Unit Objectives: Cellular Respiration

At the conclusion of this unit, you should be able to:

1. Describe the role of respiration in the cell’s energy cycle.
2. Define cellular respiration, glycolysis, citric acid cycle, and electron transport.
3. Identify the general reactants and products of glycolysis, citric acid cycle and oxidative phosphorylation.
4. Explain the role and importance of redox in metabolism.
5. Sequence the major steps of glycolysis and describe the role of enzymes in metabolism
6. Compare the end products of aerobic and anaerobic respiration and identify the types of organisms employing each.
7. Describe how the catabolism of fats, proteins, and carbohydrates relates to cellular respiration.
8. Understand the role of FAD and NAD in the process of respiration.
9. Compare the efficiency of substrate-level phosphorylation to oxidative phosphorylation. Explain both and then explain (why) which is more efficient.
10. Identify the number of ATP molecules produced by glycolysis, Krebs, and oxidative phosphorylation.
11. Describe the structure of mitochondria. Include why they are so conducive to these energy processes. Identify the specific location of each step in cellular respiration.
12. What effects does germination and non-germination have on cellular respiration in plants?
13. Design or describe and experiment using a respirometer to measure cellular respiration.
14. Explain why oxygen consumption can be used to measure the rate of respiration.