

# CELL BIOLOGY

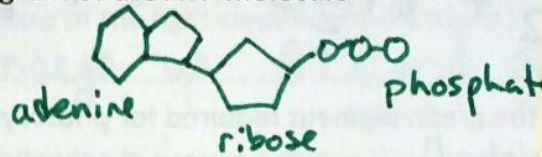
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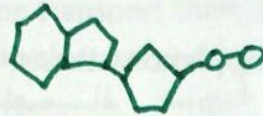
## Chapter 8 Test: Photosynthesis

### Energy in the Cell (12 pt)

1. (3pt) Draw a diagram of the ATP molecule



2. (1pt) Draw a diagram of an ADP molecule



3. ATP stands for Adenosine triphosphate

4. How is ATP different from ADP in structure? 1 less phosphate (ADP)

5. How do ATP and ADP compare in how much energy is available? ATP higher energy

6. What is the name for organisms that can capture energy from light and store it in organic compounds? autotrophs  
*(like plants)*

7. What is the name for organisms that rely on energy made by other organisms (eating them)? heterotrophs

8. Where is the energy stored in glucose? chemical bonds

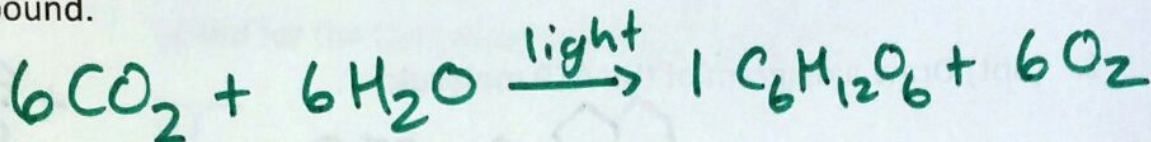
9. (2pt) Explain **why** the cell uses ATP instead of glucose for energy transfer. Make use of an **analogy** to support your explanation. It's too big!

Like \$10 bill → can't be used  
in vending machine. Must break  
down into \$1 (ATP)

11m                      12m  
A: 45 (90%)                      A: 47 (94%)  
M: 48 (96%)                      M: 48 (96%)  
H: 51.5                      H: 51.5  
2014  
A: 88%                      A: 89%  
M: 51.5                      H: 52%

## Photosynthesis Overview (20 pt)

10. (6pt) Write the balanced equation of photosynthesis (hint: 2 reactants & 2 products plus something over the arrow). Use the proper chemical formula for each compound.



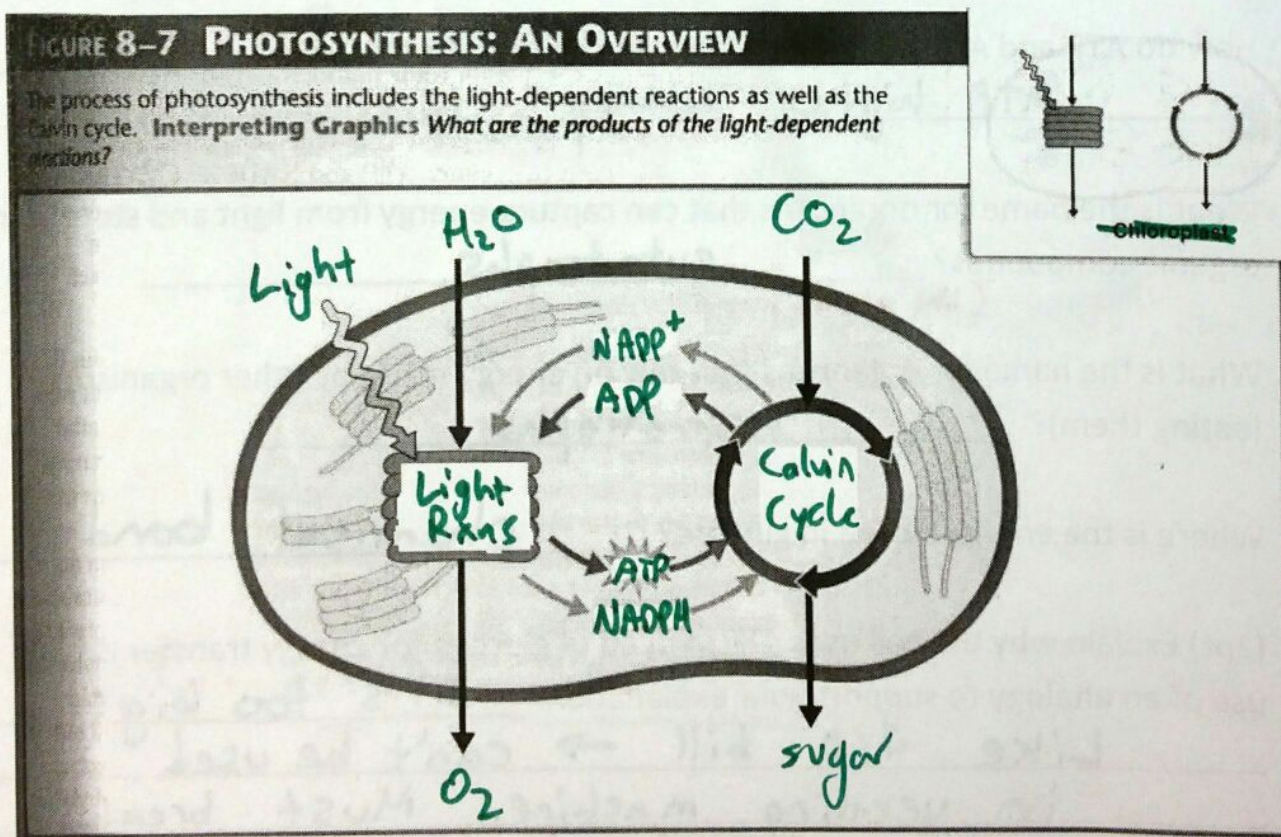
11. What is the name of the green pigment required for photosynthesis?

Chlorophyll

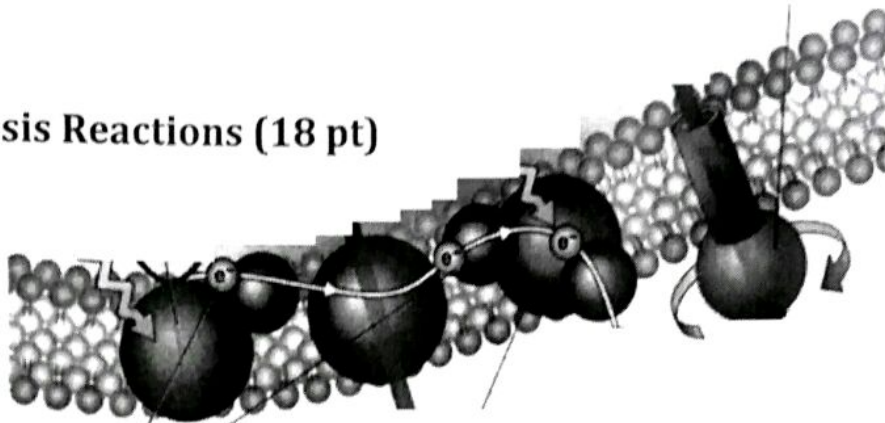
12. Name a color that *IS* absorbed during photosynthesis. blue / red

13. What part of the cell does photosynthesis occur? chloroplast

14. Complete the diagram of Photosynthesis: An Overview (11 pts)



## Photosynthesis Reactions (18 pt)



15. What is the purpose of the light-dependent reactions? Charge up ATP and NADPH
16. (5pt) Place the following in proper order as they occur in the Light Reactions:  
(photosystem I, electron transport chain, photosystem II, ATP synthase, Light is absorbed to energize an electron and break up 2 water molecules)
- photosystem II Light is absorbed  $\rightarrow$   $H_2O$  turns into  $O_2$
  - Photosystem II
  - electron transport chain
  - photosystem I
  - ATP synthase
17. What 4 things are needed for the Light Reactions? (1/2 pt each)
- Light
  - $H_2O$
  - ADP
  - $NADP^+$
18. What are 3 products of the Light Reactions? (1/2 pt each)
- $O_2$
  - ATP
  - NADPH
19. <sup>How d</sup> What does ATP synthase <sup>make ATP?</sup> do? make ATP from ADP
20. What is the energy carrier for the cell? ATP
21. What is the electron carrier for photosynthesis? NADPH

22. What is the purpose of the Calvin Cycle? Make sugar

23. It takes 2 cycles to make a glucose molecule

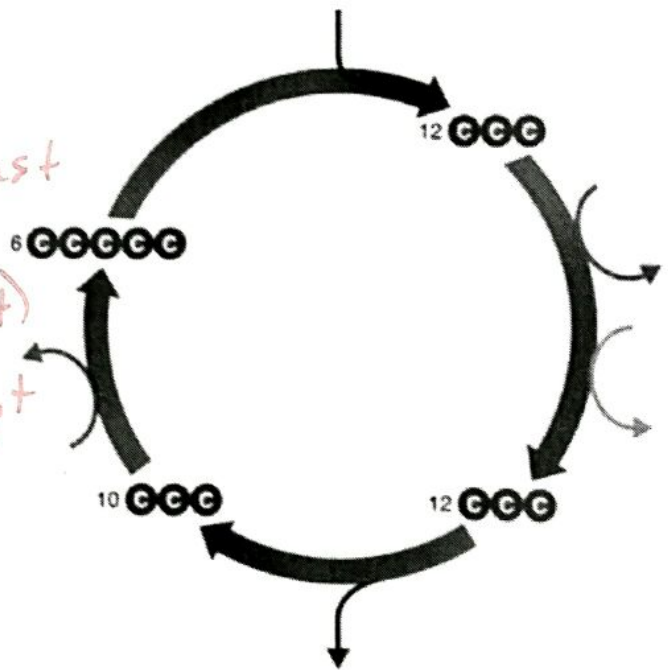
24. What materials are needed for the Dark Reactions? (1/2 pt each)

- a. ATP
- b. NADPH
- c. CO<sub>2</sub>

25. What Products are made in the Dark Reactions? (1/2 pt each)

- a. ADP
- b. NADP<sup>+</sup>
- c. sugars

26. Where in the chloroplast does the light rxns occur? thylakoids (.Spt)  
Calvin Cycle? stroma (.Spt)



EC: Make Protein