates, and sporozoan***

A. Amoebas: Shapeless protists

- Amoebas - ***no cell wall;*** **form pseudopodia to move and feed** .
- Most reproduce asexually. In times of environmental stress, **form cysts that survive extreme conditions** .
- Some **live** in fresh water, salt water or soil.



One grouping of **marine** amoebas

1. **Foraminifera** - abundant on the sea floor, have ***hard shells made of calcium carbonate*** . Used by geologists to age **rocks and sediments** .

Add to notes:

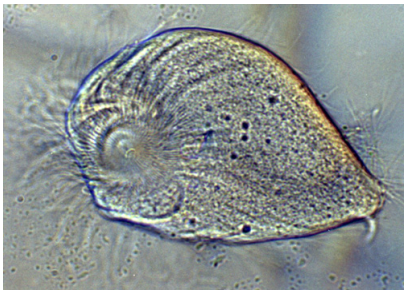
PAM(Primary amebic meningoencephalitis) - **fresh water** amoeba, found in Central Texas, a disease of the central nervous system

B. Flagellates: Protozoa with flagella

- Some flagellates have one or more ***flagella*.**

- Some are parasitic that cause disease. Ex: Africa Sleeping Sickness caused by type of ***Trypanosoma, carried by the Tsetse fly*.**

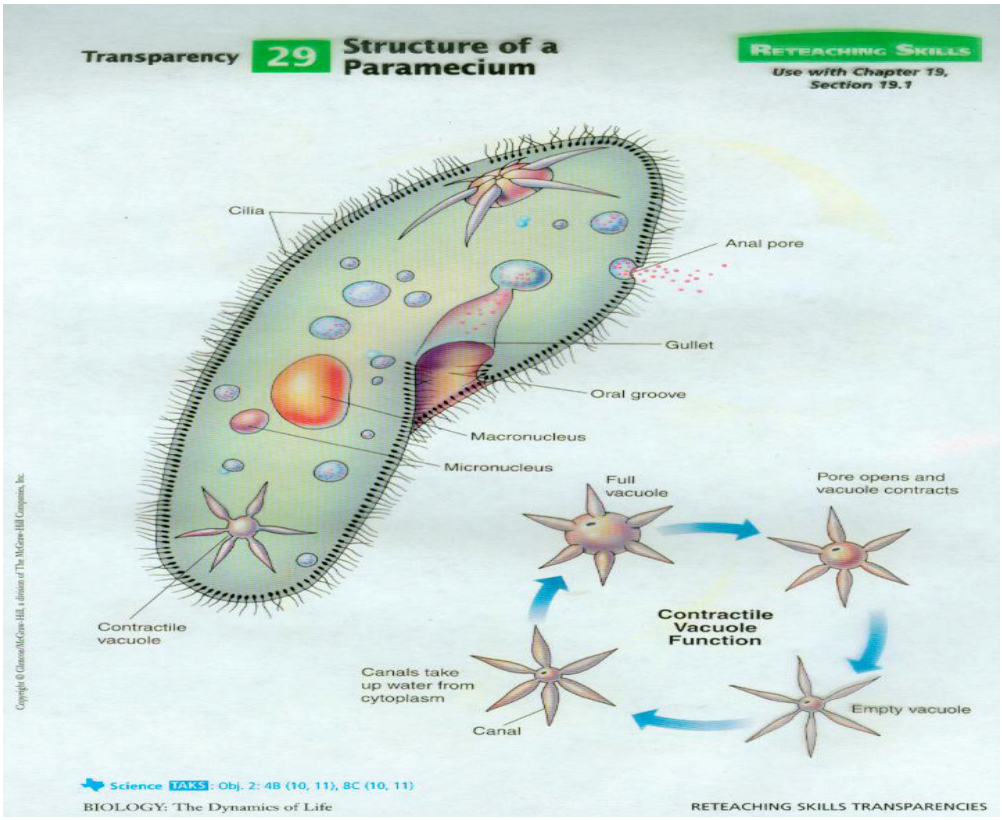
- Some are beneficial. Ex: a flagellate, of genus ***Trichonympha***, lives in the gut of a ***termite*** and breaks down the cell wall of wood, allowing the ***termite to absorb the carbohydrate, cellulose***.



C. Ciliates: Protozoans with cilia

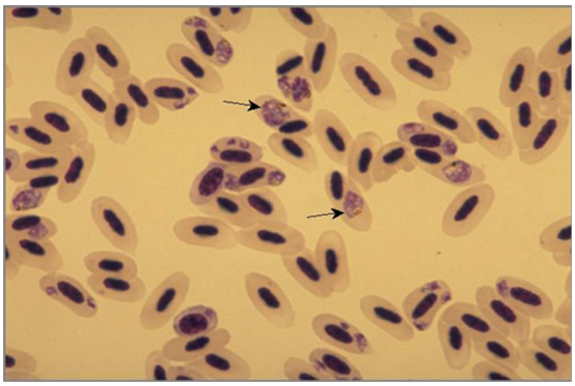
- Use cilia that cover/ or ***parts of their bodies to move***
- Live in every kind of ***aquatic*** habitat
- Many structures found in ciliates' cells may work together to perform one important like function.

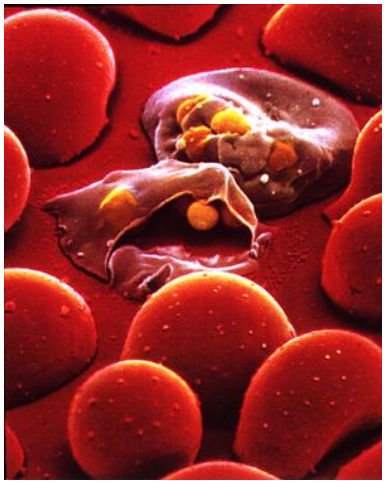
  Ex: A *Paramecium* uses its cilia, oral groove, gullet, and food vacuoles in the ***digestion*** process.
- A paramecium usually reproduces asexually by dividing ***crosswise and separating into two daughter cells***.
- When environmental conditions change, they usually undergo a form of ***conjugation***.



D. Sporozoans: Parasitic protozoa -

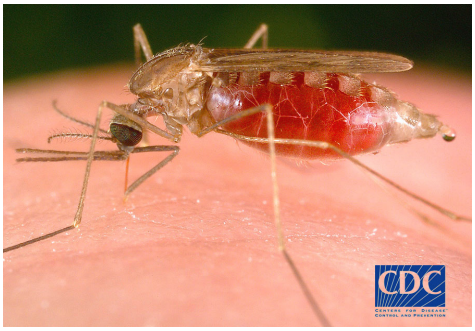
- Most produce ***spores***
- Spores = ***a reproductive*** cell that forms **without fertilization** and produces a new organism.
- All sporozoa ***are parasites,*** **have complex life cycles**.
- *Plasmodia,* organisms that cause the disease ***malaria*** in humans and other mammals and in birds.

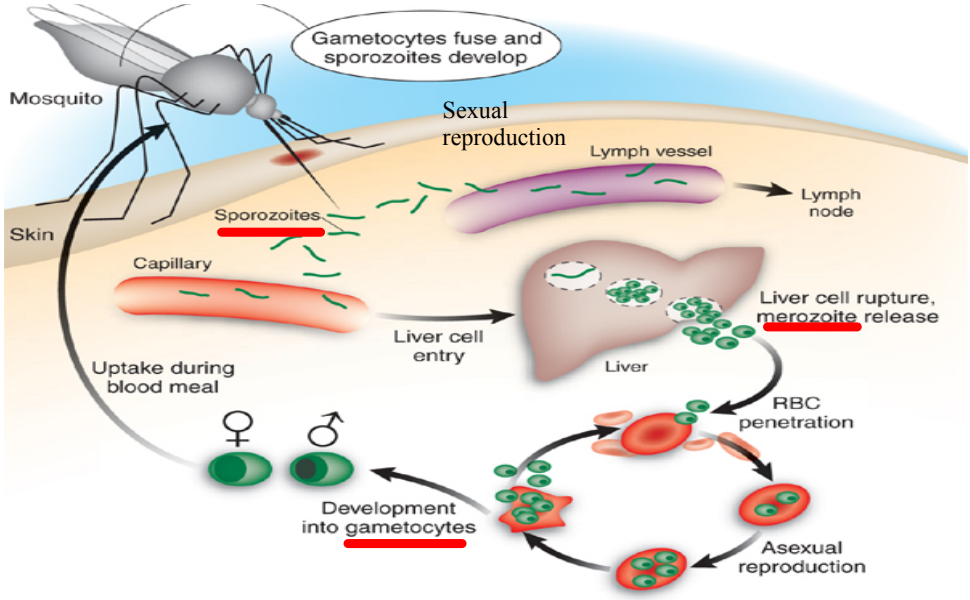


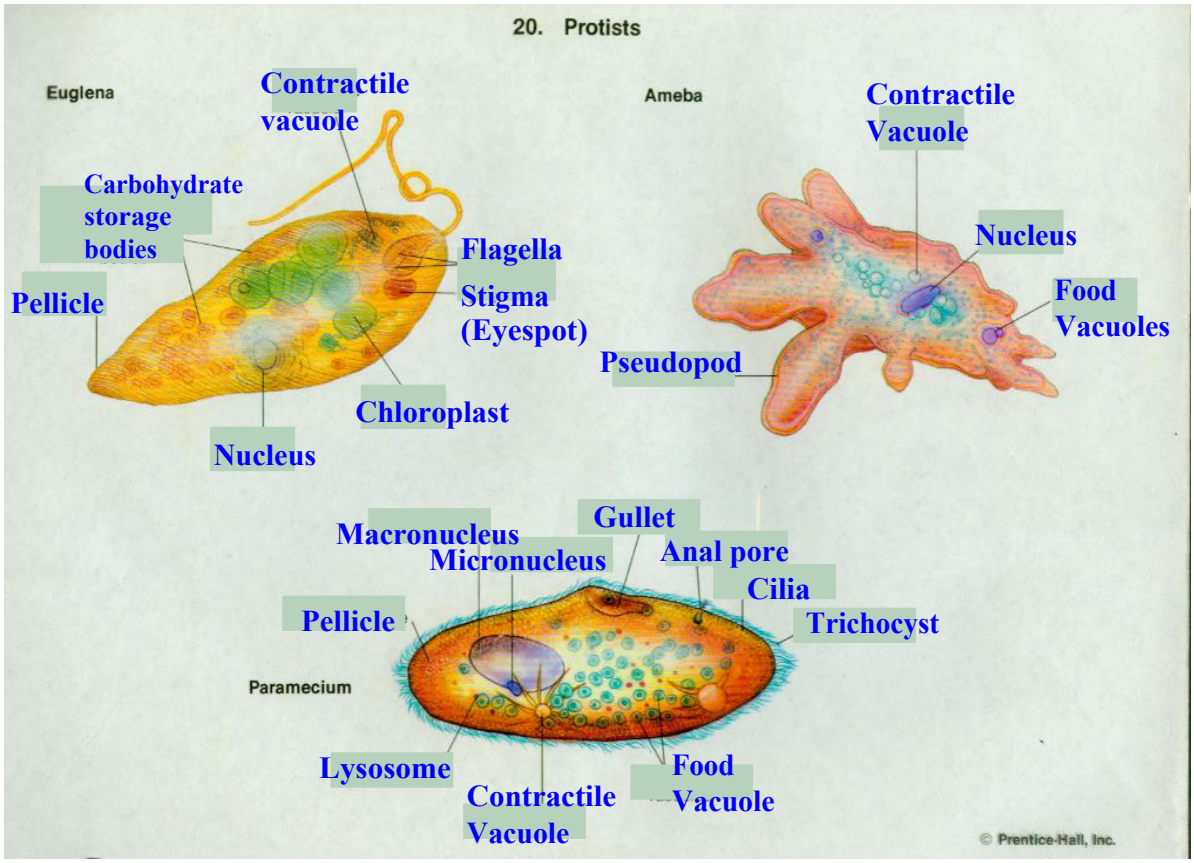


E. Sporozoa and malaria

- Today, more than 300 million people have malaria, which usually occurs in tropical climates.
- The *Plasmodia* that ***female Anopheles*** mosquitoes transmit to people cause human malaria.
- A combination of the drugs ***treat*** malaria, does not cure.
- Some species of *Plasmodia* have begun to ***resist*** these drugs.




Gametocytes fuse and sporozoites develop
Mosquito
Sexual reproduction
Lymph vessel
Lymph node
Skin
Sporozoites
Capillary
Liver cell rupture, merozoite release
Liver cell entry
Liver
Uptake during blood meal
RBC penetration
Development into gametocytes
Asexual reproduction

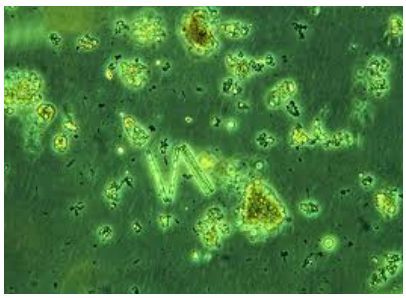

20. Protists
Euglena
Contractile vacuole
Carbohydrate storage bodies
Flagella
Stigma (Eyespot)
Pellicle
Chloroplast
Nucleus
Ameba
Contractile Vacuole
Nucleus
Food Vacuoles
Pseudopod
Gullet
Macronucleus
Micronucleus
Anal pore
Cilia
Pellicle
Trichocyst
Paramecium
Lysosome
Contractile Vacuole
Food Vacuole
© Prentice-Hall, Inc.

Section 19-2: Algae: Plantlike Protists

I. What are algae?

- ***Photosynthesizing*** protists.
- All algae contain up to ***four*** kinds chlorophyll (**a, b, c, and d**) or pigment that can produce a variety of colors in algae: purple, rusty-red, olive-brown, yellow, and golden-brown. These colors are a way of ***classifying algae*** .
- ***Unicellular and multicellular organisms*** .

- **Photosynthesizing unicellular protists** are known as ***phytoplankton***, which produce much of the oxygen used on Earth.



- ***Multicellular*** **algae** may look like plants, they have **no roots, stems, or leaves.**

II. Diversity of Algae

There are six phyla of algae -
3 are **unicellular**

- ***Euglenoids***
- ***Diatoms***
- ***Dinoflagellates***

and 3 **multicellular** Algae species

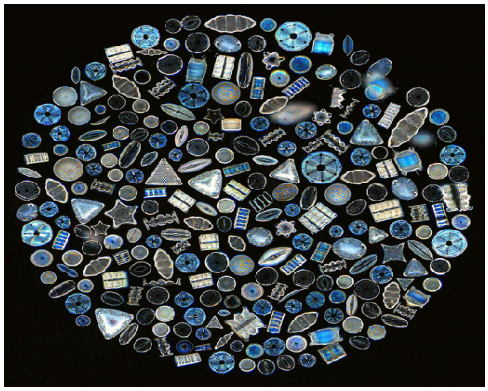
-Green
-Red
-Brown

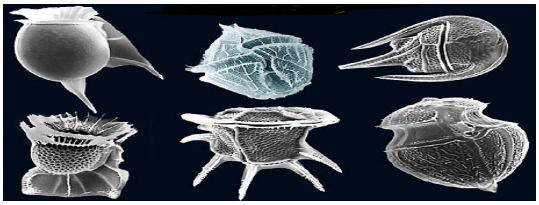
A. Euglenoids

- ***Autotrophs/ heterotrophs***
- Eulenoids are unicellular, aquatic protists that have both ***plant and animal*** characteristics.
- They lack a cell wall made of cellulose, have a ***pellicle made of protein***.
- Most have chlorophyll and ***photosynthesize***, but when light is not available, can ***ingest*** food.
- They have one or ***more*** flagella to move

B. Diatoms

- The ***golden*** algae,
- Unicellular photosynthetic protists with shells composed of **silica.**
- They make up a large component of the ***phytoplankton*** population.
- Diatom shells are mined, processed and used as **abrasives in tooth and metal polishes, or added to paint to give it sparkle.**





C. Dinoflagellates

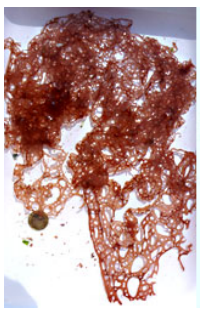
- The ***spinning*** algae
- Major component of phytoplankton (phyto meaning ***light***)
- Some are **bioluminescent**, which means they emit light.

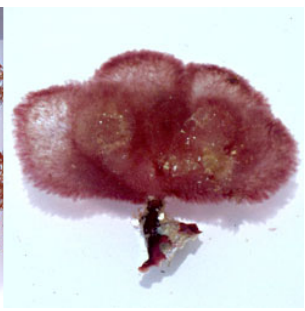
- Some produce toxins, which cause ***red tides,*** can make humans ill (including eating fish and shellfish feeding on the toxic algae).

D. Red Algae

- Mostly ***multicellular*** marine seaweeds.

- The body of the seaweed is called a **thallus**, and lacks roots, stems, or leaves.
- Red algae have structures called **holdfasts** that enable them to attach to rocks.
- They contain photosynthetic pigments called **phycobilins,** which enables green, violet, and blue light of the spectrum to be absorbed at extreme depth (below 100 meters), allowing red algae to live in deep water.



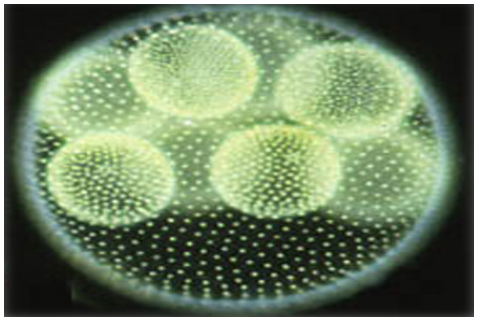


E. Brown Algae

- Most live in **salt water along rocky coasts in cool areas**.
- Many have ***air bladders*** that keep their bodies floating near the surface, where light is available.
- The largest and most complex of brown algae are **kelp.**

F. Green Algae

- The most diverse, with **7000 species**
- Most live in ***freshwater, in moist soil, on tree trunks, in snow,*** and even in the **fur of sloths** (living in tropical rain forests).
- Can be unicellular, colonial, or multicellular in organization. Ex: *Chlamydomonas* (***unicellular***), *Spirogyra* (***multicellular***), *Volvox* (***colony***)



- Green algae can reproduce both ***asexually and sexually.***
- ***Fragmentation***, asexual reproduction where an individual breaks up into pieces and each piece grows into a new individual.
- Green algae have a complex life cycle, which consists of individuals producing **spores** and **gametes.**
- The life cycles of **some of the algae and all plants** have a pattern called **alternation of generations** *(we'll study in plant unit).*

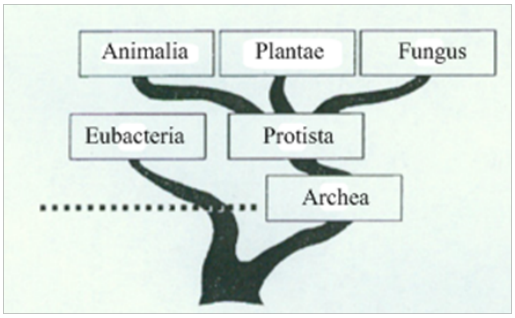
Section 19-3: Fungus - like Protists

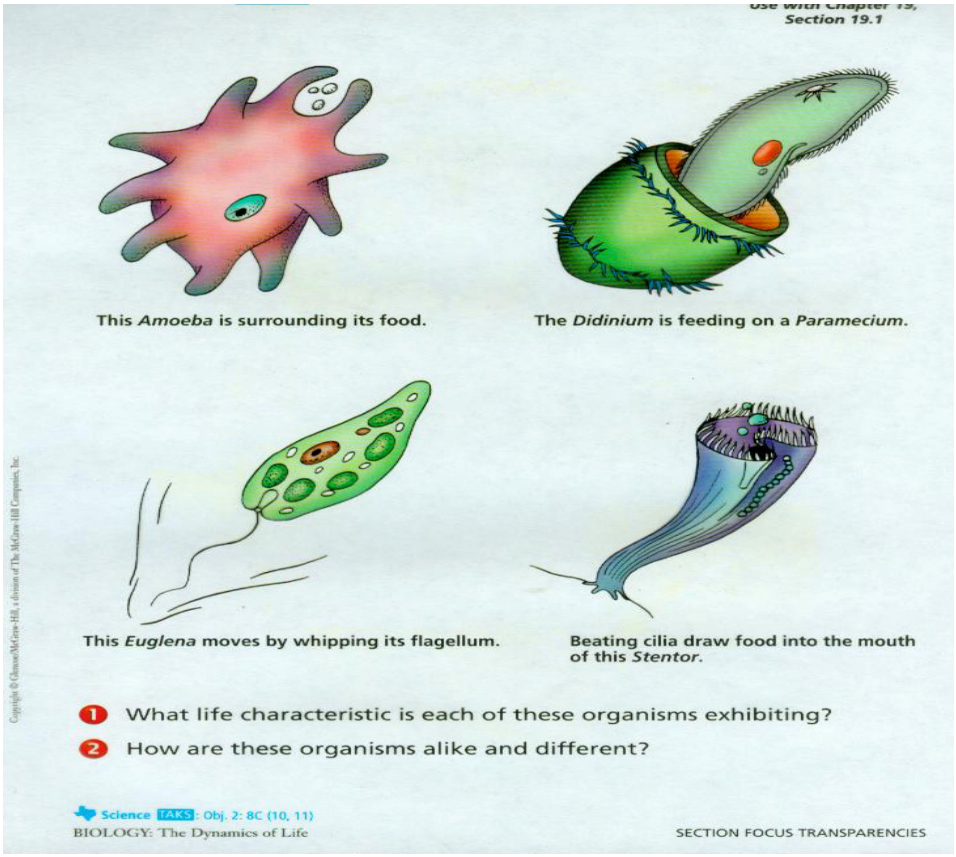
I. What are funguslike protists?

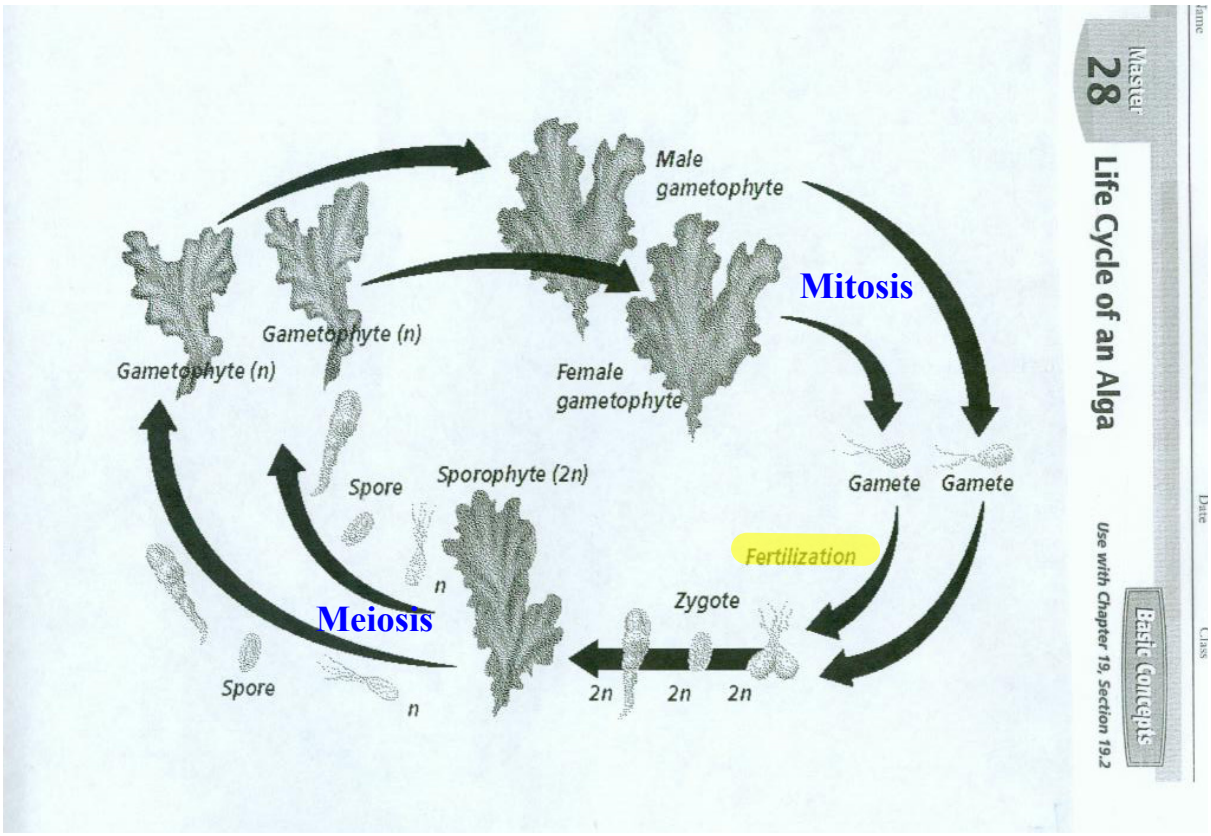
- These protists are ***heterotrophic*** & ***decompose*** organic materials.
- ***can move,*** whereas fungi cannot
- Slime molds have characteristics of both ***protozoans and fungi*** .

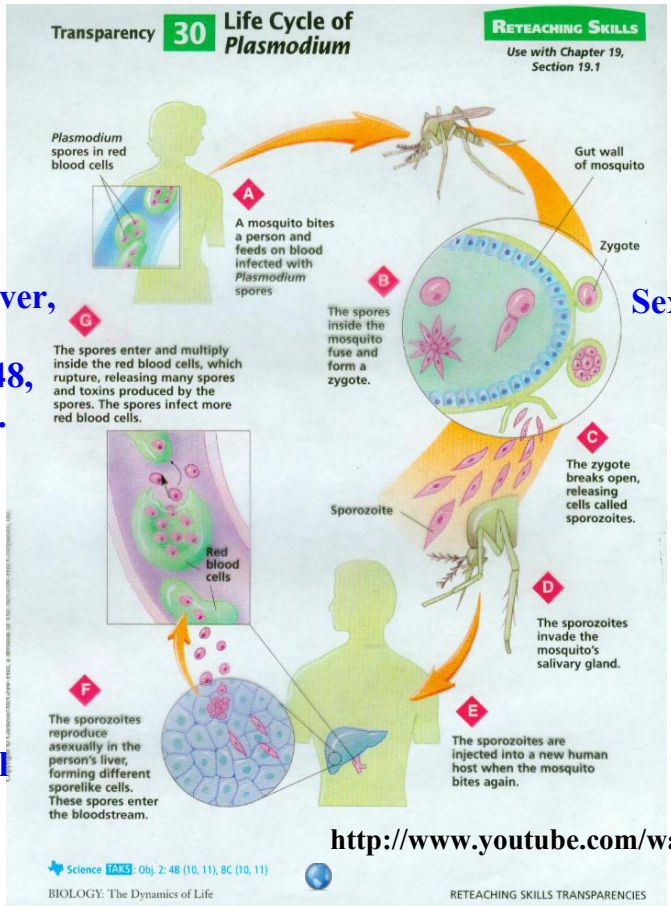
II. Origin of Protists

- There is little ***conclusive*** evidence to indicate whether ancient protists were the evolutionary ancestors of fungi, plants, and animals or whether ancient p rotists emerged as evolutionary lines that were ***separate*** .
- Biologist agree ***ancient green algae*** were ancestral to modern plants.
- Protista is one kingdom in the domain ***Eukarya***









Causes fever, chills from 24,48, or 72 hrs.

Sexual

Asexual

http://www.youtube.com/watch?v=IVbq2yQH52g