AQA Biology GCSE

4.2 - Respiration

Flashcards

What is aerobic respiration?

What is aerobic respiration?

An exothermic reaction in which glucose reacts with oxygen to release energy which can be used by cells.

What are the equations for aerobic respiration? (word and symbol)

What are the equations for aerobic respiration? (word and symbol)

Glucose + oxygen → carbon dioxide + water (+energy)

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

Where does aerobic respiration take place?

Where does aerobic respiration take place?

In the mitochondria

Why do organisms require the energy released by respiration?

Why do organisms require the energy released by respiration?

- Synthesis of larger molecules
- Muscle contraction
- Maintenance of body temperature
- Active transport

What is anaerobic respiration?

What is anaerobic respiration?

An exothermic reaction in which glucose is broken down to release energy in the absence of oxygen.

What is the equation for anaerobic respiration?

What is the equation for anaerobic respiration?

Glucose → lactic acid (+energy)

Why is anaerobic respiration less efficient than aerobic respiration?

Why is anaerobic respiration less efficient than aerobic respiration?

Glucose is not completely broken down, so less energy is transferred.

Why can anaerobic respiration lead to muscle fatigue?

Why can anaerobic respiration lead to muscle fatigue?

Lactic acid (product of anaerobic respiration) builds up in muscles, preventing efficient contraction.

What is an oxygen debt?

What is an oxygen debt?

The amount of oxygen needed to convert lactic acid into back into glucose after anaerobic respiration.

What is fermentation?

What is fermentation?

A type of anaerobic respiration that occurs in yeast cells.

What is the equation for fermentation?

What is the equation for fermentation?

Glucose → ethanol + carbon dioxide (+energy)

Why is the fermentation reaction important?

Why is the fermentation reaction important?

It is used in the production of bread and alcoholic drinks.

What are the differences between aerobic and anaerobic respiration?

What are the differences between aerobic and anaerobic respiration?

- Aerobic requires oxygen; anaerobic does not.
- Aerobic produces CO_2 and water; anaerobic produces lactic acid or ethanol + CO_2.
- Aerobic transfers a greater amount of energy.

How do muscles store glucose?

How do muscles store glucose?

As glycogen

What changes take place when muscular activity increases in the body?

What changes take place when muscular activity increases in the body?

- Heart rate increases and arteries dilate - increases flow of oxygenated blood to muscles.
- Breathing rate increases and breathing is deeper - increases the rate of gaseous exchange.
- Stored glycogen is converted back into glucose.

How is lactic acid transported away from the muscles?

(higher)

How is lactic acid transported away from the muscles? (higher)

Blood flow through the muscles transports lactic acid to the liver, where it is oxidised back to glucose.

What is metabolism?

What is metabolism?

The sum of all the reactions that take place in a cell or an organism.

How do cells use the energy transferred by respiration?

How do cells use the energy transferred by respiration?

To continuously carry out enzyme-controlled processes which lead to the synthesis of new molecules.

Give examples of metabolic reactions

Give examples of metabolic reactions

- Glucose into starch/glycogen/cellulose
- Glycerol and fatty acids into lipids
- Glucose and nitrate ions into amino acids
- Photosynthesis
- Respiration
- Breakdown of excess proteins into urea