

## Chapter 10-Part 2

class notes

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### VIII. Light-Dependent Reactions

- Definition: The reactions that convert light into ATP and NADPH.

Important Properties:

- 1.
- 2.
- 3.
- 4.
- 5.

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### VIII. Light-Dependent Reactions

- Photosystems capture light.

• Structure:

- 1.
- 2.
- 3.

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### VIII. Light-Dependent Reactions

#### A. Light-Harvesting Complex

- Several hundred Chl<sub>a</sub>, Chl<sub>b</sub>, and carotenoids absorb photons of light.
- Energy transferred to the reaction center as vibrational (resonance) energy.

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### VIII. Light-Dependent Reactions

#### B. Reaction Center and Primary e- Acceptor

- Energy is transferred to the unique Chl<sub>a</sub> in the reaction center.
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### VIII. Light-Dependent Reactions

#### C. Types of Photosystems

Photosytem I (PSI) = Chl<sub>a</sub> known as P700

Photosytem II (PSII) = Chl<sub>a</sub> known as P680

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## 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)*

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## IX. Noncyclic e- Flow

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

1.

2.

*PSII → photosynthetic ETC → PSI*

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## 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)

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Question 10.5

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X. Cyclic e- Flow

- Important Properties:
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X. Cyclic e- Flow

- 1.
- 2.

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## X. Cyclic e- Flow

3.

- 4. **H<sup>+</sup> diffuse back into the stroma via ATP synthase. Drives ATP synthesis through photophosphorylation.**

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## XI. The Calvin Cycle

- Definition: Uses ATP and NADPH to convert CO<sub>2</sub> to sugar.

• Important Properties:

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## XI. The Calvin Cycle

**Phase 1: Carbon fixation =**

**Enzyme:**

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## XI. The Calvin Cycle

**Phase 2: Reduction Phase**

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**Phase 3: Regeneration of ribulose biphosphate**

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### Question 10.6

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