

AP Biology Lab 5 – Cell Respiration LAB NOTEBOOK ASSIGNMENT

Introduction

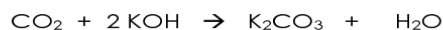
In this lab, you will:

- measure the consumption of oxygen by respiring seeds
- compare respiration rates at two different temperatures

Many cellular processes require energy. Aerobic processes require energy. Aerobic cellular respiration supplies energy by the oxidation of glucose. This is a complex process involving a number of enzyme-mediated reactions; however, we can summarize the process in terms of input and output products with a very simple equation:



You will use a respirometer to measure the rate of respiration of germinating and nongerminating pea seeds at two different temperatures. The respirometer consists of a vial that contains the peas and a volume of air. The mouth of the vial is sealed with a rubber 1-hole stopper that has a pipet inserted in it. The respirometer is submerged in water. If the peas are respiring, they will use oxygen and release carbon dioxide. Since 1 mole of carbon dioxide is released for each mole of oxygen consumed, there is no change in the volume of gas in the respirometer. You will alter this equilibrium by placing a solution of potassium hydroxide (KOH) in the vial. Potassium hydroxide reacts with carbon dioxide to form potassium carbonate, which is a solid.



Since the carbon dioxide produced is removed by reaction with KOH, as oxygen is used by cellular respiration the volume of gas in the respirometer will decrease. As the volume of gas decreases, water will move into the pipet. You will use this decrease of volume, as read from the scale printed on the pipet, as a measure of the rate of cellular respiration.

PRELAB #1 – Make an entry on your lab notebook table of contents.

PRELAB #2 – Make a section heading called **Purpose**. In this section, briefly explain the two purposes of this lab.

PRELAB #3 – Make a section heading called **Experimental Design**. In this section, state the following:

- your hypothesis for the germinated vs. dry part of the experiment
- your independent variable for germinated vs. dry
- your dependent variable for germinated vs. dry
- control group for germinated vs. dry peas
- three constants that might affect your experiment if not controlled

Repeat the five parts above for the cold vs. room temperature part of the experiment.