Chapter 22
Part 2

Flagellates

Protists that move with flagella

Dinoflagellates

Unicellular, prototroph
Have 2 flagella
Found in fresh and salt water
Protective coat of cellulose
Unusual shape
One flagella circles body and one is perpendicular
Spin like tops
Some cause red tides
Asexual reproduction

dino.jpg (484×358)


Harmful Algae - Red Tide

Zoomastigotes

Unicellular, heterotroph

At least one flagella

Some have thousands

Some live in the guts of termites where they provide enzymes to digest wood

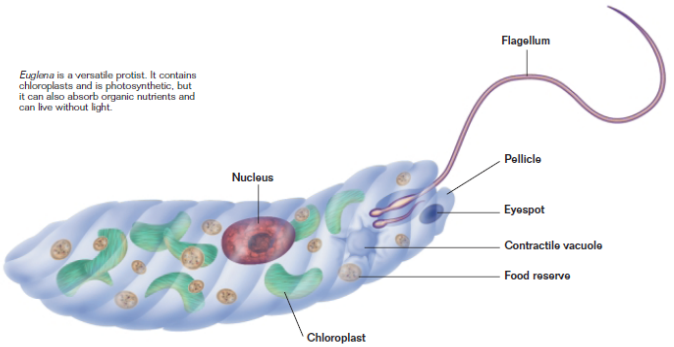
Some cause African sleeping sickness

WHO - Trypanosomiasis, Human African (sleeping sickness)

Euglenoids

Fresh water
Two flagella
One third are photosynthetic
Some ingest food-heterotroph

eyespot



Cilliates

Most complex and unusual
So different some think they need their own kingdom
All have large rows of cilia
Complex unicellular heterotroph
Flexible body
Form vacuoles to ingest food and regulating water balance
Most have two nuclei

Micronuclei- normal chromosomes that divide by mitosis
Macronuclei- some pieces of the DNA from the micronuclei

Asexual-mitosis
Cells divide for 700 generations and then die if there has been no sexual reproduction (conjugation)

Data Lab

Protistan Molds

Heterotrophs

Some mobility

One thought to be fungi because they look like them

Cell walls made of carbs like protists

Asexual reproduction

Cellular slime molds

Resemble amoebas

Individually the move in the soil and ingest bacteria

During stress the gather together and make colonies called slug

Each slug has a base, stalk, and swollen tip.

There are spores in the tip that are released and become new slime molds

Plasmodial slime molds

Groups of organism stream along as plasmodium (a mass of cytoplasm)

Looks like oozing slime

They engulf bacteria as they move

Have many nuclei

If it starts to dry up it divides into many molds

Each mound then produces a haploid spore which are highly resistant to environmental condition

Introduction to the -Slime Molds-

Oomycetes

Water molds
White rust
mildew
Alone of these was responsible
for the Irish potato famine

Water mold that triggered potato famine related to malaria

Beneficial Protists

Many live in the digestive tract of humans and animals humans eat

Cattle could not digest grass if they did not have protists

Protists make up most of the plankton in the marine food chain

Single largest group of photosynthesizers

We all breathe the oxygen they produce

33.4 million people living with HIV

2.7 million die every year died in 2008

214 million people have malaria in 2010

660,000 deaths in 2010 mostly children.

Symptoms are chills, fever, sweating, confusion, and great thirst

Victims die of anemia, kidney failure, or brain damage

Malaria is caused by several species of plasmodium

And it is carried by certain mosquitoes like the *Anopheles* only the female

On tropical Africa one person can receive more than 300 bites by infected mosquitoes each year

Cycle

First the infected mosquitoes bites the person and injects its saliva into the person
The salvia does two things
It contains a chemical that prevents the blood from clotting
It also injects about 1,000 protists into the person

The sporozoites then divide rapidly and produce millions of cells called merozoites (these are produced in the liver)

The merozoites the infect red blood cells and after 48 the RBS rupture releasing more merozoites and toxins

This begins that fever and chills

The cycle keeps repeating killing more RBS

In the third stage some merozoites develop into gametes

These are when is taken in by the mosquitoes

They then form a zygotes and more sporozoites are made in the salivary glands of the mosquito

Palasmodium falciparum is 95% more likely to kill and other strains

Because it has only been seen in human population for 10,000 years,
It is considered a new strain

Malaria can occur anywhere summer temps are above 61 degree fareinheight.

Global warming has extend those areas so the reach of malaria has increased

Although malaria is limited now because of efforts to control it

Quinine was discover in the middle of the 1600 s from the bark of a tree found in south America

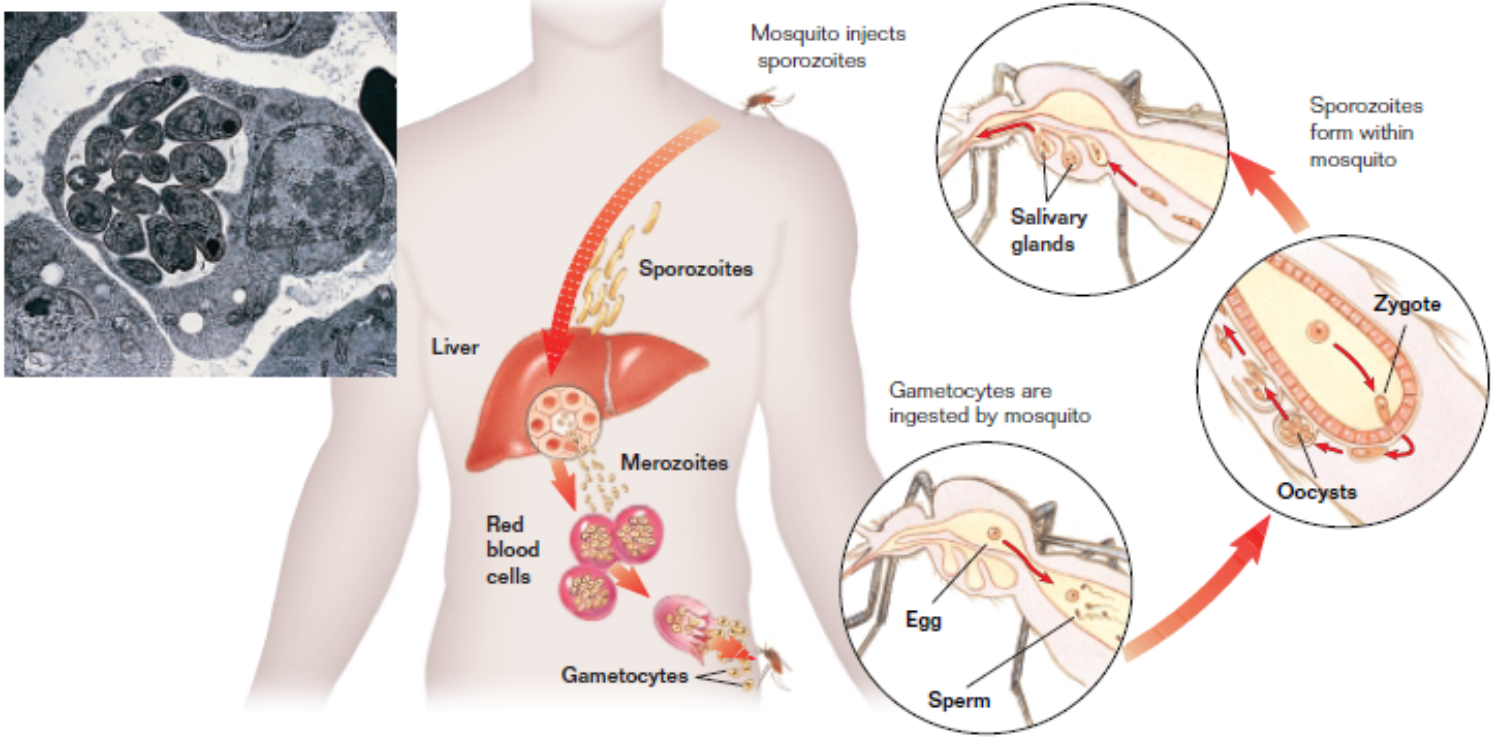
This is a treatment for malaria as well as derivates of it

Malaria can also be reduced by controlling mosquitoes like with DDT

Malaria is becoming harder to treat because the protists are becoming resistant to the drugs

Scientists are trying to make a vaccine
- part of the problems are that they are in several stages when in the body
- also the immune system cannot find them in the liver and the RBS

Also people with sickle-cell are immune because the protists cannot survive in the sickle celled RBCs


Mosquito injects sporozoites
Sporozoites
Liver
Merozoites
Red blood cells
Gametocytes
Gametocytes are ingested by mosquito
Egg
Sperm
Zygote
Oocysts
Sporozoites form within mosquito
Salivary glands

Disease	Host	Organism
Amoebic dysentery	Humans	*Entamoeba*
Malaria	Humans	*Plasmodium*
Toxoplasmosis	Humans, cats	*Toxoplasma*
Giardiasis	Humans	*Giardia*
Sleeping sickness	Humans, tsetse flies	*Trypanosoma*
Leishmaniasis	Humans, sand flies	*Leishmania*
Late blight	Potatoes	*Phytophthora*