**BIO 183 Laboratory off-week assignment**

Recently, in lecture and in lab, you explored the process of sugar production in chloroplasts – a process known as photosynthesis. Sugars are a great source of energy for cells from all eukaryotic kingdoms (plants, animals, fungi, and protists), and many prokaryotes alike. We will now start exploring the mechanisms of cellular respiration. You will study the topic thoroughly in lecture, but your assignment for this week will be to uncover some of the basic mechanisms related to cellular respiration on your own, or even better, as a group with 2 or 3 of your classmates.

Chapter 7 of our OpenStax textbook describes cellular respiration in detail, and that is the source we will use to study cellular respiration in class. However, many other resources are available online that may present the information in a somewhat simplified and more entertaining manner. You may want to check out a basic video like this one:

<https://www.youtube.com/watch?v=eJ9Zjc-jdys>

Or a more complete and thorough resource like this one:

<https://www.khanacademy.org/science/ap-biology/cellular-energetics/cellular-respiration-ap/v/introduction-to-cellular-respiration>

Please, answer the questions below in a different font color.

1. So…now that you have read or watched some of these resources, please describe cellular respiration **in your own words**. What is cellular respiration? Where does it take place? What molecules are required for it to take place, and what molecules are produced during the process of cellular respiration?
2. Why are the products of cellular respiration required for the cell, and more generally for life on Earth? Make sure you address ALL the products of cellular respiration and their importance for cells and life on Earth.
3. In your investigation, you hopefully have learned that oxygen is a requirement for mitochondrial function. What happens when oxygen is not present? Do cells die systematically, or do they have a way to palliate for the absence of oxygen?
4. How is cellular respiration responsible for the bubbles that you see in bread and beer? What kind of organism creates these bubbles, and what gas do these bubbles contain?
5. Compare and contrast photosynthesis and cellular respiration. What are the similarities and differences between the two mechanisms? How do they complement each other in terms of input and output? What molecules and mechanisms are similar in these two processes?