

GLOSSARY

A

accessory pigment a pigment that absorbs light energy and transfers energy to chlorophyll *a* in photosynthesis (113)

adenosine diphosphate (ADP) a substance involved in energy metabolism formed by the breakdown of adenosine triphosphate (116)

ATP synthase an enzyme that catalyzes the synthesis of ATP from ADP and phosphate (116)

B

biochemical pathway a series of chemical reactions in which the product of one reaction is consumed in the next reaction (111)

C

Calvin cycle a biochemical pathway of photosynthesis in which CO₂ is converted into carbohydrate (117)

CAM crassulacean acid metabolism; a biochemical pathway in certain plants in which CO₂ is incorporated into organic acids at night and released for fixation in the Calvin cycle during the day (119)

carbon fixation the incorporation of carbon dioxide into organic compounds (117)

carotenoid a light-absorbing compound that functions as an accessory pigment in photosynthesis (113)

chemiosmosis a process in chloroplasts and mitochondria in which the movement of protons down their concentration gradient across a membrane is coupled to the synthesis of ATP (116)

chlorophyll a class of light-absorbing pigments used in photosynthesis (113)

C₃ plant a plant that fixes carbon exclusively through the Calvin cycle, named for the three-carbon compound that is initially formed (119)

C₄ plant a plant that incorporates CO₂ into four-carbon compounds (119)

E

electron transport chain molecules in the thylakoid membrane or inner mitochondrial membrane that use some of the energy in electrons to pump protons across the membrane (115)

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G

granum a stack of thylakoids in a chloroplast (112)

L

light reactions the initial reactions in photosynthesis, including the absorption of light by photosystems I and II, the passage of electrons along the electron transport chains, the production of NADPH and O₂, and the synthesis of ATP through chemiosmosis (112)

N

NADP⁺ nicotinamide adenine dinucleotide phosphate; an organic molecule that accepts electrons during redox reactions (115)

P

PGA phosphoglycerate; a three-carbon molecule formed in the first step of the Calvin cycle (117)

PGAL glyceraldehyde phosphate; a three-carbon molecule formed in the second step of the Calvin cycle that can leave the cycle and be used to make other organic compounds (118)

photosynthesis the conversion of light energy into chemical energy stored in organic compounds (111)

photosystem in plants, a unit of several hundred chlorophyll molecules and carotenoid pigment molecules in the thylakoid membrane (114)

pigment in plants, a compound that absorbs light and imparts color (112)

primary electron acceptor a molecule in the thylakoid membrane that accepts the electrons that chlorophyll *a* loses in the light reactions (115)

R

RuBP ribulose biphosphate; a five-carbon carbohydrate that combines with CO₂ to form two molecules of PGA in the first step of the Calvin cycle (117)

S

stoma one of many small pores usually located on the underside of a leaf; aids in gas exchange (119)

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stroma in plants, the solution that surrounds the thylakoids in a chloroplast (112)

● V

visible spectrum the portion of sunlight perceived by the human eye as various colors (112)

● W

wavelength the distance between crests in a wave (113)