**Cellular Respiration Review - Can you answer all of these?**

1. Write the balanced chemical equation for aerobic cellular respiration of glucose.
2. Distinguish between substrate-level phosphorylation and oxidative phosphorylation. Give an example of where each occurs in cellular respiration.
3. Draw the structure of the mitochondria as seen in electron micrographs
4. Name the 4 steps to aerobic cellular respiration. For each, state the location, substrate, products and in what way ATP is produced.
5. What is the role of NAD+, NADH, FAD, FADH2? Which is the oxidized/reduced form?
6. Describe the process of chemiosmosis. What is the role of chemiosmosis in cellular respiration?
7. Why would lack of oxygen completely inhibit the Krebs cycle and the ETC but not glycolysis?
8. Explain why anaerobic respiration produces fewer ATP molecules than aerobic respiration.
9. What happens to the NAD+ and FAD after they have given their electrons to the ETC?
10. How many carbon atoms are in:
	1. glucose b) pyruvate c) acetly-CoA d) citrate
11. a) How many carbon atoms remain from the original glucose at the end of Krebs cycle?

b) Where did the carbon atoms go?

c) Where did the oxygen atoms go?

d) Where did the hydrogen atoms go?

1. a) What does ATP stand for?

b) Draw and label the general structure of ATP.

c) What class of biologically important molecules is ATP related to?

1. If a patient was deficient in the enzyme that converts fructose-1,6-bisphosphate into glyceraldehdye-3-phosphate, what molecules might start building up in the cell?
2. If a patient was deficient in the enzyme citrate synthetase (converts oxaloacetate 🡪 citrate) what molecule might start building up in the cell? What would happen to this molecule? What would happen to the process of cellular respiration?
3. How many glucose molecules would be produced by hydrolysis of two maltose molecules and how many ATP would be produced under aerobic conditions?
4. Describe how ATP is synthesized by the ETC. Include in your answer reference to:
	* + NADH/FADH2, ETC carriers, H+ pumping, ATP synthase, chemiosmosis,# ATP produced, oxidative phosphorylation
5. Hydrogen cyanide is a deadly poison that reacts with cytochrome molecules and impairs their function. Explain the effect hydrogen cyanide would have on aerobic respiration.