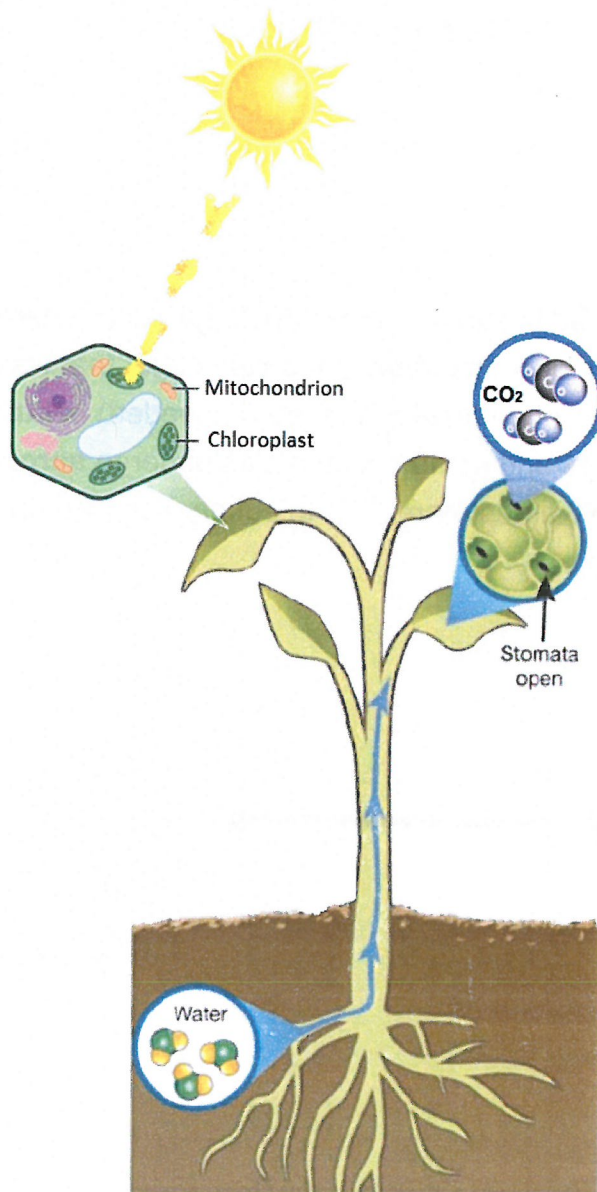
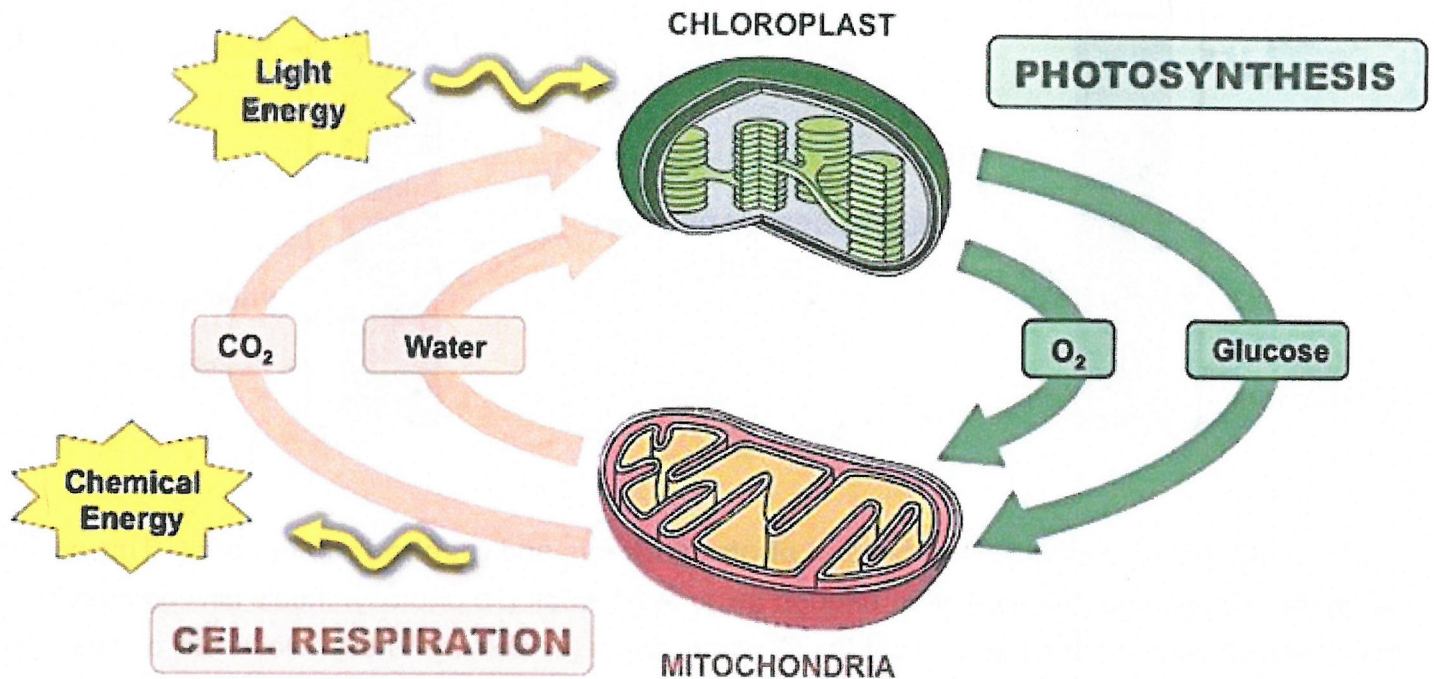


Lab 7: Introduction

(WATCH) LCP Lab Lecture Part 1



- **respiration** use the products of **photosynthesis**
- **photosynthesis** uses some products of **respiration**



In this cycle, sunlight availability determines which process -- **photosynthesis** or **respiration** -- occurs at a *faster* rate. During the day, when there's sunlight, **photosynthesis** is *faster* than **respiration** (so CO₂ is being taken out of the air by plants). At night, with no sunlight, **photosynthesis** can't happen, so **respiration** is faster (working partially off of the products that **photosynthesis** made during the day, and releasing CO₂ into the air):

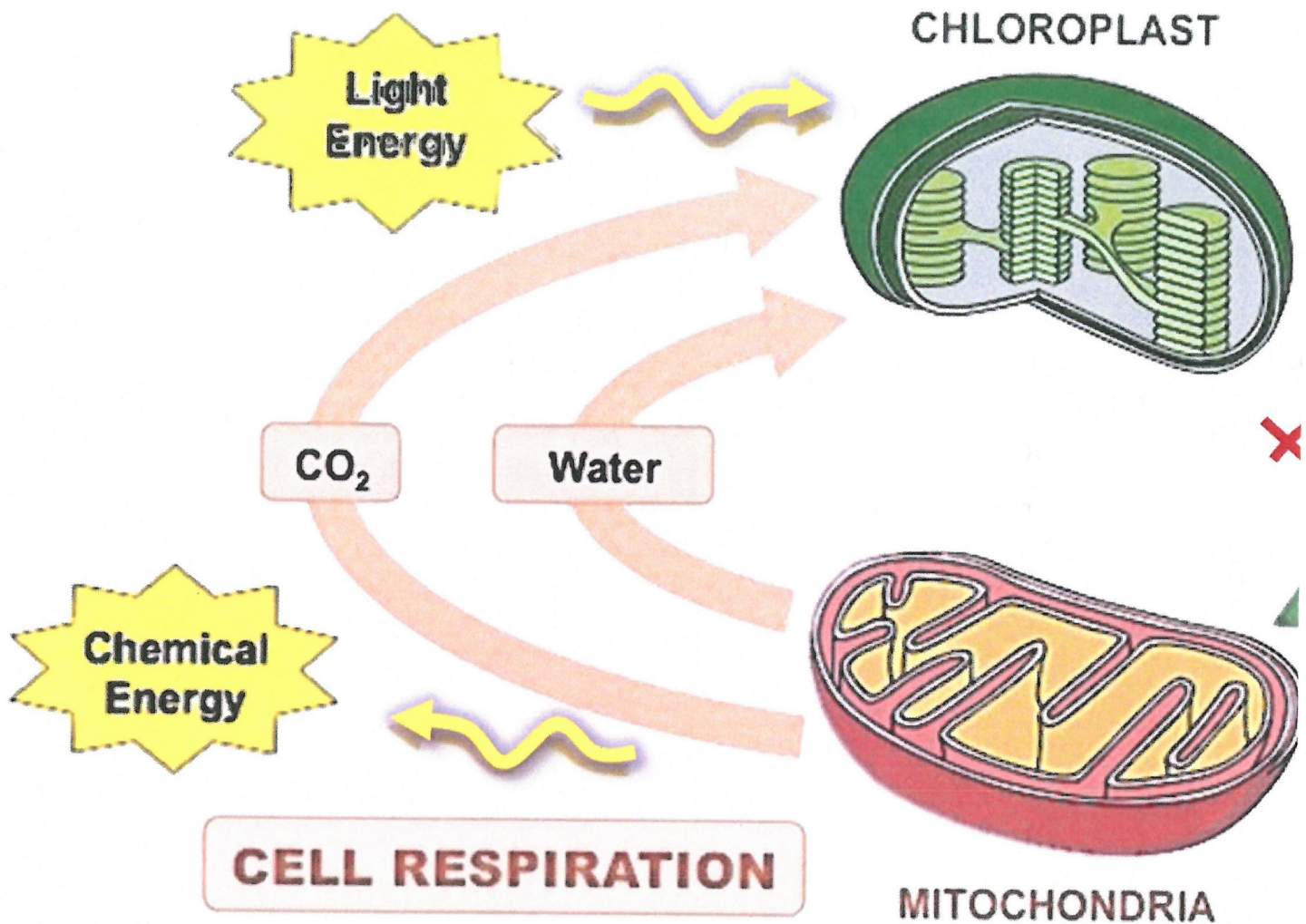
Lab 7: Light Compensation Point (LCP)

The **light compensation point (LCP)** affects where/when plants grow. Plants only grow if they have enough carbon, because carbon is much of the building material that plants use to grow leaves, stems, and roots. Carbon supplies end if plants are too slow at **photosynthesis** (i.e. can't grab enough CO_2 from the air and convert it to sugar loaded with enough carbon to make up for the carbon being used up by **respiration**). This occurs if a plant's **photosynthesis** rate is *no* higher than its **respiration** rate, i.e. at **LCP** (**photosynthesis** rate = **respiration** rate). **LCP** is determined by light distance from a plant, i.e. the intensity of light reaching the plant.

So all the coolness you see scuba diving is located above the **LCP**, at depths sunlight can still reach, where aquatic plants can grow & be used by other critters:



...as are the best fishing spots!!!



When insufficient light reaches plants, **photosynthesis** stops, and O₂ is no longer produced. So if you can find the distance from light at which O₂ production drops to zero in a plant, you have found the distance from light at which the **photosynthesis** rate = 0. And that means that you found the **LCP**. Ta-da!

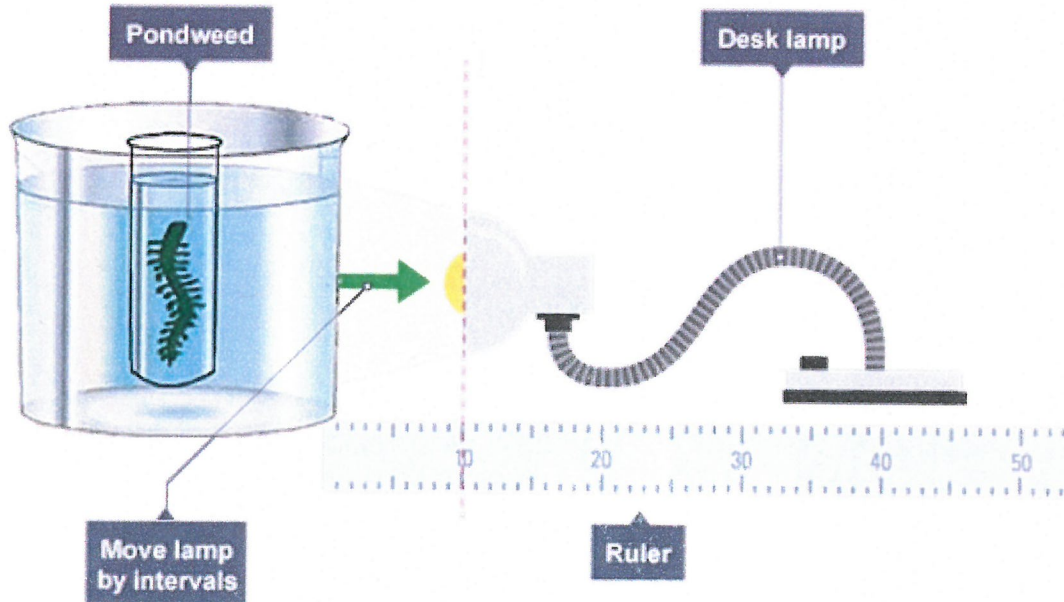
Lab 7: LCP Data Collection

Document how light intensity (i.e. distance to light source) affects the rate of oxygen production (i.e. the **photosynthesis** rate), in order to find the **LCP** for *Elodea*.

(WATCH) LCP Activity Walkthrough

Procedure

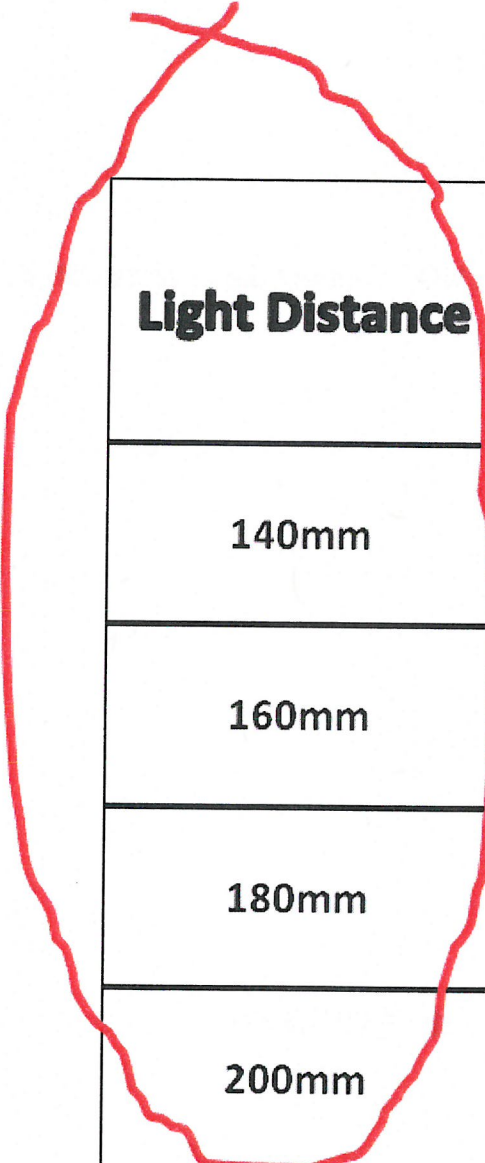
Watch this video on the experimental design: [Elodea photosynthesis at different light intensities](https://www.youtube.com/watch?v=hITp-60mqzg) (<https://www.youtube.com/watch?v=hITp-60mqzg>)



1. Open [THIS LINK](https://www.reading.ac.uk/virtualexperiments/ves/preloader-photosynthesis-full.html) (<https://www.reading.ac.uk/virtualexperiments/ves/preloader-photosynthesis-full.html>) (do not collect data yet)
 - If the link doesn't work, try [THIS ONE](http://www.reading.ac.uk/virtualexperiments/ves/preloader-photosynthesis-full.html) (<http://www.reading.ac.uk/virtualexperiments/ves/preloader-photosynthesis-full.html>)
 - Install Adobe Flash Player, if prompted

Lab 7: LCP Data Analysis

TASK 1: Graph *Elodea*'s photosynthesis rate (O_2 production rate) at different distances from light. Use the data from your table:



Light Distance	Trial	Bubbles per minute	Avg (i.e. Average)
140mm	1		
	2		
	3		
160mm	1		
	2		
	3		
180mm	1		
	2		
	3		
200mm	1		
	2		
	3		

- Complete the [Graphing Guidelines Checklist](https://foothillcollege.instructure.com/courses/15168/files/3212527/download?wrap=1)
[\(https://foothillcollege.instructure.com/courses/15168/files/3212527/download?wrap=1\)](https://foothillcollege.instructure.com/courses/15168/files/3212527/download?wrap=1)
- Use the **units** shown on the sample graph (see bottom of this page)
- Scatter plot review, if needed:

Scatter Plot Video 1 (https://www.youtube.com/watch?v=G6Edu_RybxA)

- ○ Circle the LCP.

Below is the general format of your graph, without the details. (*This is NOT based on your data; it's just a hypothetical example.*)

