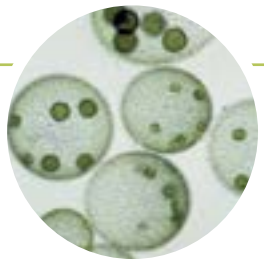
Survival: Swim to the Light

A Carolina Essentials™ Investigation

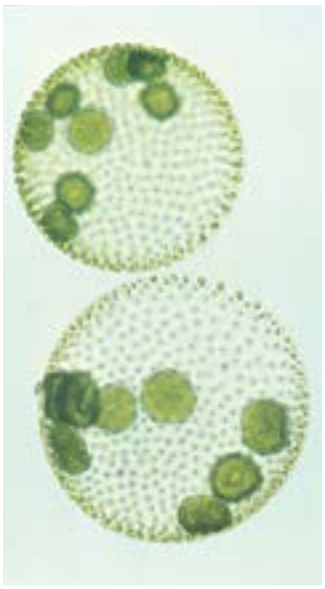
Student Worksheet



Overview

Algae are interesting organisms. You may think they are plants because of their greenish color. But, algae do not have roots, leaves, or stems like plants. They have many forms like:

Single Cell
(Chlamydomonas)



Colony
(Volvox)

Twisted Strings
(Spirulina)

Algae make their own food by photosynthesis. The organisms need sunlight to make their food. Without light, they will go into a resting state and can lose their green color. Algae live in fresh and salt water. They move up through the water to get enough light to make food. If the light is too bright or harmful, the algae move down through the water. Green pond scum is algae. Seaweed is algae. You have probably eaten algae in ice cream, cheese, or sushi.

MATERIALS

Capped tube with 3 algae types *(Volvox, Spirulina,* and *Chlamydomonas)*

Clear plastic cup

Piece of aluminum foil, 10 cm × 15 cm

Magnifying glass

Colored pencils

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Essential Question

Can all organisms survive equally well in the same habitat?

Investigation Objective

1. Observe how algae react when the amount of light in their habitat changes.
2. Explain if each type of algae will keep surviving if light decreases.

Safety Precautions

Wash your hands before and after the lab.

Activity Procedures

1. Label the cup with your name or group number.
2. Use the magnifying glass to look at algae. Do not shake up the tube.
3. Draw your observations. Pay attention to algae color and position in the tube.
4. In 2 or 3 sentences, describe what is in the tube.
5. Wrap the tube in aluminum foil. The top of the foil should be slightly below the top of the water. The bottom of the tube should be covered.
6. Recap the tube.
7. Place the tube in the cup. Put the cup in a window or under a light source for 30 to 45 minutes. Do not shake the tube.

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8. Answer the following questions.
    a. Name the organisms and their important traits.

    b. Identify the habitat and the important characteristics of the habitat.

    c. In this experiment, what is the system being investigated?

    d. What do algae need to survive?

9. Get your cup and tube from the window or light bank. Be careful not to shake the tube.
10. Use the magnifying glass and look at the tube of algae carefully. Do not shake it. Draw your observations. Pay attention to color and position of algae in the tube.
11. In 2 or 3 sentences, describe the algae in the tube in detail. Include any changes in location or depth of color of the algae.

Clean Up

Tighten the cap on the tube of algae and place it in the cup. Return the cup and tube to the location your teacher identified. Throw away the aluminum foil.

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Data and Observations

Observation 1

Description 1

Observation 2

Description 2

Analysis and Discussion

1. How was the habitat changed?

2. How did the change affect the algae? Use your observations.

3. Which algae adapted to the habitat change the best? What evidence supports your claim?

4. Which algae was least adaptable? Support your claim with observations.

5. Use your observations to make an argument for or against this claim: For algae to survive well, they must be able to move up and down through the water column to absorb light for photosynthesis. Algae that cannot move through the water column easily are less likely to survive.