

Algae Lab Investigation

Words to Know

Carbohydrate: A compound consisting of carbon, hydrogen, and oxygen found in plants and used as a food by humans and other animals.

Photosynthesis Process by which light energy is captured from the Sun by pigment molecules in plants and algae and converted to food.

Phytoplankton Microscopic algae that live suspended in the water.

Zooplankton: Tiny animals that drift through the upper surface of water bodies and feed on phytoplankton.

Ecological importance of algae





Microscopic algae are the source of much of Earth's oxygen. Algae are also very important ecologically because they are the beginning of the food chain for other animals. Phytoplankton, a mostly single-celled type of algae, are eaten by small animals called zooplankton (mostly crustaceans such as tiny shrimp) that drift near the surface.

Algal Blooms

Freshwater algae can cause problems when they are overly abundant. Algal blooms can cause foul tastes in water stored in reservoirs that are used to provide drinking water to nearby communities.



Eutrophication is a major problem that is associated with algal blooms in lakes. A direct result of human interference, eutrophication is caused by the addition of excess nutrients (runoffs of phosphate and nitrate from chemical fertilizers and sewage disposal) to the water that encourage algae to grow

Flagellated forms (some are also often classed as protozoa)
note: These flagella are hardly visible, only with strong magnification.

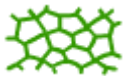
Euglenoids		green, flagella (whip-like cilia), free-swimming, red eye spot, body is flexible <0.4 mm	Flagellated algae/protozoa - includes Euglenaa heart shaped euglenoid: Phacus
Dinoflagellates		brown, 2 flagella, (1 in girdle), free-swimming, tough armour <0.4 mm	Peridinium - Stars of the Marshes
Green algae (Chlorophyta)		spherical colonies, cells with 2 flagella Volvox: 0.5 - 2mm	Volvox - the jewel of the pond Volvox in 3D Some other smaller colonial flagellates: Gonium, Eudorina, Pandorina, Sorastrum (rare), Synura, Uroglena
not all green algae are green		tiny, green/red, often in bird baths <0.05 mm	Haematococcus Haematococcus - image another small flagellated green algae: Chlamydomonas

There are many other small flagellated algae of non related groups. Classification is difficult.

Non-flagellated forms

Blue-green algae (cyanobacteria)		blue-green, often slow locomotion, used to be considered algae but more related to bacteria cells<0.05 mm colonies can be many mm	Smallest page on the web - 'bacteria' - image of a cyanobacteria
Diatoms		usually brownish, silica cell wall in two parts, solitary or colonial, some have a slow gliding motion <0.5 mm	Smallest page on the web - 'diatoms' Those who live in glass houses' Diatoms on strings Bacillaria - 'Carpenter's rule' diatom Library search - type diatom for articles on f/water & marine species Test diatoms - species to test optics
Desmids (Gamophyta: conjugating green algae)		green, no flagella, mainly solitary, some colonial, various shapes, two semi-cells which are mirror images <0.5 mm	What are desmids? Smallest page on the web - desmids Bill Ells' page - extensive articles on various species and aspects of desmids Desmids in 3D Desmid gallery
Green algae (Chlorophyta)		green, don't move, no flagella, not attached to a surface starshaped colony: Pediastrum <0.3 mm bottom right: Scenedesmus <0.03 mm	Pediastrum - image only Pediastrum - the 'star' of the pond Asterococcus Some other common 'non flagellates': Chlorella (symbiont in several organisms), Scenedesmus, Dictyosphaerium

Other algae of various growth forms

Water net		a sock-like colony, green algae (related to Pediastrum) up to 20 centimeters	Hydrodictyon - the water net
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Some other common algae of various types: Botrydium, Chaetophora, Coelochaete, Enteromorpha

Filamentous forms

<p>Pond scum (Gamophyta: conjugating green algae)</p>		<p>non-branching, green, chains of cells with distinctly shaped cell contents cell with <0.1 mm. length: centimeters</p>	<p><u>Spirogyra</u> - chloroplasts like helix <u>Spirogyra in 3D</u> <u>Zygnema</u> - starshaped chloroplasts Mougeotia has plate-like chloroplasts</p>
<p>Other non-branching forms</p>		<p>several non related groups</p>	<p><u>Oedogonium</u> Some other common filamentous types: Tribonema, Ulothrix, Vaucheria</p>
<p>Branching forms</p>		<p>mostly green algae</p>	<p>Cladophora, Draparnaldia, Stigeoclonium</p>
<p>Red algae (Rhodophyta)</p>		<p>mainly marine, but some freshwater forms, not always red</p>	<p><u>Batrachospermum</u> <u>Porphyridium</u></p>