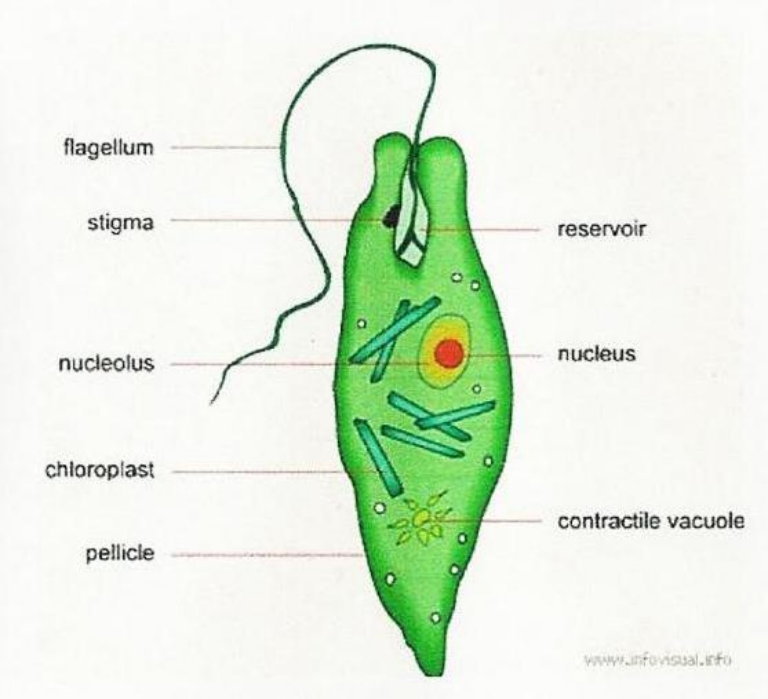
Euglena

A prime example of a single-celled organism is a Euglena. Remember that single-celled means that the organism has only one cell that does everything. Euglena move by a **flagella** which is a long whip-like structure that acts like a little motor. The flagellum is located on the **anterior** (front) end, and twirls in such a way as to move the cell through the water. It is attached at an inward pocket called the reservoir.



The Euglena is unique in that it is both **heterotrophic** (must consume food) and **autotrophic** (can make its own food). Chloroplasts within the euglena trap sunlight that is used for photosynthesis, and can be seen as several rod-like structures throughout the cell. Euglena also have an **eyespot** at the anterior end that detects light, it can be seen near the reservoir. This helps the euglena find bright areas to gather sunlight to make their food.

Euglena can also gain nutrients by absorbing them across their cell membrane, hence they become heterotrophic when light is not available, and they cannot photosynthesize.

The euglena has a stiff pellicle outside the cell membrane that helps it keep its shape, though the pellicle is somewhat flexible and some euglena can be observed scrunching up and moving in an inchworm type fashion.

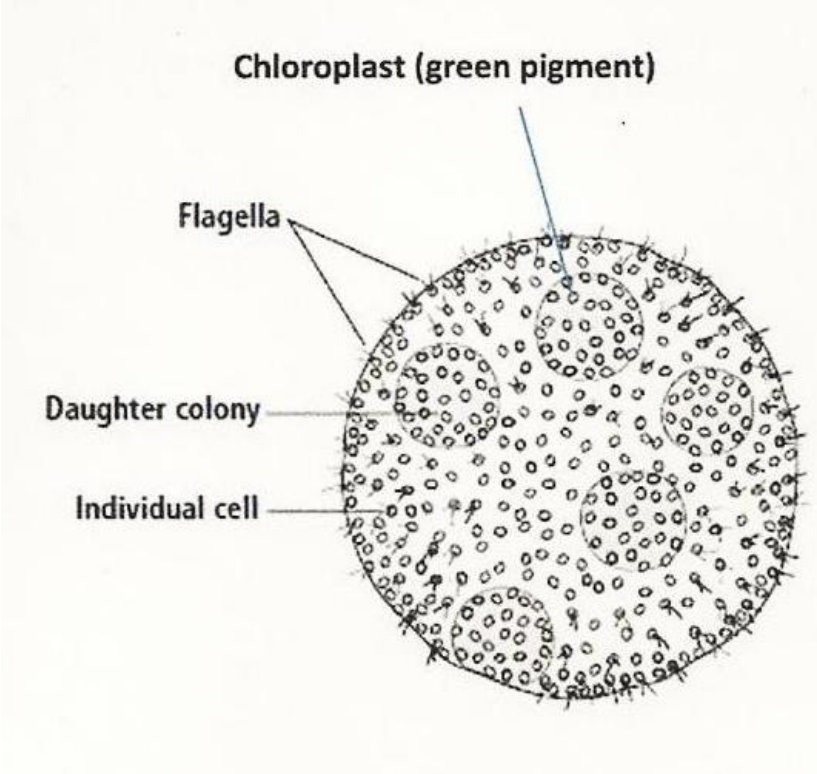
In the center of the cell is the **nucleus**, which contains the cell's DNA and controls the cell's activities. The nucleolus can be seen within the nucleus. Euglenas reproduce through asexual reproduction, which means they divide and replicate and only need one parent to reproduce.

The interior of the cell contains a jelly-like fluid substance called **cytoplasm**. Toward the posterior of the cell is a star-like structure: the **contractile vacuole**. This organelle helps the cell remove excess water, and without it the euglena could take in some much water due to osmosis that the cell would explode.

In relation to humans, euglenas are both harmful and helpful. When a euglena attracts a decaying substance, it helps to break it down. However, sometimes the process does not work and the euglena eats the digestive enzymes so it lets out pollutants into the air.

Volvox

A beautiful algae called *Volvox* is really a colony of algae cells living together in a sphere. They are single-celled organisms, but they live together in colonies, which means many of them together. It looks like a green globe spinning slowly through the water. It is macroscopic, so you can see it with a hand lens. Sometimes you can find a microscopic critter called a Rotifer living inside of a *Volvox*. This species of Rotifer is a parasite. It munches away on the cells of the *Volvox* and lays eggs. The damage slowly destroys the perfect globe shape of the *Volvox*. When the Rotifer has eaten enough, it escapes and swims off to find and parasitize another Volvox.



Volvox are single-celled algae that live together in a colony. The colony is a hollow ball with 500 to 20,000 individual cells.

Each volvox cell has two flagella to help them move. Flagella are like little tails that propel an organism through the water. The flagella beat together to roll the ball through the water.

Volvox cells have chlorophyll and make their own food by photosynthesis. Chlorophyll helps them obtain their energy by soaking up light from the sun.

Volvox reproduce through asexual reproduction. This means they divide in order to make new volvox. Daughter colonies are small, dark green balls inside the volvox colony. When the daughter colonies mature, the parent ball bursts open and releases the daughter colonies. Size 350 to 500 µm (Two or three volvox cells would fit in 1 mm.)

Volvox are helpful, but only indirectly. Volvox serve as decomposers in a pond and lake systems. These would be consumed by zooplankton. These in turn would be consumed by small fish, which would be eaten by larger fish, which would be eaten by ... you guessed it, human beings. Next time you go fishing and catch and eat a fish, remember to think about the volvox that contributed.