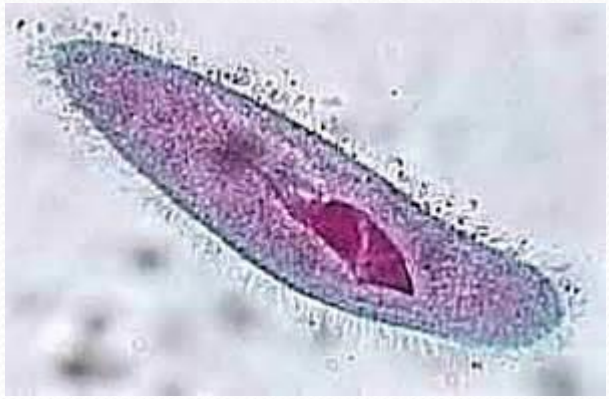
Kingdom Protista

Varied group of organisms – the "junk drawer" of the kingdoms



What is a Protist?

A **protist** is made up of one or more eukaryotic cells.

The members of these phyla differ greatly in shape, size, structure, complexity, feeding habits, locomotion and reproduction

Common Features of Protists

- Most are unicellular, some form colonies, and a few are multicellular
- Cells are **eukaryotic**
- Reproduce **asexually** by binary fission (some use forms of mitosis), or undergo **sexual reproduction** (gamete formation or conjugation)
- Survive in moist environments

Three Main Groups

- **animal-like protists** = protozoa – these are heterotrophic (the eat other things – some "hunt"
- **plant-like protists** = algae - these are the photosynthetic/autotrophic protists (they make their own food)
- **fungus-like protists** = slime moulds and water moulds – these are heterotrophic

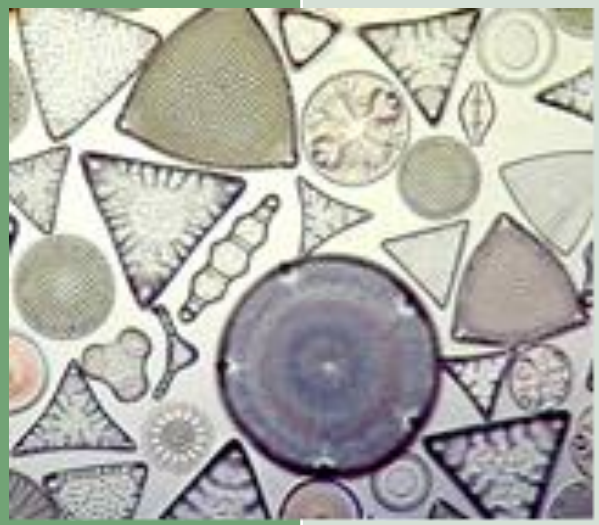
Plant-like Protists: Algae

- huge variation in this group since it includes many aquatic eukaryotes.
- Some common features with plants: cell wall, chloroplasts (contain chlorophyll), so they carry out photosynthesis.
- All are unicellular, most are motile
- Most are **photosynthetic** and **heterotrophic**
- can range from single cells to giant colonies – eg. seaweeds (ex. Kelp – a brown seaweed)

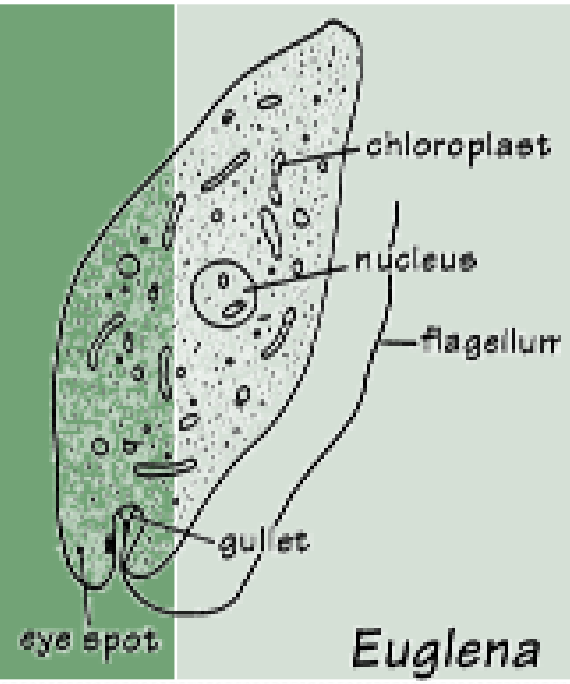
Examples of Algae

Type of Algae		Characteristic Features
Dinoflagellates		• Have flagella at right angles, move by spinning (think helicopter seeds!) • Some produce a toxin • Often have cellulose covering

Examples of Algae

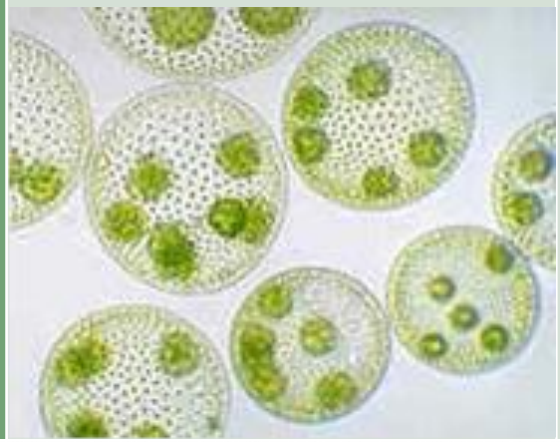
Type of Algae	Characteristic Features
Diatoms 	• Most abundant form of marine algae. • Form elaborate silicon (glass) shells to protect themselves

Examples of Algae

Type of Algae	Characteristic Features
Euglenoids 	• Have chloroplasts, and move around through flagella (autotrophic and heterotrophic) • Eg. *Euglena*

Examples of Algae

- **Multicellular Algae (3 types)**
- Are not generally true multicellular organisms, but rather "colonies"
- Show beginnings of specialized functions

Type of Algae		Characteristic Features
Green Algae **Eg phytoplankton**		• contain chlorophyl • Most frequently found in fresh water • Often colonial

Examples of Algae

Type of Algae	Characteristic Features
Red Algae  	• Found in salt/brackish water • Have additional pigments which give them a reddish color.

Examples of Algae

Type of Algae	Characteristic Features
Brown Algae 	• Most Plant-like of all algae. • Include kelps • Can grow to huge sizes (100')

Importance of Algae

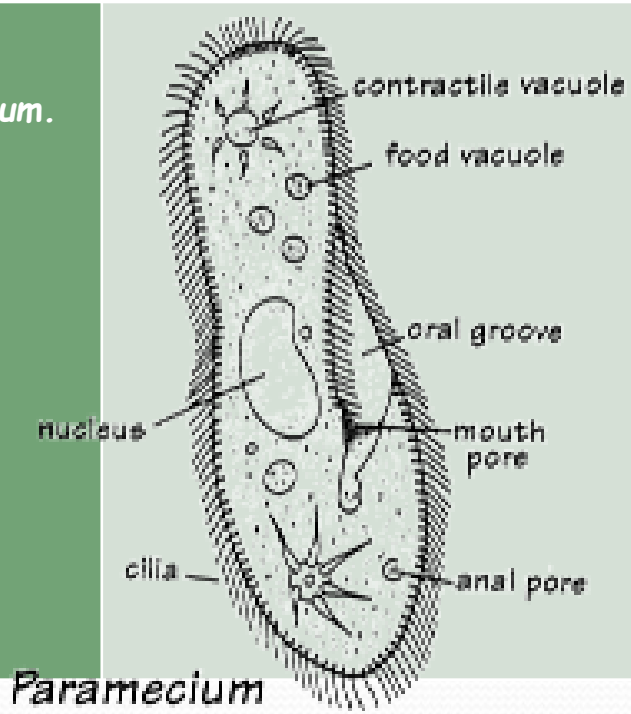
- primary food source of aquatic food chains
- supply 80% of global oxygen supply
- eat them – excellent supply of vitamins and nutrients
- great fertilizers
- agar and carrageenan – food thickeners
- responsible for the creation of huge ocean oil deposits millions of years ago

Animal-like Protists: Protozoans

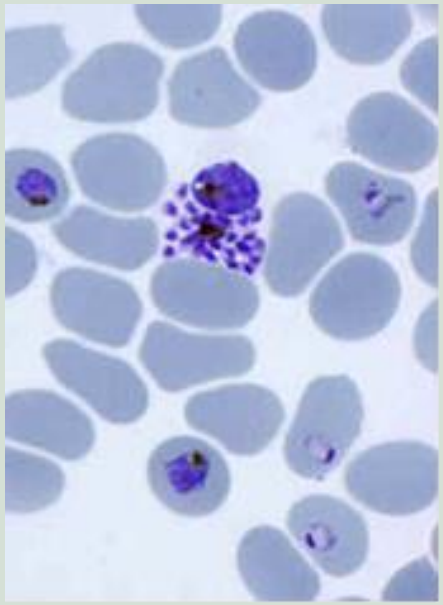
General Features:

- All protozoans are heterotrophic and must move obtain their food.
- They act as scavengers, as predators, and parasites inside larger organisms
- Some engulf their food, others absorb it directly through their cell membranes
- most are unicellular and motile
- live in aquatic environments, wet soil, and in fluids

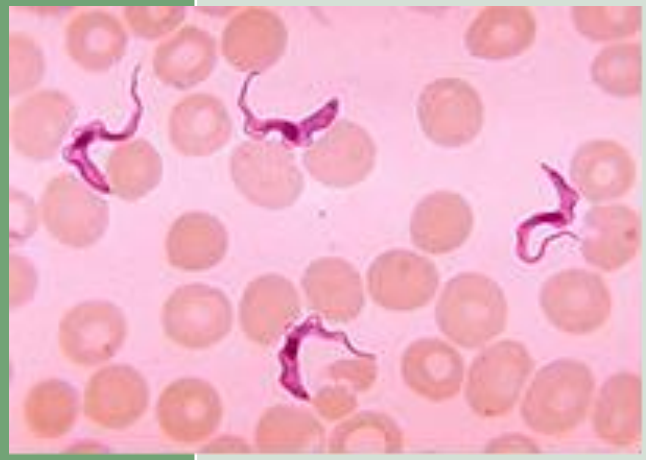
Examples of Protozoa

Type of Protozoa	Characteristic Features
Cilates Example is *paramecium*.  *Paramecium*	• Have **cilia** (short hairlike structures) on their plasma membranes • provide propulsion for the protist. • Over 7000 species in this phylum.

Examples of Protozoa

Type of Protozoa		Characteristic Features
Sporazoa		• parasitic in nature • Example is **Plasmodia** which causes **malaria**. • Liver cell infected with plasmodia (right)

Examples of Protozoa

Type of Protozoa	Characteristic Features
Flagellate 	• Use flagella for mobility • Eg *Trypanosoma* causes sleeping sickness

Examples of Protozoa

Type of Protozoa	Characteristic Features
Sarcodia **Ex *Ameoba*** 	• Protists with false feet (pseudopods) • biggest yet simplest protozoan, moves by pseudopodia and has two layers of cytoplasm!

Pathogenic Protists

- Best known sporozoans are *Plasmodium* which cause malaria
- Other examples of disorders are: African sleeping sickness, beaver fever, dysentery, ulcers
- Many people may not present symptoms of a disease but be a **carrier** and spread it to others

Fungi-Like Protists

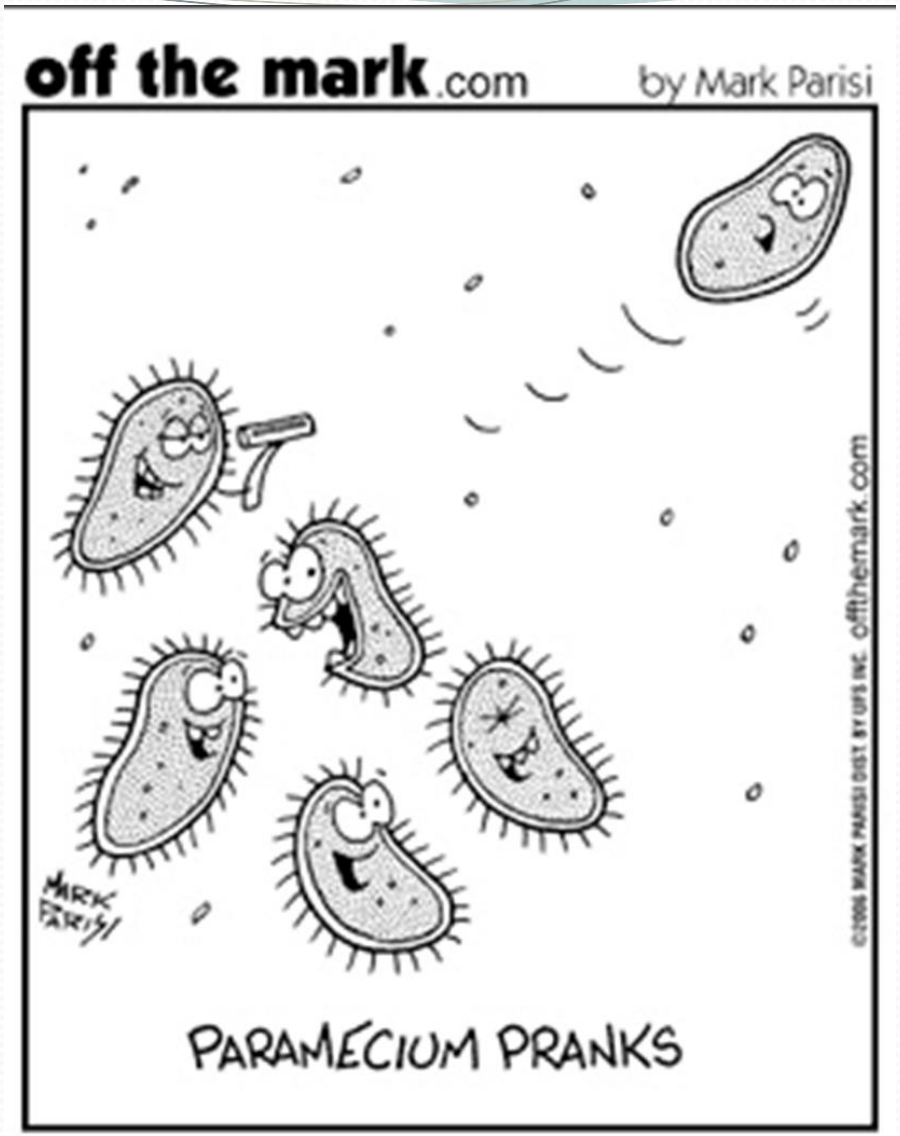
- Also referred to as Slime Moulds
- Act as decomposers
- Often have a slimy appearance/texture, hence their name.
- 3 types: (see page 132)
  - **Plasmodial slime molds** – slug-like organisms
  - **Cellular slime molds** –will form large colonies of cellular slime when condition are not good
  - **Water molds** – live on dead organic matter as parasites

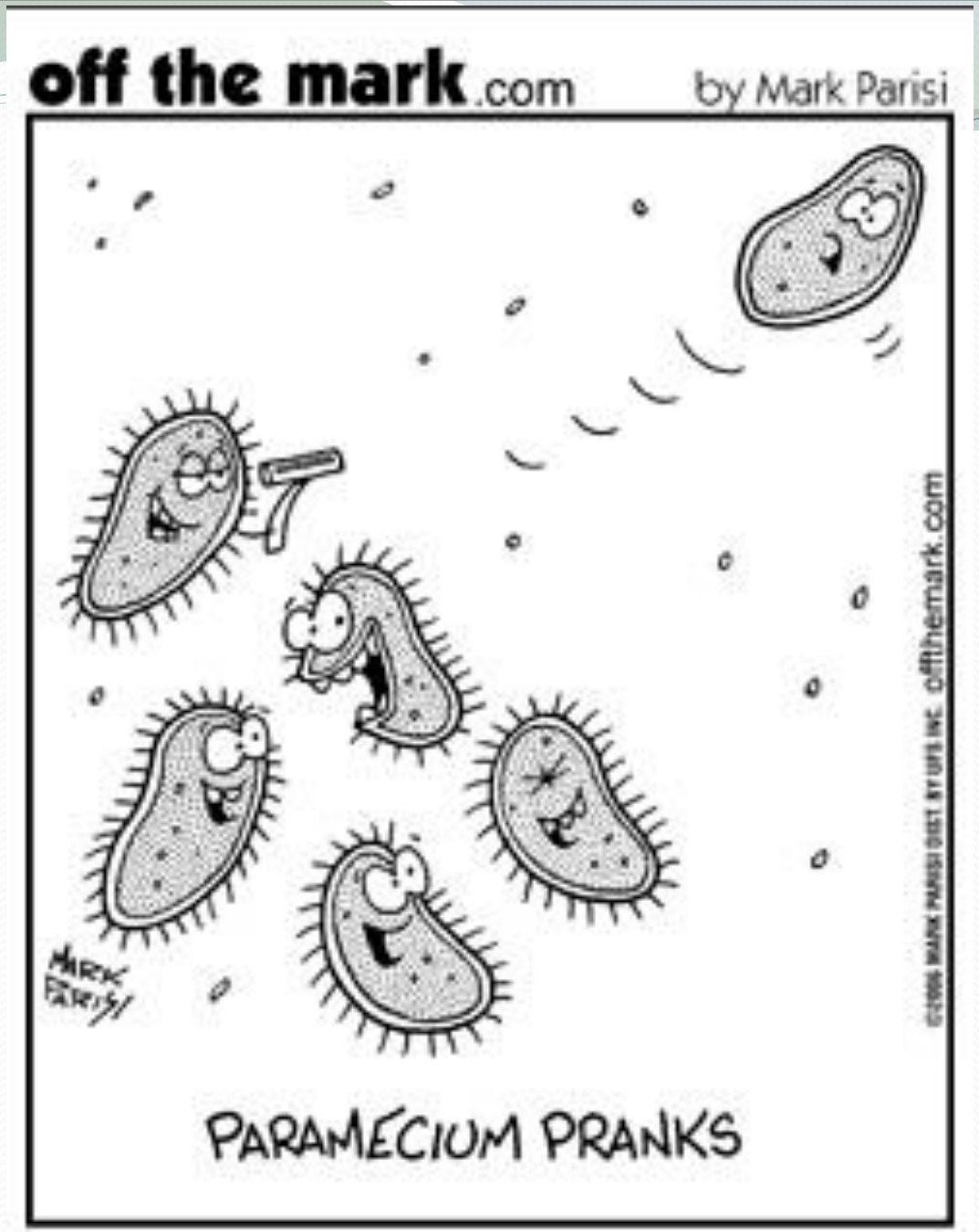
Overall Importance of Protists

- Food for food chains, oxygen
- First level of consumers in food chains
- Symbiotic relationships with other organisms: for example, a protist in the gut of termites digests wood
- Fundamental to all other life on Earth!!

Homework

- *Read: section 2.13 , Page 128-133*
- *Answer questions: 2, 3, 10, 11, 14 page 133*

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