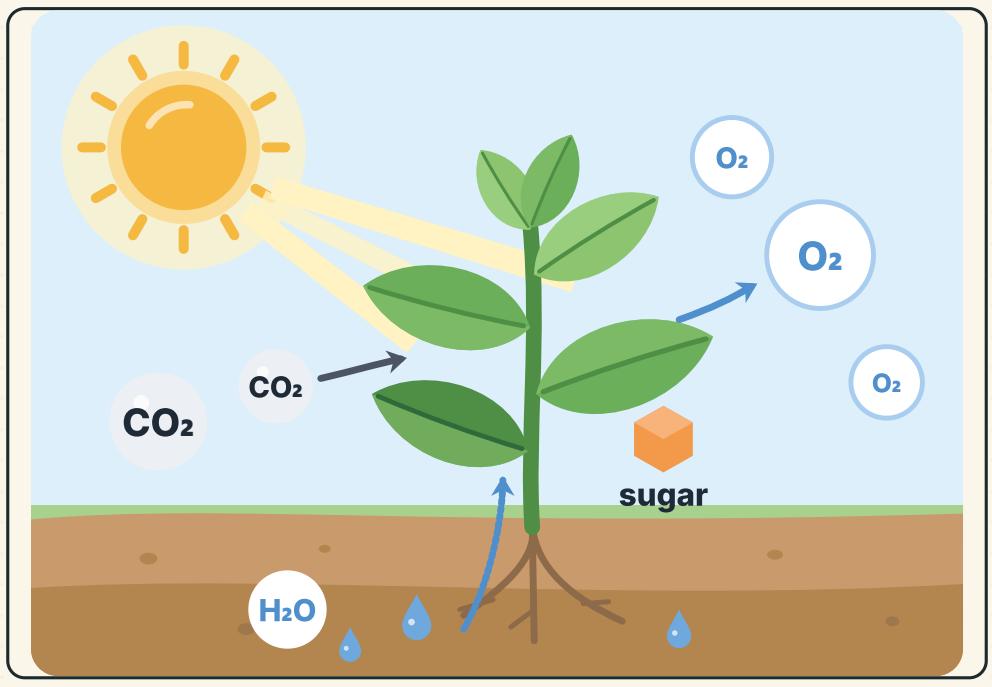
PHOTOSYNTHESIS · PART 1 OF 9 · AGES 11–16

How Photosynthesis Works

Plants turn light, water and carbon dioxide into sugar and release the oxygen we breathe.



1

Light is captured

Chlorophyll in the chloroplasts absorbs mostly red and blue light and reflects green, which is why most leaves look green.

2

Water arrives from the roots

Roots absorb water from the soil. It travels up through the xylem to the cells of the leaf.

3

Carbon dioxide enters

CO_2 from the air diffuses into the leaf through tiny pores called stomata, found mostly on the underside of leaves.

4

Water is split

In the thylakoid membranes, light energy splits water. Oxygen is released and the energy is stored in ATP and NADPH.

5

Sugar is built

In the stroma, the Calvin cycle uses ATP and NADPH to fix CO_2 into sugar. The enzyme RuBisCO does the fixing.

6

Energy is used or stored

Glucose powers growth and respiration, or is stored as starch. Oxygen leaves the leaf through the stomata.

The overall equation

$6CO_2 + 6H_2O$ + light energy → $C_6H_{12}O_6$ (glucose) + $6O_2$

NEXT IN THE SERIES

2. Inside a Leaf: Labelled Leaf Cross-Section

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