

PHOTOSYNTHESIS LAB BENCH VIRTUAL LAB

INTRODUCTION: Complete the following questions using the website:

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

Once you have navigated to the website, go through the screens by clicking the “next” button. Please note that you may have to view some of the provided animations to answer the questions.

1. What do we use paper chromatography for? **Paper chromatography is a technique used to separate a mixture into its component molecules.**
2. What is a pigment? **A colored substance that absorbs light over a narrow band of wavelengths.**
3. Which pigment went the farthest on the virtual Pigment Separation? Which pigment barely moved? **Carotene went the farthest while Chlorophyll b barely moved.**
4. What is meant by the term Reference Front? **migration of pigment relative to migration of solvent is expressed as a constant, R_f (Reference front**
5. Using the formula below, calculate Reference Front: $R_f = \frac{\text{distance pigment migrated}}{\text{distance solvent front migrated}}$
 $R_f = 3/10 = .3$
6. What is the chemical DPIP used for in the experiment? **It is used as an electron acceptor.**
7. When light strikes the **Chloroplasts**, the DPIP is reduced by the **excited electrons** from the chlorophyll, and it changes from its blue color to **colorless**.
8. What is a spectrophotometer? What does it measure? **The spectrophotometer is an instrument that can be adjusted to illuminate a sample with a specific wavelength of light. The spectrophotometer then measures the amount of light energy that is absorbed or transmitted by the sample.**
9. What happens to the color of the DPIP solution as the electrons become excited? **The DPIP will begin to change from a blue color to a lighter color, getting more pale.**
10. Why do we use the “blank” to calibrate the machine? **For this experiment, one tube (the blank) will contain all the solutions used in the reaction except the DPIP. Since the blank contains chloroplasts, it will be green; you will use this tube to calibrate the machine.**

In the experiment, we take three test tubes. One test tube has boiled chloroplast in the solution, one has unboiled chloroplast, and one has unboiled chloroplast but is covered in foil. We shine light on the test tube in order to try to activate the chloroplast. You then measure how much DPIP has reacted every 5 minutes

1. What do you think your results would be? Explain what you think happens in each test tube. Answers will vary.