Photosynthesis and Cellular Respiration Kit for AP Biology: A ThINQ!™ Investigation

Quick Guide

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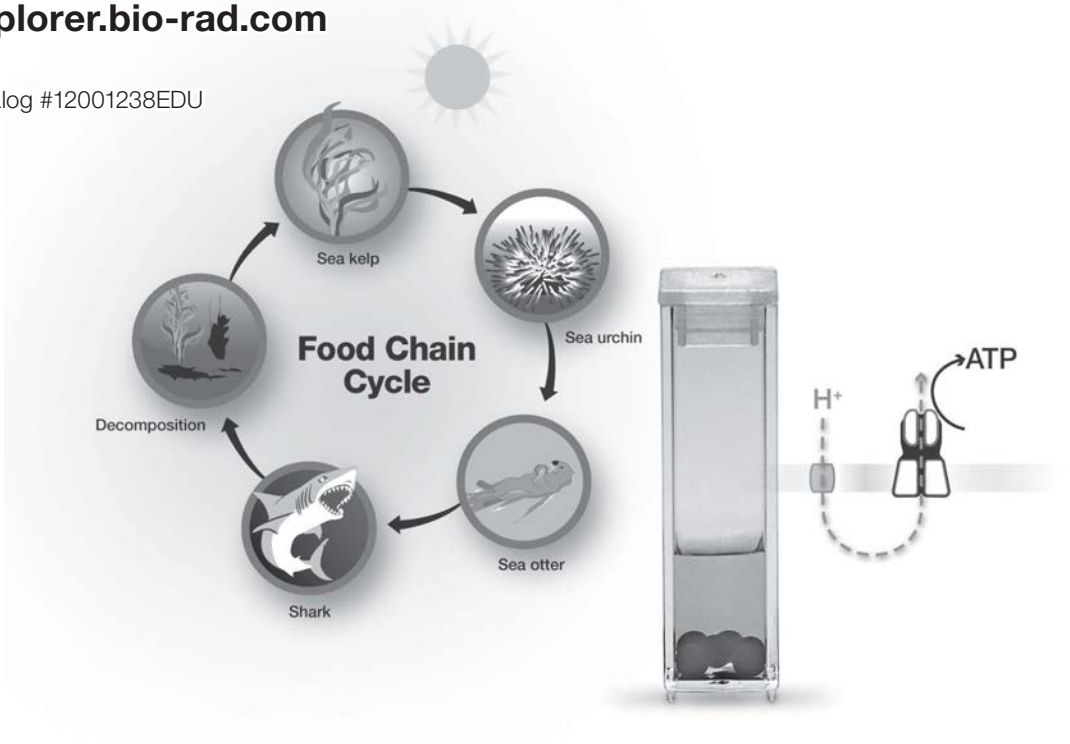
Catalog #12001238EDU



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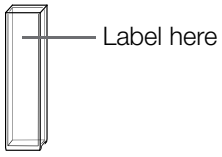
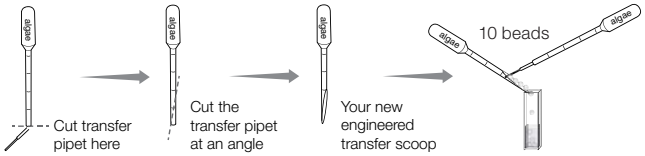
Investigation #2: Photosynthesis and Cellular Respiration Core Lab

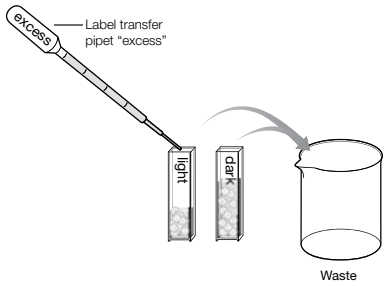
1. Label one empty cuvette **light**, and the other cuvette **dark**. Label each cuvette so that it does not obstruct light reaching the algae beads.



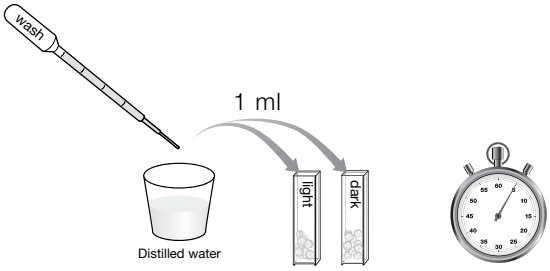
2. Label a transfer pipet **algae** and convert it into a scoop by cutting the transfer pipet at the 100 µl mark diagonally. Use the **algae** transfer pipet to transfer 10 algae beads into each of the **light** and **dark** cuvettes.



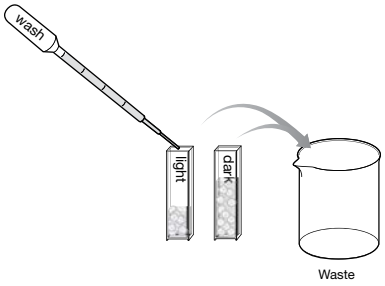
3. Label a new transfer pipet **excess** and use it to remove and discard the liquid that transferred along with the beads.



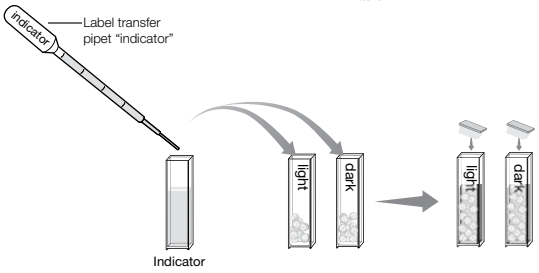
4. Label a new transfer pipet **wash** and use it to add 1 ml of distilled water to each of the cuvettes. Let the algae beads incubate in the water for 5 min to allow indicator within the bead to wash out.



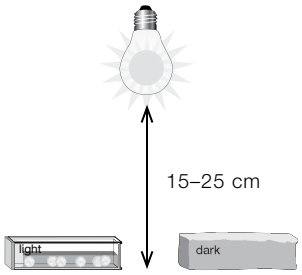
5. Use the wash transfer pipet to remove the water from the cuvette. Discard the water into the waste container.



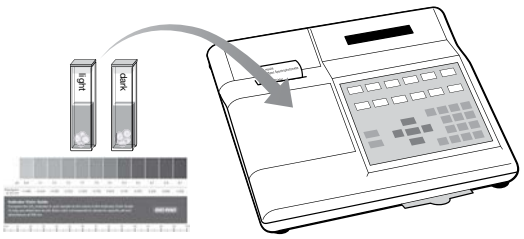
6. Label a new transfer pipet **indicator** and use it to transfer 1 ml of CO_2 indicator to each cuvette. Cap cuvettes tightly.



7. Wrap the cuvette labeled **dark** in aluminum foil being sure to cover both ends as well as all sides. Place both the cuvettes labeled **light** and **dark** on their sides 15–25 cm from the lamp. Ensure that the beads are distributed evenly throughout the cuvette and the clear side of the **light** cuvette faces the light.



8. Collect data starting at time = 0 min. Every 5 min, thoroughly mix the CO_2 indicator in the cuvettes and determine the color. This can be done by comparing the color of the CO_2 indicator in your cuvette to the provided Indicator Color Guide, or by reading the absorbance at 550 nm (A_{550}) in a spectrophotometer (make sure your teacher has zeroed the machine). Be quick about taking this reading and immediately return the cuvettes to the experimental conditions.



9. If enough time remains after the last time point, switch the light and dark cuvettes. Place the cuvette labeled **light** in the dark and the cuvette labeled **dark** in the light. Continue to record pH or A_{550} every 5 min.

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