

Project: Drawing Cellular Respiration

OBJECTIVE: To familiarize yourself with the process of Cellular Respiration from the very first step to the last. To make a clear visual that will help you remember the complex steps of cellular respiration.

GUIDELINES:

- 11x17 paper will be provided – you may use this or paper of your own (2 regular sheets of paper taped together). Final product must not be larger than 11x17.
- All visuals must be original and hand or computer drawn.
- Draw in pencil, then outlined in colour markers or pencil crayons

INSTRUCTIONS:

1. Either divide your paper into sections (you decide how many are necessary) and draw each step of the process in a separate box or draw a cell and mitochondria and add all steps to the diagram in the appropriate location(s). No matter which option you choose, **number the boxed sections or the steps.**

Your numbered diagram or drawing of the steps must include the following:

2. glycolysis, kreb cycle and electron transport chain
3. the movement of electrons
4. the movement of hydrogen ions
5. the reactions including pyruvic acid, acetyl-CoA, citric acid, 5 carbon molecules & 4 carbon molecules
6. how the reactants are involved – oxygen and glucose (highlight these)
7. how the products are made – carbon dioxide and water (highlight these)
8. the reactions involving NADH/NADP⁺, ATP/ADP and FADH₂/FAD

Before submitting, self-evaluate your work using the criteria sheet on the back side of this handout and then staple it to the front of your project.

Remember, this assignment is for your benefit and to help you understand the steps of a Cellular Respiration.

ROUGH COPY DUE: _____

GOOD COPY DUE: _____

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Performance based assessment:

| | Beginning | Developing | Accomplished | Exemplary |
|---|---|--|---|---|
| CONTENT (STRUCTURE) | Many of the components are missing or incorrectly used | The majority of structural components are correctly used, while some components are missing or incorrect | Almost all structural components are correctly used, with some minor errors. | All structural components are correctly used |
| <i>electron transport chain (carrier proteins & enzyme), ATP synthase, mitochondria, matrix, inner membrane, intermembrane space, citric acid, pyruvic acid, acetyl-CoA, 4 carbon molecules, 5 carbon molecule, oxygen, glucose, carbon dioxide, water, hydrogen ions, electrons, NAD⁺, NADH, FADH₂, FAD</i> | | | | |
| CONTENT (PROCESS) | Many processes are incorrect or not included. | The majority of processes are correct and accurate, with some processes missing or incorrect | Almost all processes are correct and accurate, with some minor errors. | Entire process is correct and accurate |
| <i>Glucose to pyruvic acid, ADP to ATP, NAD⁺ to NADH, pyruvic acid to Acetyl-CoA, 4 carbon molecule plus Acetyl-CoA to citric acid, FAD to FADH₂, citric acid to 5 carbon molecule, CO₂ released, 5 carbon molecule to 4 carbon molecule, NADH and FADH₂ releasing electrons moving down the electron transport chain, electrons plus H⁺ plus O_x to make water, hydrogen ions moving across the inner membrane, ATP synthase spinning</i> | | | | |
| CLARITY | Lack of colour or highlighting Although an attempt is made, it is difficult to understand most of the diagram. | Somewhat effective use of colour Most of the diagram is well organized with clear written communication, but some sections are not. | Effective use of colour Entire diagram is organized and clear; a few details take effort to decipher, and so could not be used as a teaching tool. | Original and highly effective use of colour Entire diagram is effectively organized with logical flow; diagram can be used as a teaching tool. |