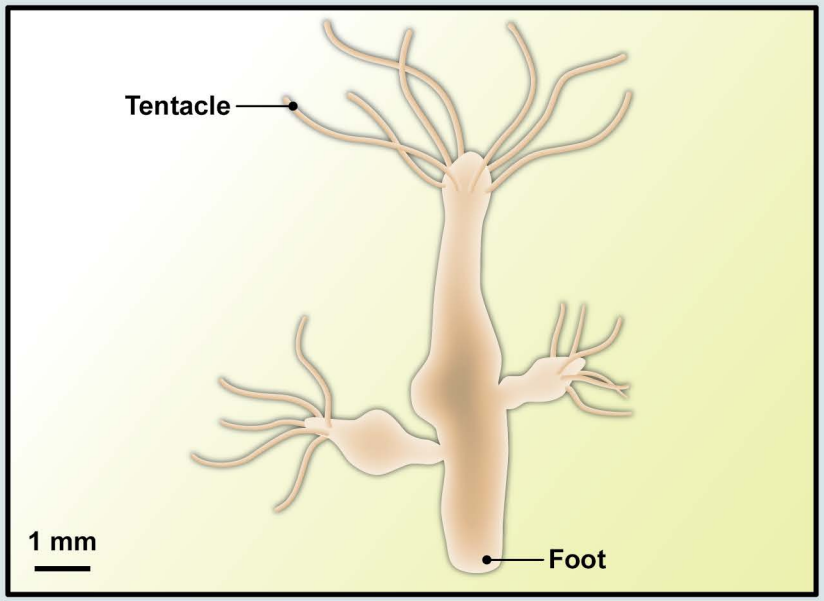
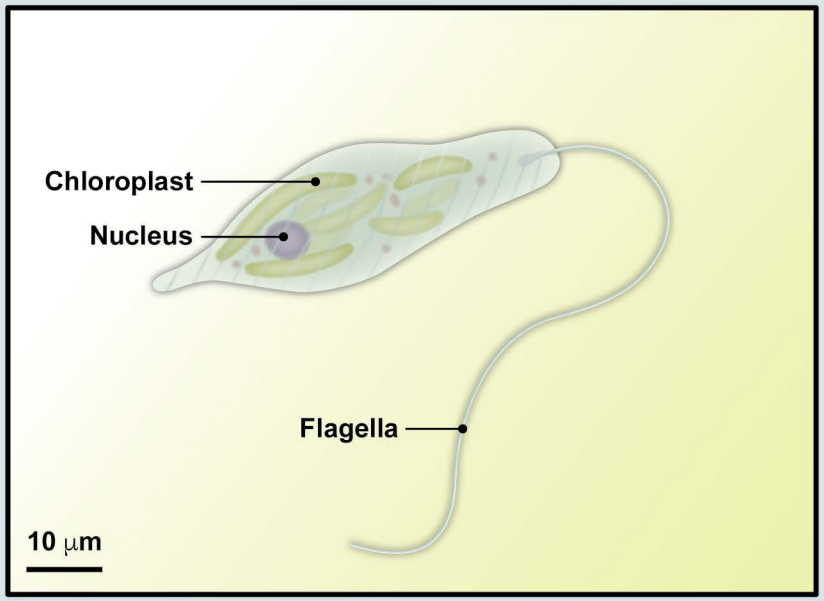
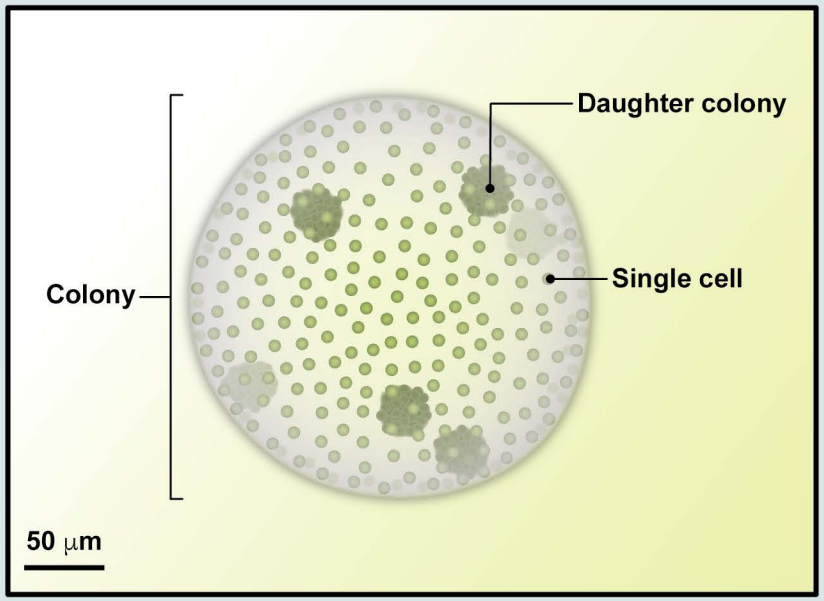
Hydra *(Hydra vulgaris)*



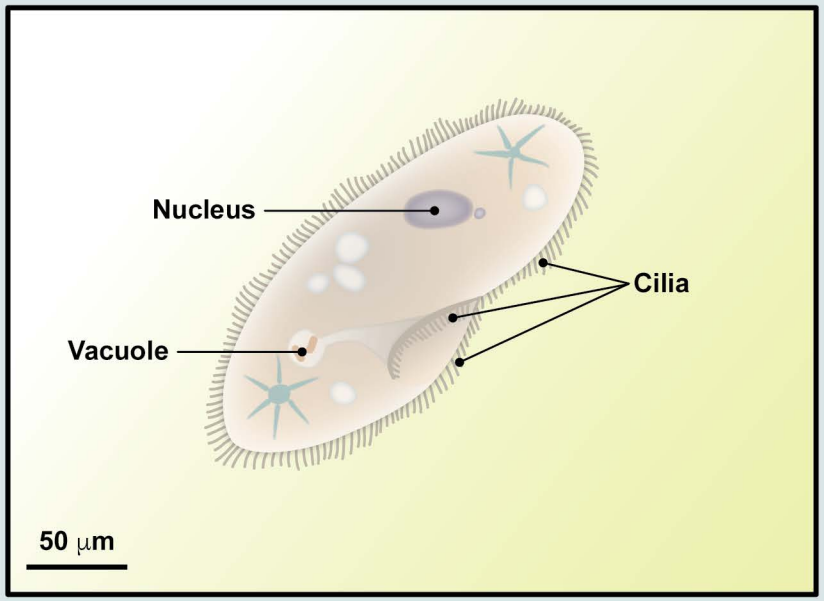
Euglena *(Euglena viridis)*



Volvox *(Volvox aureus)*



Paramecium *(Paramecium aurelia)*



Euglena viridis

Domain: Eukarya
Supergroup: Excavata
Subgroup: Euglenozoans

Habitat: Freshwater

Mode of nutrition: Mixotroph (photoautotroph and chemoheterotroph)

Cell structure: Unicellular

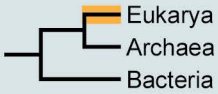
Interesting fact:

- Early taxonomists debated how to classify Euglena, as it has characteristics similar to plants (such as chloroplasts) and animals (such as movement and eating).

EUKARYOTE

Hydra vulgaris

Domain: Eukarya
Supergroup: Unikonta
Subgroup: Animals



Habitat: Freshwater

Mode of nutrition: Chemoheterotroph

Cell structure: Multicellular

Interesting facts:

- Hydra are usually fixed in one place by a basal disc “foot” and extend their tentacles to catch passing prey.
- Hydra can release their “foot” and somersault end-over-end to move to another location.

EUKARYOTE

Paramecium aurelia

Domain: Eukarya
Supergroup: SAR
Subgroup: Ciliates

Habitat: Freshwater

Mode of nutrition: Chemoheterotroph

Cell structure: Unicellular

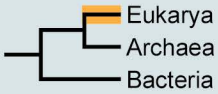
Interesting facts:

- Paramecium are covered in hair-like cilia, which are used for movement and feeding.
- Paramecium eat bacteria, yeast, and algae through phagocytosis.

EUKARYOTE

Volvox aureus

Domain: Eukarya
Supergroup: Archaeplastida
Subgroup: Chlorophyta



Habitat: Freshwater

Mode of nutrition: Photoautotroph

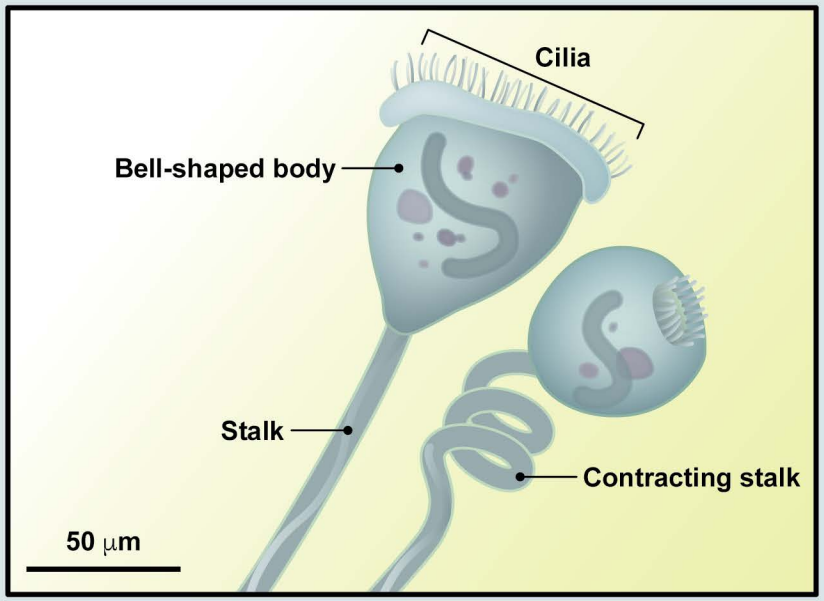
Cell structure: Colony of unicellular individuals

Interesting facts:

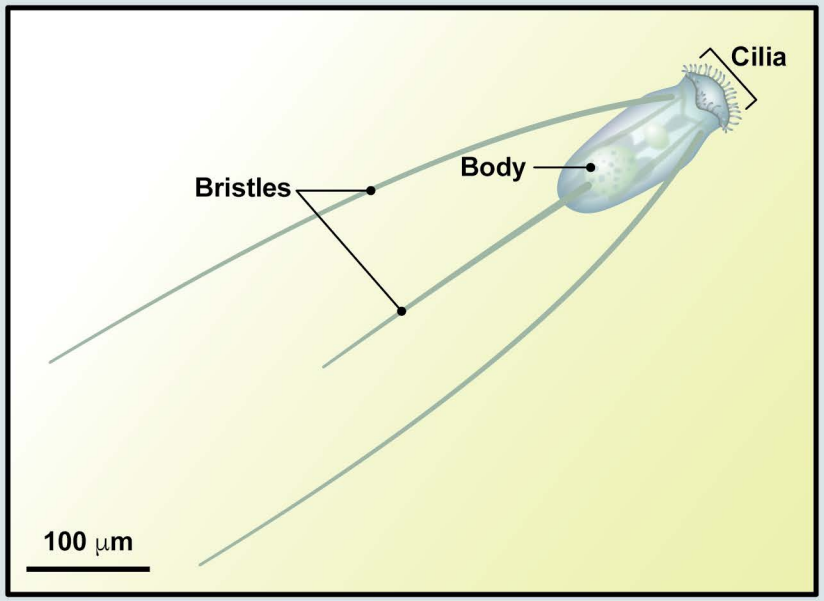
- The colony is made up of 50,000 individual cells that beat their flagella in synchronization to move together.
- The small, dark green circles are daughter colonies created by asexual reproduction.

EUKARYOTE

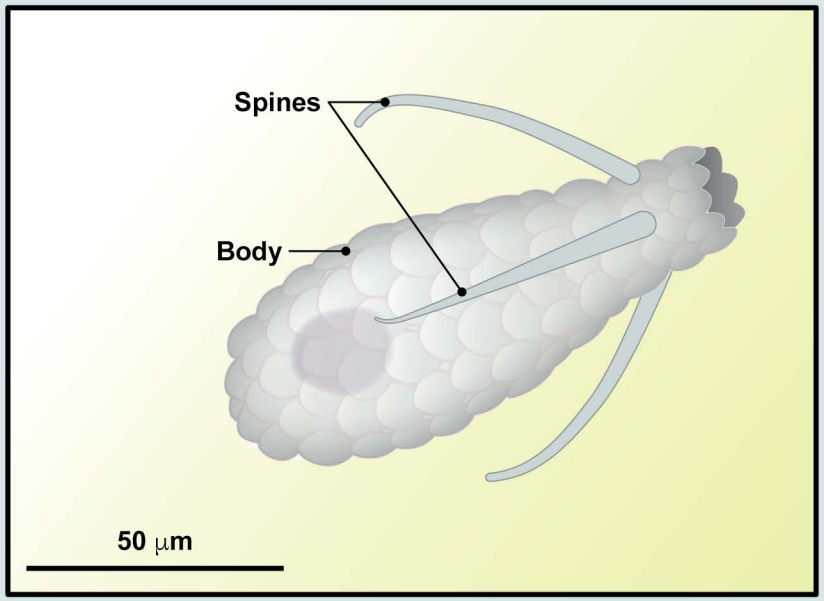
Vorticella *(Vorticella campanula)*



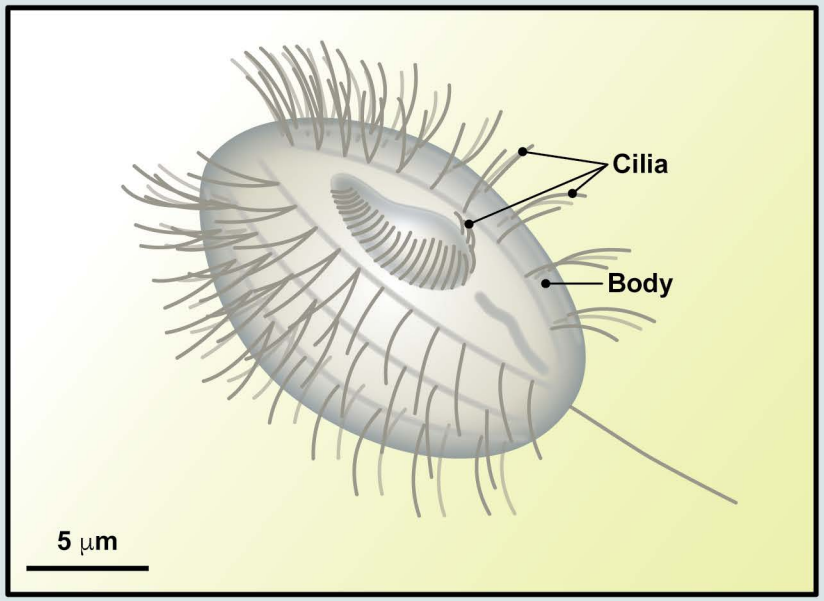
Filinia *(Filinia longiseta)*



Euglypha *(Euglypha brachiata)*

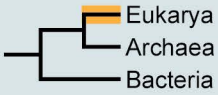


Cyclidium *(Cyclidium glaucoma)*



Filinia longiseta

Domain: Eukarya
Supergroup: Unikonta
Subgroup: Animals



Habitat: Freshwater

Mode of nutrition: Chemoheterotroph

Cell structure: Multicellular

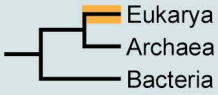
Interesting facts:

- Its diet consists of detritus, bacteria, and microscopic green algae.
- Like other rotifers, it feeds itself with a whirring crown of cilia that draws food into its mouth.

EUKARYOTE

Vorticella campanula

Domain: Eukarya
Supergroup: SAR
Subgroup: Ciliates



Habitat: Freshwater

Mode of nutrition: Chemoheterotroph

Cell structure: Unicellular

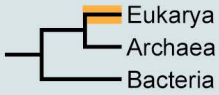
Interesting facts:

- Vorticella was the first protozoan described by van Leeuwenhoek.
- Cilia are concentrated around an oral opening.
- Bacteria are the main food source.

EUKARYOTE

Cyclidium glaucoma

Domain: Eukarya
Supergroup: SAR
Subgroup: Ciliates



Habitat: Marine

Mode of nutrition: Chemoheterotroph

Cell structure: Unicellular

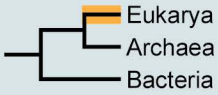
Interesting facts:

- Rows of cilia cover the surface of the body.
- As a major consumer of the bacteria found in plankton, the organism is an important component of the microbial food web.

EUKARYOTE

Euglypha brachiata

Domain: Eukarya
Supergroup: SAR
Subgroup: Cercozoans



Habitats: Submerged sphagnum (peat moss), sediments

Mode of nutrition: Chemoheterotroph

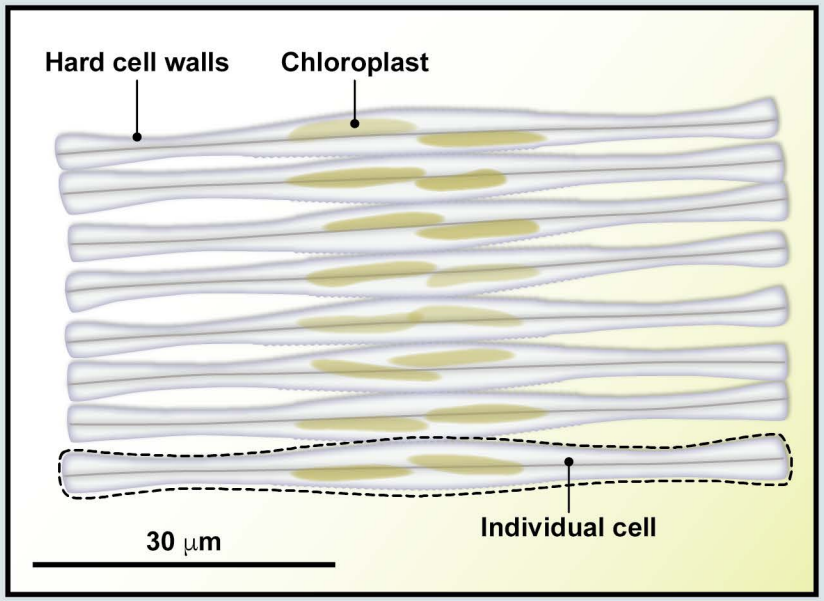
Cell structure: Unicellular

Interesting facts:

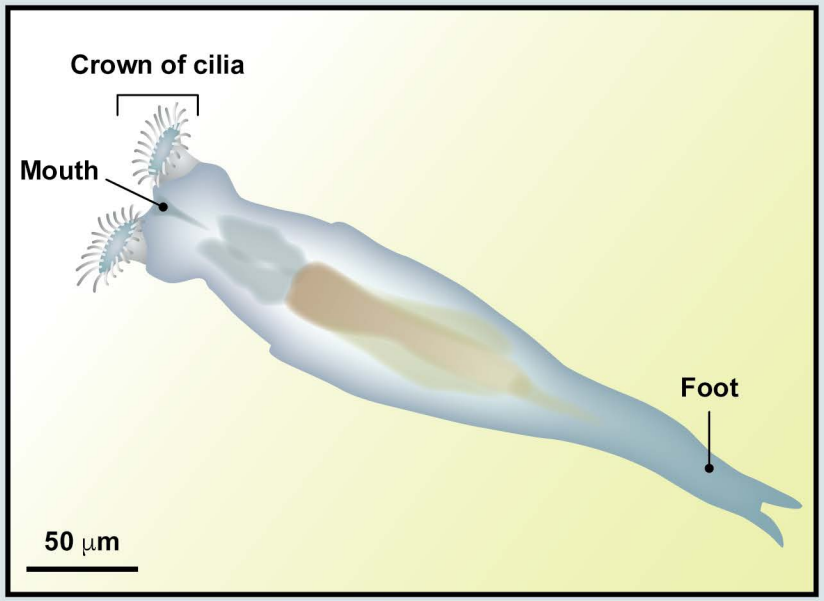
- The body of Euglypha is covered in rows of circular scales with serrated edges.
- *Euglypha brachiata* has 2 to 7 long, curved spines that arise near the neck.

EUKARYOTE

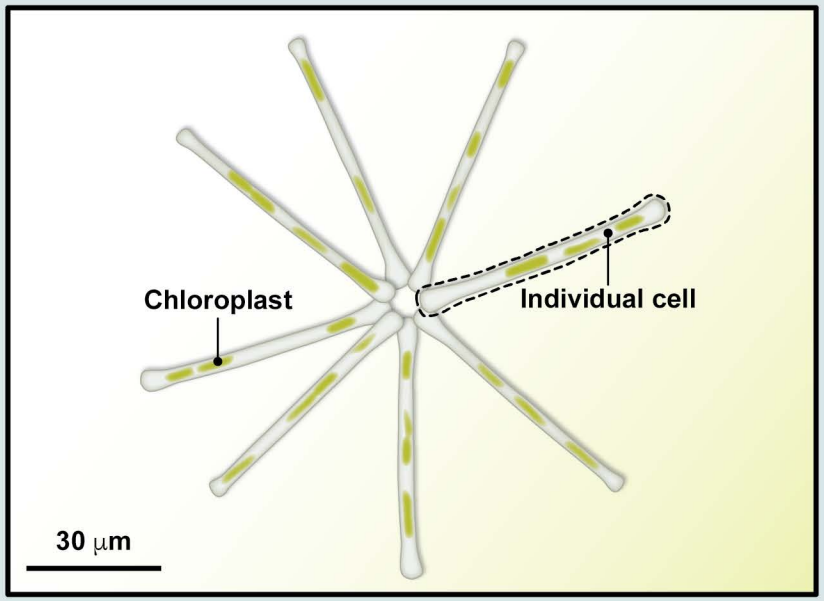
Diatom/Fragilaria *(Fragilaria crotonensis)*



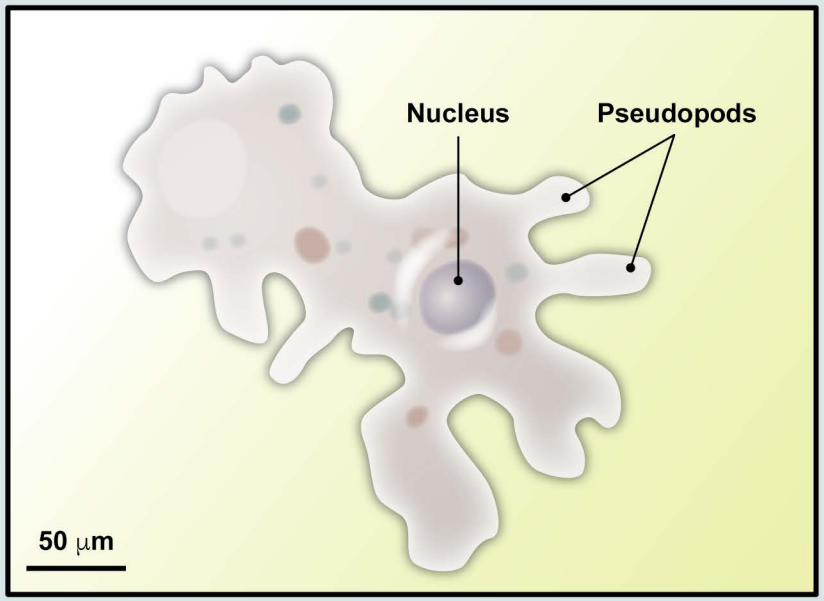
Rotifer *(Philodina roseola)*



Diatom/Asterionella *(Asterionella formosa)*

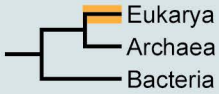


Amoeba *(Amoeba proteus)*



Philodina roseola

Domain: Eukarya
Supergroup: Unikonta
Subgroup: Animals



Habitats: Freshwater, moist soil

Mode of nutrition: Chemoheterotroph

Cell structure: Multicellular

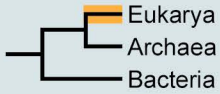
Interesting facts:

- Rotifers are microscopic animals with a complete digestive tract. Their diet mostly consists of dead or decomposing organic materials, unicellular algae, and other phytoplankton.
- The word "rotifer" comes from the Latin word meaning "wheel-bearer," referring to the crowns of cilia around the mouth that can move so rapidly they appear to whirl like a wheel.

EUKARYOTE

Fragilaria crotonensis

Domain: Eukarya
Supergroup: SAR
Subgroup: Diatoms



Habitat: Freshwater

Mode of nutrition: Photoautotroph (Photosynthesis)

Cell structure: Unicellular

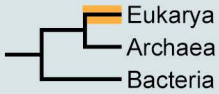
Interesting facts:

- The cell walls of diatoms are made of silica (a material like glass) and have two overlapping halves.
- *Fragilaria crotonensis* cells are swollen and attached at the center, making ribbon-like colonies.

EUKARYOTE

Amoeba proteus

Domain: Eukarya
Supergroup: Unikonta
Phylum: Tubulinea



Habitat: Freshwater

Mode of nutrition: Chemoheterotroph

Cell structure: Unicellular

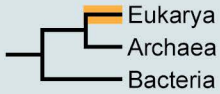
Interesting facts:

- Amoeba is a common pond dweller.
- It uses cytoplasmic extensions called pseudopods ("false feet") to move and to engulf food.

EUKARYOTE

Asterionella formosa

Domain: Eukarya
Supergroup: SAR
Subgroup: Diatoms



Habitat: Freshwater

Mode of nutrition: Photoautotroph (Photosynthesis)

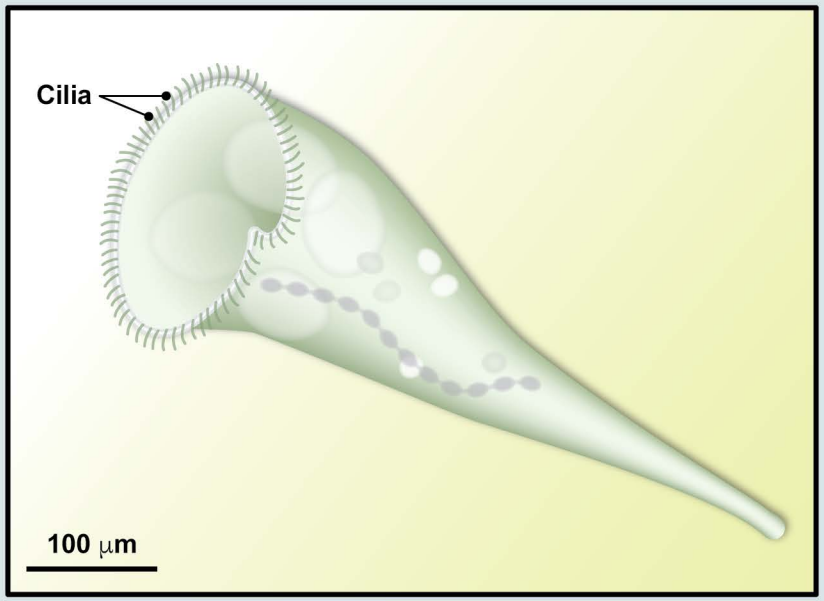
Cell structure: Unicellular

Interesting facts:

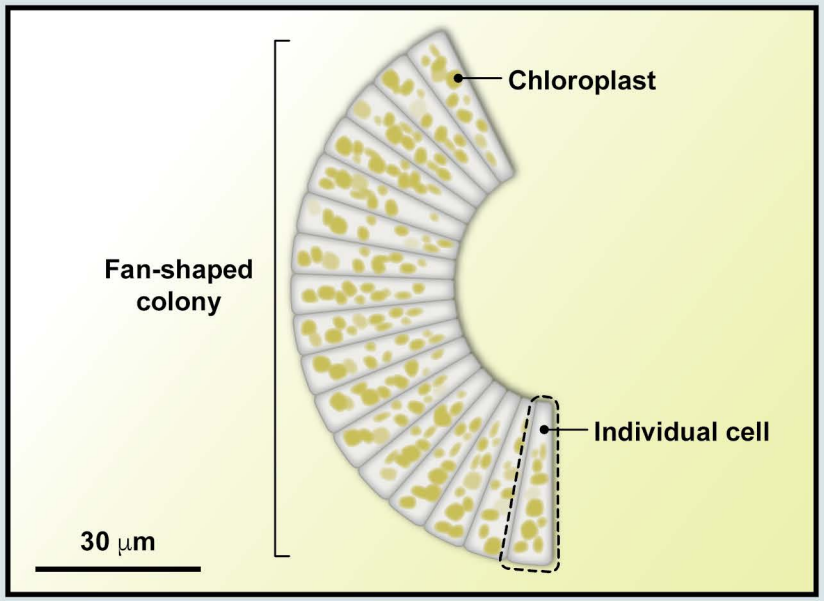
- The name *Asterionella formosa* means "little star."
- It is one of the most common diatoms in spring lake blooms; the large colony size keeps them from being grazed during blooms.
- Each colony is flat, consisting of 6 to 8 cells glued together at one end.

EUKARYOTE

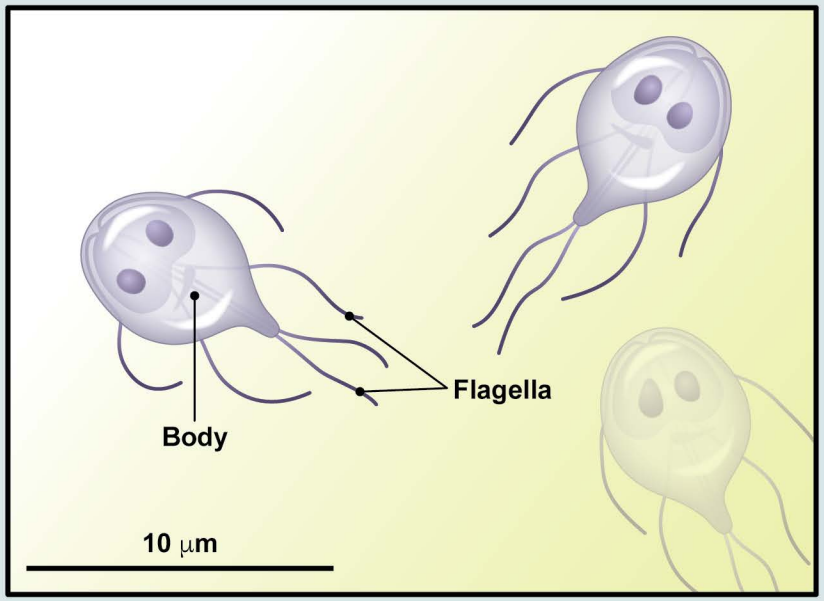
Stentor *(Stentor roeseli)*



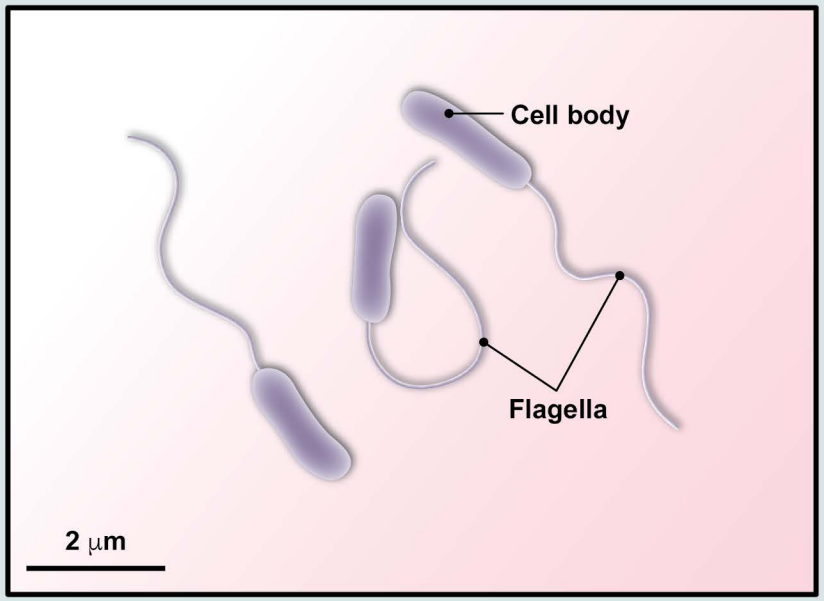
Diatom *(Meridion circulare)*



Giardia *(Giardia intestinalis)*

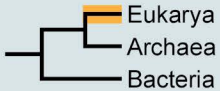


Vibrio *(Vibrio harveyi)*



Meridion circulare

Domain: Eukarya
Supergroup: SAR
Subgroup: Diatoms



Habitat: Freshwater

Mode of nutrition: Photoautotroph (Photosynthesis)

Cell structure: Unicellular

Interesting facts:

- Diatoms come in a great variety of forms.
- The cell walls are made of silica (a material like glass) and have two overlapping halves.
- Cells of *Meridion circulare* often grow in fan-shaped colonies.

EUKARYOTE

Stentor roeseli

Domain: Eukarya
Supergroup: SAR
Subgroup: Ciliates

Habitat: Freshwater

Mode of nutrition: Chemoheterotroph

Cell structure: Unicellular

Interesting facts:

- The name Stentor comes from its trumpet horn shape. In Greek mythology, Stentor was a very loud herald in the Trojan War.
- Cilia around the flared bell of the horn sweep in food, such as bacteria.

EUKARYOTE

Vibrio harveyi

Domain: Bacteria
Supergroup: Proteobacteria
Subgroup: Gamma Proteobacteria

Habitats: Tropical marine water, endosymbiotic (parasite of marine animals)

Mode of nutrition: Chemoheterotroph

Cell structure: Unicellular, curved rod-shaped, single flagellum

Interesting facts:

- *Vibrio harveyi* communicate by quorum sensing. Quorum sensing is a mechanism by which groups of bacteria coordinate the expression of certain genes (for example, bioluminescence genes) in response to the presence of specific signals.
- Bioluminescence by massive groups of bacteria can cause large areas of the sea to glow at night—what sailors call “milky sea.”

PROKARYOTE

Giardia intestinalis

Domain: Eukarya
Supergroup: Excavata
Subgroup: Diplomonads

Habitats: Humans and other animals (parasite)

Mode of nutrition: Chemoheterotroph

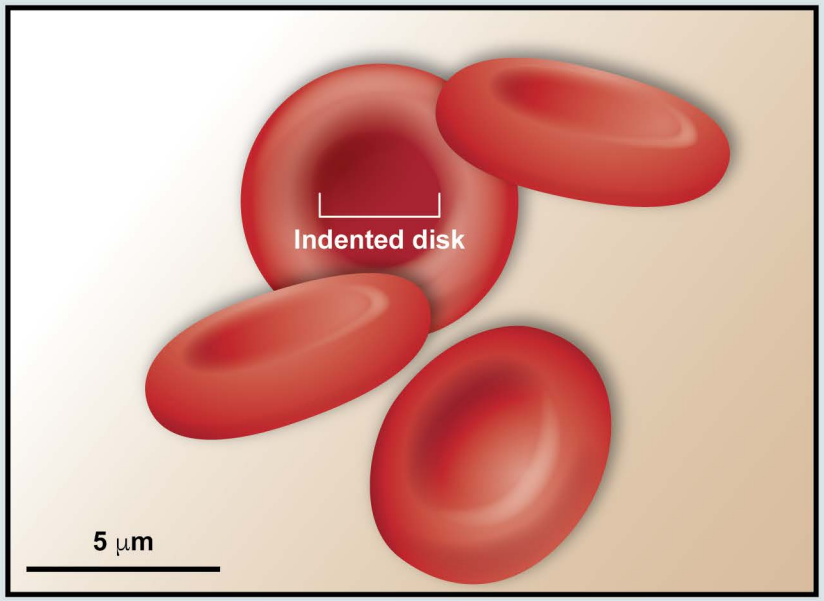
Cell structure: Multicellular

Interesting facts:

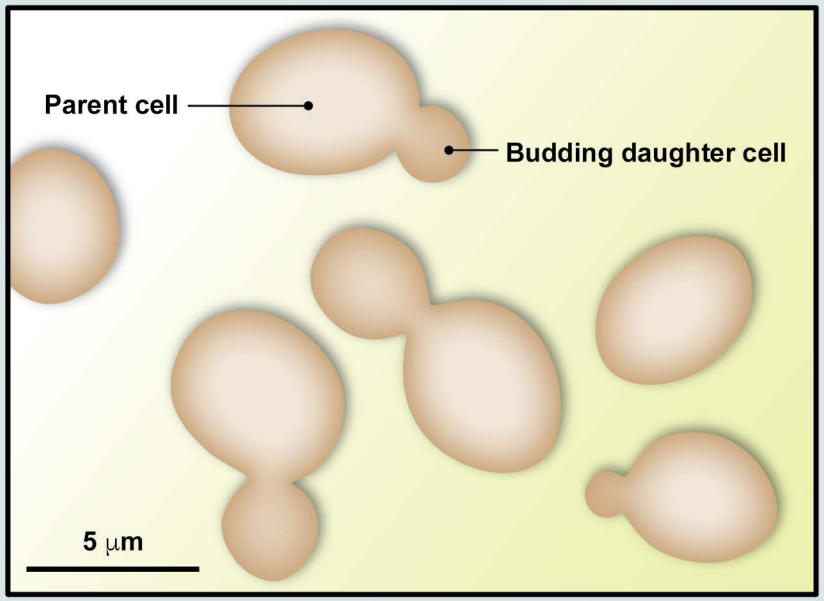
- Giardia causes the diarrheal illness known as giardiasis in humans.
- It is found in cyst form on surfaces or in soil, food, or water that has been contaminated with feces from infected humans or animals.
- Giardia is protected by an outer shell that allows it to survive outside the body for long periods of time and makes it tolerant to chlorine disinfection.

EUKARYOTE

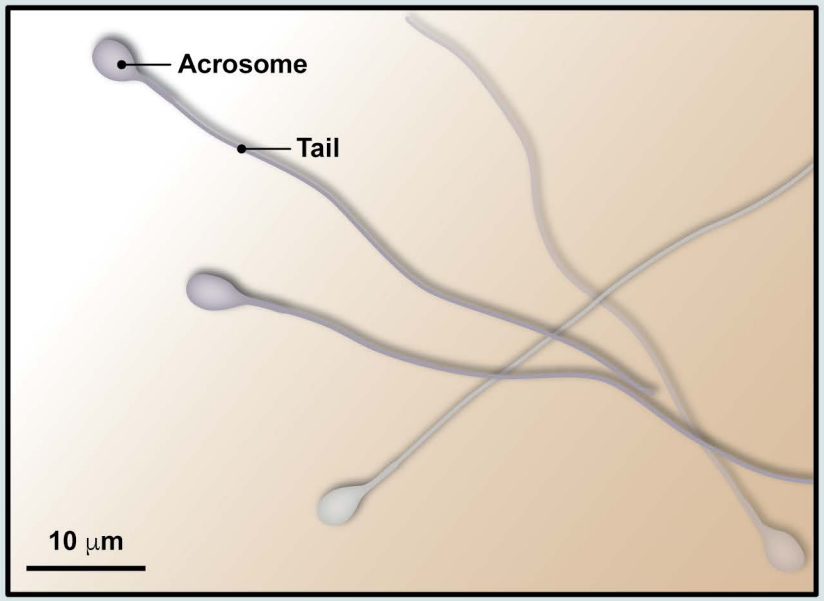
Human Red Blood Cell (Erythrocyte)



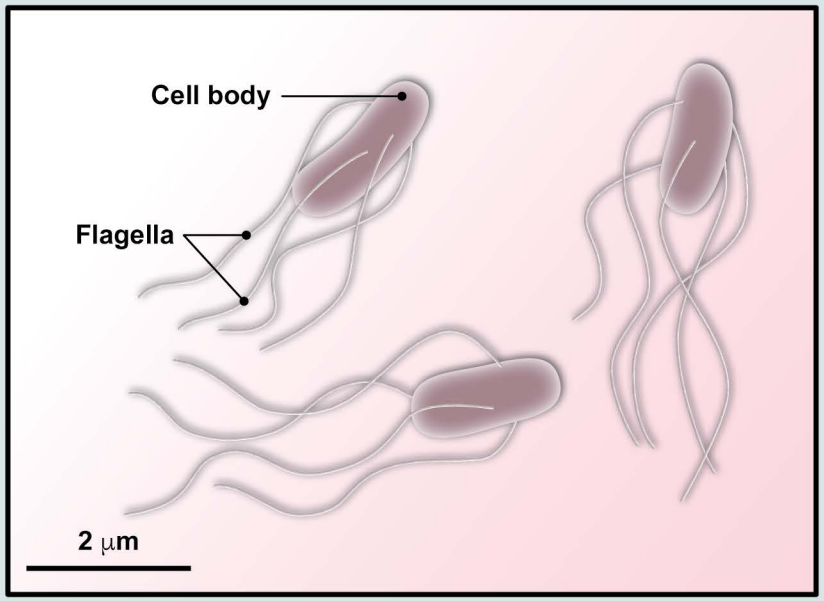
Brewer's or Baker's Yeast *(Saccharomyces cerevisiae)*



Sperm Cell (Spermatozoan)

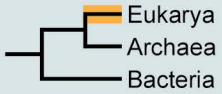


E. coli *(Escherichia coli)*



Saccharomyces cerevisiae

Domain: Eukarya
Supergroup: Unikonta
Subgroup: Fungi



Habitats: Skins of grapes and other fruits; soil; gastrointestinal tracts of insects and warm-blooded animals; aquatic environments

Mode of nutrition: Chemoheterotroph

Cell structure: Unicellular

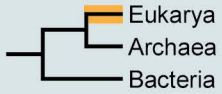
Interesting facts:

- *Saccharomyces cerevisiae* reproduces by budding (see image).
- Under anaerobic conditions, different species of yeast can use fermentation to produce ATP.

EUKARYOTE

Homo sapiens — Erythrocyte

Domain: Eukarya
Supergroup: Unikonta
Subgroup: Animals



Habitat: Red blood cells are found in blood.

Mode of nutrition: Humans are chemoheterotrophs.

Cell structure: Red blood cells are specialized cells, part of a multicellular organism.

Interesting facts:

- The human body produces about 20 million red blood cells per second.
- The concave shape allows red blood cells to bend and flow smoothly through the body's capillaries.
- In mammals, red blood cells lack a nucleus, DNA, and organelles.

CELL

Escherichia coli

Domain: Bacteria
Supergroup: Proteobacteria
Subgroup: Gamma Proteobacteria

Habitats: Freshwater and intestines of humans and other animals

Mode of nutrition: Chemoheterotroph

Cell structure: Unicellular

Interesting facts:

- Most strains are harmless. Some strains even aid in digestion or protect animals from other microbes. Few strains are harmful.
- E. coli strain 0157:H7 is a food-borne pathogen that causes abdominal cramps, bloody diarrhea, and vomiting.

PROKARYOTE

Homo sapiens — Spermatozoan

Domain: Eukarya
Supergroup: Unikonta
Subgroup: Animals

Habitat: Human sperms are found in human semen.

Mode of nutrition: Humans are chemoheterotrophs.

Cell structure: Sperms are specialized cells, part of a multicellular organism.

Interesting facts:

- The acrosome (oval-shaped structure) contains strong chemicals that drill through the egg's outer surface so that the sperm can release its genetic cargo.
- Sperm get energy from the sugar fructose, supplied by the seminal vesicles.

CELL