


## Chapter 20 Protists

### 20-1

#### Key Concepts

What are protists?

 <https://www.youtube.com/watch?v=Ln69k7LyTsU> (20 Minutes)

#### Protist

any organism that is **NOT** a plant, animal, fungi, prokaryote

include more than 200,000 species

grouping for organisms that don't fit into other kingdoms

Kingdom name = **Protista**

One way protists are **classified** is by how they eat.

#### Animal-like

heterotrophs  
eat other organisms

#### Plantlike

make own food

#### Funguslike

external digestion-decomposer or parasite

## 20-2 Animal-like Protists: Protozoans

**Key Concepts**

What are the distinguishing features of the major phyla of animal-like protists?  
How do animal-like protists harm other living things?

**Protozoa**

first animals

4 phyla - based on how they move  
broken down

**1. Zooflagellates**

Phylum - Zoomastigina

swim with **flagella**- long whiplike structures  
most have one or two some have many  
live in lakes, streams, other organisms  
absorb food through cell membrane of decaying  
organic matter  
asexual and sexual reproduction



giardia

**2. Sarcodines**

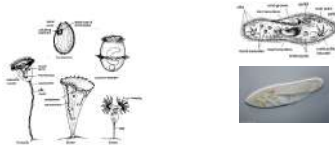
Phylum - Sarcodina

move by cytoplasmic projections - **pseudopods**  
**pseudopods** - false foot, used for feeding/movement  
**amoeboid movement** - extending the pseudopod

**3. Ciliates**

Phylum - Ciliophora

**cilia** - short, hairlike projections used for feeding  
and movement  
both fresh and salt water



most common is the paramecium

**Page 501**

**trichocysts** - used in defense, release a stiff  
projection that protects the cell

**two nuclei**

**macronucleus** - copies of the information  
that is needed

**micronucleus** - reserve copy of all cell's genes

**gullet** - indentation in organism

**anal pore** - releases wastes

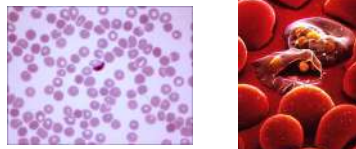
**contractile vacuole** - collects water and then  
contracts to pump water out of  
the paramecium

**conjugation** - exchanging of genetic material -pg 502

**4. Sporozoans**

Phylum Sporozoa

Do **NOT** move on their own - parasitic  
reproduce by **sporozoite** - pg 503

**Animal-like Protists and Disease****Malaria**

caused by Plasmodium

carried by the female Anopheles mosquito

first infects the liver cells then moves to the

red blood cells - which produce chills/fever

most strains are resistant to vaccines

**African Sleeping Sickness**

spread from the fly

Trypanosoma - Zooflagellates that destroy

red blood cells and infect other  
tissues of the body

**Amebic Dysentery**

Entamoeba - parasitic amoebas

live in the intestine and absorb food and attack

wall of intestine causing bleeding

passed out of body through feces which then

can be passed into water supply

**Giardia**

poor sanitation

parasites are found in lakes, ponds, rivers and  
streams worldwide, as well as in municipal  
water supplies, wells, swimming pools, water  
parks and spas. Ground and surface water can  
become contaminated from agricultural runoff,  
wastewater discharge or animal feces.

Children in diapers and people with diarrhea

may accidentally contaminate pools and spas

parasites can be transmitted through food —

either because food handlers with giardia don't

wash their hands thoroughly or because raw

produce is irrigated or washed with

contaminated water. Because cooking food

kills giardia, food is a less common source of

infection than water is, especially in

industrialized countries.

## 20-3 Plantlike Protists Unicellular Algae

**Key Concepts**

What is the function of chlorophyll and accessory pigments in algae?  
 What are the distinguishing features of the major phyla of unicellular algae?

**Plantlike Protists - algae**

Traits used to classify algae is the type of pigments in algae.

Pigments used for photosynthesis.  
 Chlorophyll a, Chlorophyll b, and Chlorophyll c trap the sunlight of different wavelengths so more energy from the sun can be used.

**Accessory Pigments**

absorb light at different wavelengths and pass energy along for photosynthesis

gives algae a wide range of colors due to the reflection of different wavelengths

**7 Phyla - This section includes 4****1. Euglenophytes**

two flagella for swimming  
 no cell wall  
 contain chloroplasts - similar to zooflagellates  
*Euglena* common organism  
 found in ponds and lakes worldwide  
*eyespot* (stigma) - used to locate sunlight  
 if no sunlight will absorb decaying matter to become a heterotroph  
*pellicle* - cell membrane, ridges made of microtubules but flexible  
 they can crawl through mud when there is not enough water to swim  
 reproduce asexually

**2. Chrysophytes**

*Chrysophyta* - golden plants  
 yellow-green and golden-brown algae  
 gold colored chloroplasts  
 store food in the form of oil instead of starch  
 reproduce asexually and sexually  
 usually do not move, some form colonies

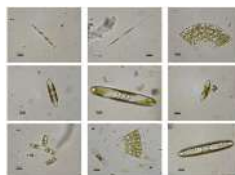
**3. Bacillariophyta**

most abundant  
 diatoms  
 most are unicellular  
 freshwater, saltwater, and damp soil  
 autotrophs and heterotrophs  
 used in polishing products  
 toothpaste  
 insecticide - sharp cell walls puncture the bodies of insects  
*centric* - radially symmetrical  
*pennate* - bilaterally symmetrical

side view



Freshwater Diatoms

**4. Pyrrophyta**

*Pyrrophyta* - fire plants  
 freshwater, saltwater, rivers  
*Dinoflagellates*  
 photosynthetic and heterotrophs  
 reproduce asexually  
 defense - flagella find grooves in the thick plates that surround the cell  
 give off light



Dinoflagellates

**Why are Plantlike Protists Important?****Phytoplankton**

photosynthetic organisms found near surface of the ocean  
 base of food chain which helps with diversity

Protists help with the recycling of sewage. If a lot of sewage is being released this causes an increase in population of algae that grow in blooms. These blooms will decrease the water nutrients which decreases the oxygen level and causing fish and invertebrates to die.

## Section 20-4 Plantlike Protists: Red, Brown, Green Algae

**Key Concepts**

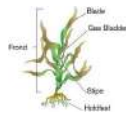
What are the distinguishing features of the major phyla of multicellular algae?  
How do multicellular algae reproduce?

**3 Phyla of multicellular algae**

- Rhodophyta** - red plants  
can live in deep water to depths of 260 m or shallow water  
use accessory pigments - reddish- **phycoobilins**  
contain chlorophyll a  
many red algae are also green, purple, reddish black  
provide nutrients from photosynthesis  
desserts, salad dressings, toothpaste, cosmetics, paints



- Phaeophyta** - dusky plants - brown algae  
contain chlorophyll a and c  
contain brown accessory pigment - **fucoxanthin**  
largest of all algae groups  
multicellular  
marine waters  
used to thicken ice cream,  
Fucus - rockweed



- Chlorophyta** - green plants - green algae  
similar cell walls to plants - cellulose  
chlorophyll a and b  
store food in form of starch  
found in fresh and salt water

**Unicellular Green Algae**

Chlamydomonas - lives in ponds ditches  
2 flagella

**Colonial Green Algae**

**Filaments** - threadlike colonies of algae

Volvox

**Multicellular Green Algae**

Ulva - sea lettuce

**Uses of algae**

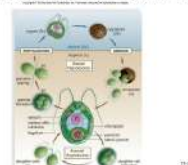
food  
agar  
plastics

deodorants  
paints  
waxes

**Reproduction of Algae****Alternation of Generations**

switching back and forth between haploid and diploid stage

Figure 17.11A Reproduction in Chlamydomonas, a motile green alga



Jan 22-2:55 PM

## 20-5 Funguslike Protists

**Key Concepts**

What are the similarities and differences between funguslike protists and fungi?  
 What are the defining characteristics of the slime molds and water molds?

**Funguslike vs Fungi**

both heterotrophs through absorption  
 unlike fungi, funguslike have centrioles and lack the chitin cell walls

**Funguslike Protists****Slime Molds**

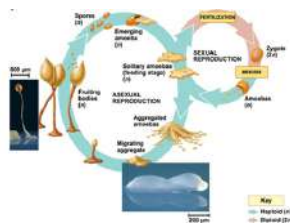
damp and rich in organic matter  
 recycles organic material

**Two groups of Slime Molds****Cellular Slime Molds**

Phylum Acrasiomycota  
 individual cells remain distinct and are separated by cell membranes  
 unicellular - but look like multicellular when they join up during reproduction

**Reproduction**

cells aggregate to a colony  
 colony migrates for a few centimeters  
 produce **fruiting body** - produces spores which are scattered



<http://www.ck12.org/life-science/Fungus-like-Protists-in-Life-Science/enrichment/Slime-Molds>

**Acellular Slime Molds****Phylum Myxomycota**

Cells fuse to form large cells with many nuclei

**Reproduction**

cell fuse together to form a plasmodia (plural)  
 plasmodium (singular)  
 plasmodia begin to grow  
 small fruiting bodies (**sporangia**)  
 spores scatter where they germinate

**Water Molds****Phylum Oomycota**

feed on dead or decaying organic matter in **WATER**  
 parasites of plants on land  
 cell walls

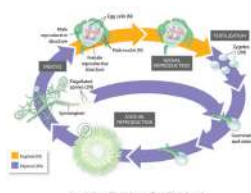
**hyphae (plural) hypha (singular)**

thin filaments of material that can absorb O<sub>2</sub>,  
 reproduction,

sexual and asexual reproduction

**Antheridium** - a structure on the hypha that produces male nuclei

**Oogonium** - a structure on the hypha that produces female nuclei



Blepharisma



Paramecium



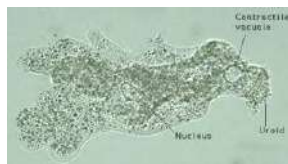
Euglena



Stentor



Amoeba



Didinium



Volvox



Rotifer

