

## **Biology – Photosynthesis and Cellular Respiration**

### **Standards Covered**

**SB3 Students will derive the relationship between single-celled and multi-celled organisms and the increasing complexity of systems.**

- SB3 a. Explain the cycling of energy through the processes of photosynthesis and respiration.

### **What you need to learn**

Steps of Photosynthesis  
Equation of Photosynthesis  
Reactants of Photosynthesis  
Products of Photosynthesis  
Steps of Cellular Respiration  
Equation of Cellular Respiration  
Reactants of Cellular Respiration  
Products of Cellular Respiration  
Differences between Cellular Respiration and Photosynthesis  
Similarities between Photosynthesis and Cellular Respiration  
Differences between Fermentation and Cellular Respiration  
Foods/ Products made from Fermentation

### **Essential Question**

How are plants dependent on animals?

### **Learning Log Questions**

- 1) What does the **1<sup>st</sup> Law of Thermodynamics** state?
- 2) What does the **2<sup>nd</sup> Law of Thermodynamics** state?
- 3) What is energy?
- 4) What is an autotroph?
- 5) What is a heterotroph?
- 6) Are you an autotroph or a heterotroph?
- 7) Is an apple tree an autotroph or a heterotroph?
- 8) What is the ultimate source of energy for all living organisms on Earth?
- 9) What is metabolism?
- 10) Define catabolic.
- 11) Define anabolic.
- 12) Is Photosynthesis Anabolic or Catabolic? Explain why.
- 13) What does "ATP" stand for?
- 14) What is the main function of ATP?
- 15) When is the energy released from an ATP molecule? How does this happen?
- 16) Draw a chloroplast and label the following: chloroplast, granum, thylakoid, stroma, chlorophyll.
- 17) What are molecules that absorb light?
- 18) What colors do chlorophyll pigments absorb? What colors do they reflect?
- 19) What are accessory pigments?
- 20) What colors do the carotenoids reflect?
- 21) What pigment is the most abundant in plants?
- 22) What happens to chlorophyll in the autumn? What happens to the colors of the leaves of trees because of this?
- 23) What is the equation of photosynthesis?
- 24) What are the 2 steps of Photosynthesis?
- 25) Where does the Light Reaction take place?