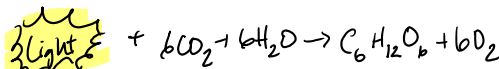


PHOTOSYNTHESIS

Inputs: • Light energy (photons)
• H_2O
• CO_2

Light put together



Light energy \rightarrow chemical energy of food

Outputs: Sugar ($G3P \rightarrow$ Glucose)
glyceraldehyde-3-phosphate
 O_2 (byproduct)
(produced in glycolysis)

I. LIGHT DEPENDENT REACTIONS
Location: (Thylakoid membrane)

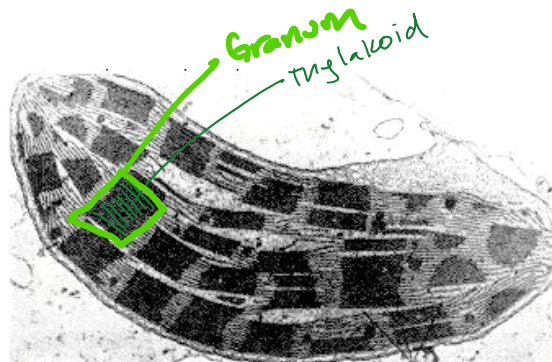
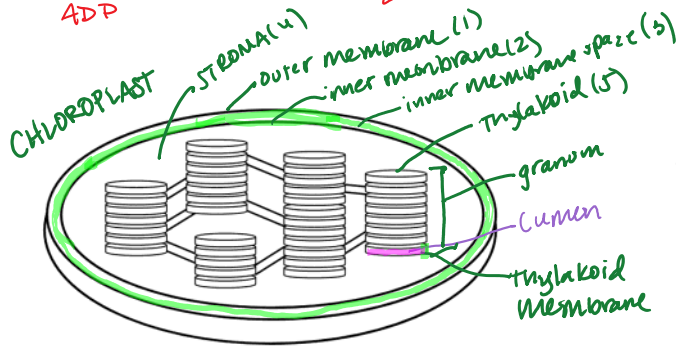
INPUTS: Light (photons)
 H_2O
 $NADP^+$
 ADP

OUTPUTS: ATP
 $NADPH$ } H^+ gradient
 O_2 [Byproduct]

II. LIGHT INDEPENDENT REACTIONS (CALVIN CYCLE)
(stroma - cytosol of chloroplast)

INPUTS: ATP
 $NADPH$
 CO_2

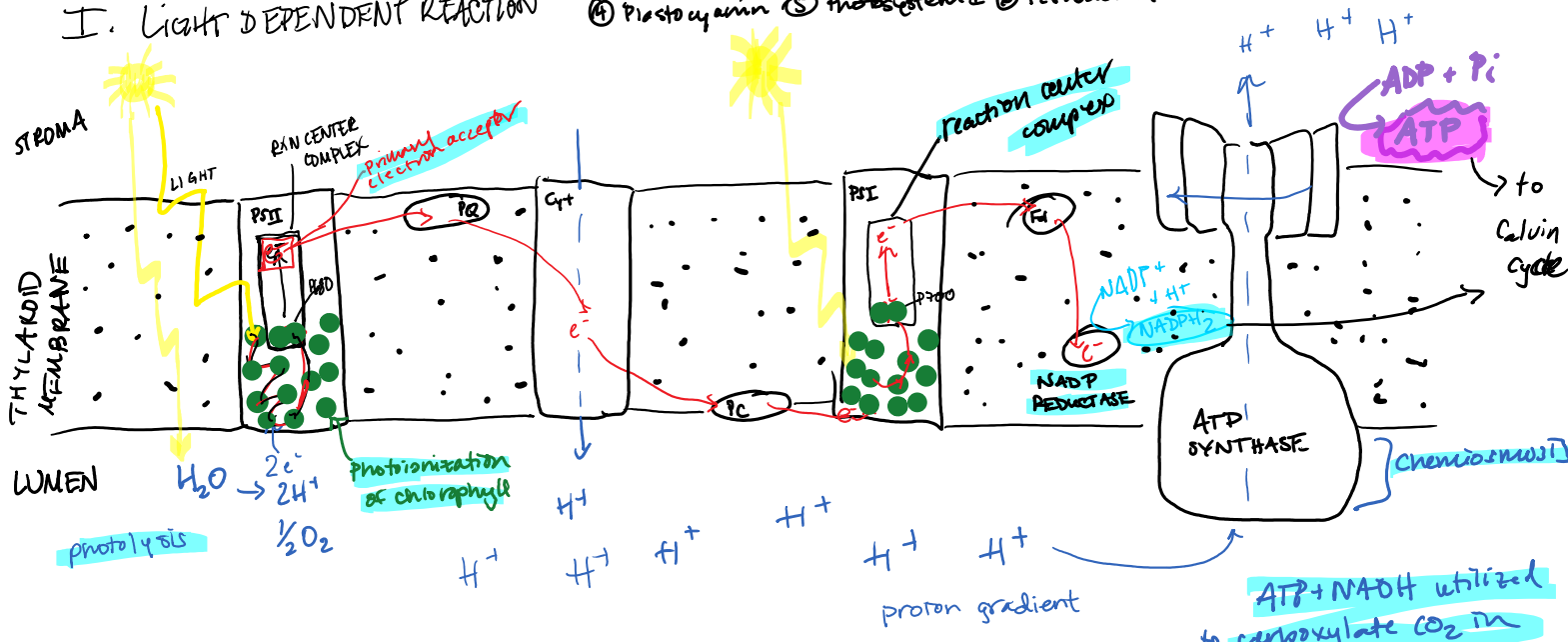
OUTPUTS: Sugar ($G3P$)
GLYCERALDEHYDE-3-PHOSPHATE



- ① Semi-porous: permeable to small molecules & ions
- ② Border to the stroma - regulates passage of molecules + synthesizes fatty acids, lipids, carotenoids
- ③ 10-20 nm wide
- ④ aqueous protein rich fluid - full of DNA, ribosomes, starch granules, site of ENZs!
- ⑤ Membraneous sacs w/ chlorophyll - clumped into granum (10-20 thylakoids)

I. LIGHT DEPENDENT REACTION


- ① Photosystem II
- ② Plastocyanine
- ③ Cytochrome Complex
- ④ Plastocyanin
- ⑤ Photosystem I
- ⑥ Ferredoxin



proton

2-6



H^+ H^+ 
proton gradient

ATP + NADPH utilized
to carboxylate CO_2 in
Calvin cycle