



Science Virtual Learning

LEP Science

April 15, 2020



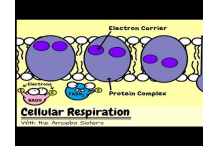
LEP Science
Lesson: April 15, 2020

Objective/Learning Target: I can explain how glucose is converted into ATP energy

Let's get started: write your answers on a piece of paper

Watch the video and answer the following questions as you watch.

1. What is the goal of cellular respiration?
2. Write the formula for cellular respiration.
3. How is the formula for cellular respiration similar, yet different to the formula for photosynthesis?
4. What is the starter molecule in cellular respiration?
5. Complete the table on the next slide.



Process	Where	Use Oxygen	Net yield of ATP
Glycolysis			
Kreb's Cycle			
Electron Transport Chain			

6. What happens if there is no oxygen?

7. What does cyanide do to the cellular respiration process?

How did you do?

1. To make ATP energy
2. $C_6H_{12}O_6 + 6 O_2 \rightarrow 6 CO_2 + 6 H_2O + \text{ATP Energy}$
3. Products and reactants are on opposite sides of the equation.
4. Glucose

5.

Process	Where	Use oxygen?	Net yield of ATP
Glycolysis	cytoplasm	no	2
Kreb's Cycle	mitochondria	yes	2
Electron Transport Chain	mitochondria	yes	A lot (34)

6. Fermentation
7. Blocks ATP production, thus killing the organism.

Using the word bank, fill in the boxes (use the shape of the box for clues). The information you learned in the video should help you.

Electron Transport Chain

2

34

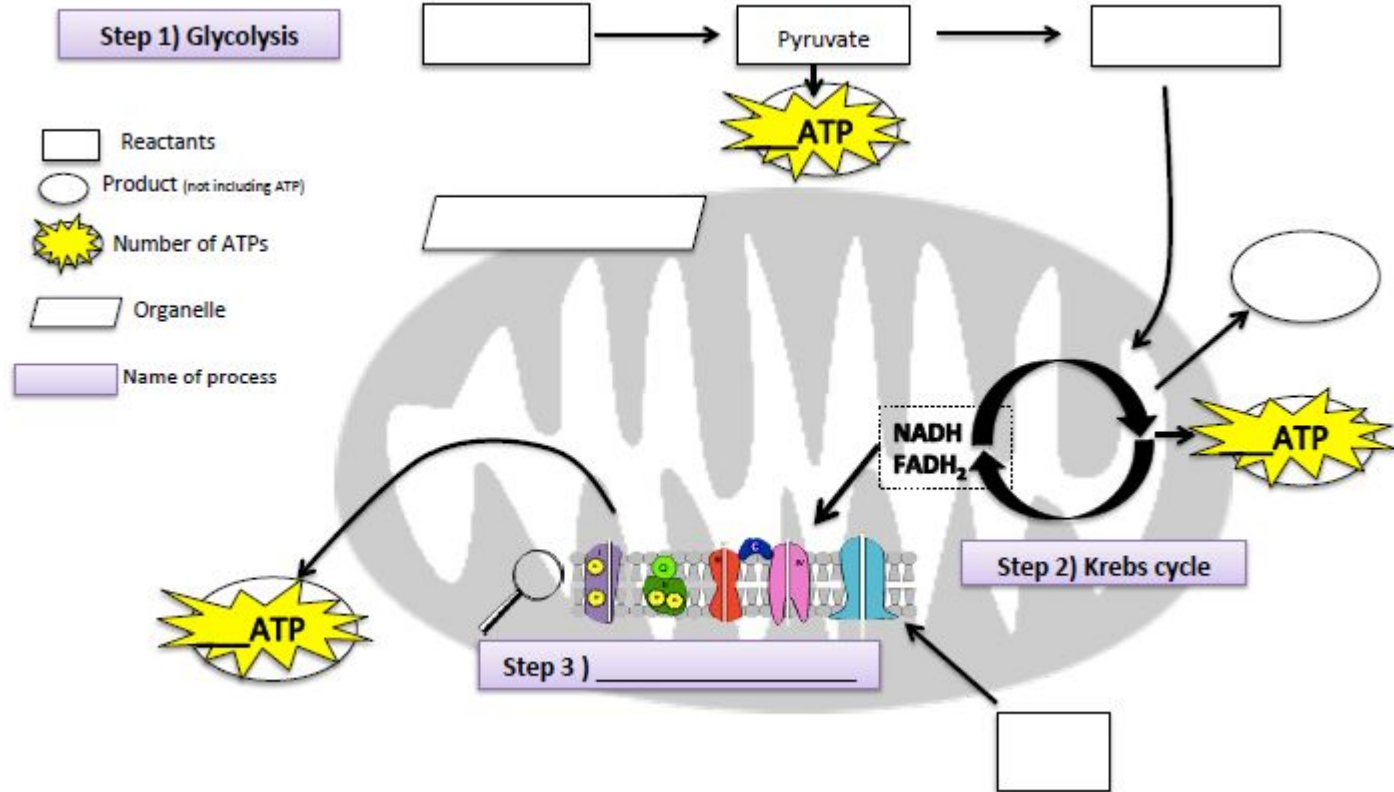
Mitochondria

Water/Carbon Dioxide

Oxygen

Glucose

Pyruvic Acid



How well did you do?

Electron Transport Chain

2

34

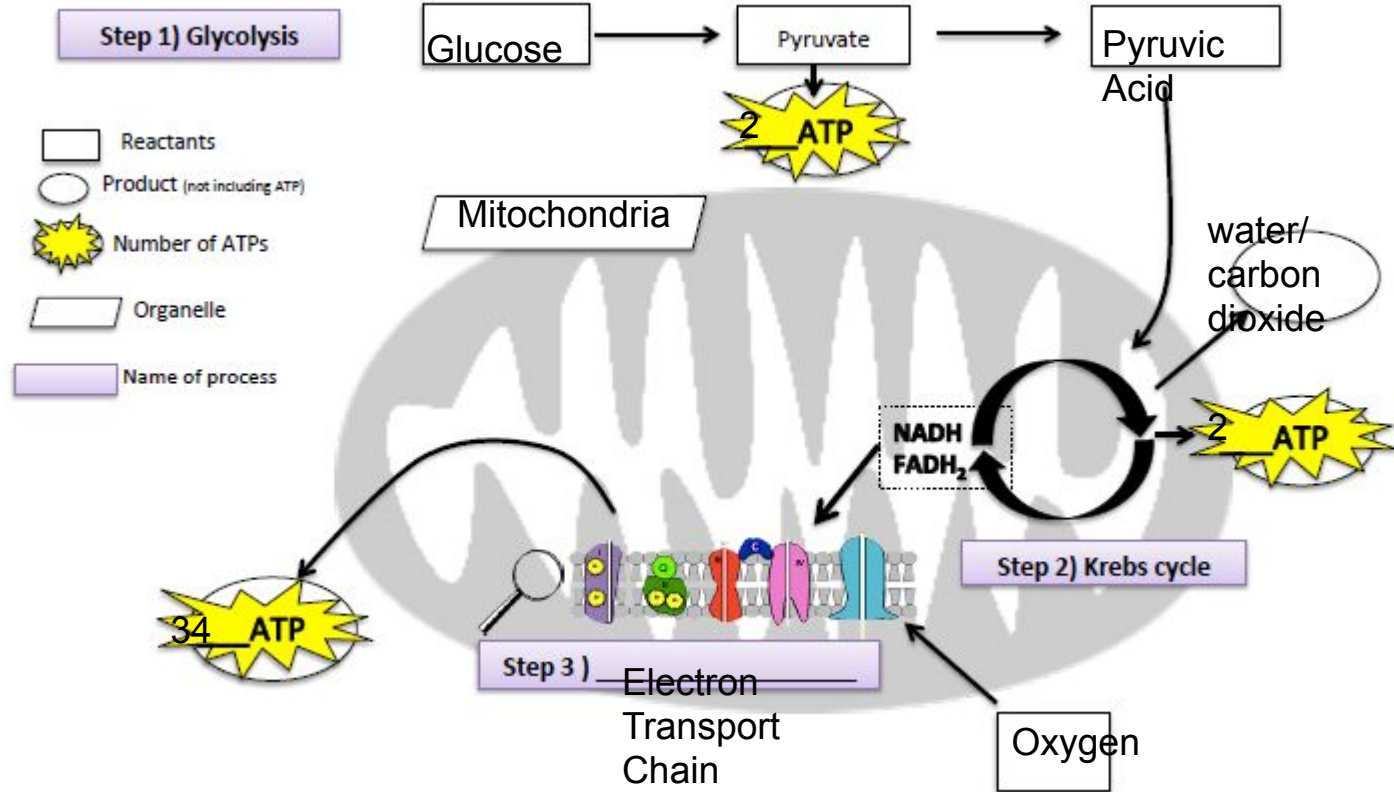
Mitochondria

Water/Carbon Dioxide

Oxygen

Glucose

Pyruvic Acid



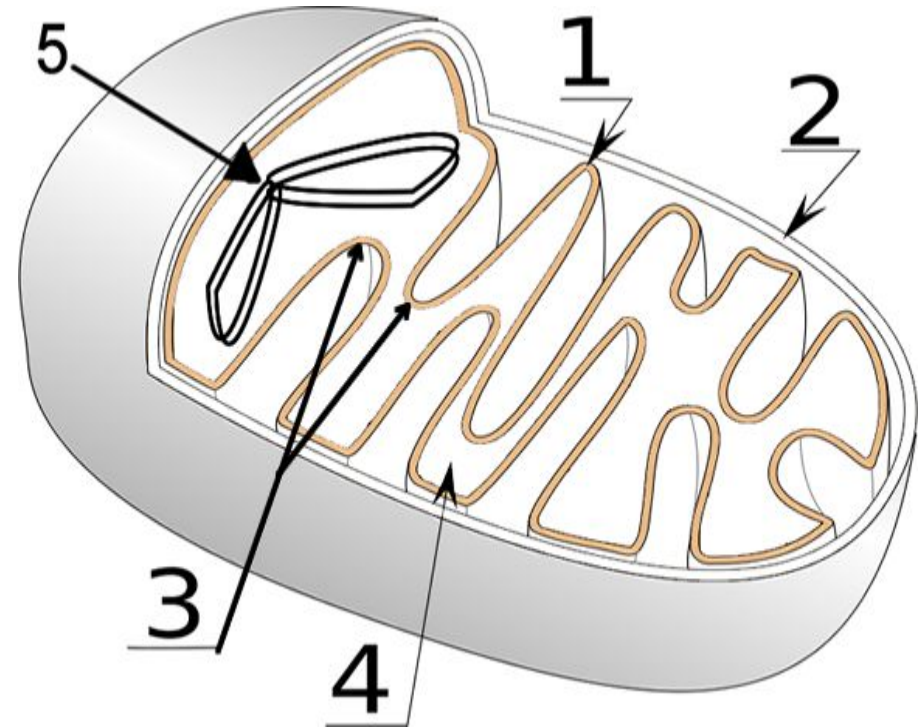


More Practice: Read the following passages, then answer the questions

Mitochondria are the powerhouses of the cell because they “burn” or break the chemical bonds of glucose to release energy to do work in a cell. Remember that this energy originally came from the sun and was stored in chemical bonds by plants during photosynthesis.

Glucose and other carbohydrates made by plants during photosynthesis are broken down by the process of **aerobic cellular respiration** (requires oxygen) in the mitochondria of the cell. This releases energy for the cell. ATP is the energy-carrying molecule produced by the mitochondria through a series of chemical reactions. The more active a cell (such as a muscle cell), the more mitochondria it will have.

The mitochondria are about the size of a bacterial cell and are often peanut-shaped. Mitochondria have their own DNA and a double membrane. The **outer membrane** (2) is smooth, while the **inner membrane** (1) is convoluted into folds called **cris^tae** (3) in order to increase the surface area. The **matrix** (4) is the space contained within the inner membrane.

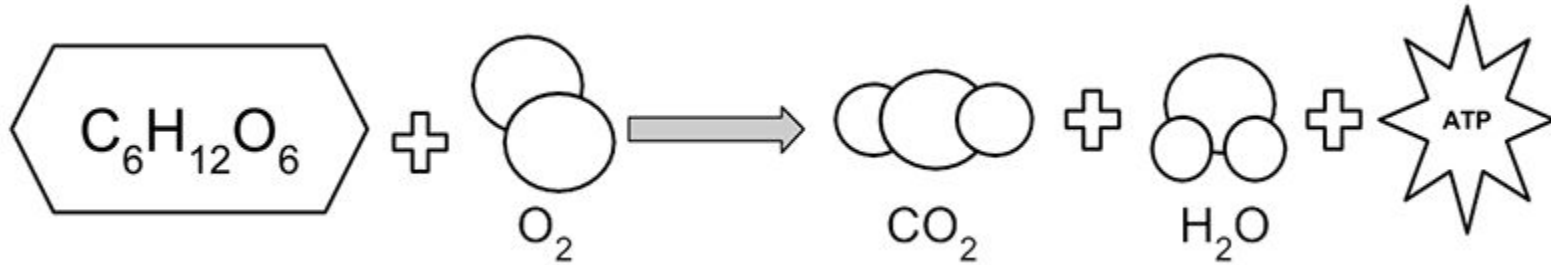




Answer these questions using information from the passage your read.

1. Why are mitochondria called the powerhouse of the cell?
2. What types of cells would have more mitochondria than others?
3. What simple sugar is broken down in the mitochondria?
4. Glucose is broken down by the mitochondria by what process?
5. In humans (and other animals) where does this glucose come from?
6. Why is this process called “aerobic?”
7. What energy-carrying molecule is created when the chemical bonds of glucose are broken?

Answer these questions using information from the passage you read.



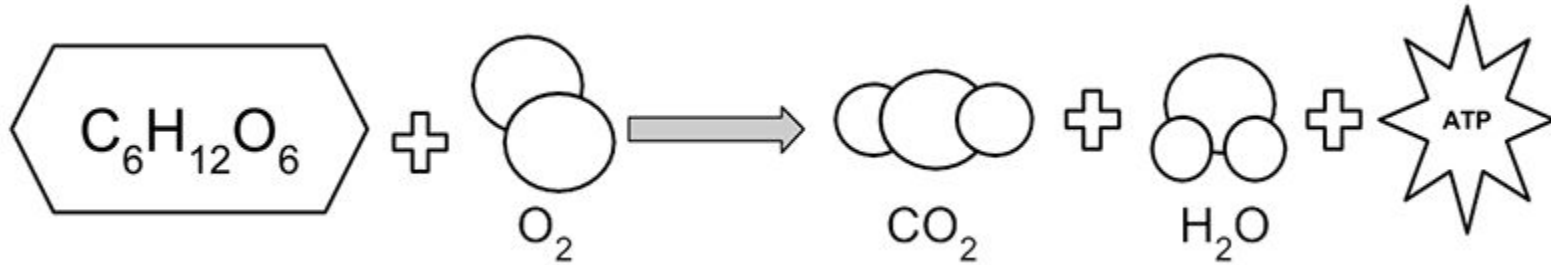
8. Products are what is created during a reaction. What are the three products of cellular respiration?
9. Reactants are what goes into the reaction, what are the two reactants needed for respiration to occur?



Answer these questions using information from the passage your read.

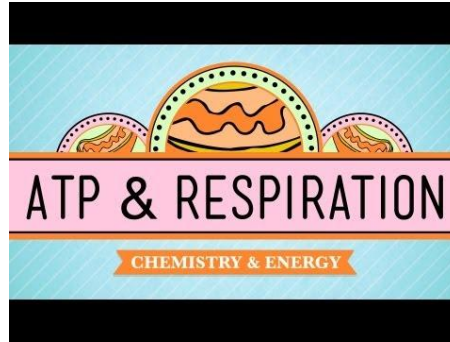
1. Why are mitochondria called the powerhouse of the cell? **They make the ATP energy. “they “burn” or break the chemical bonds of glucose to release energy to do work in a cell”**
2. What types of cells would have more mitochondria than others? **a muscle cell**
3. What simple sugar is broken down in the mitochondria? **Glucose**
4. Glucose is broken down by the mitochondria by what process? **aerobic cellular respiration (requires oxygen)**
5. In humans (and other animals) where does this glucose come from? **made by plants during photosynthesis**
6. Why is this process called “aerobic?” **Requires oxygen**
7. What energy-carrying molecule is created when the chemical bonds of glucose are broken? **ATP**

Answer these questions using information from the passage you read.



8. Products are what is created during a reaction. What are the three products of cellular respiration? CO_2 , H_2O , and ATP

9. Reactants are what goes into the reaction, what are the two reactants needed for respiration to occur? $C_6H_{12}O_6$ and O_2



[Video Worksheet](#)

[Answer key](#)