

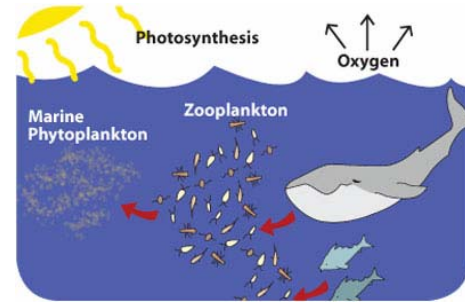
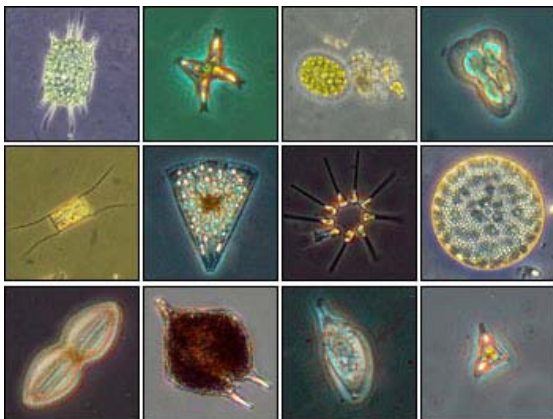
Plankton

What Do I Need?

- small aquarium or clear bucket of water
- modeling clay
- beads
- sponges
- stopwatch
- pipe cleaners
- paper clips
- Styrofoam peanuts
- paper towels

What Do I Do?

1. First, research different types of plankton and try to identify what structures they use to stay afloat in the water.
2. Use a variety of materials to design a plankton model. Your goal is to develop a model that will stay neutrally buoyant for the longest period of time. It should not float to the surface or sink too quickly.
3. Once you have developed a model, place it in the water and use a stopwatch or simply count how long it takes to reach the bottom of the container.
4. Remove the plankton model from the container and shake off excess water. Think about what you could change to keep it suspended for a longer period of time. Modify your plankton.
5. Test it again by timing how long it takes to reach the bottom of the container. How did your two trials compare?
6. Keep experimenting with your model until you have created the perfect plankton.



What's Going On?

Plankton are tiny organisms that float or drift in the ocean. They serve as an important food source for many other animals, including the giant blue whale. Although they come in many shapes and sizes, all plankton are heavier than water. Consequently, they have different adaptations that prevent them from sinking, such as a small body size or a long, thin flattened shape. Many plankton also have long spines or projections that increase drag in the water. Several plankton even contain small amounts of oil. Since oil is lighter than water, it helps the plankton stay afloat.

Some plankton, called phytoplankton, use energy from the sun to make their own food in a process called photosynthesis. If these plankton sink too far down in the water they will not obtain enough sunlight. However, they cannot float too close to the water's surface or they will become too warm. Other plankton, called zooplankton, feed on the phytoplankton. These plankton must stay suspended in the same part of the water column as their food supply.

Plankton also depend on the upwelling of nutrients (such as iron) from the cold dense water near the ocean floor. Under normal circumstances, this cold water layer periodically mixes with the warmer layers above it, bringing important nutrients to the zone where the plankton live. However, when the surface of the ocean heats up, this water becomes less dense and separates from the cold nutrient-rich layer below. Evidence suggests that plankton populations will decline as the Earth's ocean surfaces warm. When plankton populations decline, the animals that depend on these organisms for food will also be impacted.