

Name:

OL Lab 3: Cellular Respiration: Measuring energy consumption during exercise

Learning Objectives:

- Explain the structural changes of glucose and ATP during glycolysis
- Analyze blood glucose and lactic acid concentrations of athletes before and after exercise
- Determine electron carrier products of the Krebs cycle
- Understand the role of the electron transport chain in generating ATP
- Experiment on oxygen consumption in mice at various exercise intensities

Cellular respiration is a multistep process by which the cells create energy in the form of ATP to drive its cellular activities. In this simulation, you will learn the differences between aerobic and anaerobic respiration by studying glucose metabolism. You will explore the three stages of cellular respiration: glycolysis, the Krebs cycle, and the electron transport chain.

In this simulation, you will use a mouse model to understand the cellular respiration of basketball players. The experimental exercise data collected from the mouse model and respirometry will be compared to the blood glucose and lactic acid concentrations of the basketball players throughout the game. You will also, be able to explore the cellular processes that occur within the mitochondria and how it contributes to ATP generation. Are you ready to apply your knowledge on glycolysis, the Krebs cycle, and the electron transport chain to help basketball players perform their best during the game?

Part 1: Complete Labster- Cellular Respiration: Measuring energy consumption during exercise

Part 2: Report and Reflection

Purpose: Describe in your own words and in complete sentences, the purpose of this experiment.

The purpose of this experiment was to learn how aerobic exercise affects lactic acid and glucose levels, and to also learn about the three stages of cellular respiration

Observations: List 2 observations you have made in this simulation.

1. The mouse's oxygen intake increased when exercise was more intense.
2. Glucose levels and lactic acid levels were low for an individual who did not do any exercising.

Answer all the questions below:

1. Why does lactic acid build up in muscles during exercise? (2 points)