

# PROTISTS 200,000 species

all very diverse

what are they?

Domain Eukarya

- Kingdom PROTISTA
- mostly unicellular, but also ~~multicellular~~ eukaryotes.
- Can be ingestive, photosynthetic or absorptive

There are 3 nutritional modes

### Autotroph

- photosynthetic
- chloroplasts

### Heterotroph

- absorb or ingest molecules or food particles

### Mixotroph

- combine capabilities
- e.g. euglena

Reproduction

- Highly varied
- mostly asexual but some sexual
  - Binary Fission
  - Binary Fission
  - conjugation

### Protozoans

"animal-like" protists

- when first discovered they were captivating because they could move.
- Named protozoa

looking at 4 Phyla for animal-like protists

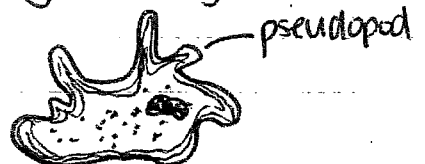
- 1) phylum Sarcodina - blobs <sup>amoeba</sup>
- 2) Phylum Sporozoa - sporozoans
- 3) Phylum Ciliophora - ciliates
- 4) Phylum Zoomastigina - flagellates

### Amoeba

Phylum Sarcodina

- no cell wall
- move using pseudopods "False Feet"

engulf bits of food by flowing around and over them.



## Sporozoans

Phylum  
Sporozoa

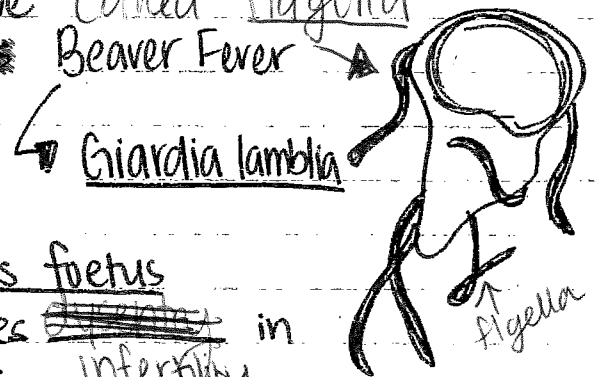
- Non-motile - do not move
  - Live inside a host (parasitic).
  - 1 type causes malaria.
  - Moves into red blood cells
- 1) mosquito bites 2) travels to liver 3) burst from liver and infect RBC's 4) cycle continues

## Flagellates

Phylum  
Zoomastigina

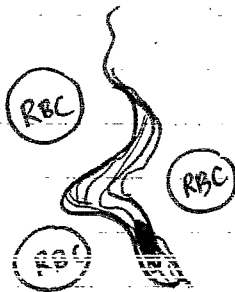
- flagellated protozoans  
→ whip-like extension used to move called flagella

• some cause Beaver Fever



• Trichomonas foetus

↳ causes ~~infection~~ in infectivity in COWS

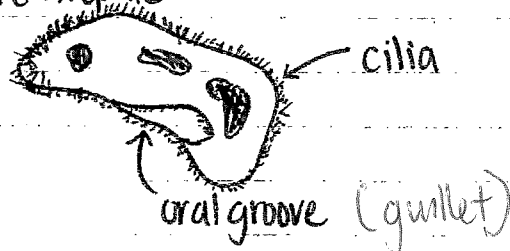


- Trypanosomes are transmitted by insects such as the tsetse fly and cause sleeping sickness and Chagas disease.

## Ciliates

the "hairy ones"

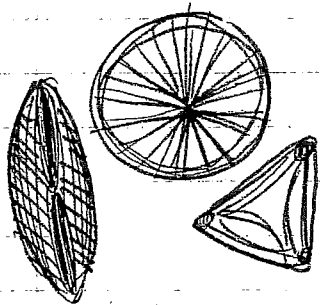
- minute protein filaments → cilia
- propel through water or guide food into position to be ingested.
- Heterotrophic



plankton + phytoplankton → photosynthetic and  
 and other photosynthetic protists produce 1/4 world's  
 photosynthesis

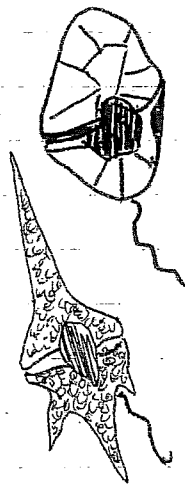
## Plant-like Protists

- euglenoids
- diatoms
- dinoflagellates



very intricate shapes

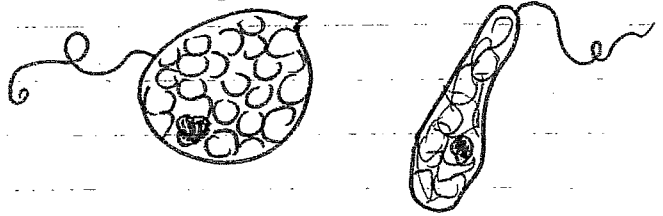
hard-  
armour  
like  
shells



build up of  
toxin  
and  
accumulates in  
shellfish which  
threaten  
health.

## The Euglenoids - Euglena

- aquatic and photosynthetic
- Move like animals
- Have an eye-spot
- curved flagella
- use binary fission to reproduce



## The Diatoms - Phylum Chrysophyta

- have shells made of silica -  $\text{SiO}_2$
- photosynthetic pigment called carotenoids give them colour.
- usually called "golden brown algae"
- example: White Cliffs of Dover, England  
 ↳ shells of dead diatoms

## The Dinoflagellates

- spin around using 2 flagella
- Responsible for Red Tides
- Create toxins that can kill animals and sometimes people.

- Algae blooms in warm months
- Filter feeders (clams, musshells, oysters)  
 take in toxin.
- Eat them and you are toast.
- some have bioluminescent abilities and when disturbed release energy in the form of light.

## Algae

- Red Algae - phylum Rhodophyta
  - small amount of light needed
  - contains Red chlorophyll.
  - example: nori in sushi uses red algae
- Green Algae - Phylum Chlorophyta
  - green pigments
  - closely related to plants
  - can be unicellular, multicellular and colonial.
    - ↳ dozens of cells
- Brown Algae - Phylum Phaeophyta
  - grow very large
  - plant-like structures
  - multicellular
  - kelp. - example.

## Fungus-like protists

"absorptive"

what is a spore?

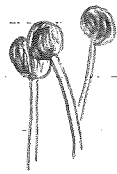
2 main types:

- Heterotrophs w/ cell wall
- use spores to reproduce

spore: a tiny cell that can grow into a new organism

- 1) Slime Mold
- 2) Water molds + Downy Mildew.

Slime  
Molds



- Brightly coloured
- Live in moist, shady places
- Tiny to very large
- slug or fruiting body formation

Water  
Molds

- Most live in water
- Grow in tiny threads that look like fuzz
- Responsible for Irish Potato famine  
↳ 1845 fungus-like protist spread through Ireland  
1/2 crop that year was affected.  
lead to starvation

SUMMARY - highlight key points

- flagellates
  - ciliates
  - sporozoans
  - amoeba
- } animal like
- euglena
  - Dinof's
  - Diatoms
  - algae
- } plantlike
- Slimes
  - Water
- } Fungus like
- } 3 types ~~molds~~ of protists

\*we will look at

- Amoeba
- Euglena & paramecium closely

