Chapter 10-Part 2

class notes

VIII. Light-Dependent Reactions
• Definition: The reactions that convert light into ATP and NADPH.

Important Properties:
1. 
2. 
3. 
4. 
5. 

VIII. Light-Dependent Reactions
• Photosystems capture light.

• Structure:
  1. 
  2. 
  3.
VIII. Light-Dependent Reactions

A. Light-Harvesting Complex

- Several hundred Chl\textsubscript{a}, Chl\textsubscript{b}, and carotenoids absorb photons of light.
- Energy transferred to the reaction center as vibrational (resonance) energy.

B. Reaction Center and Primary e- Acceptor

- Energy is transferred to the unique Chl\textsubscript{a} in the reaction center.

C. Types of Photosystems

Photosystem I (PSI) = Chl\textsubscript{a} known as P700

Photosystem II (PSII) = Chl\textsubscript{a} known as P680
VIII. Light-Dependent Reactions

D. PSI and PSII are involved in two processes that produce ATP and NADPH.

1. 

2. 

*Need more ATP than NADPH for the Calvin Cycle (2 ATP: 1 NADPH)*

IX. Noncyclic e- Flow

*(Described in different order then in your book)*

1. 

2. 

*PSII $\rightarrow$ photosynthetic ETC $\rightarrow$ PSI*

IX. Noncyclic e- Flow

3. 

4. **Producing ATP:**
   a. As e- pass through the photosynthetic ETC, H+ are pumped from the stroma to the thylakoid space (lumen).
   
   a. H+ diffuse back into the stroma via ATP synthase. Drives ATP synthesis (photophosphorylation)

*(2 slides)*
Question 10.5

X. Cyclic e- Flow

- Important Properties:
  


X. Cyclic e- Flow

1. 

2.
X. Cyclic e- Flow

3.


XI. The Calvin Cycle

• Definition: Uses ATP and NADPH to convert CO₂ to sugar.

• Important Properties:
  –
  –
  –

XI. The Calvin Cycle

Phase 1: Carbon fixation =

Enzyme:
XI. The Calvin Cycle

Phase 2: Reduction Phase

Phase 3: Regeneration of ribulose bisphosphate

Question 10.6