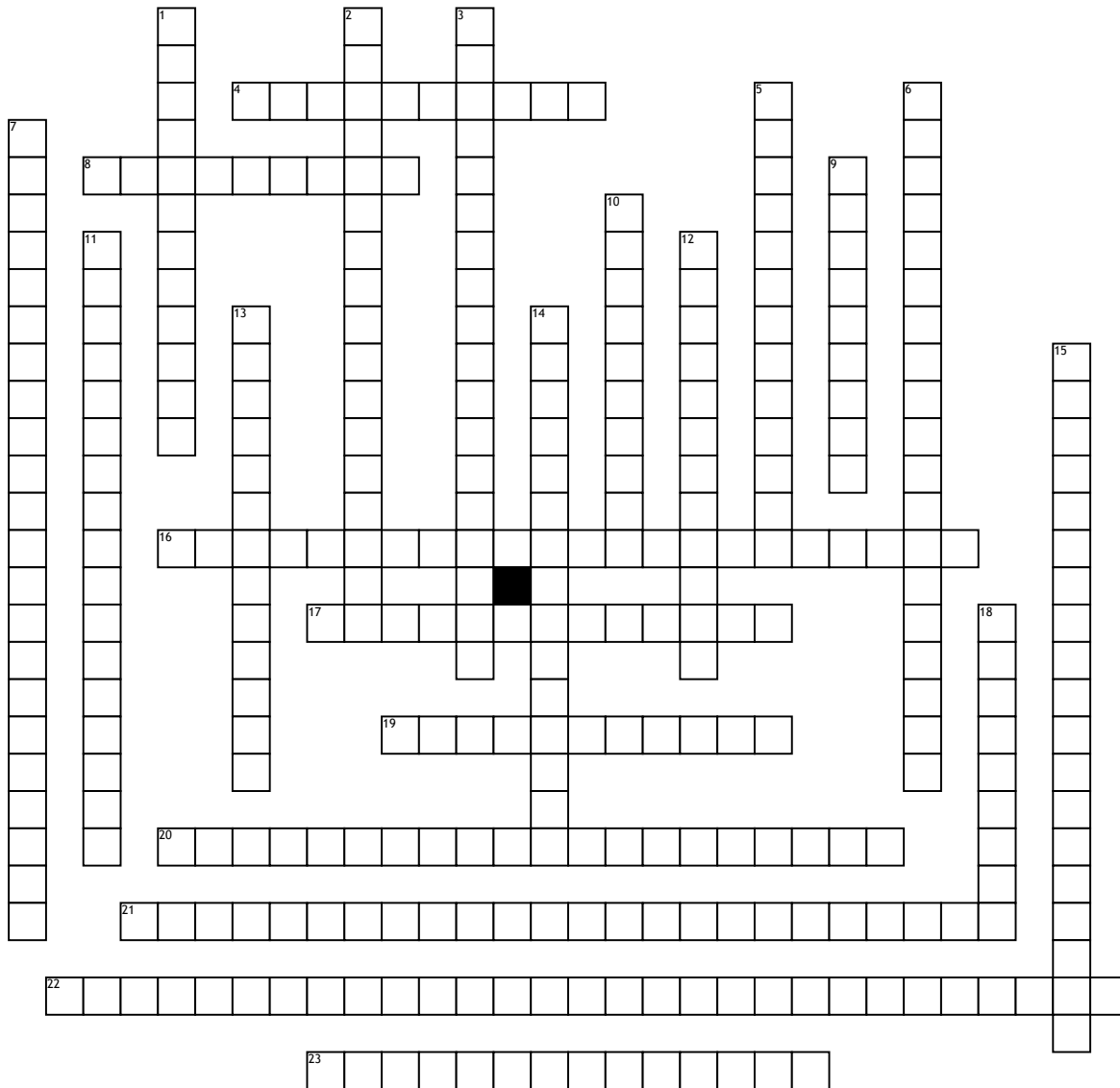


Name: _____

Date: _____

Cellular respiration and Fermentation



Across

4. An iron-containing protein that is a component of electron transport chains in the mitochondria and chloroplasts of eukaryotic cells and the plasma membranes of prokaryotic cells

8. the entry compound for the citric acid cycle in cellular respiration

16. a sequence of electron carrier molecules (membrane proteins) that shuttle electrons down a series of redox reactions that release energy used to make ATP

17. a metabolic sequence that breaks fatty acids down to two-carbon fragments that enter the citric acid cycle as acetyl CoA

19. a complex of several membrane proteins that functions in chemiosmosis with adjacent electron transport chains, using the energy of a hydrogen ion (proton) concentration gradient to make ATP

20. an organism that makes ATP by aerobic respiration if oxygen is present but that switches to anaerobic respiration or fermentation if oxygen is not present

21. the production of ATP using the energy derived from the redox reactions of an electron transport chain; the third major stage of cellular respiration

22. the enzyme-catalyzed formation of ATP by direct transfer of a phosphate group to ADP from an intermediate substrate in catabolism

23. the electron acceptor in a redox reaction

Down

1. a catabolic process that makes a limited amount of ATP from glucose (or other organic molecules) without an electron transport chain and that produces a characteristic end product, such as ethyl alcohol or lactic acid

2. the potential energy stored in the form of a proton electrochemical gradient, generated by the pumping of hydrogen ions across a biological membrane during chemiosmosis

3. a catabolic pathway for organic molecules, using oxygen as the final electron acceptor in an electron transport chain and ultimately producing ATP

5. the electron donor in a redox reaction

6. the catabolic pathways of aerobic and anaerobic respiration, which break down organic molecules and use an electron transport chain for the production of ATP

7. glycolysis followed by the reduction of pyruvate to lactate, regenerating NAD⁺ with no release of carbon dioxide

9. the complete or partial loss of electrons from a substance involved in a redox reaction

10. a series of reactions that ultimately splits glucose into pyruvate

11. an organism that carries out only fermentation or anaerobic respiration

12. an energy-coupling mechanism that uses energy stored in the form of a hydrogen ion gradient across a membrane to drive cellular work, such as the synthesis of ATP

13. A chemical reaction involving the complete or partial transfer of one or more electrons from one reactant to another; short for reduction-oxidation reaction

14. A chemical cycle involving eight steps that completes the metabolic breakdown of glucose molecules begun in glycolysis by oxidizing acetyl CoA (derived from pyruvate) to carbon dioxide

15. glycolysis followed by the reduction of pyruvate to ethyl alcohol, regenerating NAD⁺ and releasing carbon dioxide

18. the complete or partial addition of electrons to a substance involved in a redox reaction