CONCEPT: INTRODUCTION TO AEROBIC CELLULAR RESPIRATION

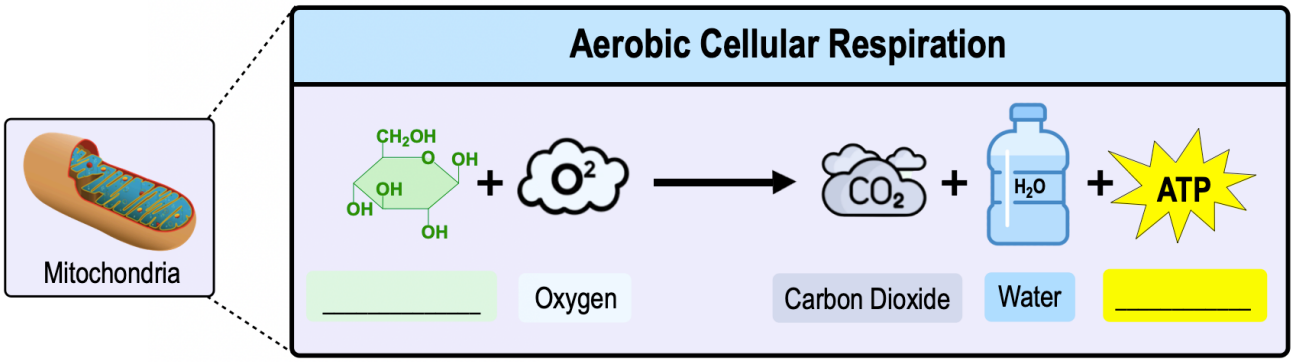
●**Aerobic Cellular Respiration**: the _____ process of *breaking-down* glucose to make lots of _____.

□ **Aerobic**: requires the presence of _____ gas (O_2).

□ Occurs in multiple stages, *most* of which occur inside of the _____ in *eukaryotes*.

□ In *prokaryotes*, which lack mitochondria, most of cellular respiration occurs in the _____.

EXAMPLE: Overall Chemical Equation for Aerobic Cellular Respiration.

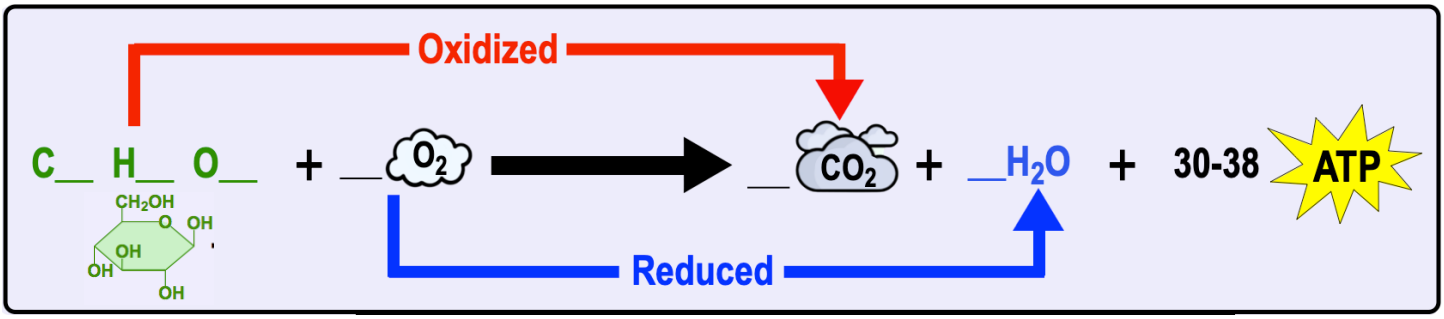


Aerobic Cellular Respiration is a Redox Reaction

●The overall chemical equation for *Aerobic Cellular Respiration* is a _____ *reaction*.

□ By the end of the process, glucose is _____ while oxygen is _____.

EXAMPLE: Chemical Equation for Aerobic Cellular Respiration.



PRACTICE: Which one of the following molecules is a by-product of cellular respiration?

a) Water. b) Glucose. c) Pyruvate. d) Oxygen. e) ADP.

PRACTICE: Which of the summary statements below describes the results of the following reaction?

$$C_6H_{12}O_6 + 6\ O_2 \rightarrow 6\ CO_2 + 6\ H_2O + \text{Energy}$$

a) $C_6H_{12}O_6$ is oxidized and O_2 is reduced.

b) O_2 is oxidized and H_2O is reduced.

c) CO_2 is reduced and O_2 is oxidized.

d) O_2 is reduced and CO_2 is oxidized.

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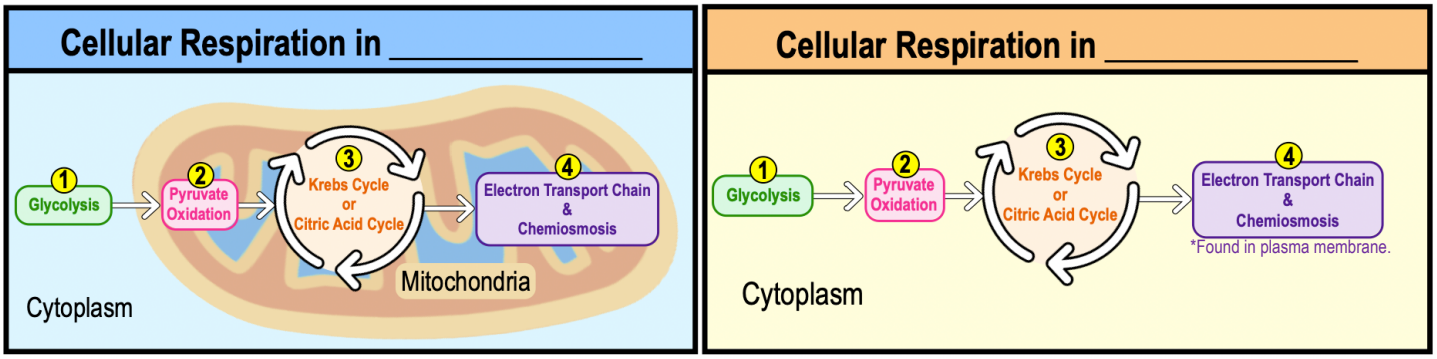
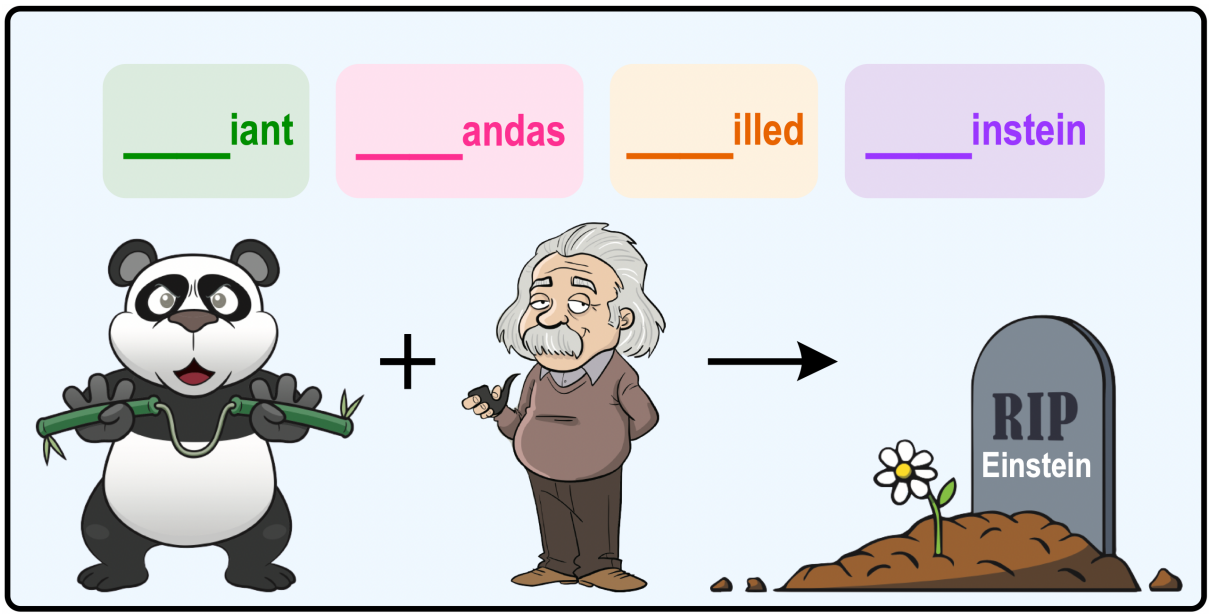
Stages of Aerobic Cellular Respiration

●Aerobic Cellular Respiration includes _____ metabolic pathways/reactions:



Remembering Stages of Aerobic Cellular Respiration



EXAMPLE: Which of the following options lists the stages of aerobic cellular respiration in the correct order?

a) Glycolysis, electron transport chain & chemiosmosis, pyruvate oxidation, and Krebs cycle.

b) Glycolysis, pyruvate oxidation, Krebs cycle, and electron transport chain & chemiosmosis.

c) Pyruvate oxidation, electron transport chain & chemiosmosis, glycolysis, and Krebs cycle.

d) Krebs cycle, electron transport chain & chemiosmosis, pyruvate oxidation, and glycolysis.

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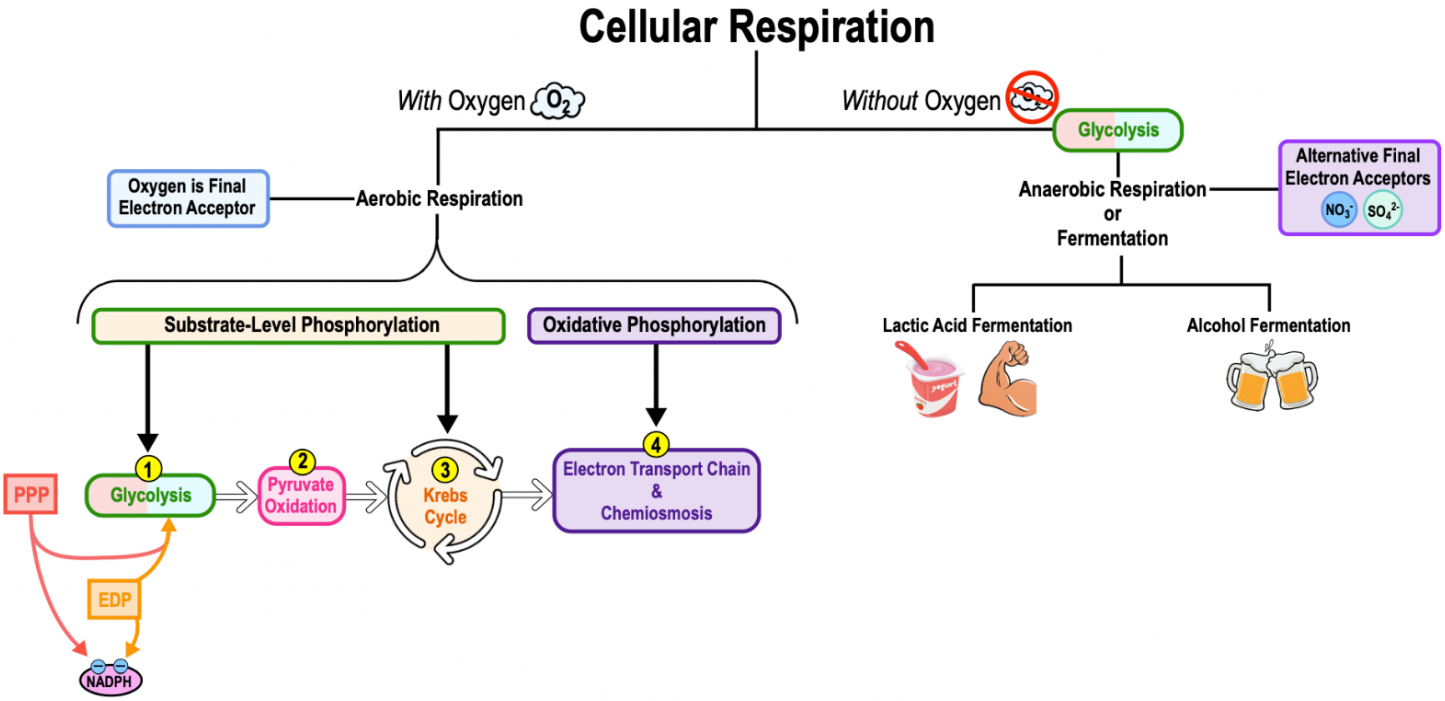
Map of the Lesson on Cellular Respiration



EXAMPLE: Using the map above, which of the following occurs in the absence of oxygen (no oxygen)?

a) Fermentation.

b) Oxidative phosphorylation

c) Aerobic respiration.

d) O_2 serves as the final electron acceptor.

PRACTICE: Based on the map of cellular respiration, why do we need to breathe in oxygen?

a) Oxygen is the final electron acceptor for lactic acid fermentation.

b) Oxygen is the final electron acceptor for alcohol fermentation.

c) Oxygen is the final electron acceptor for aerobic cellular respiration.

d) Oxygen is not important for the purposes of cellular respiration.