

Review – Test #2

Photosynthesis and Cellular Respiration

photosynthesis	photosystem	Krebs cycle
energy	stroma	mitochondrion
autotroph	stroma lamellae	cristae
heterotroph	inner membrane	matrix
ATP, ADP, AMP	outer membrane	coenzyme A
adenine	intermembrane space	acetyl-CoA
ribose	light-dependent reactions	FADH ₂
phosphate	light-independent reactions (Calvin cycle)	FAD
phosphorylation	cellular respiration	
exergonic reaction	glucose	
pigment	glycolysis	
chlorophyll	cytoplasm	
carrier molecule	PGAL	
electron transport	pyruvic acid (pyruvate)	
electron transport chain	NAD ⁺ , NADH	
NADP ⁺ , NADPH	lactic acid fermentation	
chloroplast	alcoholic fermentation	
thylakoid	aerobic	
granum (grana)	anaerobic	

1. What does ATP stand for?
2. What are the components of ATP? Be familiar with the representation in textbook.
3. Where is energy stored in ATP?
4. How does the energy stored in a single glucose molecule compare to the energy in a molecule of ATP?
5. What is the name of a light-absorbing pigment in plants?
6. a) What is an electron carrier?
b) What is one electron carrier that is involved with photosynthesis?
c) What are two electron carriers that are involved with cellular respiration?
7. What are the names and descriptions/functions of the structures found in a chloroplast? Be able to label a diagram a chloroplast.
8. a) Write a balanced chemical equation for the overall process of photosynthesis.
b) How does the equation you wrote in (a) compare to the equation for cellular respiration?

9. a) Where do the light-dependent reactions of photosynthesis occur?
b) Where do the light-independent reactions of photosynthesis occur?
c) Where does glycolysis occur?
d) Where does the Krebs cycle occur?
e) Where does electron transport in cellular respiration occur?
10. What is needed for the light-dependent reactions to occur? What is produced as a result of the light-dependent reactions of photosynthesis?
11. Be able to label Figure 8-10 on page 211.
LEVEL 1: Describe in detail the reactions that are occurring. (ie/ Describe how H^+ gets into the inner thylakoid space, how many H^+ 's and electrons are picked up by $NADP^+$, what are 2 H_2O broken into?)
12. What products of the light-dependent reactions are used in the Calvin cycle?
13. What does the Calvin cycle require from the atmosphere?
14. What does the Calvin cycle produce?
LEVEL 1: Describe the "carbon count" as the cycle occurs and the role of ATP and NADPH in the cycle.
16. What are three factors affecting photosynthesis?
17. What are the three stages, in order, of cellular respiration?
18. Is oxygen required for glycolysis?
19. Describe the process of glycolysis. Include the starting material, intermediate material and final products.
20. What are two types of fermentation? What type do humans undergo?
21. What type of process is fermentation?
22. When does fermentation occur?
23. What pathways in cellular respiration are aerobic?
24. Be able to describe the structure of a mitochondrion.
25. Be able to state the starting material, the roles of oxygen and CoA, the changing "carbon count" and number of ATP, $FADH_2$, CO_2 and NADH produced in the Krebs cycle.
26. What are two products of cellular respiration's electron transport chain?
27. What is the total number of ATP molecules produced per glucose molecule as a result of cellular respiration?