

# **Lab 7 - An Introduction to Photosynthesis**

*(April 2014)*

## **Section 1 - Energy**

[2] Hi, this is Lyn Koller again. This week we will be exploring one of the biochemical pathways organisms use to obtain and use energy. We will start with how plants use energy from cm BT se



[23] The plant organ involved in photosynthesis is the leaf. We will look at this organ in more detail later in the lab.

[24] Inside the leaf there are several different tissue types, but the main one involved in photosynthesis is the parenchyma tissue of the palisade layer.

[25] In the palisade layer, individual parenchyma cells are responsible for the majority of photosynthesis although any green cell can carry on photosynthesis.

[26] Within the parenchyma cells the organelle responsible for the photosynthetic reaction is the chloroplast.

[27] At the level of the molecule, there are many involved in the entire process, but for now we will just say that the plant uses carbon dioxide to make glucose. Be sure you have the chart filled in and then we'll continue.

[28] See if you can put these plant structures in the correct order?

### **Section 5 - The Photosynthetic Reaction**

[29] Here you can see the overall reaction for photosynthesis. Do you remember that reactions that build more complex products are anabolic and those that produce less complex products are catabolic? Write this equation down in the beginning of Section 5 and answer the question that follows before returning to the program.

[30] For the next part of Section 5 you'll see a long set of instructions for the first of today's experiments. This experiment will take a *minimum* of 45 minutes, so don't start it unless you can stay in lab until it's finished. Before you start the experiment let me give you some hints for completing the experiment successfully.

[31] When you are filling your tubes with water, be sure you fill them of the way full.

[32]

## **Section 6 - The Leaf and Photosynthesis**

[36] We can continue with Section 6 while your tubes are sitting in front of the lights. At the end of the lab, before the summary we will come back and review the experiment.



[59] As you have read, the separation of the pigments is based on their solubility in the chromatography solution. Can you match the solubility to the pigment?

[60] At this point you should be able to complete the questions at the end of Section 8. Return to the program when you have done so.

[61] Are you beginning to have an appreciation of the overall process of photosynthesis? A plant needs sunlight and the photosynthetic pigments in the chloroplasts to convert carbon dioxide and water into

## Section 9

[87] You actually ran two experiments at the same time with the elodea. The first experiment was between tubes A and B. What was different about the experimental conditions between tubes A and B? In other words, what variable were you testing?

[88] Therefore what is the first thing necessary for the removal of carbon dioxide from the solution? Be sure the answer in your manual is correct and then continue with the program.

[89] The second experiment was between tubes A and C. What was different about the experimental conditions between tubes A and C? Or, what variable were you testing here?

[90] Therefore what is the second thing necessary for the removal of carbon dioxide from the solution? Be sure the answer in your manual is correct