

Protists

Kingdom Protista

- Called the "Junk Drawer"
- 3 Groups of Protists
 - Protozoans
 - Algae
 - Slime molds

Protozoans

- Animal-like
- Types:
 - Sarcodines
 - Ciliates
 - Flagellates
 - Sporozoans

Sarcodines

- The most common sarcodines are the amoebas.
- Move via "pseudopodia" or "false feet"
- Reproduce asexually through binary fission.



Ciliates

- The most common is the Paramecium.
- Move via cilia (tiny hair-like structures.)
- Reproduce sexually and asexually.
 - Sexually: Conjugation (joining at the oral groove.)
 - Asexually: binary fission.
- Have two nuclei
 - micronucleus: controls reproduction
 - macronucleus: controls cell activities



Flagellates:

- Most common = Trypanosome (Causes African Sleeping Sickness,) Euglena
- Move via flagella (Long whip-like structure.)
- Reproduce asexually.

Sporozoans

- Most common is the Plasmodium (causes Malaria.)
- No means of locomotion: travel only with an infected host.
- Parasitic.

Algae

- Plant-like
- 22,000 kinds
- Photosynthetic protists--contain chlorophyll
- Can be unicellular or multicellular



The 6 Phyla of Algae

Phyla Name	Unicellular or Multi-cellular	Common Name
Chlorophyta	Both	Green Algae
Phaeophyta	Multi-cellular	Brown Algae
Rhodophyta	Multi-cellular	Red Algae
Chrysophyta	Unicellular	Golden Brown Algae, Diatoms
Pyrrophyta	Unicellular	Dinoflagellates
Euglenophyta	Unicellular	Euglena

Unicellular Algae

- Called "Plankton"
 - Photosynthetic Plankton are called "Phytoplankton"
- Float near the surface of fresh or salt water

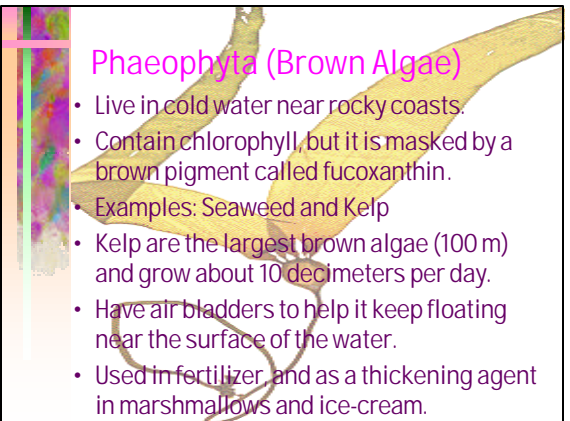
Chlorophyta (The Green Algae)

- 7,000 Species
- Most live in Freshwater or on tree trunks
- All have large amounts of Chlorophyll
- Can be
 - unicellular -- ie: Chlamydomonas, Chlorella
 - Colonial-- ie: Volvox
 - multi-cellular-- Spirogyra, Ulva (Sea Lettuce)



Phaeophyta (Brown Algae)

- Live in cold water near rocky coasts.
- Contain chlorophyll, but it is masked by a brown pigment called fucoxanthin.
- Examples: Seaweed and Kelp
- Kelp are the largest brown algae (100 m) and grow about 10 centimeters per day.
- Have air bladders to help it keep floating near the surface of the water.
- Used in fertilizer, and as a thickening agent in marshmallows and ice-cream.



Rhodophyta (Red Algae)

- 4,000 species-- ie: seaweed
- Live in warm, tropical ocean water as deep as 150 meters.
- Has chlorophyll, but it is masked by the pigment " phycobilins "causing a redish-orange color.
- Coated in a glue-like polysaccharide material that is used to make agar for lab use and carageenans used as thickening agents in pudding, toothpaste, cheese, marshmallows, etc.

Chrysophyta: (Golden Brown Algae, Diatoms)

- 10,000 species
- The most abundant phytoplankton
- Yellowish-brown to a Golden-brown in color from the golden-brown pigment that masks its chlorophyll



Chrysophyta: (Golden Brown Algae, Diatoms)

- Most are Diatoms:
 - made up of silica so look glass-like
 - Used in toothpaste, detergent, and silver polish
- Two kinds:
 - Centric- circular; found in oceans
 - Pennate- long/rectangular; found in lakes, freshwater



Pyrrophyta (Dinoflagellates)

- 2,000 species
- Sometimes called "fire Algae."
- Grow in ocean and freshwater ponds and lakes. (Most in saltwater.)
- Most are red in color or luminescent
- Have 2 flagella and spine-like projections
- Float near the Surface of water.



Pyrrophyta (Dinoflagellates)

- Examples:
 - Noctiluca: Glow pale green or blue
 - Gonyaulax: causes "red Tide" when populations are in large quantities; Poisonous to vertebrates: kill some fish and are harmful to humans; shellfish are not harmed by it, but they collect the toxin and if eaten by humans, they get food poisoning.



Euglenophyta (Euglenoids)

- One celled
- Long flagellum
- Contain chloroplasts with chlorophyll
- Can synthesize its own food when in the presence of light or can absorb food when light is not present.
- No cell wall.
- Is both plant-like and animal-like.



Slime molds

- Fungus-like protists
- Grow in cool, shady, moist areas on decaying materials and bacteria.
- Have two life stages:
 - Reproductive- where they act like a fungi
 - Feeding - act like amoebas
- 3 Phyla
 - Myxomycota - terrestrial
 - Acrasiomycota - terrestrial
 - Oomycota - mostly aquatic, but can be terrestrial



Myxomycota

- In feeding stage it is "Pseudopodial"- large cytoplasm mass with many nuclei and no cell walls or cell membranes separating them.
- Moves like amoebas digesting organic materials as it moves along.
- When food supply is gone, makes a stalk with reproductive structures that produce spores and are carried away by wind to start a new slime mold somewhere else.
- Usually yellow, but can be white, green, red, orange, brown, violet, or blue.

Acrasiomycota

- Unicellular
- One nucleus
- Feeding stage is amoeba-like
- Reproductive stage--become a pseudoplasmodium (each cell remains separate, but swarm together) and migrate to where there is light and produces reproductive structures.

Oomycota

- Include water molds, white rusts, downy mildews.
- Are branched and have many nuclei.
- Some are parasitic.
- Appear as fuzzy white growths on decaying material.