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Protists

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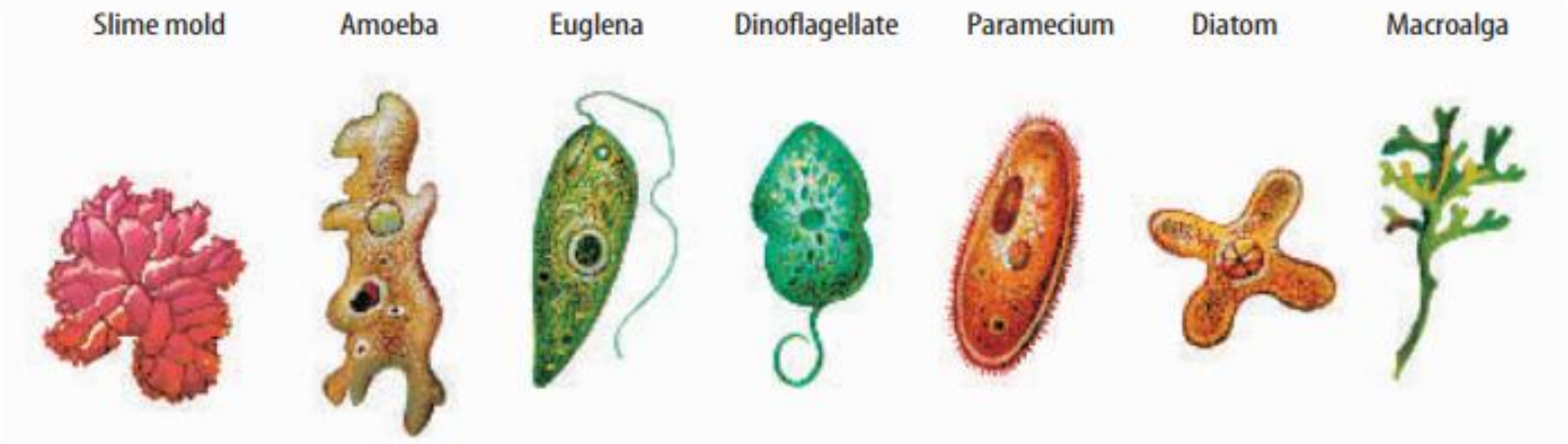

Slime mold
Amoeba
Euglena
Dinoflagellate
Paramecium
Diatom
Macroalga

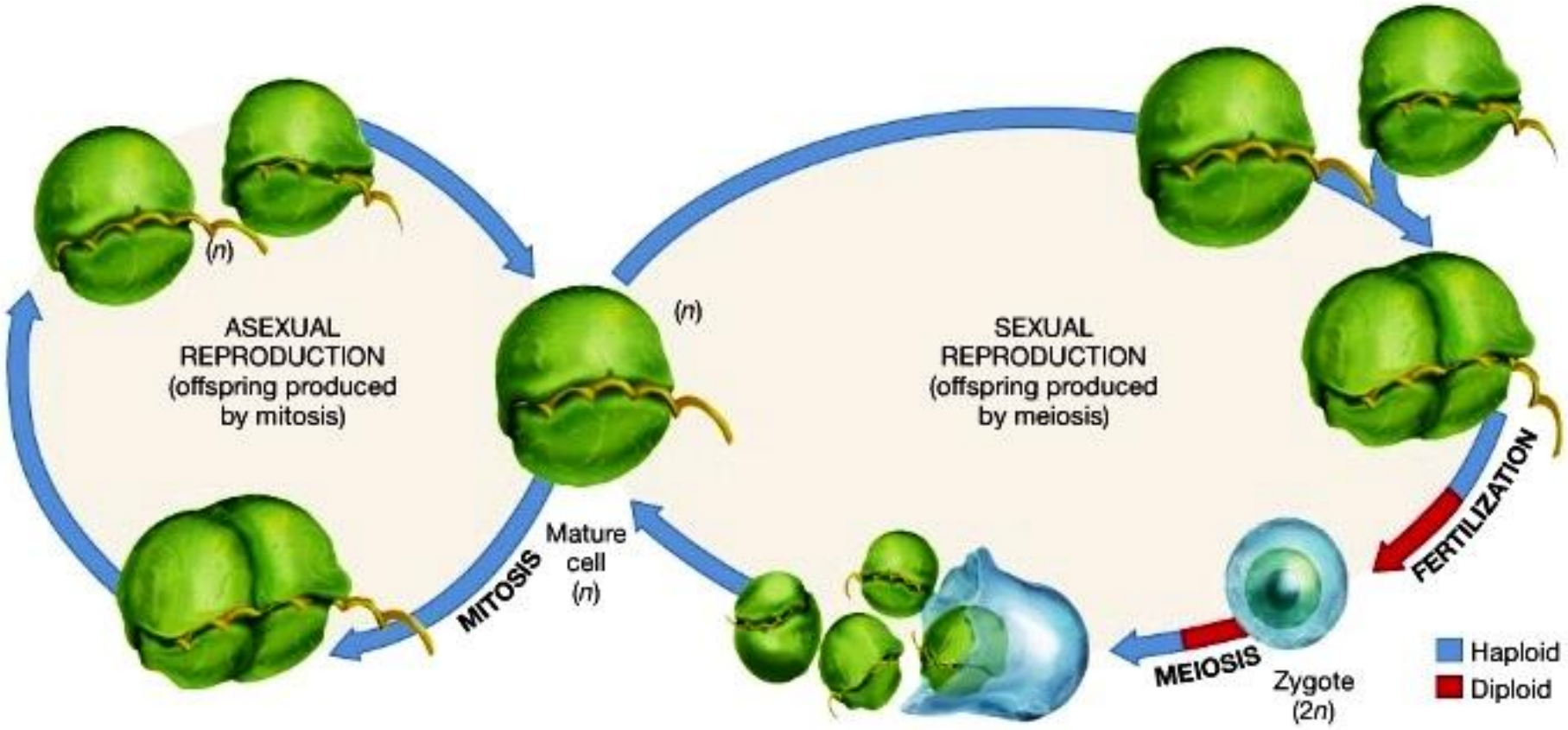
Characteristics of all protists

- They are eukaryotic cell.
- Some of them are plantlike.
- Some of them are animal-like.

- Plant-like -> contain chlorophyll and make photosynthesis
- Animal-like -> don’t contain chlorophyll and can move.

Protist Reproduction

- Usually asexual reproduction by cell division.
  - Sometimes **sexual reproduction.**
- A process called **meiosis** produces **sex cells**.



Classification of protists

Table 1 Characteristics of Protist Groups

Plantlike	Animal-Like	Funguslike
Contain chlorophyll and make their own food using photosynthesis	Cannot make their own food; capture other organisms for food	Cannot make their own food; absorb food from their surroundings
Have cell walls	Do not have cell walls	Some organisms have cell walls; others do not
No specialized ways to move from place to place	Have specialized ways to move from place to place	Have specialized ways to move from place to place

Plant-like protists

Chlorophyll

Cell wall

Plant-like protists are known as algae.

Algae can contain green, red, orange and brown pigment.

There are 6 groups of plant-like protists:

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

1.Diatoms

- Golden-brown pigment.
- Secrete glasslike boxes.
- Cell walls of diatoms contain silica, the main element in glass.

2.Dinoflagellates

- Dinoflagellates means “spinning flagellates”.
- Many of the species in this group produce a chemical that causes them to glow at night, and that’s why they are known as fire algae.

3. Euglenoids

- Many have chloroplasts, but some do not.
- Euglena – can produce their own food.
- If they move, they do it by whipping their flagella.

4. Red Algae

- Sometimes are called seaweeds.
- They contain chlorophyll, but also they produce red pigment.

5. Green Algae

- Contain large amount of chlorophyll.
- Because they resemble plants, most scientists hypothesize that plants evolved from ancient, many-celled green algae.

6. Brown Algae

- Contain brown pigment.
- They are an important food source for many fish and invertebrates.
- Kelps can be grown up to 100m in the Oceans.

Importance of Algae:

1. The grass of the Oceans.
2. Most animals that live in oceans feed on algae.
3. They produce Oxygen through Photosynthesis.
4. A substance called Carrageenan extracted from algae, is used in cosmetics and food industries. This substance gives toothpastes, puddings, and salad dressings their smooth, creamy textures.
5. Algin, a gelatinlike substance, extracted from brown algae, it is used to thicken foods such as ice cream and marshmallows.

Animal-like protists

Also called Protozoans, which proto means before, and zoo means animals.

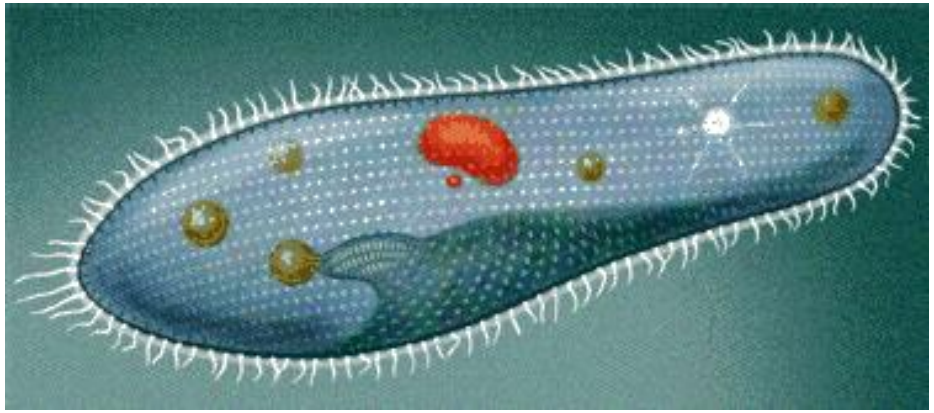
They can move.

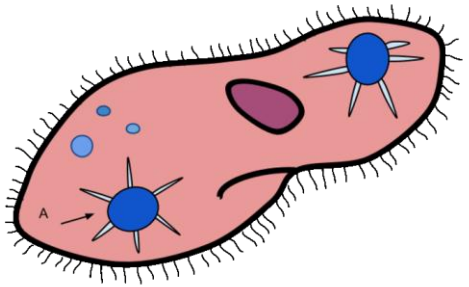
There are 3 main groups of plant-like protists:

1. Ciliates
2. Flagellates
3. Pseudopods
4. Other Protozoans

1.Cilliates

- They have cilia.
- Cilia help the organism in movement.
- Paramecium is one typical example. It has two nuclei. **Micronucleus** – involved in reproduction, while **Macronucleus** – controls feeding and exchange of gases.
- **Contractile vacuole** – get rid of excess water from anal pore.



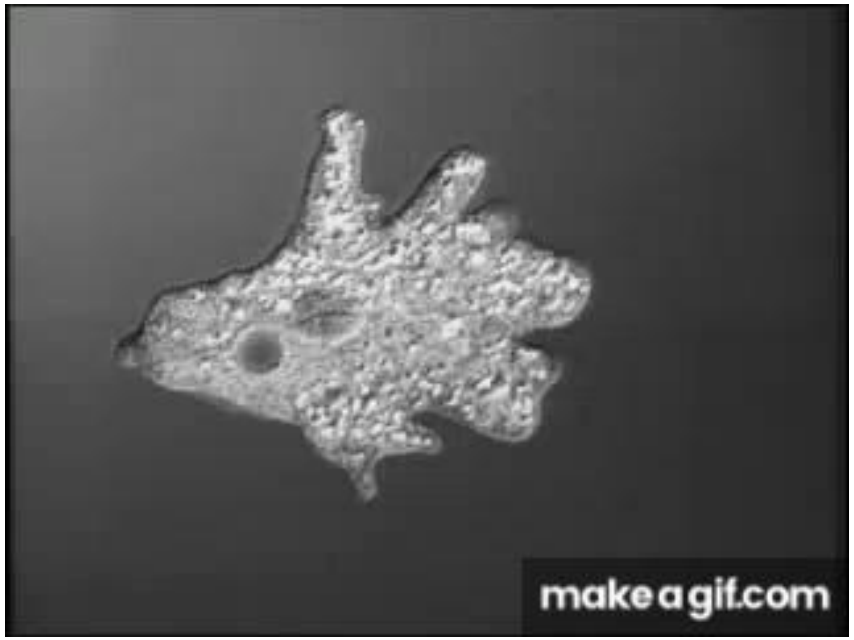


2. Flagellates

- They move by whipping their flagella.
- Proterospongia is an example of this.

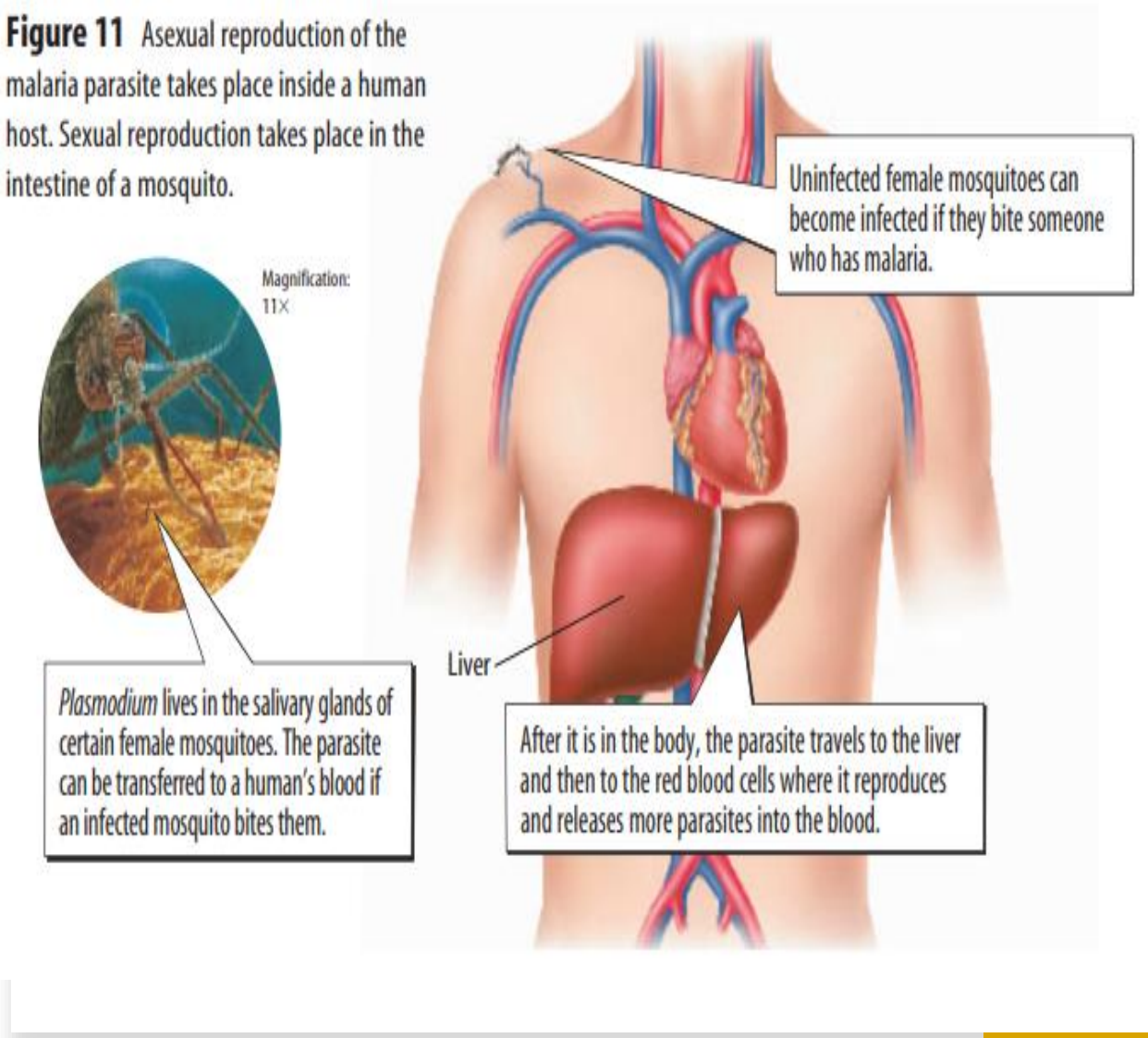
3. Pseudopods

- They have pseudopods. Pseudo means false, pods means foot.
- They seem to flow along as they extend their pseudopods.
- Amoeba is an example.



4. Other protozoans

- They are parasites of humans and other animals.
- They have sexual and asexual reproduction.
- Malaria is caused by Plasmodium, which is part of this group of protozoans.

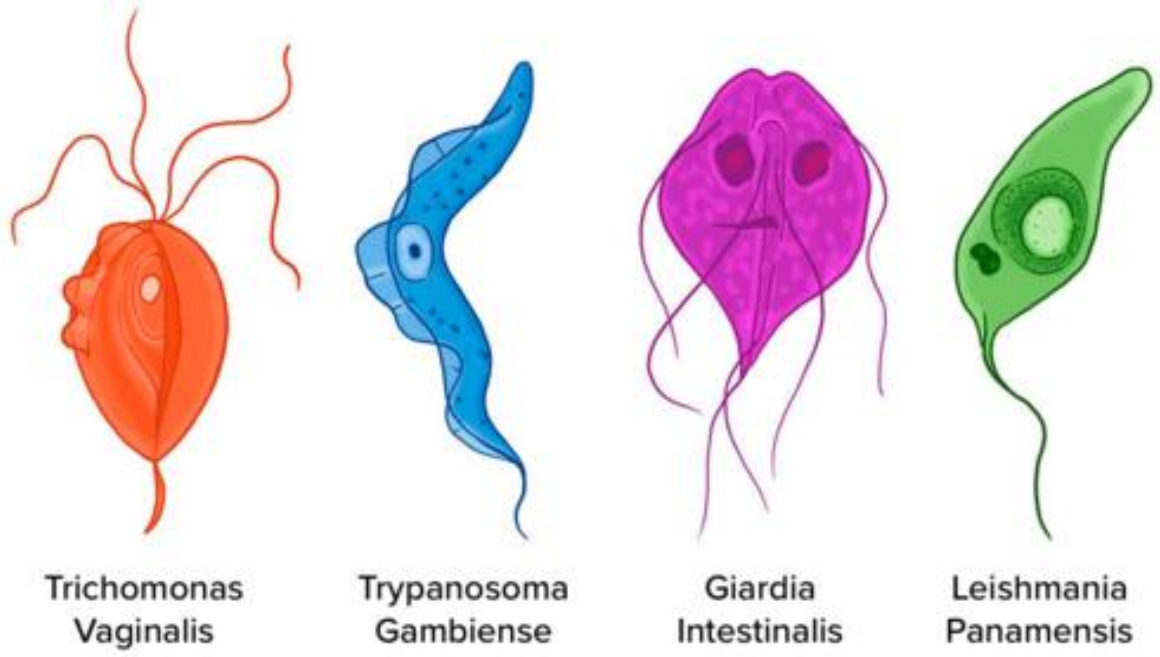


Animation about Malaria

- https://www.youtube.com/watch?v=rIiegij3DQs&t=2s

Diseases in humans caused by protozoans

- Malaria – by plasmodium – carried by mosquitoes.
- Chagas disease (Sleeping sickness) – by Trypanosoma – carried by tsetse fly.
- Diarrhea – by Giardia carried from contaminated waters.
- Brain infection and death – by amoeba – some ponds and streams.
- Trichomonas vaginalis – vaginal infection.



Fungus-like protists

They produce spores (reproductive cells) like fungi, but most of them can move from place to place using pseudopods.

There are three main groups of fungus-like protists:

1. Slime mold
2. Water Molds
3. Downy Mildews

1. Slime mold

- They create weblike structures on the surface of their food supply.
- Often, they show bright color.
- They are found on decaying logs or dead leaves in moist, cool, shady environments.

2. Water Molds and Downy Mildews

- They live in water and moist places.
- They grow as a mass of threads over a plant or animal.
- Water molds – they are parasites of plants, appear as fuzzy, white growths on decaying matter.
- Downy Mildew – warm days, cool, moist nights are ideal growing conditions for them. They weaken and kill plants.

Importance of funguslike protists

- They help break dead organisms.
- They can cause infections in animals and plants.
- Knowing about them helps us understand why plants and animals get sick.
- Water molds can infect lots of fish.
- Downy mildew can infect lots of plants.
- Sometimes, even crops can get sick, which can be a big problem for the entire population.