Photosynthesis: Energy from the Sun

1. Identifying Photosynthetic Reactants and Products

2. The Two Pathways of Photosynthesis: An Overview

3. Properties of Light and Pigments

    A. Light comes in packets called photons
    B. Absorption of a photon puts a pigment in an excited state
    C. Light absorption and biological activity vary with wavelength
    D. Photosynthesis uses chlorophylls and accessory pigments
    E. Excited chlorophyll acts as a reducing agent

4. Photophosphorylation and Reductions

    A. Noncyclic photophosphorylation produces ATP and NADPH
    B. Cyclic photophosphorylation produces ATP but no NADPH
    C. Chemiosmosis is the source of ATP in photophosphorylation
    D. Photosynthetic pathways are the products of evolution

5. Making Sugar From CO_2: The Calvin-Benson Cycle

    A. Elucidation of the Calvin-Benson cycle required radioactive carbon
    B. The first stable product of CO_2 fixation is the compound 3PG
    C. The CO_2 acceptor is the compound RuBP
    D. Identifying intermediate reactions of the Calvin-Benson cycle

6. Photorespiration and Its Evolutionary Consequences

A. In photorespiration, RuBP reacts with O_2
B. Some plants have evolved systems to bypass photorespiration
C. The leaf anatomy of C4 plants differs from that of C3 plants
D. CAM plants also use PEP carboxylase

7. Plants Perform Cellular Respiration