

Name: _____ Period: _____ Date: _____

Cellular Respiration Worksheet

1. Describe the overall summary equation for cellular respiration
2. Distinguish between substrate-level phosphorylation and oxidative phosphorylation
3. Explain how exergonic oxidation of glucose is coupled to endergonic synthesis of ATP
4. Define oxidation and reduction
5. Explain how redox reactions are involved in energy exchanges
6. Define coenzyme and list those involved in respiration
7. Describe the structure of coenzymes and explain how they function in redox reactions
8. Describe the role of ATP in coupled reactions

9. Explain why ATP is required for the preparatory steps of glycolysis

10. Describe how the carbon skeleton of glucose changes as it proceeds through glycolysis

11. Identify where in glycolysis the sugar association, substrate-level phosphorylation, and reduction of coenzymes occur

12. Write a summary equation for glycolysis and describe where it occurs in the cell

13. Describe where pyruvate is oxidized to acetyl CoA, what molecules are produced, and how pyruvate links glycolysis to the Krebs cycle

14. Explain at what point during cellular respiration complete oxidation of glucose occurs

15. Explain how the exergonic "slide" of electrons down the electron transport chain is coupled to the endergonic production of ATP by chemiosmosis

16. Describe the process of chemiosmosis

17. Explain how membrane structure is related to membrane function in chemiosmosis

18. Describe the fate of pyruvate in the absence of oxygen

19. Explain why fermentation is necessary

20. Distinguish between aerobic and anaerobic metabolism

21. Describe how food molecules other than glucose can be oxidized to make ATP

22. Describe evidence that the first prokaryotes produced ATP by glycolysis

23. Explain how ATP production is controlled by the cell and what role the allosteric enzyme, phosphofructokinase, plays in this process