

Ch 8. Photosynthesis. Biology. Landis

Comment s'appelle tu? _____

Section 8–1 Energy and Life (pages 201–203)

This section explains where plants get the energy they need to produce food. It also describes the role of the chemical compound ATP in cellular activities.

Autotrophs and Heterotrophs (page 201)

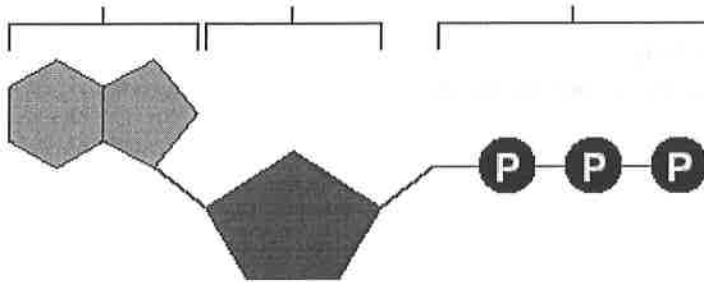
1. Where does the energy of food originally come from?
2. Complete the table of types of organisms.

TYPES OF ORGANISMS

Type	Description	Examples
	Organisms that make their own food	
	Organisms that obtain energy from the food they eat	

Chemical Energy and ATP (pages 202–203)

3. How is ATP different from ADP?
4. Label each part of the ATP molecule illustrated below.



5. When a cell has energy available, how can it store small amounts of that energy?
6. When is the energy stored in ATP released?
7. What are two ways in which cells use the energy provided by ATP?

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ATP and Glucose (page 203)

8. Why is it efficient for cells to keep only a small supply of ATP on hand?

9. Circle the letter of where cells get the energy to regenerate ATP.

- a. ADP b. phosphates c. carbohydrates d. organelles

Section 8–2 Photosynthesis: An Overview (pages 204–207)

This section describes what important experiments revealed about how plants grow. It also introduces the overall equation for photosynthesis and explains the roles light and chlorophyll have in the process.

Introduction (page 204)

10. What occurs in the process of photosynthesis?

Investigating Photosynthesis (pages 204–206)

11. What did Jan van Helmont conclude from his experiment?

12. Circle the letter of the substance produced by the mint plant in Joseph Priestley's experiment.

- a. carbon dioxide b. water c. air d. oxygen

13. What did Jan Ingenhousz show?

The Photosynthesis Equation (page 206)

14. Write the overall equation for photosynthesis using WORDS.

15. Write the overall equation for photosynthesis using CHEMICAL FORMULAS.

Light and Pigments (page 207)

16. What is the principal pigment of plants?

17. Circle the letter of the regions of the visible spectrum in which chlorophyll absorbs light very well.

- a. blue region
b. green region
c. red region
d. yellow region

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Section 8-3 The Reactions of Photosynthesis (pages 208-214)

This section explains what happens inside chloroplasts during the process of photosynthesis.

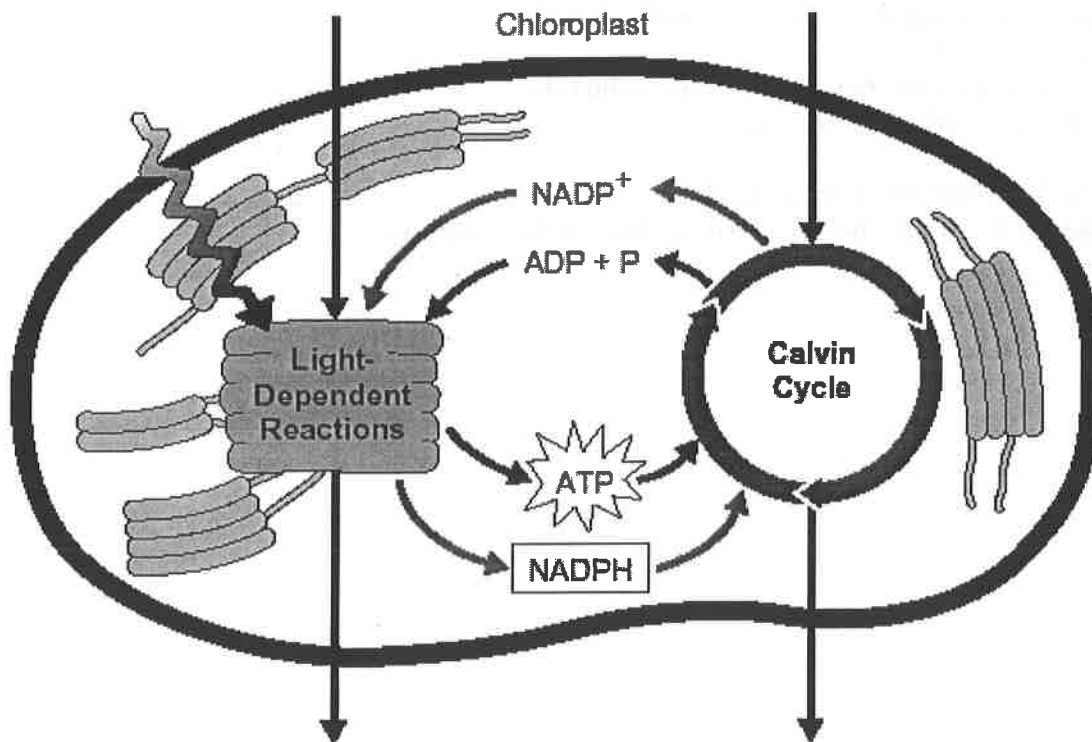
Inside a Chloroplast (page 208)

18. What is a granum?

19. The region outside the thylakoid membranes in the chloroplasts is called the

20. What are the two stages of photosynthesis called?

21. Complete the illustration of the overview of photosynthesis by writing the products and the reactants of the process, as well as the energy source that excites the electrons.



NADPH (page 209)

22. How does NADP⁺ become NADPH?

Light-Dependent Reactions (pages 210-211)

23. Where do the light-dependent reactions take place?

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24. Circle the letter of each sentence that is true about the light-dependent reactions.

- a. They convert ADP into ATP.
- b. They produce oxygen gas.
- c. They convert oxygen into carbon dioxide.
- d. They convert NADP⁺ into NADPH.

The Calvin Cycle (pages 212–213)

25. What does the Calvin cycle use to produce high-energy sugars?

26. Circle the letter of each statement that is true about the Calvin cycle.

- a. The main products of the Calvin cycle are six carbon dioxide molecules.
- b. Carbon dioxide molecules enter the Calvin cycle from the atmosphere.
- c. Energy from ATP and high-energy electrons from NADPH are used to convert 3-carbon molecules into similar 3-carbon molecules.
- d. The Calvin cycle uses six molecules of carbon dioxide to produce a single 6-carbon sugar molecule.

Factors Affecting Photosynthesis (page 214)

27. What are three factors that affect the rate at which photosynthesis occurs?