

# Cellular Respiration

9

Name: \_\_\_\_\_

Period: \_\_\_\_\_

**Cellular Respiration Virtual Lab:** Carbon Transfer through Snails and Elodea  
[http://www.classzone.com/cz/books/bio\\_07/resources/htmls/virtual\\_labs/virtualLabs.html](http://www.classzone.com/cz/books/bio_07/resources/htmls/virtual_labs/virtualLabs.html)

## Background:

All organisms are dependent on a healthy carbon dioxide-oxygen balance. Photosynthesis and cellular respiration are key processes in maintaining this balance. Plants, through the process of photosynthesis, use energy absorbed from sunlight, water, and carbon dioxide to produce sugars and oxygen. Animals and plants, through the process of cellular respiration, use oxygen and sugars to produce carbon dioxide, water, and the energy needed to maintain life.

1. Read through the problem tab. Create your own question for what you are investigating in this experiment.
  - a. Problem (in question form): \_\_\_\_\_
2. Explore the lab to learn what is available to you in your investigation. You must click on each item in the checklist. Describe the materials you will be using in this lab.
  - a. Why is the BTB in the beaker green?
  - b. If snails use lungs to breathe, you can conclude that they release which gas into their environment as a result of respiration?
  - c. If Elodea is an aquatic plant, you can conclude that it releases which gas into its environment as a result of photosynthesis?
  - d. What is the purpose of the growth light?
  - e. What is the purpose of the test tube rack cover?
  - f. If no carbon dioxide is present in your test tube it will be a \_\_\_\_\_ color. If a medium amount of CO<sub>2</sub> is present, your test tube will be a \_\_\_\_\_ color. If a large amount of CO<sub>2</sub> is present, your test tube will be \_\_\_\_\_.
3. Hypothesis: Explain how carbon dioxide (CO<sub>2</sub>) cycles in aquarium water through snails and Elodea.

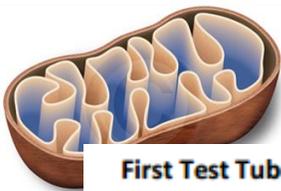
If I add a snail and elodea to a test tube with bromthymol blue then \_\_\_\_\_ because \_\_\_\_\_.

4. Data/Results: You will be using 8 test tubes for this experiment. Fill your test tubes and perform the experiment according to the data chart found below.

After filling in the data table on back, answer the conclusion questions below, and then the discussion questions on back.

Conclusions: Complete the following sentences.

- a. In the test tubes which contained only snails \_\_\_\_\_
- b. In the test tubes which contained only Elodea under the light \_\_\_\_\_
- c. In the test tubes which contained only Elodea in the dark \_\_\_\_\_
- d. In the test tubes which contained both snails and Elodea under the light \_\_\_\_\_



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## First Test Tube Rack – Placed under the *growth light*:

TEST TUBE WITH BTB	INDEPENDENT VARIABLES	BEGINNING COLOR	COLOR PREDICTION	COLOR RESULT
Tube # 1 (control)	No snails, No <i>Elodea</i>	<i>Green</i>		
Tube #2	2 snails	<i>Green</i>		
Tube #3	2 <i>Elodea</i>	<i>Green</i>		
Tube #4	2 snails, 2 <i>Elodea</i>	<i>Green</i>		

## Second Test Tube Rack – Placed under the *test tube cover*:

TEST TUBE WITH BTB	INDEPENDENT VARIABLES	BEGINNING COLOR	COLOR PREDICTION	COLOR RESULT
Tube # 1 (control)	No snails, No <i>Elodea</i>	<i>Green</i>		
Tube #2	2 snails	<i>Green</i>		
Tube #3	2 <i>Elodea</i>	<i>Green</i>		
Tube #4	2 snails, 2 <i>Elodea</i>	<i>Green</i>		

Discussion: ANSWER THESE ON A SEPARATE SHEET OF PAPER AND STAPLE TO BACK OF THIS ASSIGNMENT.

1. Conclude. What is the relationship between snails and *Elodea*?
2. Analyze. Why did the color of the Bromthymol Blue (BTB) solution change in certain test tubes?
3. Analyze. What was the importance of a control in your experiment? What would you conclude if the color of the solution in the control changed?
4. Infer. When you began the experiment, was there CO<sub>2</sub> in the water? In the test tubes that contained *Elodea*, where did the CO<sub>2</sub> go?
5. Infer. Which gas did the snails release? What observation supports this inference?
6. Apply. Based on the results of your experiment, explain why you need to add the *Elodea* to your snail aquarium.