

## Photosynthesis

### Chapter 10

1. Distinguish between autotrophs, heterotrophs, photoautotrophs, and chemoautotrophs.
2. For the reactants and products in photosynthesis, identify the steps in which each is used or produced.
3. How do the reactants reach the chloroplasts in the leaves?
4. Describe how the two stages of photosynthesis are dependant on one another.
5. Describe the structure and function of a photosystem.
6. Summarize the events that occur when a photon is absorbed by a photosystem.
7. What color of light is *least* effective in driving photosynthesis?
8. Noncyclic electron flow is the movement of electrons from PS II to  $\text{NADP}^+$ . Summarize the steps.
9. What is the source of electrons in the light reactions? Where do they end up?
10. What is cyclic electron flow and why is it necessary?
11. Explain how ATP is generated in the chloroplast.
12. How are the products of the light reactions used by the Calvin cycle?
13. What is the actual carbohydrate produced by the Calvin Cycle? Where have you seen this molecule before?
14. How does the use of ATP and NADPH by the Calvin cycle demonstrate the reverse of cellular respiration?
15. How is the high number of ATP and NADPH used by the Calvin cycle consistent with the high energy content of glucose?
16. What is photorespiration and what causes it?