OCR (B) Biology GCSE

Topic B4.1: What happens during cellular respiration?

Flashcards

What is respiration?

What is respiration?

A process that releases energy in the form of ATP from the breakdown of glucose

What is ATP?

What is ATP?

It is a short term energy store in all cells and is described as the universal energy carrier.

Why does respiration occur continuously in living cells?

Why does respiration occur continuously in living cells?

ATP is required for many essential processes in living cells e.g. movement, homeostasis and active transport.

What type of reaction is respiration?

What type of reaction is respiration?

It is an exothermic reaction that releases energy in the form of heat.

Where do plants get the glucose required for respiration?

Where do plants get the glucose required for respiration?

They produce their own glucose during photosynthesis.

Where do animals get the glucose required for respiration?

Where do animals get the glucose required for respiration?

From the breakdown of carbohydrates that they have ingested

What is aerobic respiration?

What is aerobic respiration?

Respiration in the presence of oxygen that forms ATP from the breakdown of glucose

Write the word equation for aerobic respiration

Write the word equation for aerobic respiration

glucose + oxygen → carbon dioxide + water (+ATP)

Write the symbol equation for aerobic respiration

Write the symbol equation for aerobic respiration

$$C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O\ (+ATP)$$

What does aerobic respiration require?

What does aerobic respiration require?

Glucose, $C_6H_{12}O_6$

Or another respiratory substance e.g. lipids, proteins

Oxygen gas, O_2

What does aerobic respiration produce?

What does aerobic respiration produce?

Carbon dioxide gas, CO_2

Water, H_2O

ATP

Where does aerobic respiration take place in eukaryotic cells?

Where does aerobic respiration take place in eukaryotic cells?

In the cytoplasm and mitochondria

Where does aerobic respiration take place in prokaryotic cells?

Where does aerobic respiration take place in prokaryotic cells?

In the cytoplasm

What is anaerobic respiration?

What is anaerobic respiration?

Respiration that takes place without oxygen and forms ATP from the breakdown of glucose

When may anaerobic respiration take place in human cells?

When may anaerobic respiration take place in human cells?

During vigorous exercise

When may anaerobic respiration take place in plant cells?

When may anaerobic respiration take place in plant cells?

If the soil becomes waterlogged

When may anaerobic respiration take place in bacteria?

When may anaerobic respiration take place in bacteria?

When bacteria enter puncture wounds (little oxygen available)

Where does anaerobic respiration take place?

Where does anaerobic respiration take place?

It takes place in the cytoplasm of eukaryotic and prokaryotic cells.

What does anaerobic respiration require?

What does anaerobic respiration require?

Glucose, $C_6H_{12}O_6$

Or another respiratory substance e.g. lipids, proteins

Write the word equation for anaerobic respiration in muscle cells

Write the word equation for anaerobic respiration in muscle cells

glucose → lactic acid (+ ATP)

Why may anaerobic respiration in muscle cells eventually stop?

Why may anaerobic respiration in muscle cells eventually stop?

Lactic acid build-up inhibits anaerobic respiration

What are the symptoms of lactic acid build-up?

What are the symptoms of lactic acid build-up?

Cramp and fatigue

Write the word equation for anaerobic respiration in yeast cells

Write the word equation for anaerobic respiration in yeast cells

glucose → ethanol + carbon dioxide

(+ATP)

What is the problem associated with ethanol build-up in yeast cells?

What is the problem associated with ethanol build-up in yeast cells?

Ethanol is toxic to yeast cells

Is aerobic or anaerobic respiration more efficient? Explain why

Is aerobic or anaerobic respiration more efficient? Explain why

Aerobic respiration is more efficient as it produces 32 molecules of ATP in comparison to anaerobic respiration which produces 2 molecules of ATP.

Why does anaerobic respiration release less energy than aerobic respiration?

Why does anaerobic respiration release less energy than aerobic respiration?

Glucose is only partially broken down in anaerobic respiration.