

PHYTOPLANKTON

of the northern Gulf of Mexico

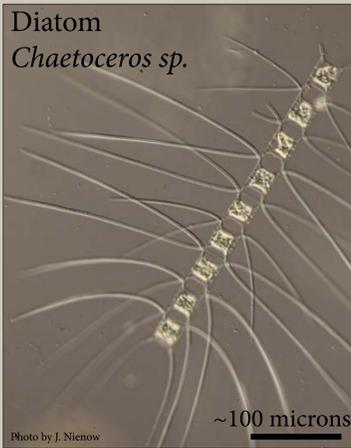
Phytoplankton Facts

- Are microscopic organisms, often called algae, that drift with the current
- Live in marine (salty) and freshwater ecosystems
- Are photosynthetic and so must live in sunlit waters
- Three main groups in local waters are diatoms, dinoflagellates and cyanobacteria

Fun Facts

You owe your life to phytoplankton - they produce ~50% of the oxygen in our atmosphere.

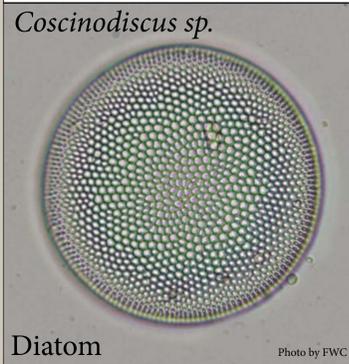
Diatom frustules do not break down quickly and can build-up in sediments. They can tell us about past climate conditions on Earth. We use diatomaceous earth in water filters, toothpastes, cat litter and insulation!



Fun Facts

Phytoplankton can be single-celled or can form colonies or chains.

A diatom's cell wall is known as a frustule.

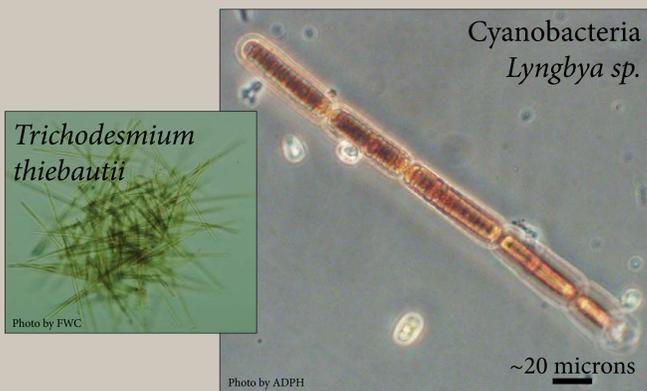


DIATOMS

- Covered by a mineral cell wall made of silicon (same mineral that makes up glass)
- The concentration of dissolved silicon in water can determine the number of diatoms that can live in a location

CYANOBACTERIA

- Group of photosynthetic bacteria found in fresh and marine waters
- Used to be known as blue-green algae
- Can be single-celled or form a colony



Phytoplankton are microscopic: many are 10s of microns (millionth of a meter) to 100s of microns in size!

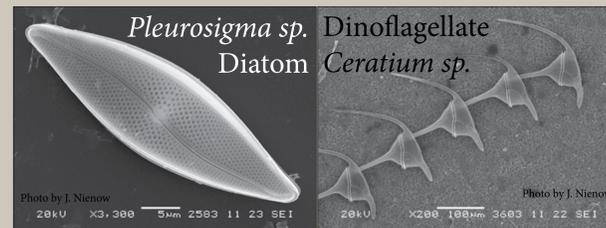
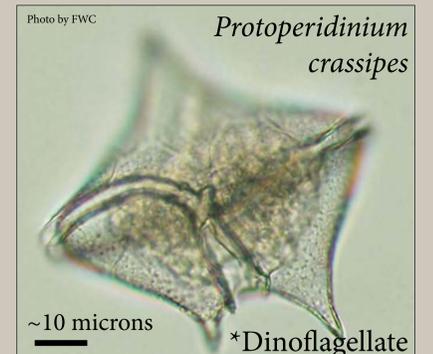


Image from a scanning electron microscope (SEM): uses electrons instead of visible light to make the image.

Fun Facts

Some species are bioluminescent - produce blue-green or red light when excited.



Photosynthesis

- The basis for almost all food chains on Earth
- Chlorophyll and other pigments are used to capture the sun's energy
- Chemical 'shorthand' for photosynthesis
 $6CO_2 + 6H_2O \Rightarrow C_6H_{12}O_6 + 6O_2$

Fun Facts

Dinoflagellates can form symbiotic relationships with other organisms: ex. zooxanthellae in coral, jellyfish, clams or nudibranchs.

Most phytoplankton reproduce by cell division (one cell splits into two), some reproduce sexually (mix of genetic material) and some form resting stages to persist through unfavorable environmental conditions.

DINOFLAGELLATES

- 'Swim' using two flagella
- Cell wall made of cellulose (like plants) or absent
- Some species are photosynthetic but others may eat other organisms (pictures with *)