

Photosynthesis

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July 25, 2017

1 Recap + Precap

- Covered: cells, organelles, and cell resp
- Today: Photosynthesis by greek roots

2 Photosynthesis History

2.1 van Helmont

400 years ago, scientific method, willow tree in a pot

2.2 Priestly + Ingenhausz

Candle under a jar, plant refreshes the air

Chemistry: start and end with a balanced equation

2.3 The Equation of Photosynthesis

- Water + Carbon Dioxide + **LIGHT** -> Sugar + Oxygen
- $\text{H}_2\text{O} + \text{CO}_2 + \text{LIGHT} \rightarrow \text{CHO} + \text{O}_2$

3 The Location and Tools of Photosynthesis

3.1 Chloro - plast

3.2 Step 1: Light Reaction

Pigments

Chlorophyll a+b

Carotenoids

Wavelength

The Nature of Light on pg 125 in the book

Photosystem

Embedded in the thylakoids

Antenna complex+reaction center

P680 and P700

Batteries

ATP + NADPH

3.3 Step 2: Calvin Cycle

RUBISCO

Two turns to make a single sugar

Steps in the Calvin Cycle

1. Fixation
2. Reduction
3. Regeneration

4 Figures from the book

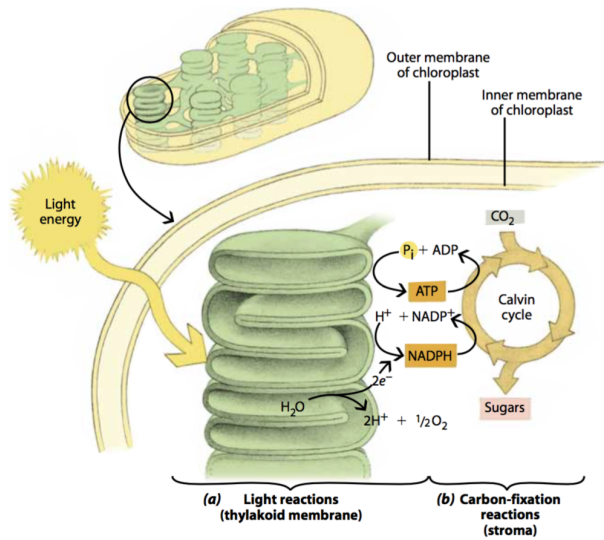


Figure 1: Figure of the chloroplast to be drawn. Focus on the locations reactions, whether on the membranes or in the stroma

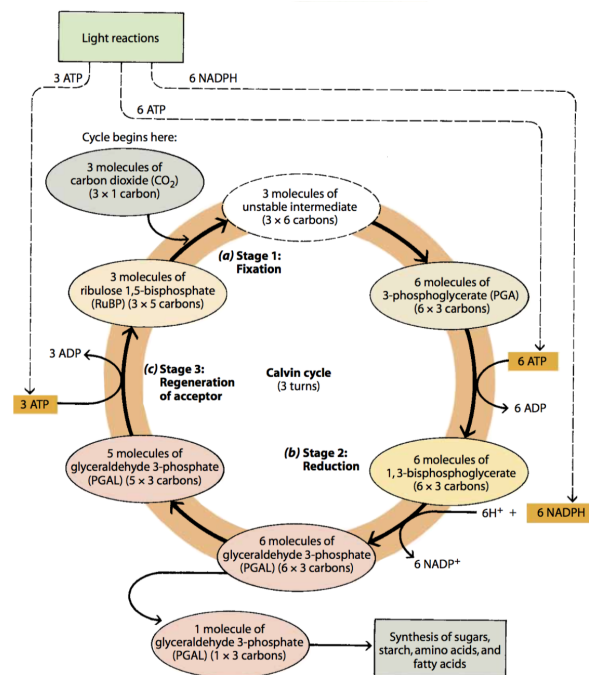


Figure 2: Calvin cycle in excess detail

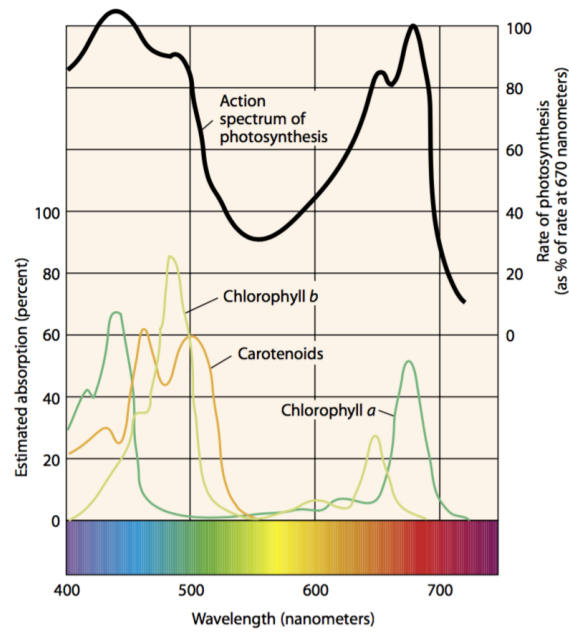


Figure 3: Wavelengths of light and absorption spectra for pigments

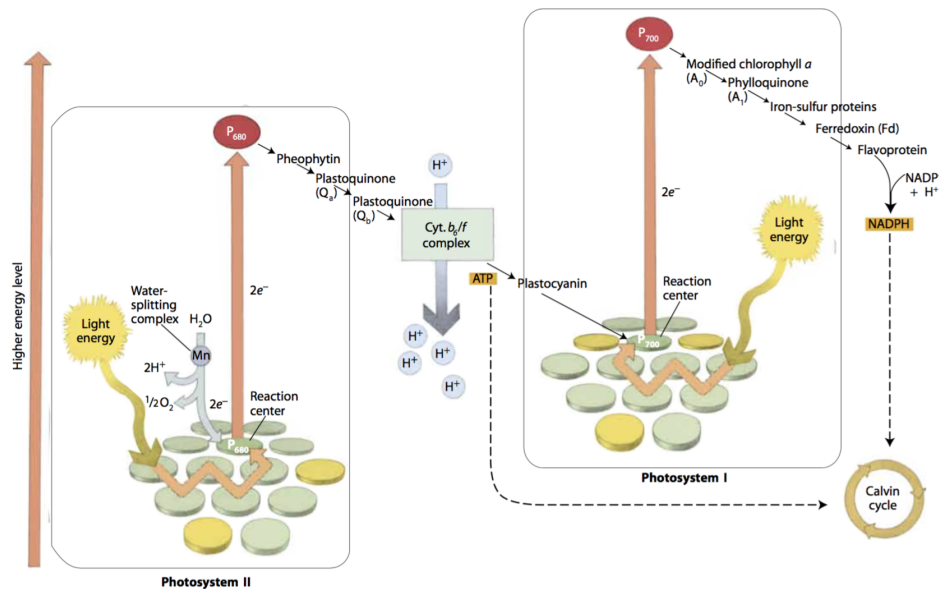


Figure 4: Z-scheme in detail

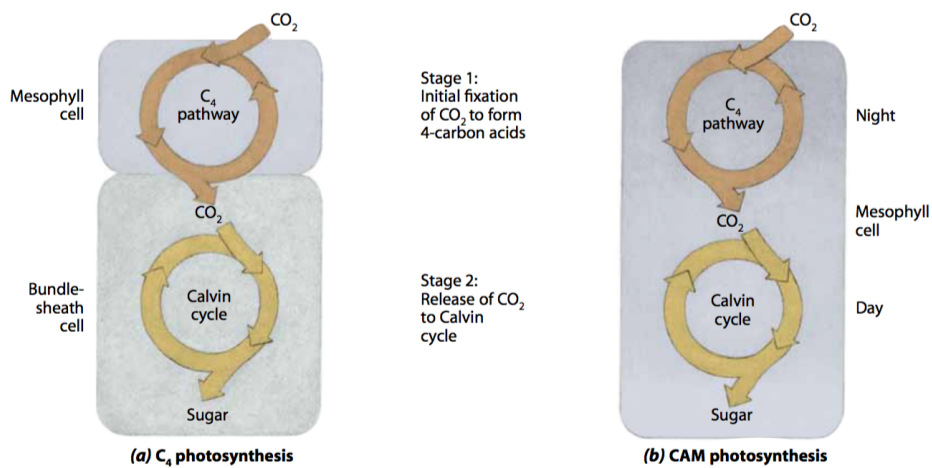


Figure 5: C4 and CAM photosynthesis