

Cellular Energy

2 Photosynthesis

REVIEW VOCABULARY

carbohydrate

Recall the definition of the Review Vocabulary term.

carbohydrate

NEW VOCABULARY

thylakoid
granum
stroma
pigments
NADP⁺
Calvin cycle
rubisco

Use your book to define each vocabulary term.

thylakoid

granum

stroma

pigments

NADP⁺

Calvin cycle

rubisco

ACADEMIC VOCABULARY

transport

Define *transport* to show its meaning.

transport

2 Photosynthesis (continued)

Summarize the functions of the light-dependent and light-independent reactions by completing the sentences.

Plants and other green organisms absorb _____ from _____.

The light-dependent reactions change _____

into the molecules _____ and _____. The

light-independent reactions use _____ and _____ to make _____.

The light-independent reactions produce _____,

which are then made into complex carbohydrates such as _____

, which stores _____ in plants.

Get It? Apply Look back at the photo at the beginning of the module. What cellular structures in the plants absorb the light passing into the greenhouse?

Get It? Explain why many plant parts appear green in color.

Get It? Summarize the function of water during chemiosmosis.

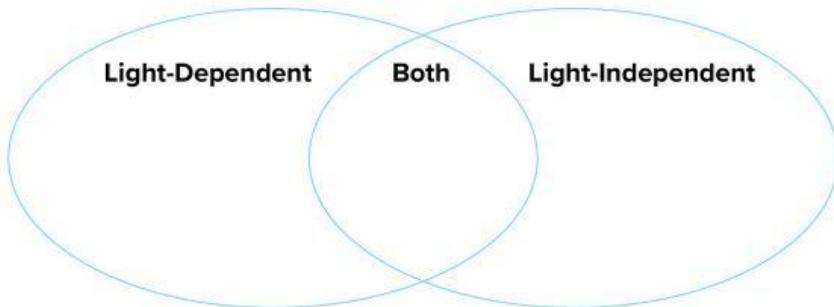
Analyze how leaves change color in the fall.

2 Photosynthesis (continued)

Model light-dependent reactions in a flow chart.

Compare light-dependent and light-independent reactions by putting each phrase into the correct part of the Venn diagram.

| | |
|-----------------------|---------------------------------|
| • forms stored energy | • occurs in the chloroplast |
| • makes NADPH | • occurs in the dark |
| • makes sugar | • uses Calvin cycle |
| • needs sunlight | • uses electron transport chain |



Compare two alternative photosynthesis pathways. Identify plants that use each pathway.

| Pathway: | Pathway: |
|-------------------------------|-------------------------------|
| Description: | Description: |
| Plants that use this pathway: | Plants that use this pathway: |

SUMMARIZE

Explain the results of light-dependent and light-independent reactions.

2 Photosynthesis (continued)

CHECK YOUR PROGRESS

1. **Summarize** how light energy is converted to stored chemical energy during photosynthesis.

2. **Identify** two other molecules that can be assembled in living things by recombining the chemical elements in glucose.

3. **Explain** why water is essential for the light reactions.

4. **Summarize** the steps in the Calvin cycle.

5. **Diagram** and explain electron transport.

2 Photosynthesis (continued)

6. **Predict** how environmental factors such as light intensity and carbon dioxide levels can affect rates of photosynthesis.

7. **Research** the effects of global warming on photosynthesis. Write an article summarizing your findings.
