Protist Notes
What is a Protist?

- Mostly single-celled eukaryotes that can’t be classified as a plant, an animal, or fungi – some are multi-cellular

- Three main categories
  1. Animal-like
  2. Plant-like
  3. Fungus-like
Animal-like Protists

- Called Protozoans
- Are heterotrophs - get energy from other organisms
- Can move to obtain food
- Made of cells with a nucleus and no cell wall - just like an animal cell
- Unicellular – made up of one cell
4 Main Groups of Animal-like Protists

1. Sarcodines
2. Ciliates
3. Flagellates
4. Parasites
1. Sarcodines

- **Animal-like protist** that moves to obtain food
- They feed using **pseudopods** ("false feet")
  - a temporary bulging/extension of the cell that is used to capture and engulf food and used to move
- Have a **Contractile vacuole** - structure that collects and expels extra water from the cell
- Example - **Amoeba**
Amoeba Proteus

- Most well known amoeba.
- Was named for the Greek god of the sea, Proteus, that could change shape!
Amoeba

- Amoeba Movement
2. Ciliates

- Animal-like protists that use cilia to move and eat

- **Cilia** - hair-like projections from the cell that move with a wavelike motion
  - They work together like oars, which beat to move
  - It sweeps food to the ciliates

- Example - Paramecium
3. Flagellates

- Animal-like protists that use flagella (whip-like tail structure) to move

- They can have one or more flagella

- Ex. Peranema
4. Parasites

- Animal-like protists that feed on the cells and body fluids of their host
- Many of them have more than one host
- Example - Plasmodium (causes malaria)

Plasmodium in a human blood sample
Plant-like Protists

- Commonly called algae
- Autotrophic - use the sun’s energy to produce their own food
- Some are unicellular
- Some are multicellular
- There are 7 main types
7 Main Types

1. Algae
2. Diatoms
3. Dinoflagellates
4. Euglenoids
5. Red Algae
6. Green Algae
7. Brown Algae
1. Algae

- Plant-like protists
- VERY IMPORTANT in oxygen production
- Most live in water, some on damp surfaces
- All algae contain chlorophyll and photosynthesize
2. Diatoms

- Unicellular protists that have glass-like cell walls
- Float near the surface of lakes and oceans
- Move by oozing chemicals out of slits in their cell walls
- Used in household scouring products and insecticides
3. Dinoflagellates

- Unicellular algae surrounded by stiff plates
- They come in a variety of colors (many glow in the dark)
- All have two flagella
- Responsible for "red tides"
Red Tides

- Common name for **algal bloom**.
- Usually in coastal areas.
- Are a result of **rapid accumulation of algae** (specifically dinoflagellates) in the water column.
- Have the potential to kill fish, birds, marine mammals, and other organisms.
4. Euglenoids

- Green, unicellular algae found mostly in fresh water
- Can be autotrophs or heterotrophs
- Use flagella for movement
5. Red Algae

- Multi-cellular seaweed
- It only needs a small amount of sunlight
- It is used in hair conditioner and ice cream
- Contains red chlorophyll, which gives it its color.
6. Green Algae

- Contain green pigments
- Unicellular, multicellular or colonial
  - Colonial organisms lives attached to others
- They are closely related to plants
7. Brown Algae

- Seaweed with many pigments
- It has many plant-like structures
Fungus-like Protists

- Heterotrophs
- They have cell walls
- They use spores to reproduce
- Spore - a tiny cell that can grow into a new organism

Two Main Types:
1. Slime Mold
2. Water Molds and Downy Mildew
1. Slime Mold

- Brightly colored
- Live in moist, shady places
- They are tiny in size to as big as several meters
2. Water Molds and Downy Mildews

- Most live in water
- They grow in tiny threads that look like fuzz
- Responsible for Irish Potato Famine

Water Mold (from a stream)

Downy Mildew