

A Photosystem II

Light absorbed by photosystem II is used to break up water molecules into energized electrons, hydrogen ions (H^+), and oxygen.

D Hydrogen Ion Movement

The inside of the thylakoid membrane fills up with positively charged hydrogen ions. This action makes the outside of the thylakoid membrane negatively charged and the inside positively charged.

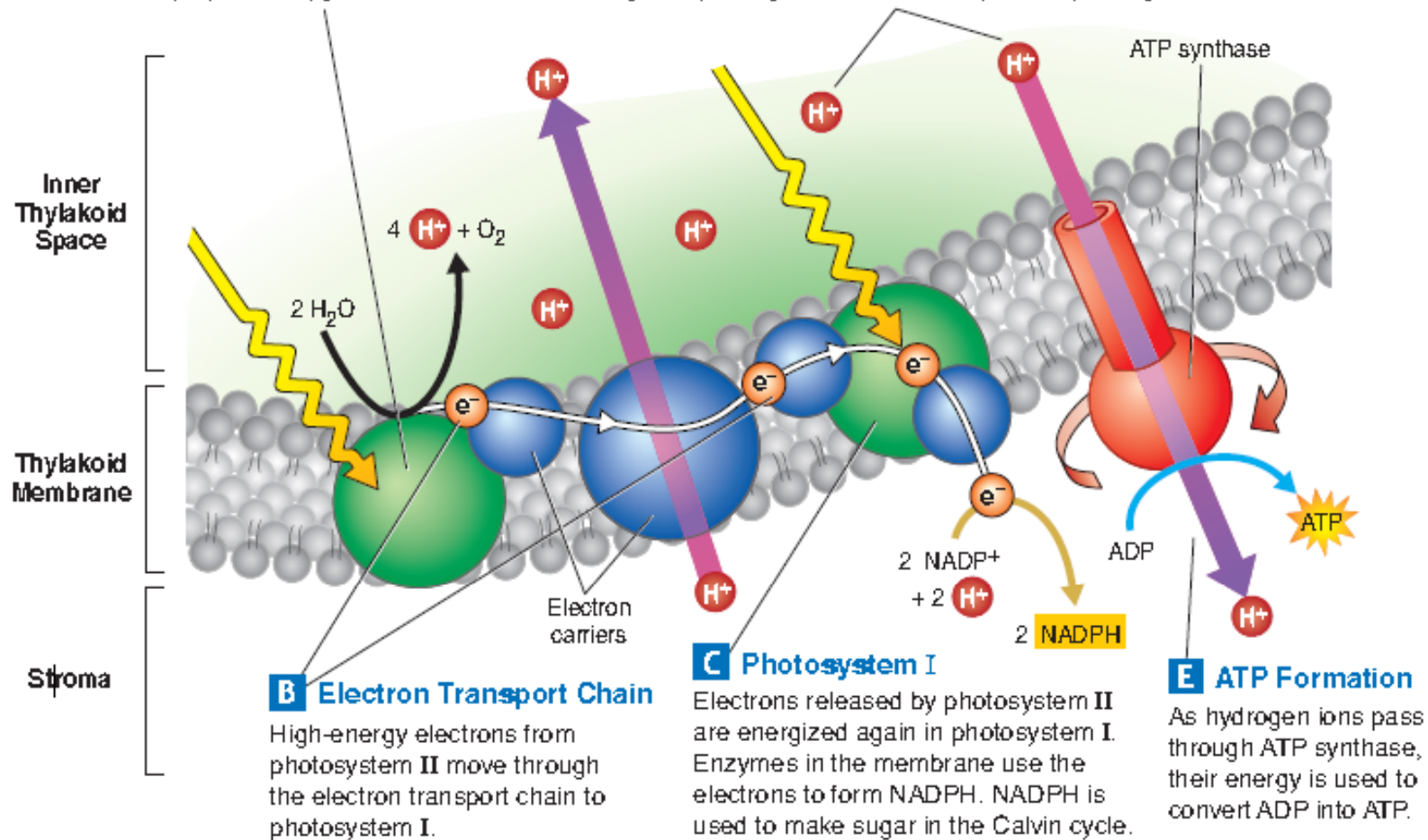
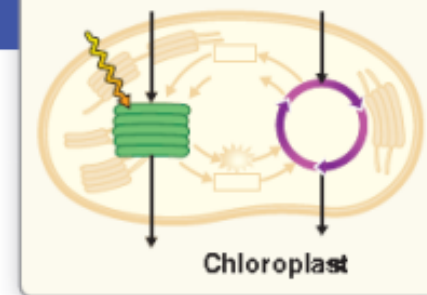
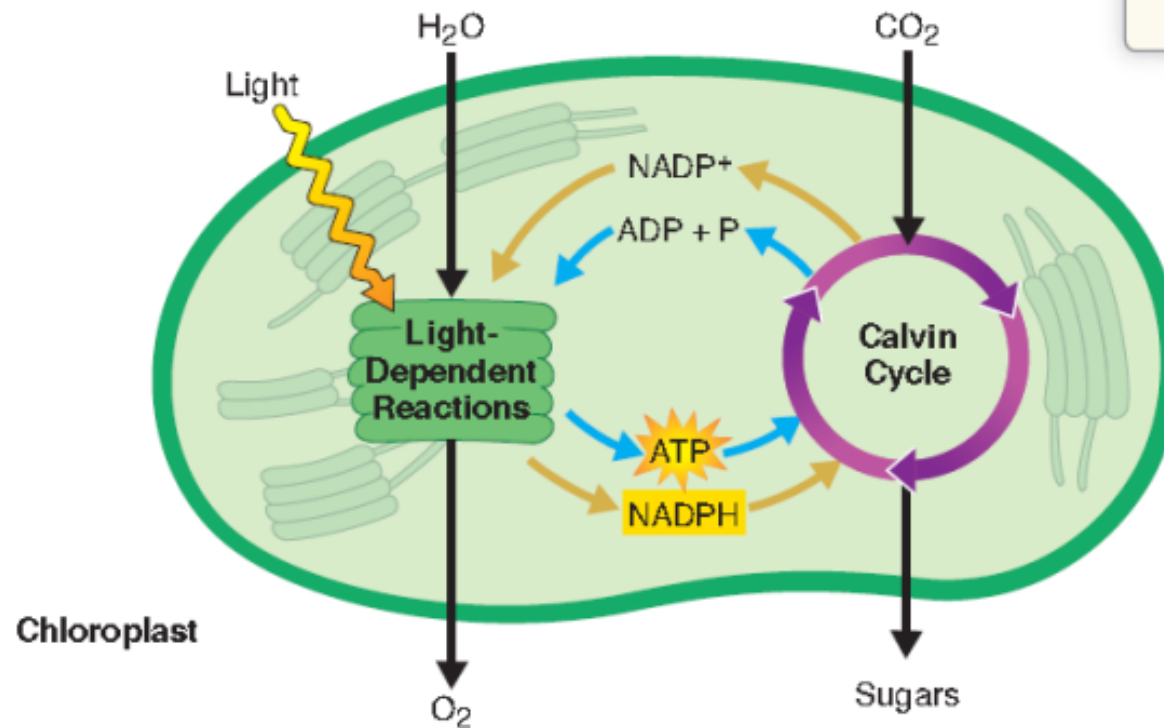


FIGURE 8-7 PHOTOSYNTHESIS: AN OVERVIEW

The process of photosynthesis includes the light-dependent reactions as well as the Calvin cycle. **Interpreting Graphics** What are the products of the light-dependent reactions?



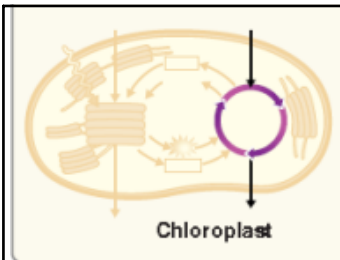


FIGURE 8-11 CALVIN CYCLE

The Calvin cycle uses ATP and NADPH to produce high-energy sugars. The Calvin cycle takes place in the stroma of chloroplasts and does not require light.

A CO₂ Enters the Cycle

6 carbon dioxide molecules are combined with six 5-carbon molecules to produce twelve 3-carbon molecules.

B Energy Input

Energy from ATP and high-energy electrons from NADPH are used to convert the twelve 3-carbon molecules into higher-energy forms.

D 5-Carbon Molecules Regenerated

The 10 remaining 3-carbon molecules are converted back into six 5-carbon molecules, which are used in the next cycle.

C 6-Carbon Sugar Produced

Two 3-carbon molecules are removed from the cycle to produce sugars, lipids, amino acids, and other compounds.

