Carolina Quick Tips®

Algae Beads Necklace

How organisms get the energy that they need to survive is an integral part of life science. As students investigate the ways that organisms get energy, they will encounter the processes of cellular respiration and photosynthesis. Algae beads are a fun way for students to explore the processes of photosynthesis and cellular respiration and the factors that impact these processes.

Materials Required

Concentrated *Chlorella* (152068)

2 9-oz Plastic Cups (972337)

2 Disposable Plastic Pipettes (736986)

2 Plastic Medicine Cups (513321)

Strainer (646207)

Plastic Spoon (971323)

3% Calcium Chloride Solution (851840)

2% Sodium Alginate Solution (888177)

Bicarbonate Indicator (747762)

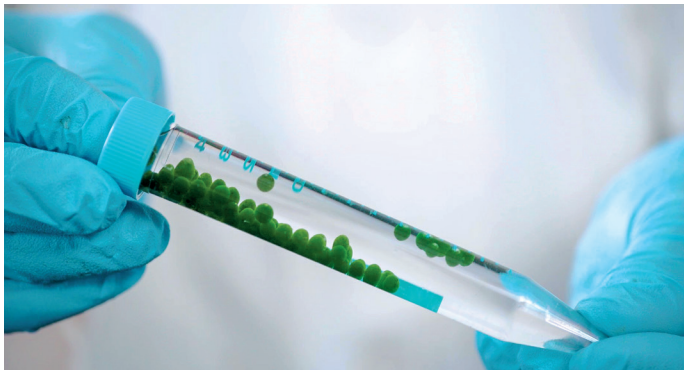
Distilled Water (858621)

2-mL Microcentrifuge Tube

Ribbon or Similar

Activity Procedure

1. Fill a 9 oz plastic cup approximately ¼ of the way full with the calcium chloride solution.
2. Place 5 mL of sodium alginate solution in a plastic medicine cup.
3. Add 5 mL of concentrated *Chlorella* to the sodium alginate.
4. Gently mix the concentrated algae and the alginate mixture.
5. Draw some of the sodium alginate-algae mixture into a pipette.
6. Hold the pipette approximately 1 cm above the calcium chloride solution and then slowly drip the mixture into the solution.
7. Continue to drip the remainder of the mixture into the calcium chloride.



8. Allow the beads to rest in the calcium chloride for a few minutes.
9. Place the strainer over the empty plastic cup. Separate the beads from the calcium chloride by pouring the bead-calcium chloride mixture into the strainer.
10. Half fill the microcentrifuge tube with algae beads.
11. Add 10 drops of bicarbonate indicator solution to the algae beads in the tube.
12. Fill the tube with distilled water and secure the cap.

Results/Summary

The algae beads can be stored in distilled water and refrigerated for approximately 2 weeks.

A bicarbonate indicator can be used to qualitatively show pH changes in a narrow range. In the presence of light algae beads will consume carbon dioxide during the process of photosynthesis, this will cause an increase in pH. As the algae in the algae beads release carbon dioxide during the process of cellular respiration, the solution will decrease in pH. These changes in pH will cause the bicarbonate indicator to change in color.

Additional Information

View more information, content links, and products related to this activity at www.carolina.com/takeaways.

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