

Cell Respiration Review

1. Define the term metabolism
2. Write the balanced chemical equation for aerobic cellular respiration of glucose
3. How many carbon atoms are in:
 - a) Glucose
 - b) pyruvate
 - c) acetyl-CoA
 - d) citrate
4. How many carbon atoms remain from the original glucose at the end of Krebs cycle?
 - a) Where did the carbon atoms go?
 - b) Where did the oxygen atoms go?
 - c) Where did the hydrogen atoms go?
5. Identify reactants needed for each of the following processes:
 - a) Glycolysis
 - b) pyruvate oxidation
 - c) Krebs cycle
 - d)ETC (oxidative phosphorylation)
6. Identify the location in the cell and net products of:
 - a) Glycolysis
 - b) pyruvate oxidation
 - c) Krebs cycle
 - d)ETC (oxidative phosphorylation)
7. Be able to label diagrams of glycolysis, pyruvate oxidation, Krebs and ETC.
8. Draw and label a mitochondrion and it's parts
9. Explain what is happening in these specific steps:
 - a) Conversion of phosphoenol pyruvate to pyruvate in glycolysis
 - b) Conversion of isocitrate to α -ketoglutarate in Krebs cycle
10. If a patient was deficient in the enzyme that converts fructose-1,6-bisphosphate into DHAP, what molecules might start building up in the cell?
11. What is the role of NAD^+ , NADH, FAD, FADH_2 ? Which is the oxidized/reduced form?
12. Describe the role of oxygen in the ETC.
 - a) How does the lack of oxygen affect both the ETC and Krebs cycle?
 - b) Is glycolysis affected? Why?
 - c) What is the effect if ubiquinone is blocked from accepting electrons?
13. How many pyruvate molecules would be produced by the glycolysis of 5 glucose molecules?
14. Draw the reactions for:
 - a) Alcoholic fermentation
 - b) Lactate fermentation
15. What is the real purpose of fermentation?
16. Describe, with the use of a diagram, how ATP is synthesized by the ETC.
17. Describe how these foods enter into the metabolic cycles of cellular respiration:
 - a) Lipids
 - b) Proteins