Kingdom Protista

Module IV :Kingdom Protista

- Salient features and classification up to phyla
- **Type: Paramecium**

- 1. Phylum Rhizopoda
- : Amoeba
- 2. Phylum Actinopoda
- : Actinophrys
- 3. Phylum Dinoflagellata
- : Noctiluca
- 4. Phylum Parabasalia
- : Trychonympha
- 5. Phylum Metamonada
- : Giardia
- 6. Phylum Kinetoplasta
- : Trypanosoma
- 7. Phylum Euglenophyta
- : Euglena
- 8. Phylum Cryptophyta
- : Cryptomonas
- 9. Phylum Opalinata
- : Opalina
- 10. Phylum Bacillariophyta
- :Diatoms
- 11. Phylum Chlorophyta
- :Volvox
- 12. Phylum Choanoflagellata
- : Proterospongia
- 13. Phylum Ciliophora
- : Paramecium
- 14. Phylum Sporozoa
- : Plasmodium
- 15. Phylum Microsporidia
- :Nosema
- 16. Phylum Rhodophyta
- :Red Alga
-

Phylum Rhizopoda

- Example Amoeba
- Pseudopodia
- Cytoplasm differentiation
- Cytoplasm streaming
- Holozoic nutrition

Phylum Actinopoda

- Example: *Actinophrys sol*
- Freshwater
- Silicious, perforated exoskeleton

Phylum Dinoflagellata

- Example: *Noctiluca* and *Ceratium*
- Marine
- Redtides

Phylum *Parabasalia*

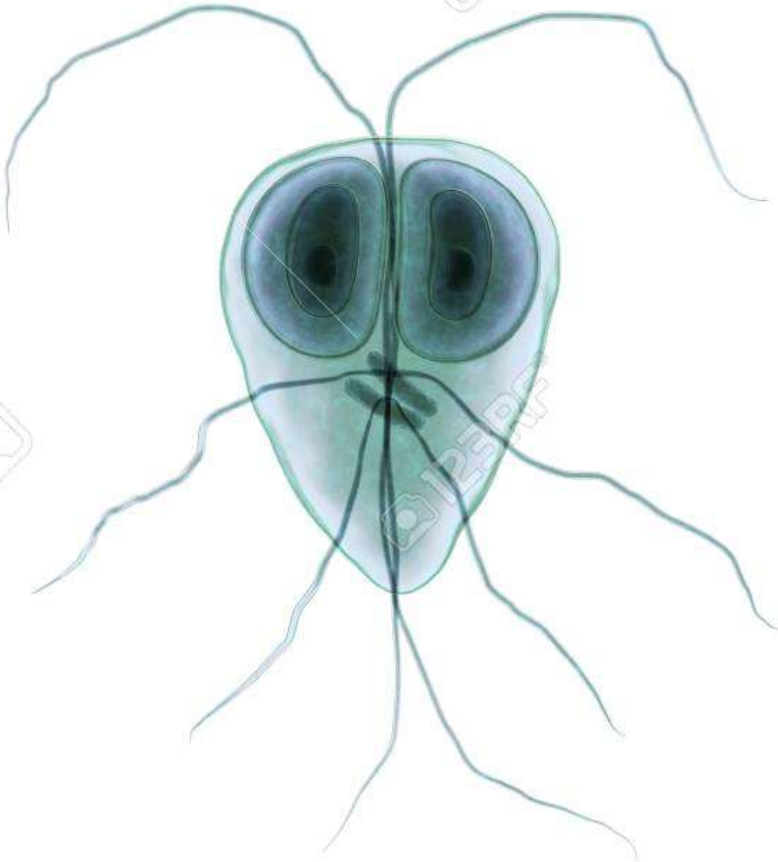
Trychonympha

- *Trichonympha* sp. is an anaerobic symbiotic flagellate, which is part of the parabasalid goup, within the supergroup Excavata. Parabasalids are characterized by parabasal fibers that link their basal bodies to Golgi complexes. *Trichonympha* sp. cells are typically ~100 µm long and lack mitochondria

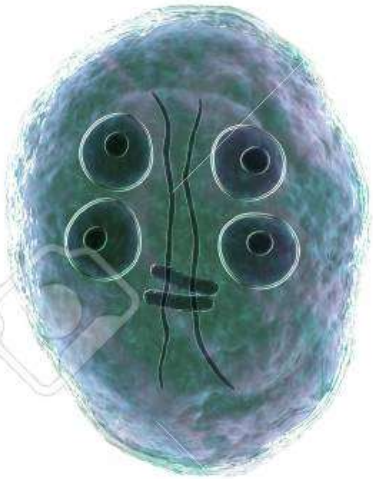
Phylum Metamonada

- **Flagellated protists with 2, 4, 8 flagella**
- **They lack mitochondria**
- **Mostly intestinal parasites**
- **Example: *Giardia lamblia***, also known as ***Giardia intestinalis***
- Absorb their nutrients from the lumen of the small intestine, and are anaerobes
- Bilaterally symmetrical body

GIARDIA INTESTINALIS



Trophozoite



Cyst

Phylum Kinetoplasta

- Body covered with pellicle, beneath cell membrane, which gives the individual its shape
- Single nucleus
- Undifferentiated cytoplasm
- Reproduction by longitudinal fission

Trypanosoma gambiense

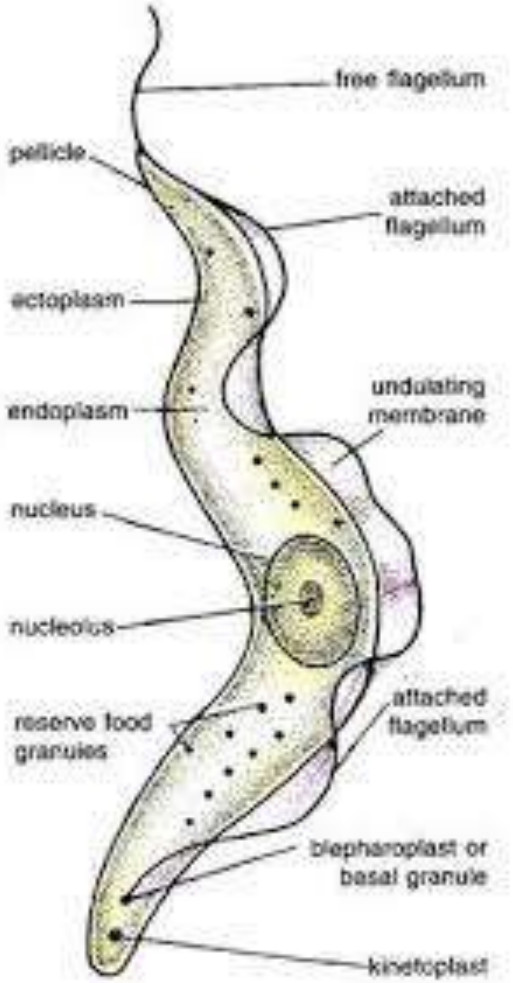
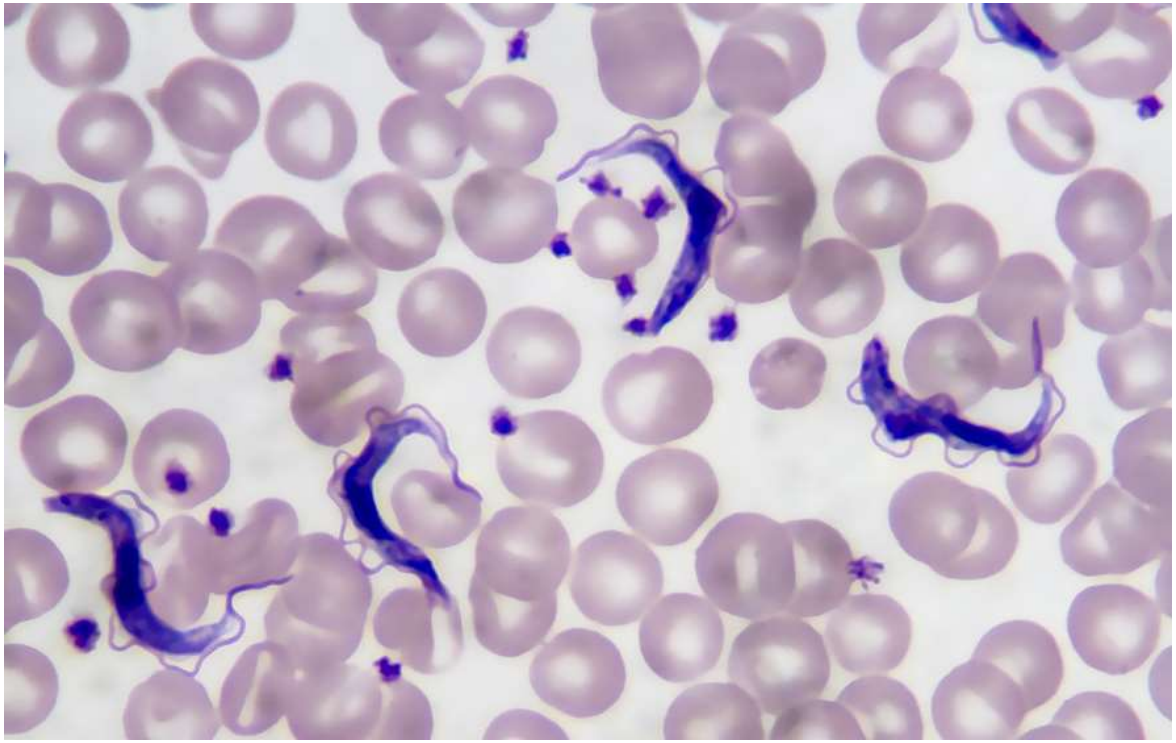


Fig. 13.3. *Trypanosoma gambiense.*



Trypanosoma gambiense Dutton, 1902

- **ETYMOLOGY:** This parasite was named after its location along the Gambia river in West Africa.

- **SYNONYMS:***Trypanosoma ugandense* Castellani, 1903; *Trypanosome castellanii*, Kruse, 1903; *Trypanosoma hominis* Manson, 1903; *Trypanosoma fordii* Maxwell-Adms, 1903; *Trypanosoma nepveui* Sambon, 1903;*Trypanosoma tullochii* Minichin, 1907; *Trypanosoma rovumense* Beck & Weck, 1913; *Trypanosoma nigeriense*Macfie, 1913; *Castellanella gambiense* (Dutton, 1902) Chalmers, 1918.
- This is the causative organism of classical "Sleeping Sickness" in humans. This trypanosome was first discovered in human blood in 1901 by Forde, and Dutton proposed the name *Trypanosoma gambiense* in 1902.

- **LOCATION IN THE HOST:** This is a parasite of the blood and tissue fluids (Fig 1-30); it has not been observed in naturally infected cats.

African Trypanosomiasis

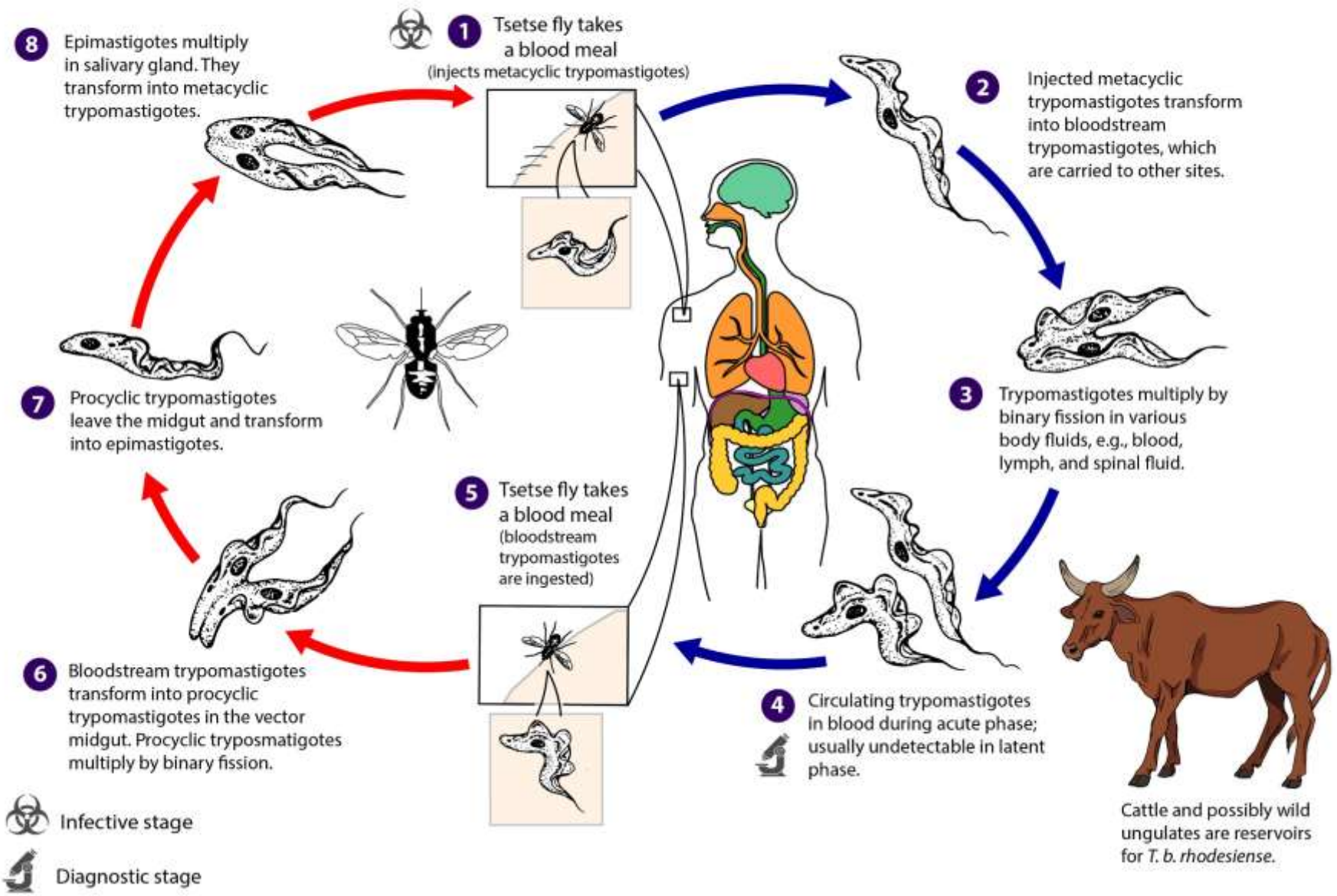
Trypanosoma brucei gambiense & Trypanosoma brucei rhodesiense

DPDx

CDC

Tsetse Fly Stages

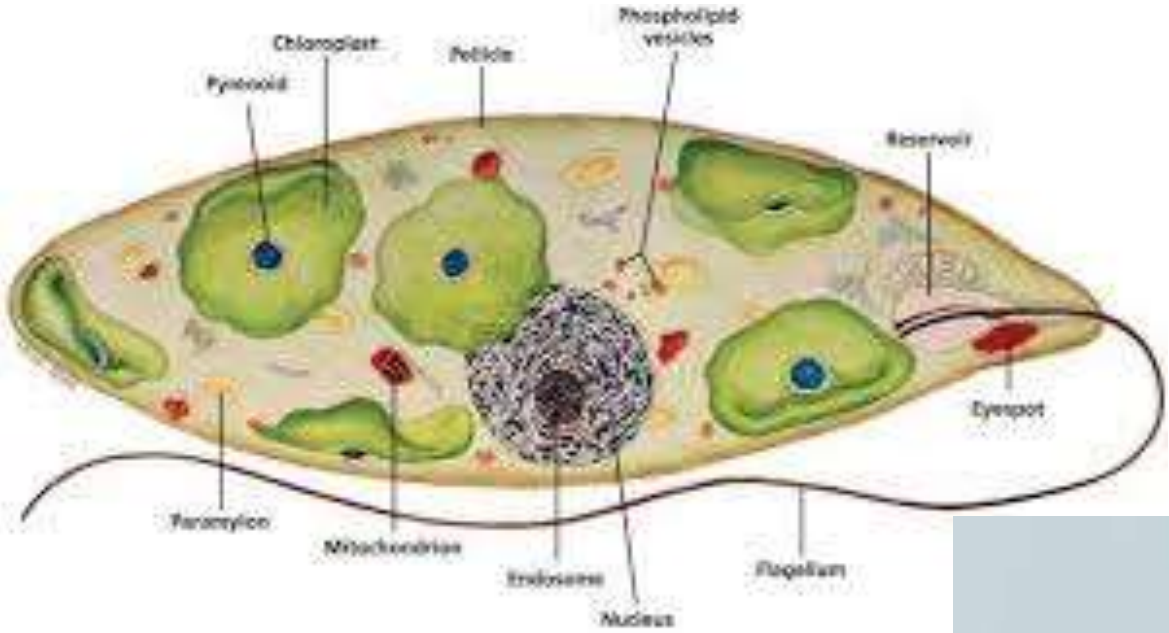
Mammalian Stages



Phylum Euglenophyta

- Species of *Euglena* are found in freshwater and salt water. They are often abundant in quiet inland waters where they may bloom in numbers sufficient to color the surface of ponds and ditches green (*E. viridis*) or red (*E. sanguinea*).
- The species *Euglena gracilis* has been used extensively in the laboratory as a model organism

Euglena

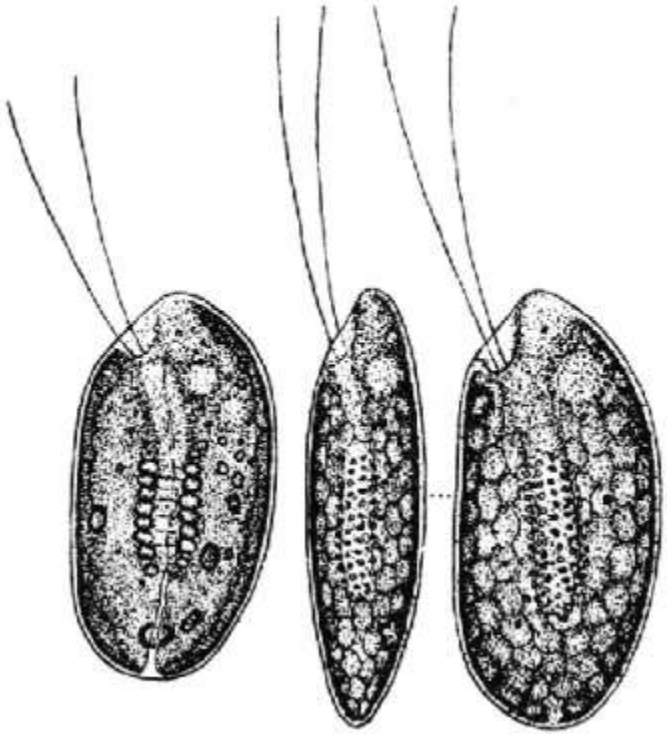

Chloroplast
Pyrenoid
Pellicle
Phospholipid vesicles
Reservoir
Eyespot
Paramylon
Mitochondrion
Endosome
Nucleus
Flagellum

Phylum Cryptophyta

- Biflagellate, unicellular, algal protist
- Example: *Cryptomonas, Rhodomonas*

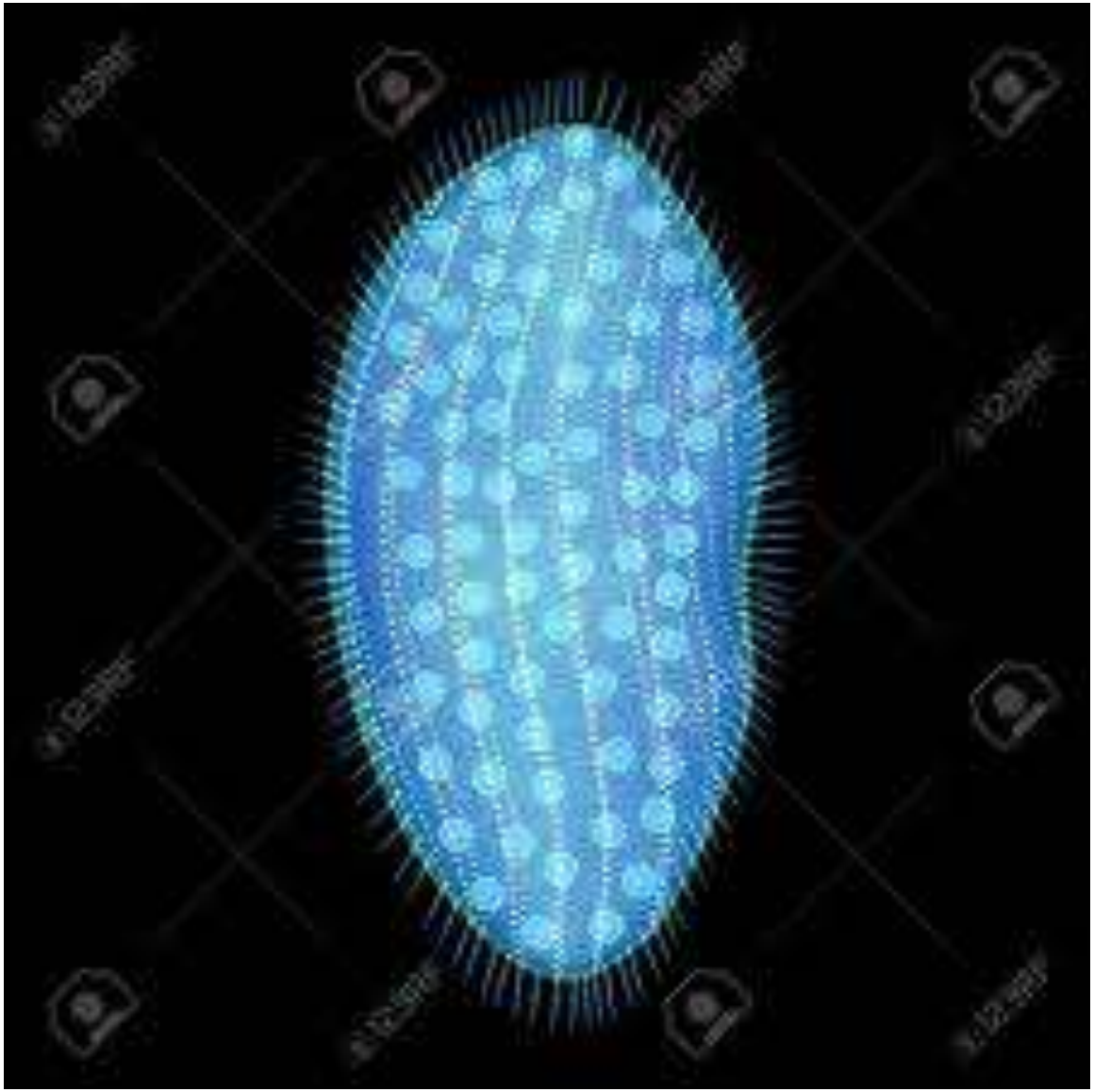
Cryptomonas

Cryptomonas ovata



Rhodomonas

Phylum: Opalinata

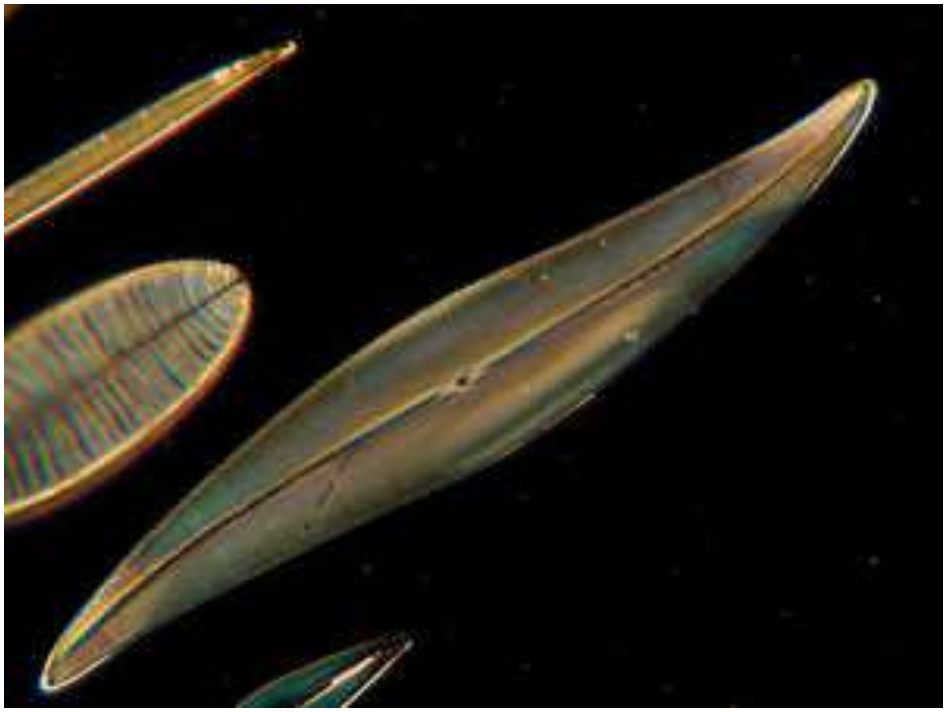


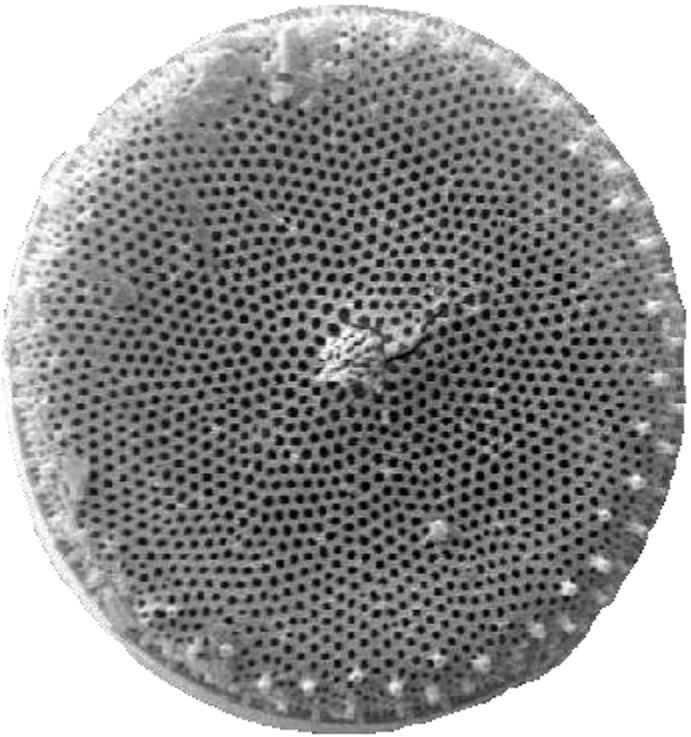
Phylum Bacillariophyta

- They are among the most important aquatic microorganisms : they are extremely abundant both in the plankton and in sediments in marine and freshwater ecosystems, and because they are photosynthetic they are an important food source for marine organisms.
- Some may even be found in soils or on moist mosses.

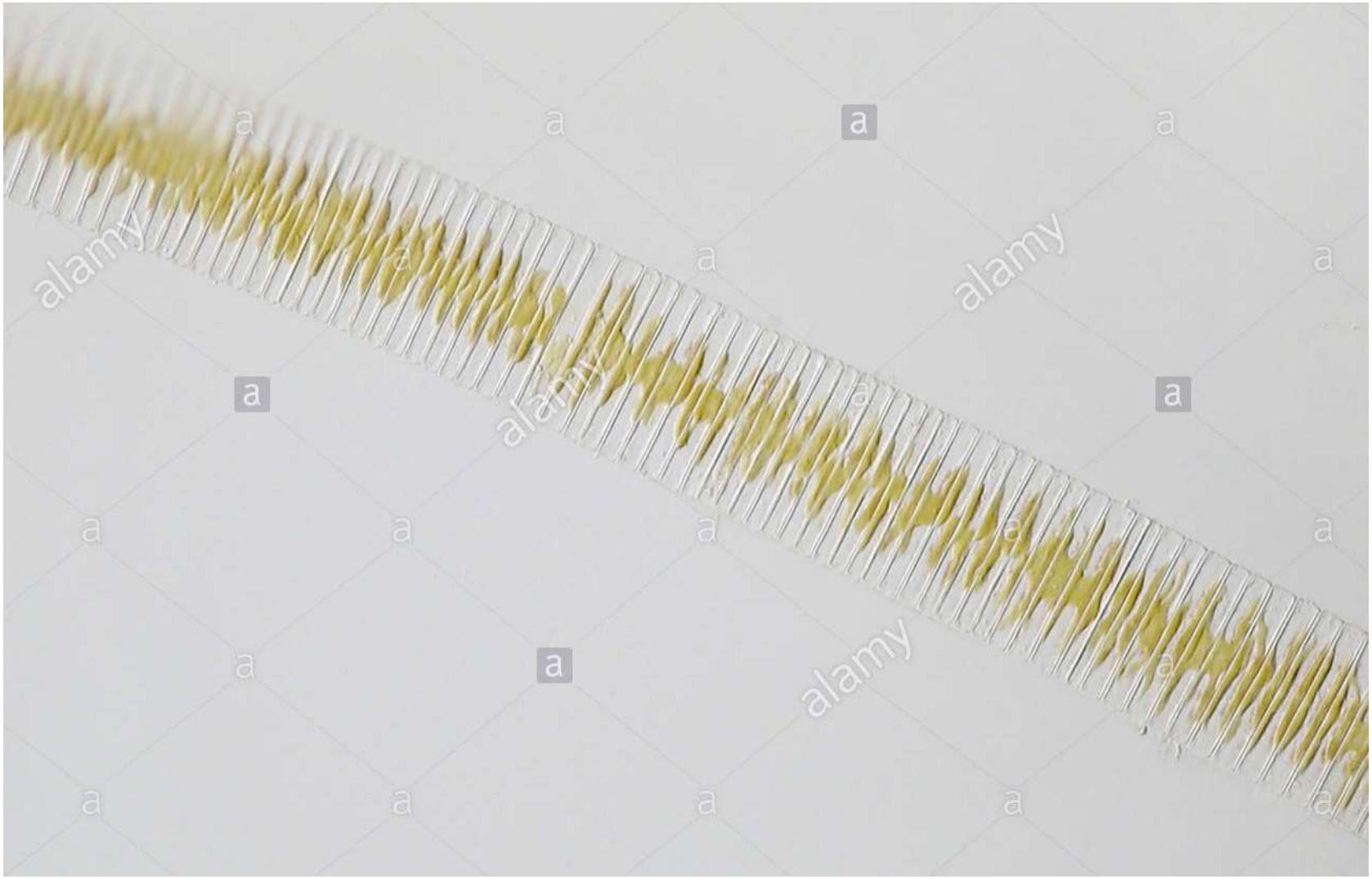
Diatoms

Diatoms

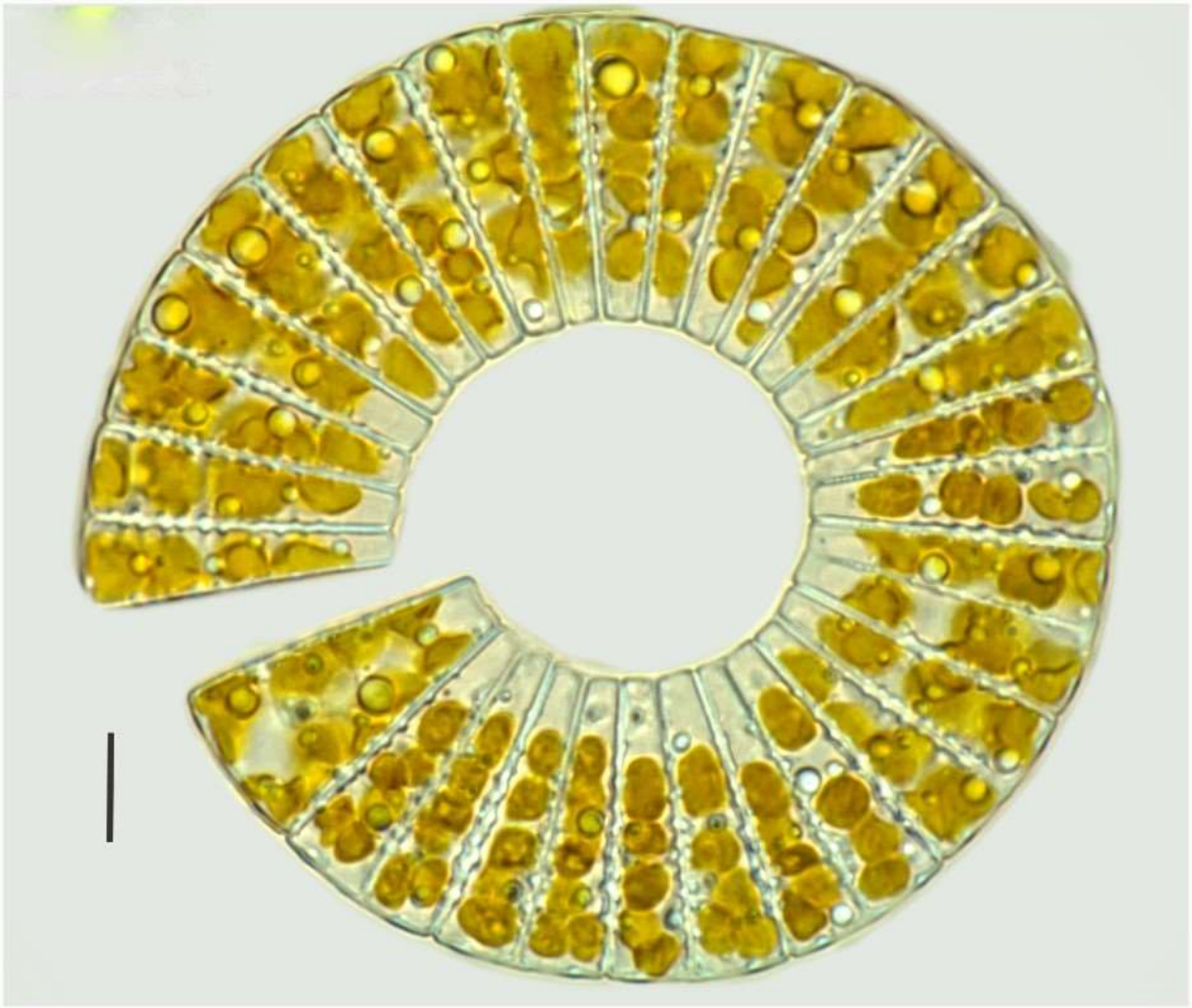




Fragillaria

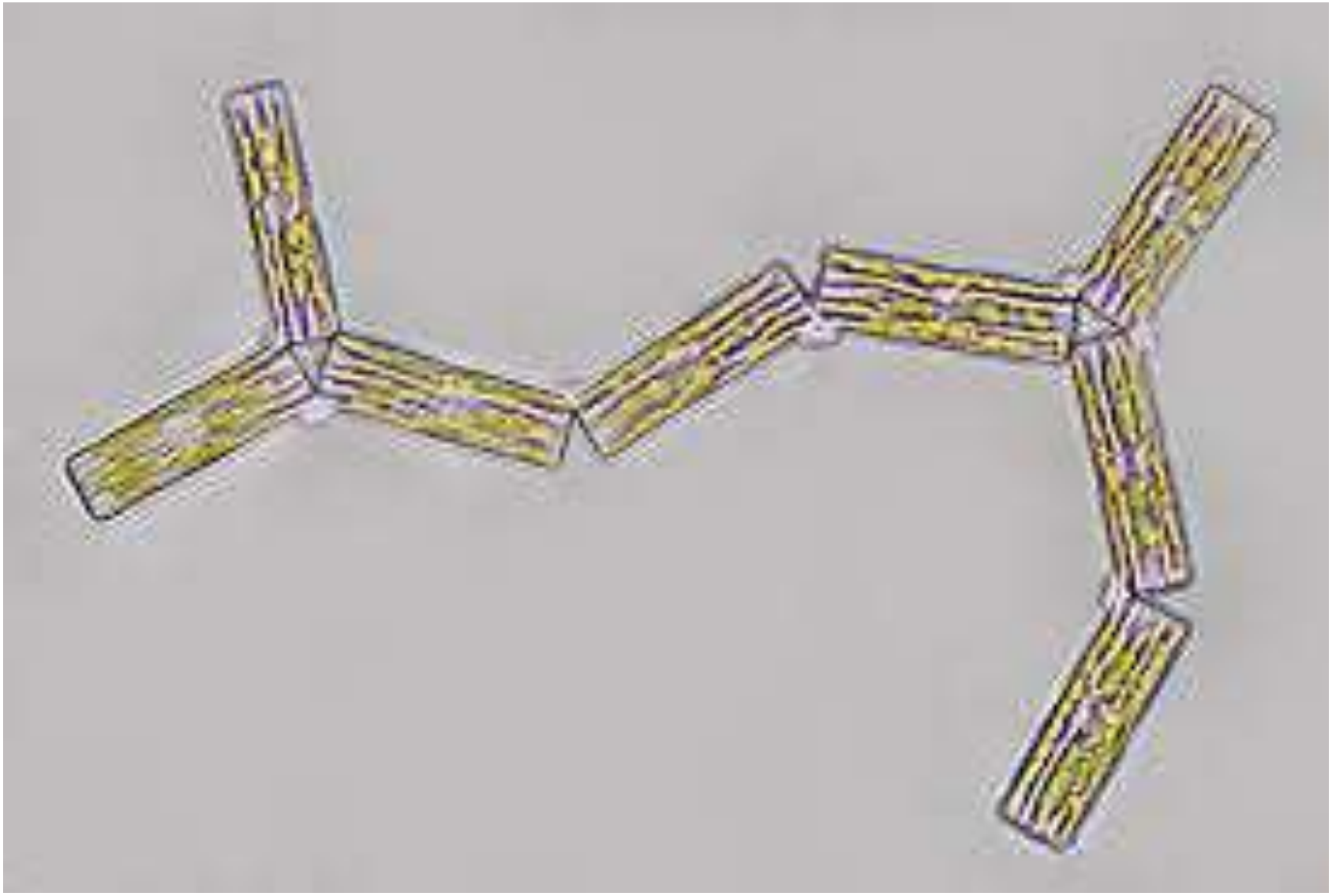


Meridion circulare

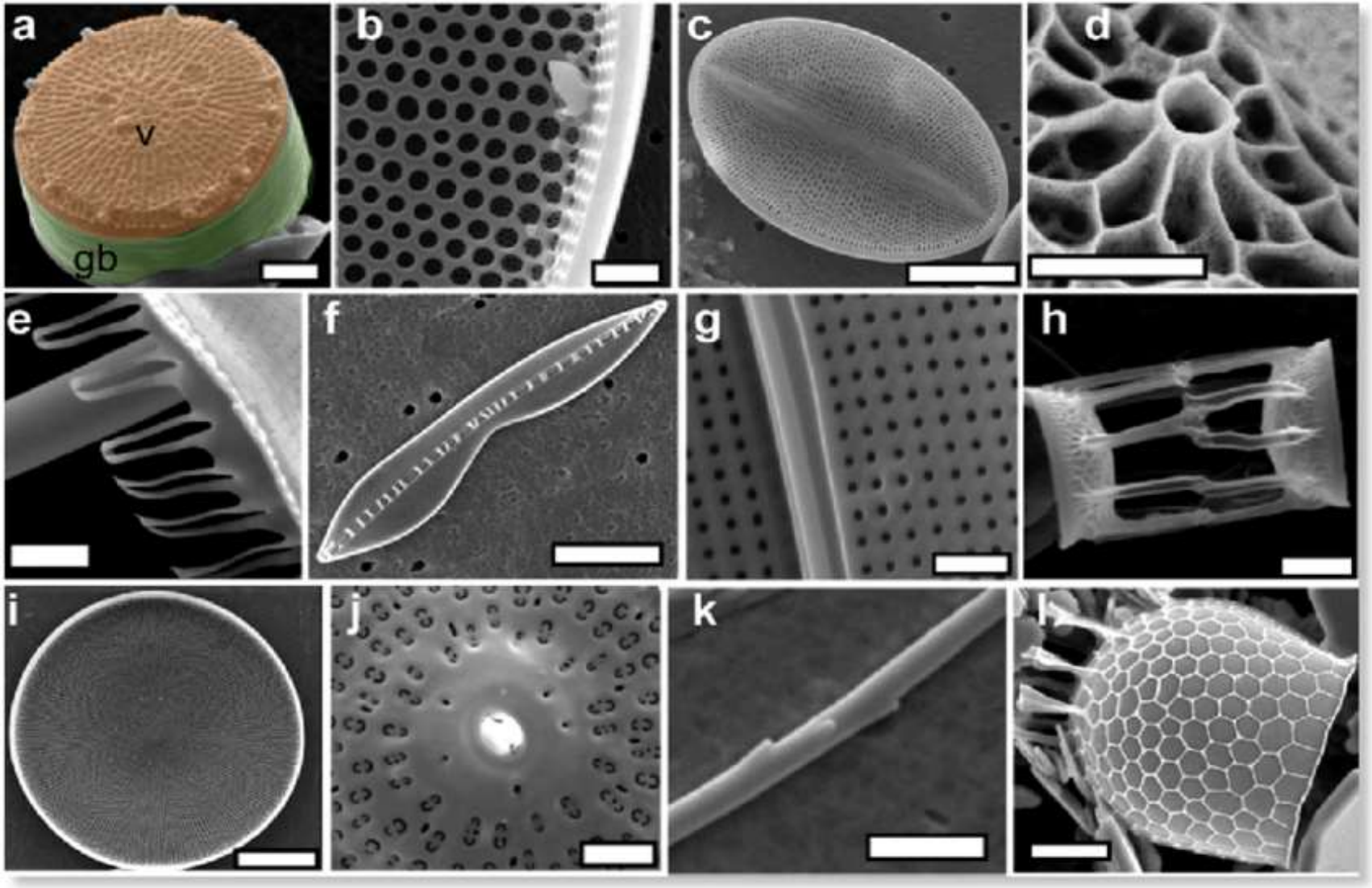


Scaldwell feeder stream, Pitsford Water, Northamptonshire, UK
Chris Carter

Tabellaria

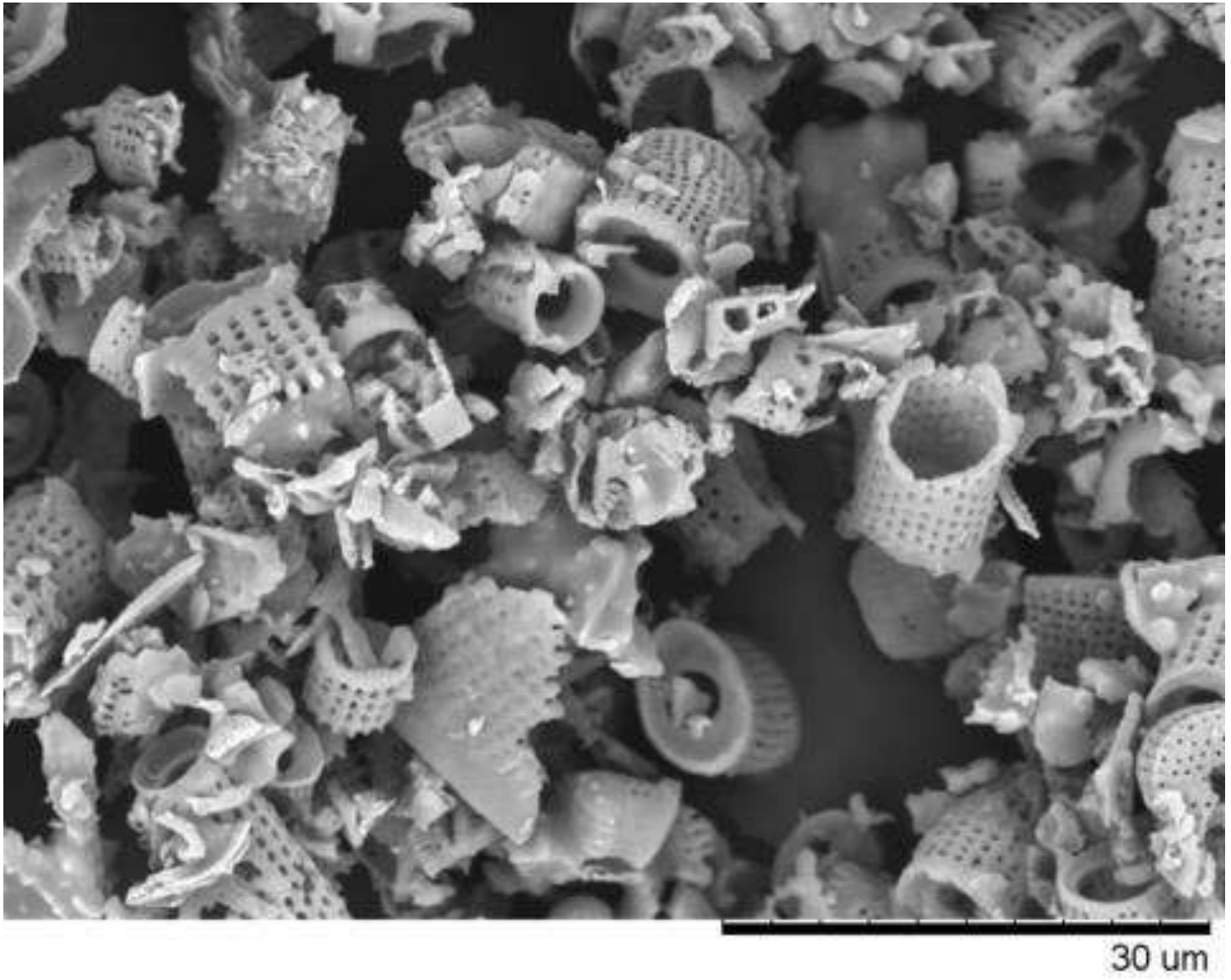


Diatom frustule

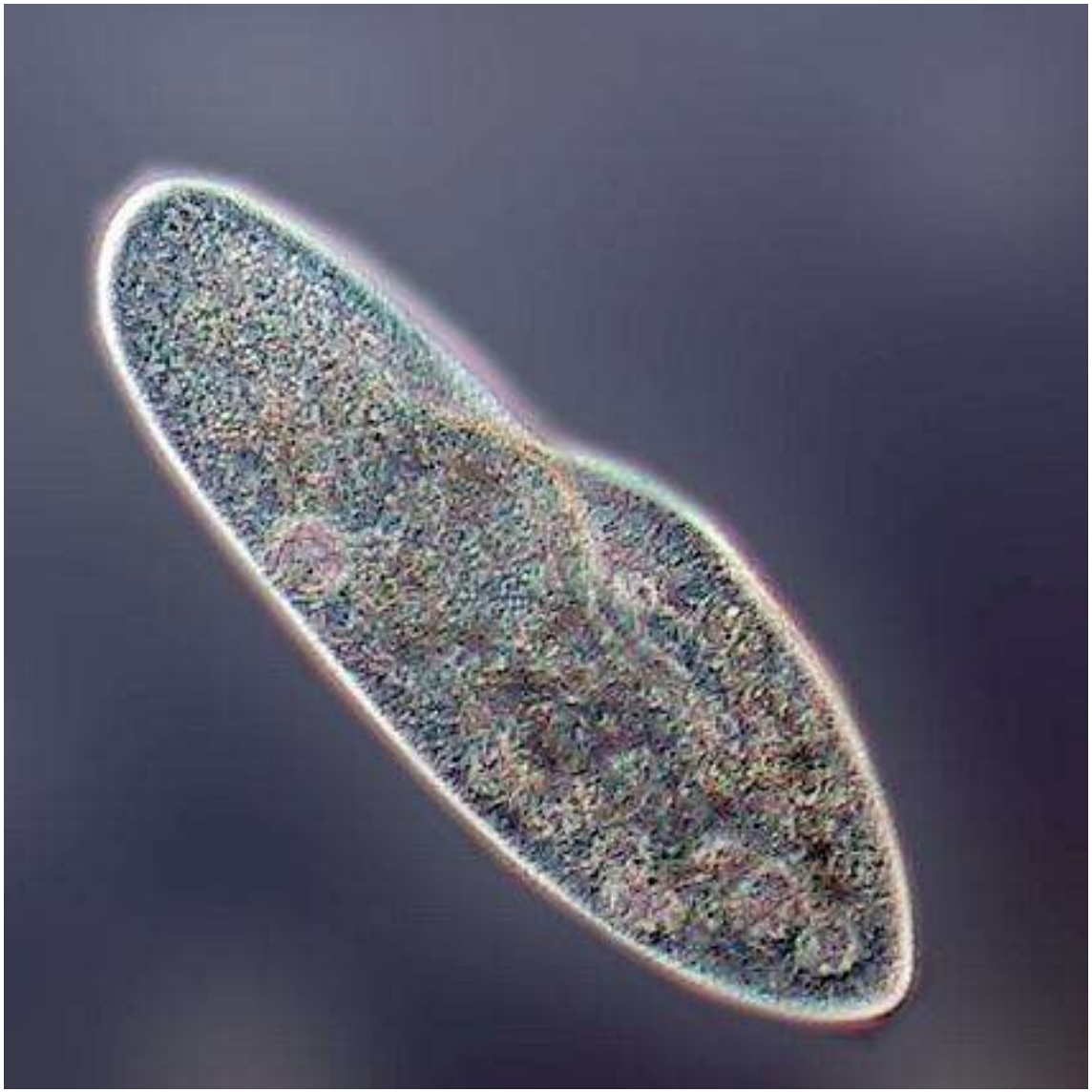


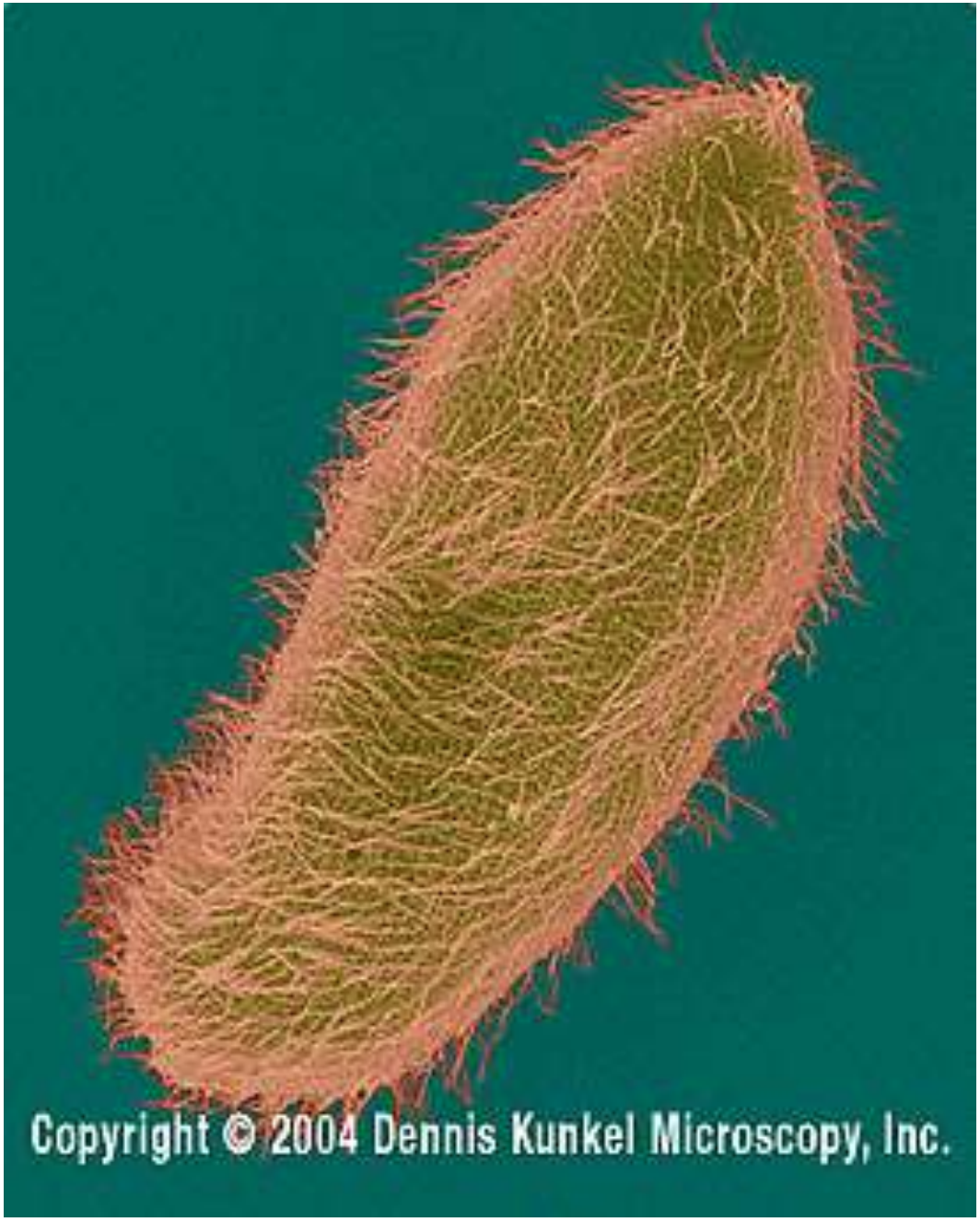
Diatomaceous earth

Diatomite



Phylum Ciliophora

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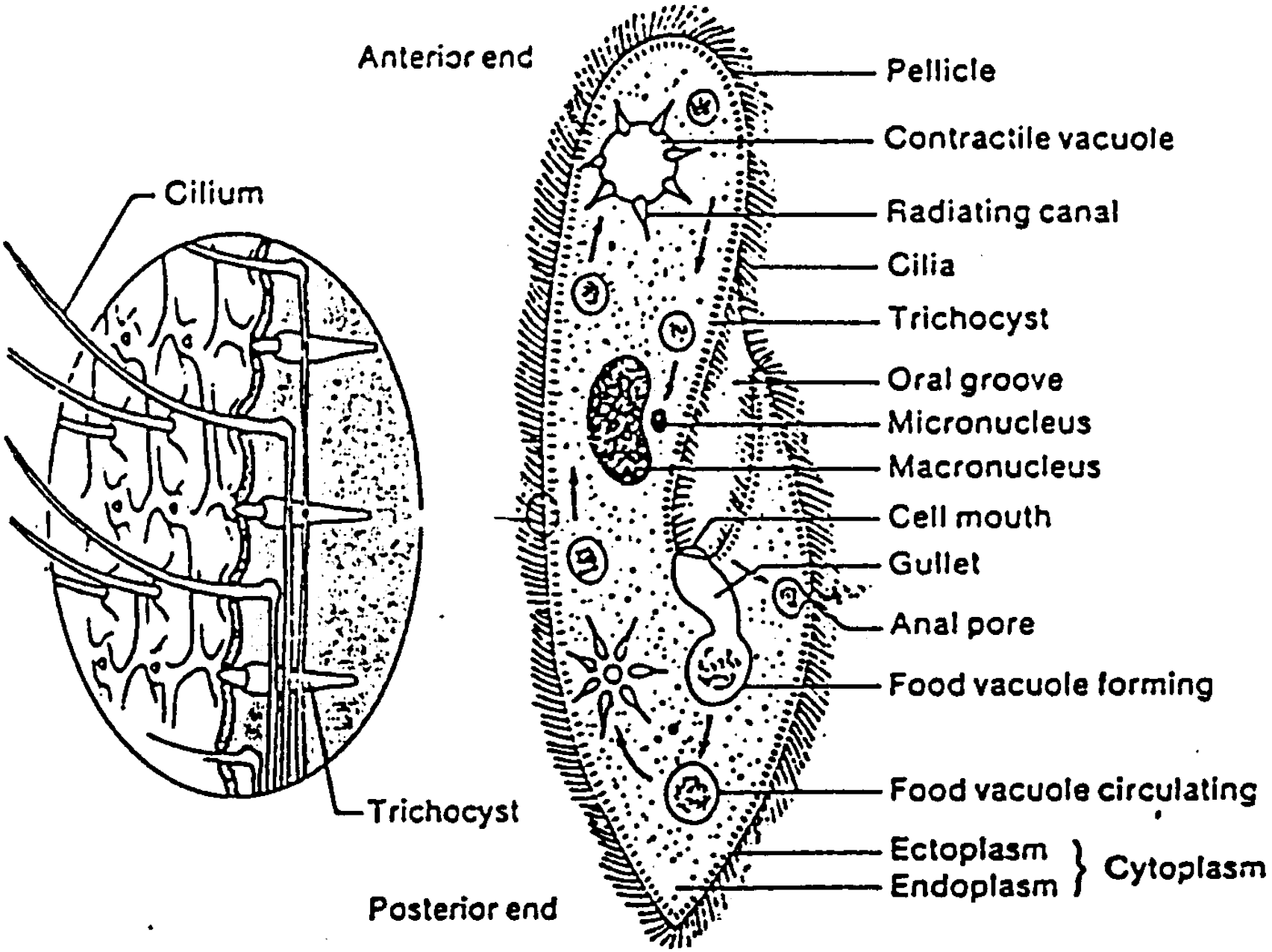

Anterior end
Cilium
Trichocyst
Posterior end
Pellicle
Contractile vacuole
Radiating canal
Cilia
Trichocyst
Oral groove
Micronucleus
Macronucleus
Cell mouth
Gullet
Anal pore
Food vacuole forming
Food vacuole circulating
Ectoplasm
Endoplasm
Cytoplasm

Paramecium caudatum

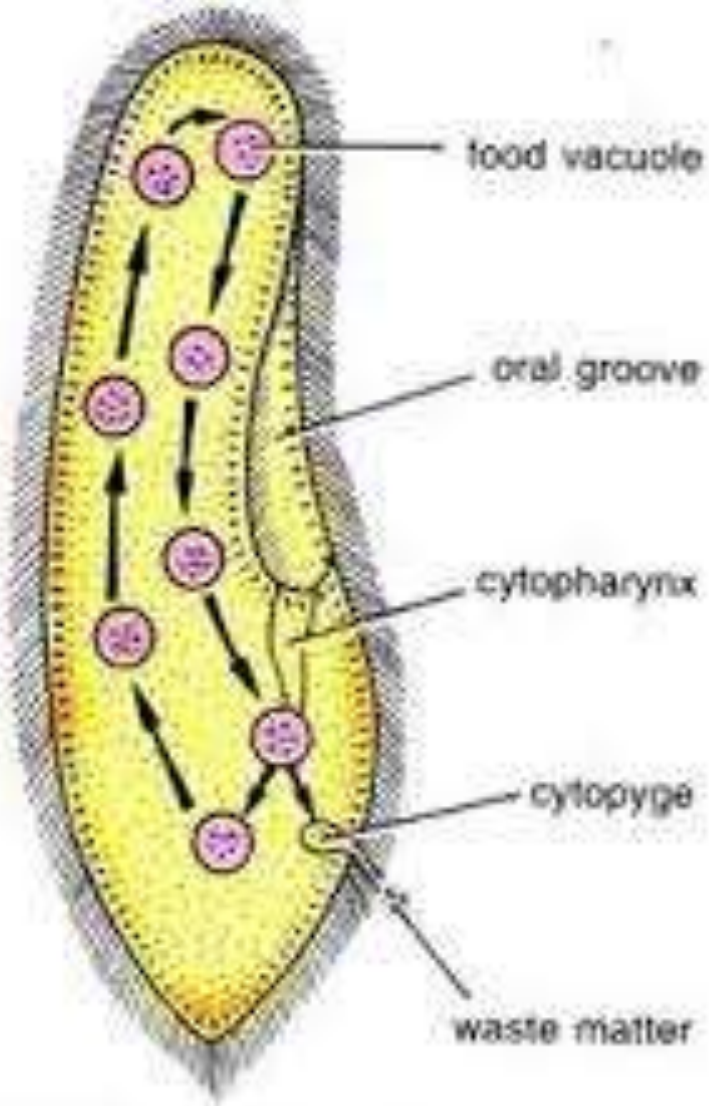
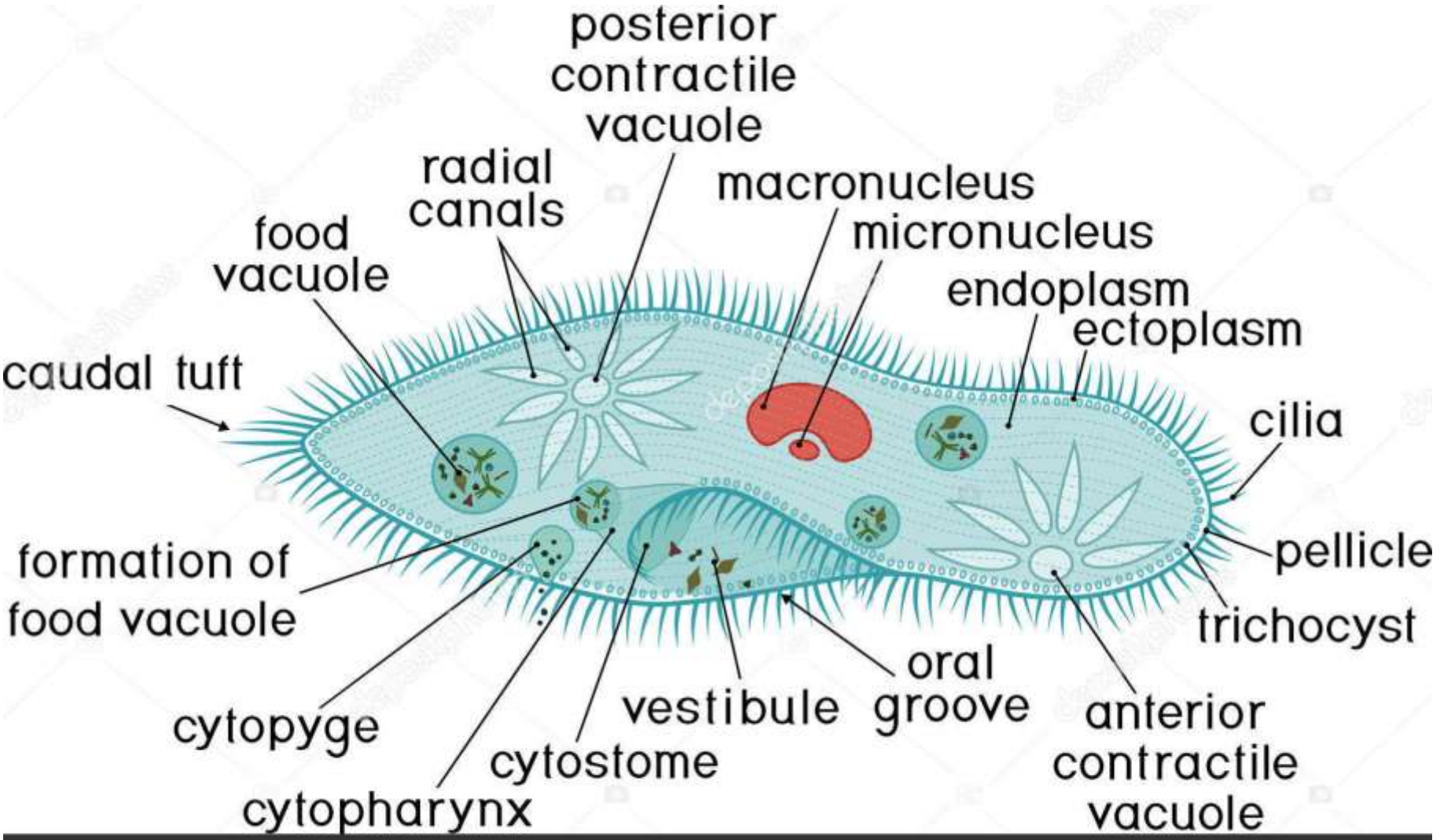


Fig. 20.17. *Paramecium.* Showing cyclosis and the course of food vacuoles in the endoplasm.

Paramecium



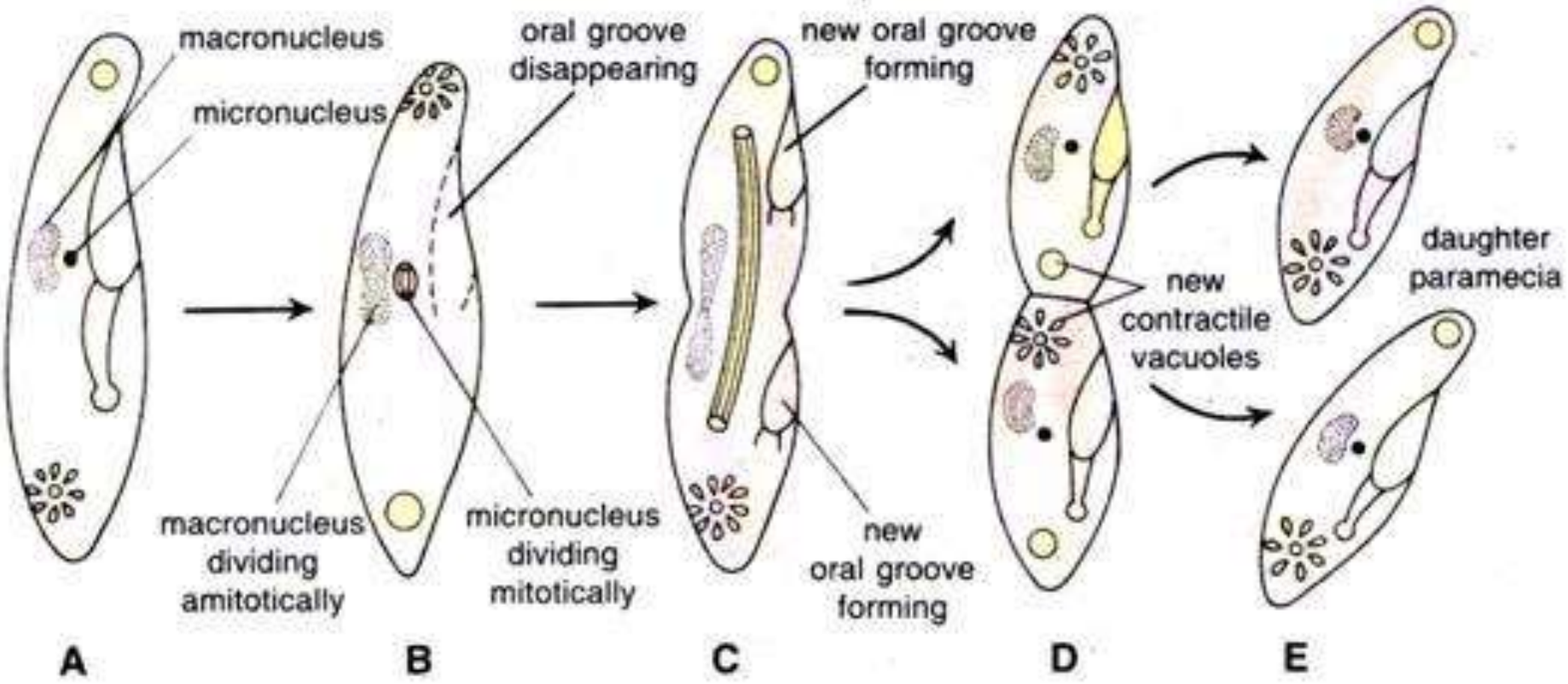


Fig. 20.20. *Paramecium caudatum.* Binary fission.