**AP BIOLOGY (WHEATLEY)**

**PHOTOSYNTHESIS AND PLANT HOMEOSTASIS UNIT GUIDE 2015**

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| **MONDAY** | **TUESDAY** | **WEDNESDAY** | **THURSDAY** | **FRIDAY** |
| **2/8**  **TEST CORRECTIONS** | **2/9**  \*Photosynthesis notes  and discussion | **2/10**  \*Photosynthesis POGIL | **2/11**  \*Photosynthesis POGIL –  **due at the end of the**  **period.** | **2/12**  \*Photosynthesis lab |
| **2/15**  \*Photosynthesis lab –  **due 2/18** | **2/16**  \*Transpiration webquest  – **due at the end of the**  **period.** | **2/17**  \*Photosynthesis quiz  \*Transpiration lab set-up | **2/18**  \*Transpiration lab – **due**  **2/22** | **2/19**  \*Plant hormones POGIL –  **due 2/22** |
| **2/22**  \*Plant responses online  lab – class zone – due at  the end of the period | **2/23**  **REVIEW FOR TEST** | **2/24**  **PHOTOSYNTHESIS AND PLANT HOMEOSTASIS TEST** | **2/25**  **TEST CORRECTIONS** | **2/26**  **HALF DAY – TEACHER PROFESSIONAL DEVELOPMENT** |

Supplemental Resources:

1. Bozeman Science Videos
   1. Photosynthesis
   2. Plant Control
2. Crash Course Videos
   1. Vascular Plants: Winning

Reading: Read Chapters 7, 32, and 33 and answer the prompts below.

A. An Overview of Photosynthesis

7.1 Define autotrophs, heterotrophs, producers, and photoautotrophs.

7.2 Describe the structure of chloroplasts and their location in a leaf. Identify   
specifically where most light energy is converted to chemical energy.

7.3 Explain how plants produce oxygen. Describe the experiments that revealed the source of the oxygen produced during photosynthesis.

7.4 Describe the role of redox reactions in photosynthesis and cellular respiration.

7.5 Compare the reactants and products of the light reactions and the Calvin cycle. Explain how photosynthesis relates to these reactions.

B. The Light Reactions: Converting Solar Energy to Chemical Energy

7.7 Explain how photosystems capture solar energy.

7.8–7.9 Explain how the electron transport chain and chemiosmosis generate ATP, NADPH, and oxygen in the light reactions.

7.9 Compare photophosphorylation and oxidative phosphorylation.

C. The Calvin Cycle: Reducing CO2 to Sugar

7.10 Describe the reactants and products of the Calvin cycle. Explain why this cycle is dependent upon the light reactions.

7.11 Compare the mechanisms that C3, C4, and CAM plants use to obtain and use carbon dioxide. Note examples of plants that use each of these systems.

D. Photosynthesis Reviewed and Extended

7.13 Describe the greenhouse effect. Explain how deforestation and the use of fossil fuels contribute to global warming.

7.14 Explain how the ozone layer forms, how human activities have damaged it, and the consequences of the destruction of the ozone layer.

E. The Uptake and Transport of Plant Nutrients

32.1 Explain what happens to the materials that plants take up from the air and soil.

32.2 Compare the intracellular and extracellular movements of material into root   
xylem.

32.3 Explain how root pressure is generated.

32.3 Explain how the transpiration-cohesion-tension mechanism causes the ascent of xylem sap in a plant.

32.4 Explain how guard cells control transpiration. Describe three cues that contribute to stomatal opening at dawn.

32.5 Explain how, when, and where phloem conducts sap.

E. Discovery of Plant Hormones

33.1 Define tropism.

33.2 Define phototropism.

33.3 Describe Darwin’s experiment on phototropism.

33.4 Explain how the experiments provide evidence that phototropism relies on chemical signals.

F. Five Major Types of Hormones

33.5 State the 5 major plant hormones and describe the function of each.

33.6 Explain the importance of auxins in plants.

**G. Responses to Stimuli**

**33.7** Define gravitropism.

**33.8** Define thigmotropism.

H. Plants have Internal Clocks

* 1. Explain what circadian rhythms are and how each plant determines them:

**I. Defenses**

* 1. What are the 5 types of environmental stress?
  2. Compare and contrast how plants defend themselves from herbivores and how they defend

themselves from pathogens.