

PHOTOSYNTHESIS LAB REVIEW

Begin at this web site:

http://www.phschool.com/science/biology_place/labbench/lab4/intro.html

INTRODUCTION:

1. In photosynthesis, plant cells convert _____ energy into _____ energy.

CLICK INTO THE PHOTOSYNTHESIS SECTION IN THE MENU ON THE LEFT:

Key Concepts II:

2. Observing the diagram, what six molecules or structures play a role in photosynthesis?
 - 1.
 - 2.
 - 3.
 - 4.
 - 5.
 - 6.
3. Which of these molecules holds the electrons that will initially be 'excited' by light energy?
4. Which of these molecules will be reduced and carry electrons to the Calvin Cycle?
5. Where are the chlorophyll pigment molecules located in the chloroplast?

Using DPIP as an electron acceptor:

6. When light excites the electrons in the chlorophyll molecules, those electrons are then passed to the _____.
7. If the electron transport chain is disrupted, the excited electrons need a place to go. The chemical _____ is now the electron acceptor.

8. DPIP will turn from blue to _____ when it is _____.
- DPIP will turn from blue to _____ when it picks up _____.

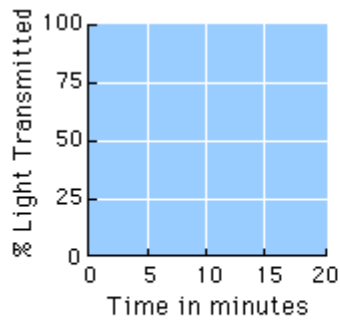
Spectrophotometer:

9. The spectrophotometer measures the amount of light energy that is _____ or _____.
10. As DPIP is reduced, it changes from blue to colorless, more light can be _____ through the sample.
11. The color change of DPIP is visible without a spectrophotometer. Why is the spectrophotometer used in this experiment?

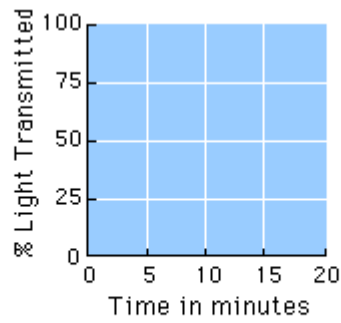
Design of the experiment:

12. Draw four test tubes. Clearly list what would be inside each test tube.
13. Why would you want to make sure all test tubes are cleaned of fingerprints?

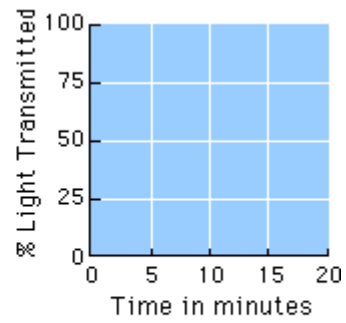
14. Draw in the approximate shapes of the curves you expect:



Tube 2
DPIP, unboiled chloroplasts
(Light)



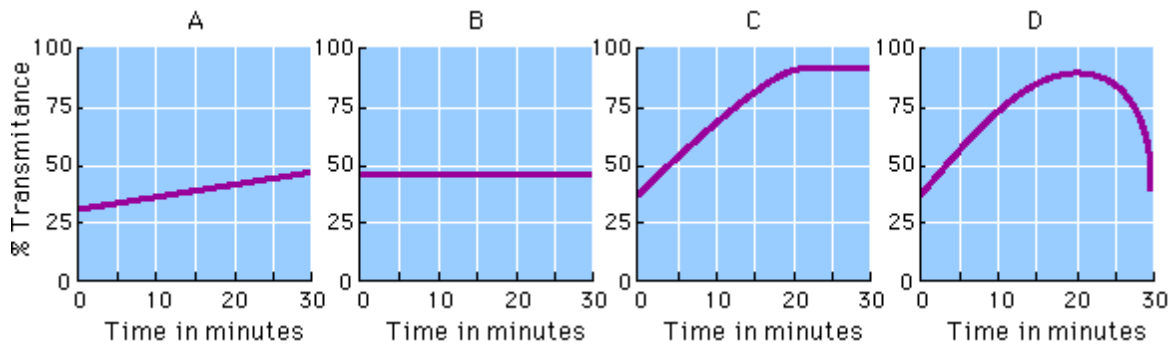
Tube 3
DPIP, unboiled chloroplasts
(Dark)



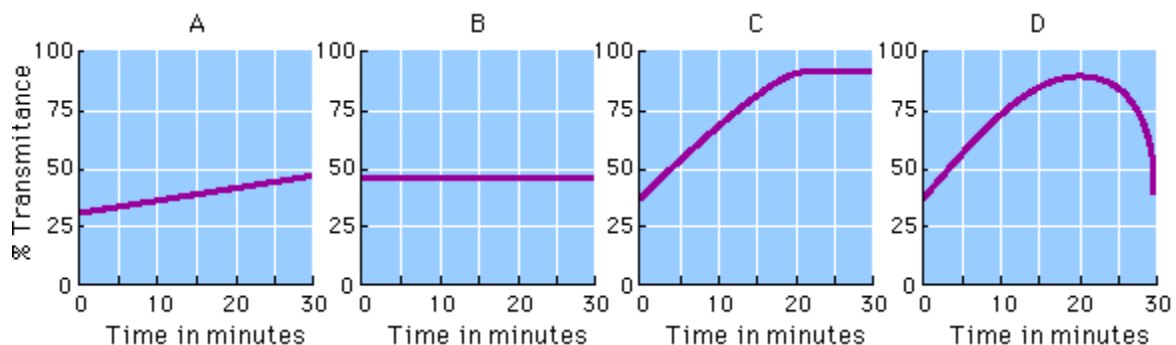
Tube 4
DPIP, boiled chloroplasts
(Boiled)

Lab Quiz II

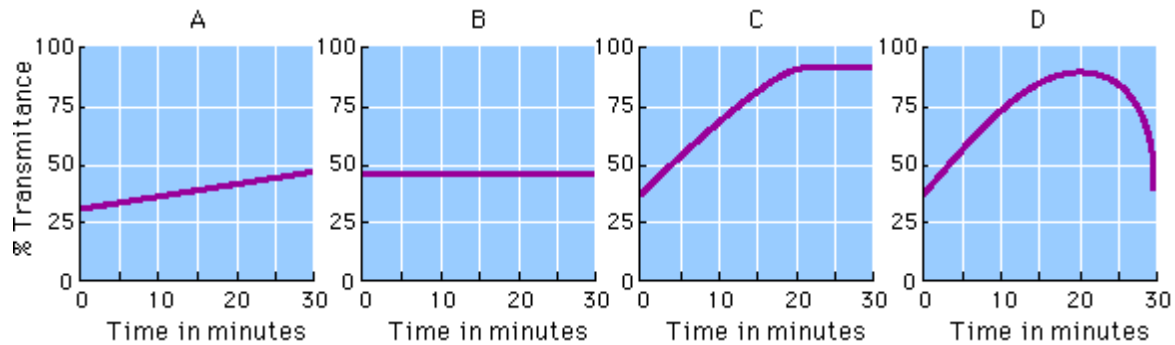
1. Which graph would be the most likely result of performing the photosynthesis experiment using fresh chloroplasts placed in light and DPIP?



2. What is the best explanation for graph B?



3. What effect would adding more DPIP to each experimental tube have on these results?



4. What is the role of DPIP in this experiment?

5. Some students were not able to get many data points in this experiment because the solution went from blue to colorless in only 5 minutes for the unboiled chloroplasts exposed to light. What modification to the experiment do you think would be most likely to provide better results?

Go to the following web site and answer the two sets of photosynthesis questions:

<http://www.biology.arizona.edu/biochemistry/biochemistry.html>

Which three questions were the easiest?

Which three questions were the most challenging?