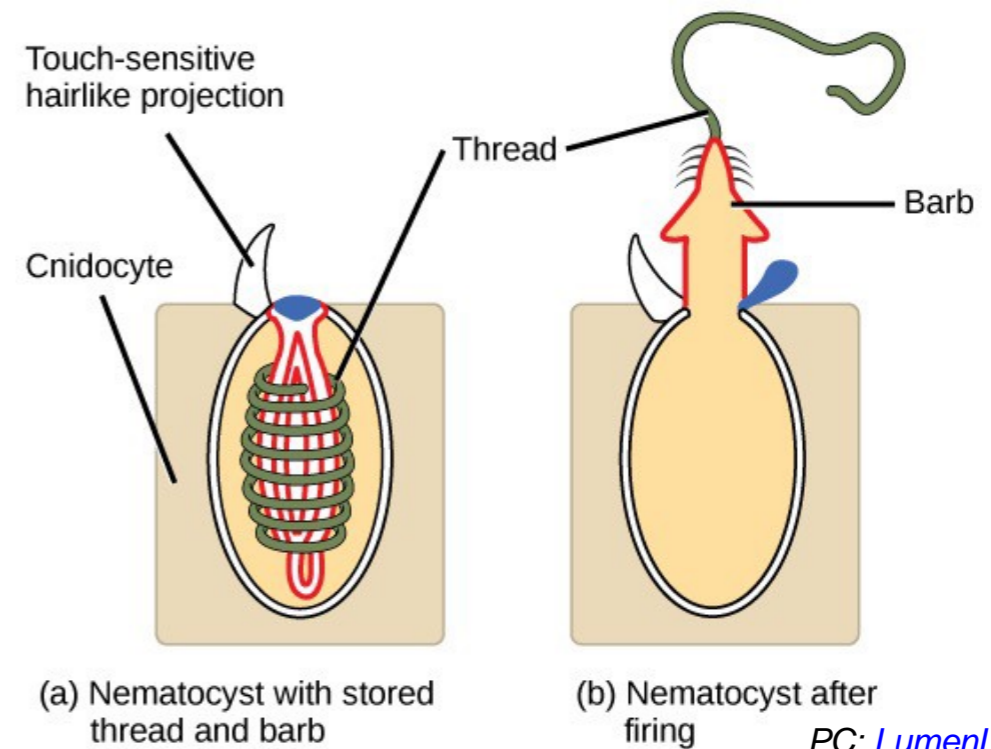


# Peach Blossom Jellyfish (*Craspedacusta sowerbii*)



PC: Wikipedia

One of the only known freshwater jellyfish species, the peach blossom jellyfish is native to the Yangtze River basin in China, but has spread around the world in the last century. About the size of a penny, it feeds on zooplankton in the water, stinging its prey with nematocysts (see diagram below), a technique shared among the cnidarians, which includes jellyfish, anemones, and corals. Blooms of this species are observed in warmer water, and its worldwide spread has correlated with rising global temperatures. The resting dormant state, known as a podocyst, may help it spread by adhering to substrates like aquatic plants and birds' feet.

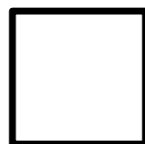


PC: [LumenLearning.com](https://lumenlearning.com)

Cerrito:



Codornices:



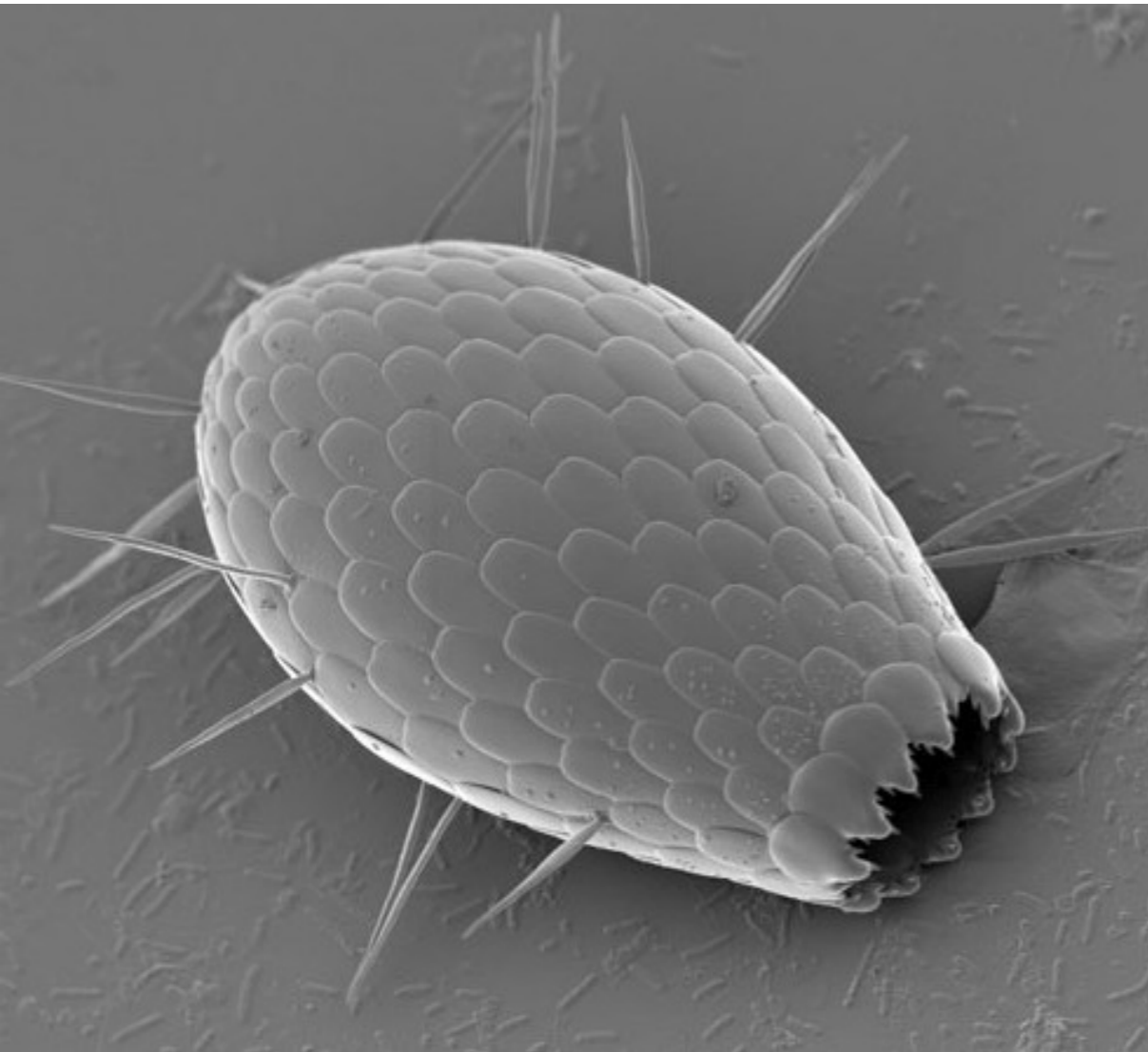
More info: [https://en.wikipedia.org/wiki/Craspedacusta\\_sowerbii](https://en.wikipedia.org/wiki/Craspedacusta_sowerbii)

[https://animaldiversity.org/accounts/Craspedacusta\\_sowerbii/#8c604e49a7a6822d2abf1f590490d4bb](https://animaldiversity.org/accounts/Craspedacusta_sowerbii/#8c604e49a7a6822d2abf1f590490d4bb)

[https://nas.er.usgs.gov/queries/GreatLakes/FactSheet.aspx?Species\\_ID=1068](https://nas.er.usgs.gov/queries/GreatLakes/FactSheet.aspx?Species_ID=1068)

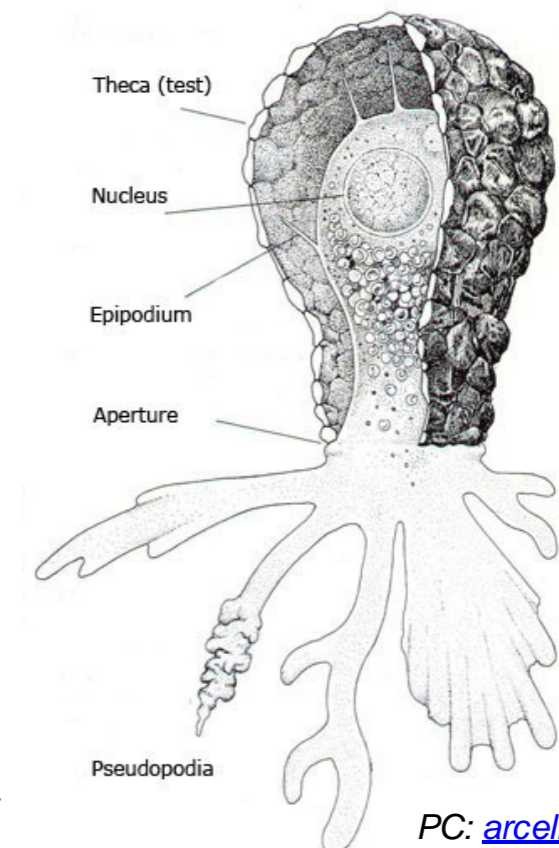
<https://e360.yale.edu/digest/as-water-temperatures-rise-freshwater-jellyfish-found-in-british-canal>

# Shell-building amoebae (order *Euglyphida*)



PC: Eckhard Voelcker, [arcella.nl](http://arcella.nl)

We tend to think of amoebae as amorphous blobs, but many protect themselves from predators and other threats by building a shell. We call these testate amoebae, or shell-building amoebae. Testate amoebae leave at least one hole in their shell that allows the amoebae to come out to crawl around or hunt, often for bacteria, algae, and other single-celled organisms, but in rare cases they can eat small microscopic animals such as rotifers. Testate amoebae are classified as either autogenic (they synthesize the materials for the shells themselves) or xenogeneic (gathering building materials from the environment). The species found in Codornices and Cerrito Creeks are mostly in the *Euglyphida* order, which build silica-based shells, similar to diatoms.



PC: [arcella.nl](http://arcella.nl)

Cerrito:



Codornices:



More info: <https://www.arcella.nl/euglyphida/>

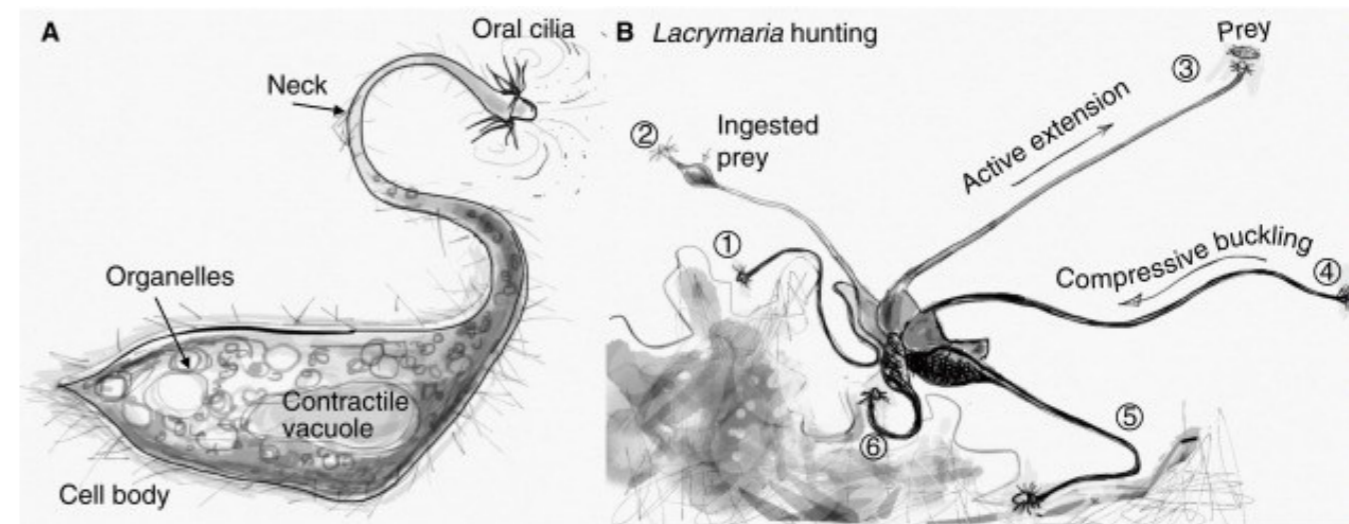
<https://www.youtube.com/watch?v=9EutjfdS2c>

## “Tear of a swan” (*Lacrymaria*)



PC: beholdthehumaneye.blogspot.com

One of the more notorious unicellular predators, *Lacrymaria* extends its neck rapidly and flexibly around its environment to capture anything that is unlucky enough to find itself within reach. The neck can extend up to seven times the length of the body. Like a snake, *Lacrymaria* is flexible enough to ingest prey nearly its size. It can also re-generate it's had when cut off. As for finding its prey, *Lacrymaria* doesn't appear to be able to see or smell, but instead uses a 'chaotic' approach, rapidly retracting and extending its neck in different directions to sample a large space, hoping to strike it rich.



PC: Kirsty Wan, Current Biology

Cerrito:



Codornices:



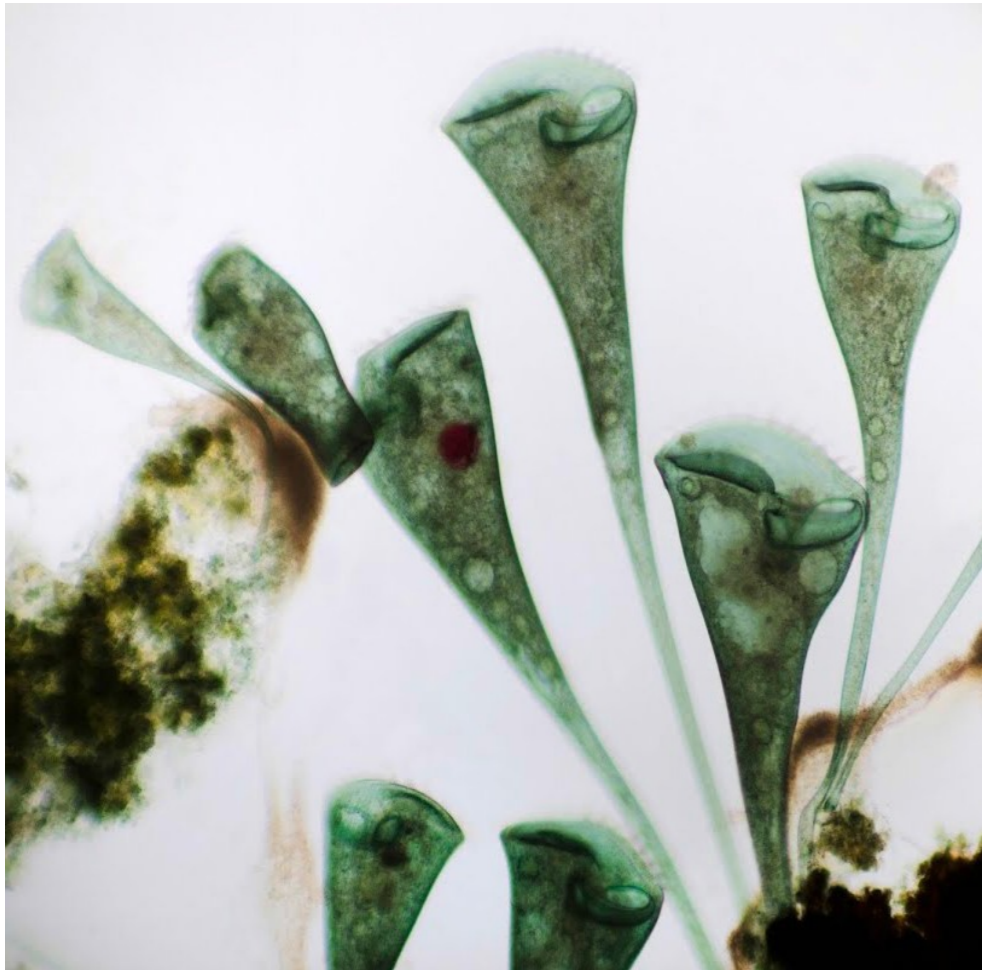
More info:

<https://www.youtube.com/watch?v=rWtMIQguUOo>

<http://www.microscopy-uk.org.uk/mag/indexmag.html?http://www.microscopy-uk.org.uk/mag/art98/tear1.html>

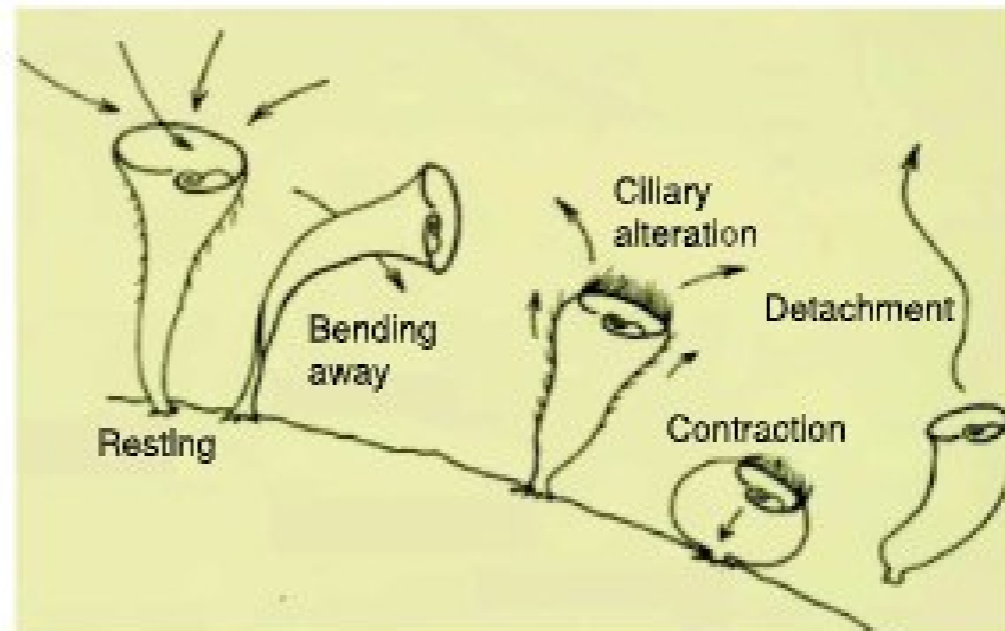
[https://en.wikipedia.org/wiki/Lacrymaria\\_olor](https://en.wikipedia.org/wiki/Lacrymaria_olor)

## The “trumpet animalcule” (*Stentor roeselii*)



PC: James Weiss (Jam's Germs)

Some of the largest single-celled organisms known, individual *Stentor* cells can reach up to 4 millimeters in length. They are common freshwater inhabitants, filter feeders that anchor themselves to a substrate and then use a ring of tiny hairs, or 'cilia', that beat and generate fluid flow, creating a vortex that pulls in other microscopic organisms. *Stentor* has many other remarkable features, such as its impressive re-generation ability: small fragments of the cell are sufficient to regenerate the entire organism, which the characteristic trumpet shape, feeding apparatus, and holdfast. Recent research on *Stentor* has also shown complex behavior in these cells as they respond to environmental irritants.



PC: Dexter et al, 2019

Cerrito:



Codornices:



More info:

<https://hms.harvard.edu/news/unexpected-depths>

<https://owlcation.com/stem/Stentor-A-Trumpet-Shaped-Organism-With-Interesting-Behaviour>

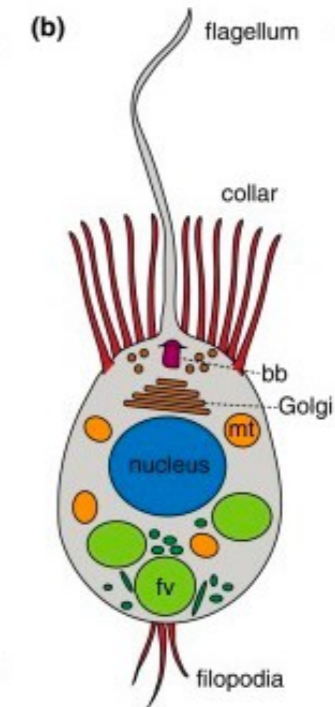
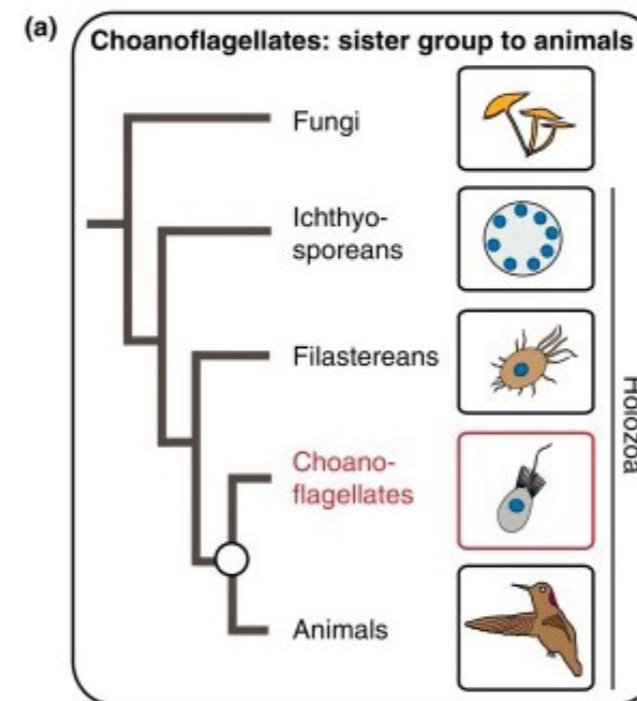
<https://www.youtube.com/watch?v=PZoaKzEXzi8>

# Choanoflagellates (*Salpingoeca fusiformis*)



PC: PlanktonNet

Choanoflagellates are a large group of (mostly) single-celled organisms that eat bacteria. Found in both freshwater and marine environments, they are the closest living relatives of animals. Because of this evolutionary relationship, they are useful for learning about the earliest stages in animal evolution. Some of the leading experts on the study of choanoflagellates and animal origins are here at UC Berkeley, in the lab of Dr. Nicole King. New choanoflagellate species are being discovered regularly, in the alkaline waters of California's Mono Lake, or the rocky coasts of the island of Curaçao. Their close relationship to animals was recognized as far back as the 1800s, due to the similarity between choanoflagellates and a cell type found in sponges known as a choanocyte.

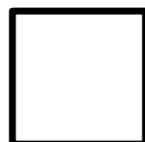


PC: Hoffmeyer and Burkhardt, 2016

Cerrito:

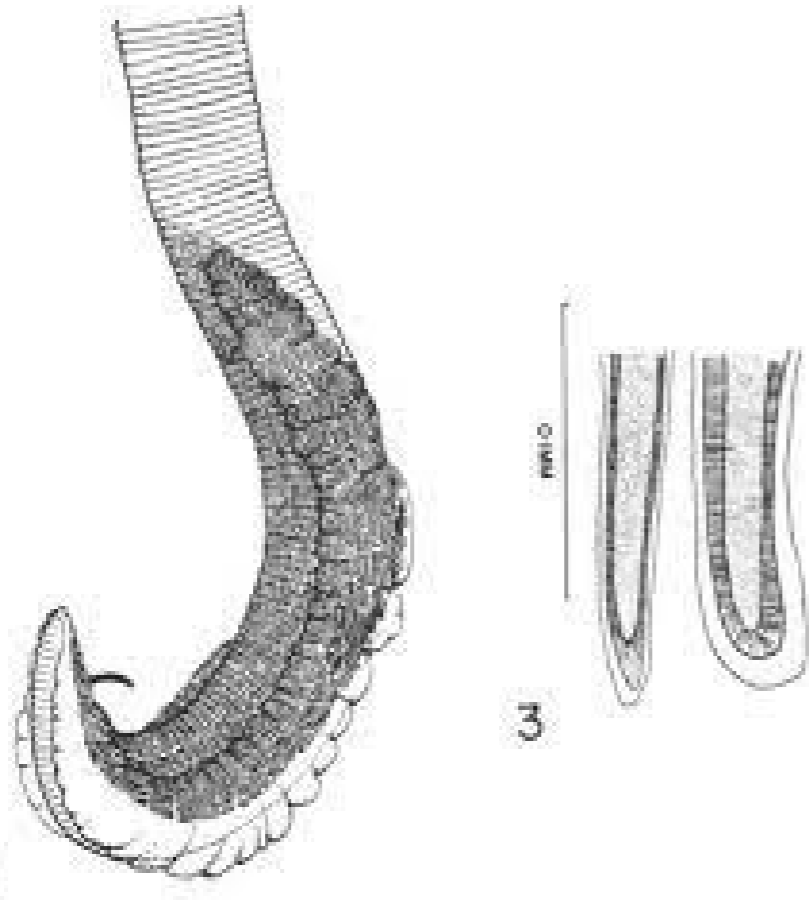


Codornices:



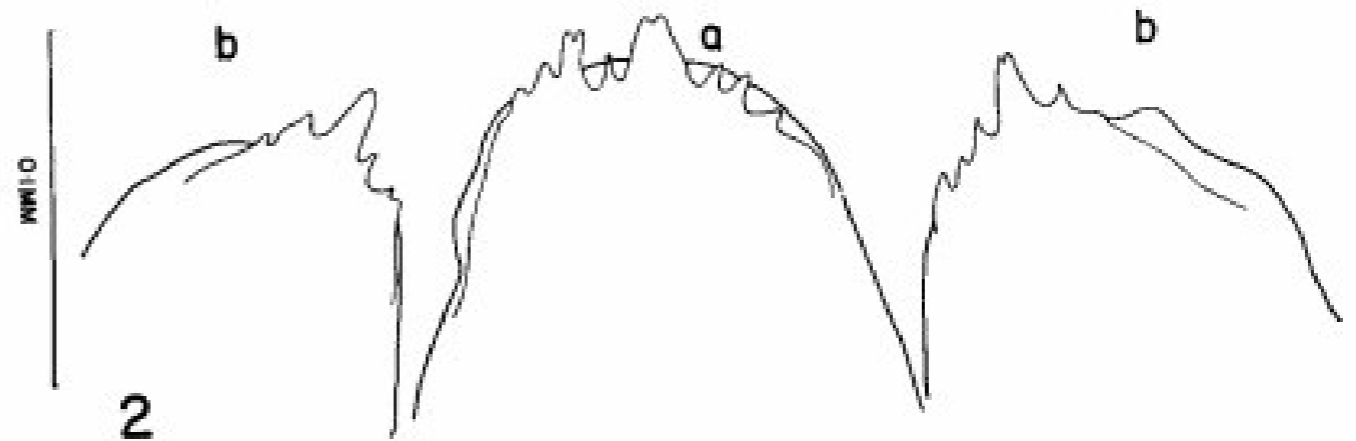
More info: <https://www.ibiology.org/ecology/choanoflagellates/>  
<https://www.quantamagazine.org/scientists-debate-the-origin-of-cell-types-in-the-first-animals-20190717>  
<https://en.wikipedia.org/wiki/Choanoflagellate>

# Nematode parasites of rodents (*Mastophorus muris*)



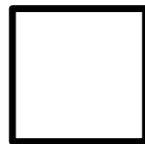
PC: Wertheim, 1962

Parasitism is a part of life; no healthy ecosystem lacks its fair share. Nematodes are a large group of worms that include both free-living and parasitic species. Our data showed the robust presence of a nematode known to parasitize rodents around the world, from Costa Rica to Serbia. In our case its most likely host is the common rat *Rattus norvegicus*, which also left behind a healthy trace of eDNA in our samples. While rats can serve as reservoirs for some human diseases, this nematode is a specialist for rodents and is no harm to humans.



Teeth of *Mastophorus muris*, PC: Wertheim 1962

Cerrito:



Codornices:



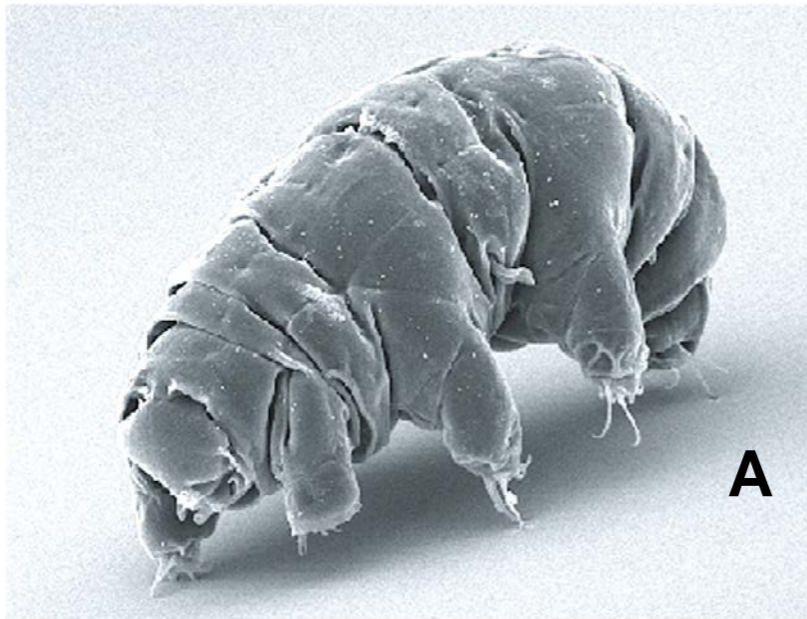
More info:

[https://en.wikipedia.org/wiki/Mastophorus\\_muris](https://en.wikipedia.org/wiki/Mastophorus_muris)

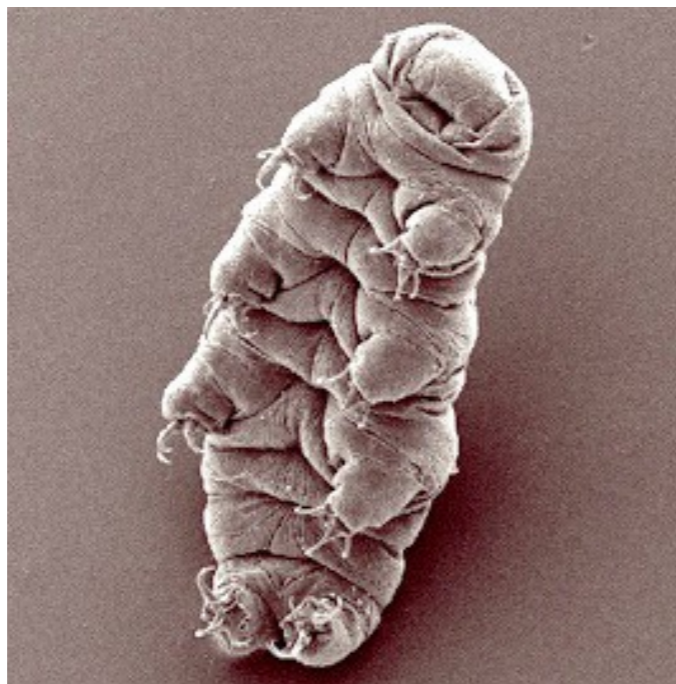
<https://www.jstor.org/stable/pdf/3224051.pdf>

<https://www.cabi.org/ISC/abstract/19790860825>

## Tardigrades (e.g., *Hypsibius convergens*)



Tardigrades, also known as “water bears” or “moss piglets,” are tiny animals of the ancient phylum Tardigrada (which means “slow steppers”). Short (up to 0.5 mm) and plump, they move on four pairs of legs ending in claws or suction disks. They are common in the films of water on mosses and lichens, feeding on plant cells, algae, and small invertebrates.



**B**

Tardigrades are everywhere in Earth's biosphere, however. Some 1,300 species have been found on land and water, including the deep sea, volcanoes, and rainforests. They are among the most resilient animals known -- some species can survive extreme temperatures, extreme pressures, air deprivation, radiation, dehydration, and starvation. Some have famously survived accidental rides into outer space.

To see them stepping slowly go to the BBC video:

[https://www.youtube.com/watch?v=dork\\_85Q8ul](https://www.youtube.com/watch?v=dork_85Q8ul)

Cerrito:



Pictures sources:

A. Schokraie et al. (2012), <https://commons.wikimedia.org/w/index.php?curid=22716809>

Codornices:



B. Goldstein Lab at UNC Chapel Hill <http://tardigrades.bio.unc.edu/pictures/>

## Copepods (e.g., *Eurytemora affinis*)



Copepods are small crustaceans that are part of the zooplankton, tiny drifting animals essential in the food webs of fresh and salt water. The more than 10,000 species of copepods vary a lot, but most have a single eye. Eggs develop to embryos in special sacs. Emerging as larvae (called nauplii), they grow through several stages (instars) that can also look quite different from adults. Even though they move mainly by drifting, many "jump" or swim rapidly when they detect even minute currents (like a fish opening its mouth). All three major copepod groups were detected in at least one on our samples.

T

**Harpacticoids** have very short antennae. Most live on or near bottoms or solids like sea ice, moving with something like hops. The name comes from the Greek noun harpacticon (rapacious predator).



Photo by Carol Lee

**Cyclopoids** have relatively short antennae. Like their mythical-creature namesakes, the Cyclops, they have a single eye.

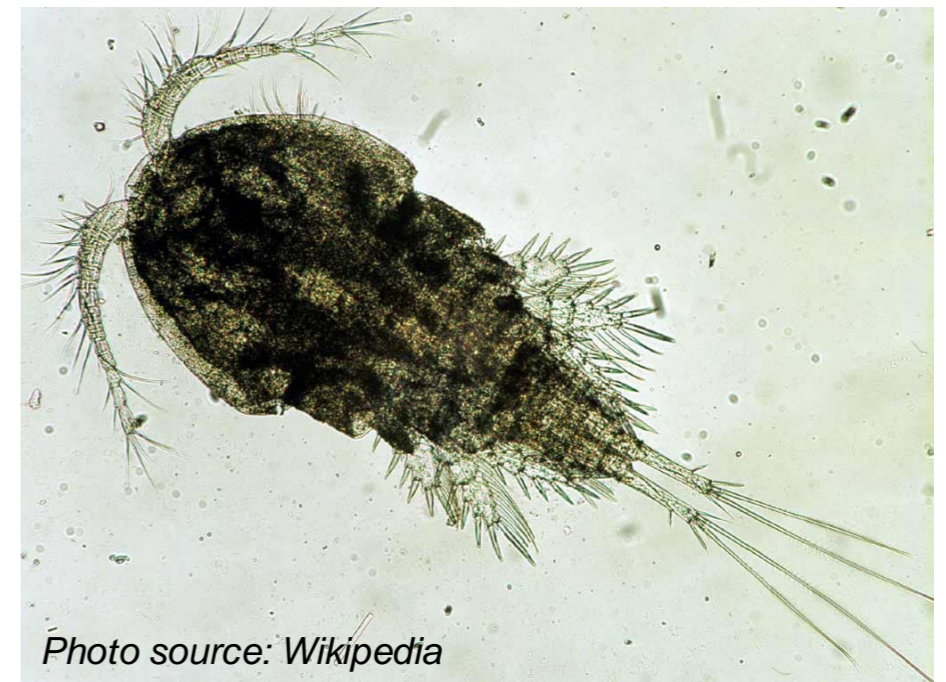


Photo source: Wikipedia

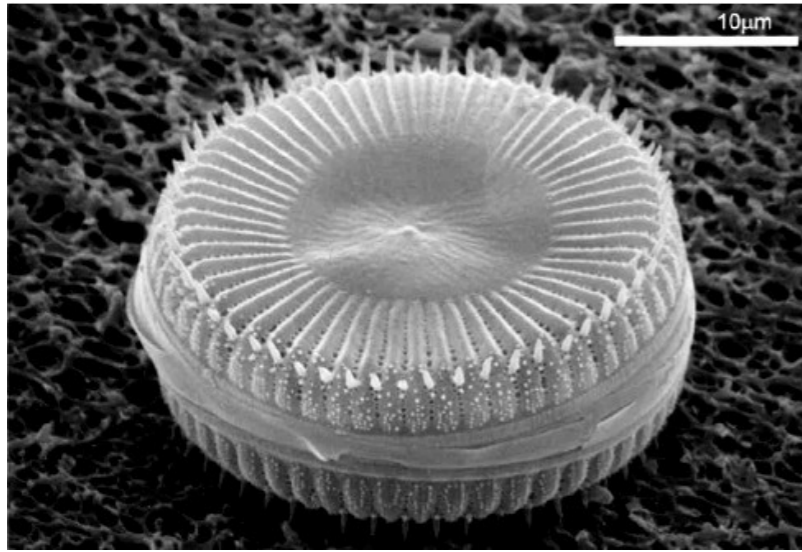
Cerrito:

**Calanoids** have longer antennae -- at least half the length of the body, which for most species is less than 2 millimeters long. Some, though, grow to 18 mm -- 0.71 in. Most calanoids live in the water column and eat phytoplankton, tiny floating plants.

Codornices:



# Diatoms (Bacillariophyta)



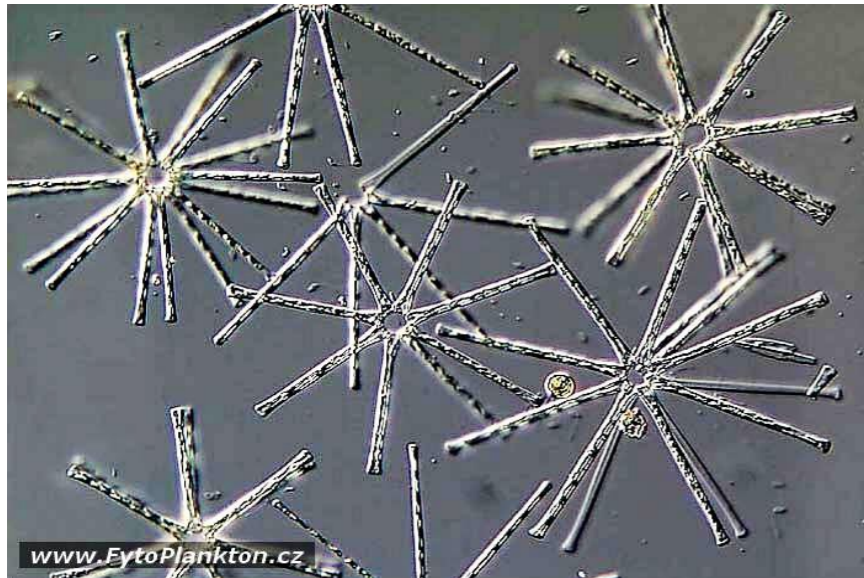
*Cyclotella*-sp. By Harold Marshall



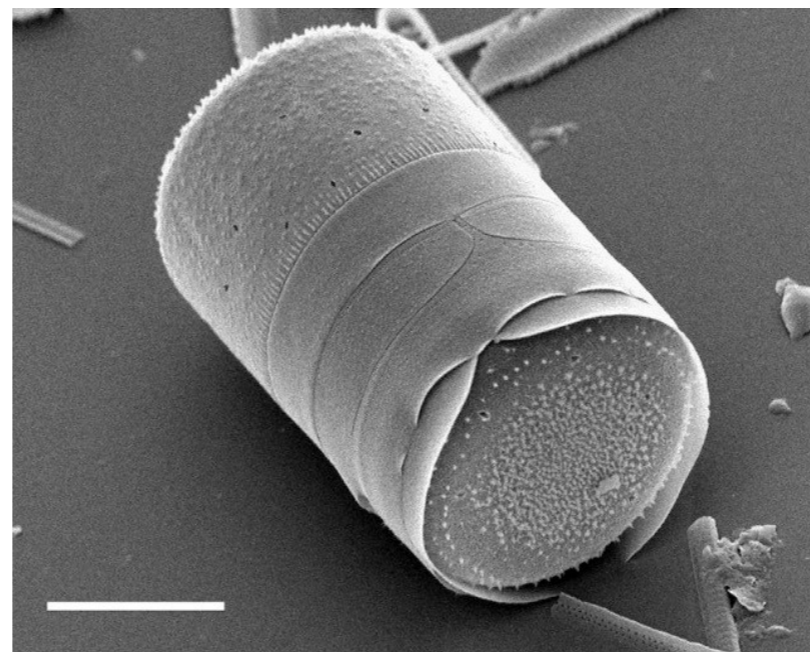
*Amphora* sp.  
By Pauli Snoeijs

Neither plants nor animals, diatoms are single-celled organisms that live by photosynthesis and silica to grow cell wall that can look like elaborate glass boxes. Masses of diatoms can look like a golden-brown mat on sediments, where many can glide to reach favorable light levels.

Diatoms are vital to life on Earth: They produce about a quarter of all the oxygen in the biosphere while also supporting healthy food chains. Our four sediment samples contained DNA from 22 genera and about 40 species of diatoms.



*Asterionella formosa* by Petr Znachor



*Melosira varians*-Jane Bradbury2004

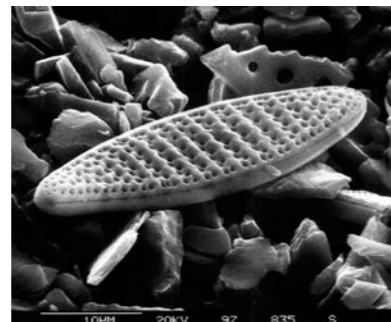


*Cocconeis*\_sp. By Anne Gleich

Cerrito



Codornices



*Nitzschia*-sp. By Hannes Grobe