Gas Exchange and Respiration B4 Fact Sheet

Aerobic respiration is the process by which organisms release energy from food.

Energy is used to power all the chemical processes necessary for life.

The formula for aerobic respiration is:

Oxygen + Glucose ⟶ Water + Carbon dioxide (+ energy)

Respiration without oxygen is called anaerobic respiration and involves the partial breakdown of glucose releasing less energy.

The equation for anaerobic respiration is:

Glucose ⟶ Lactic Acid (+ energy)

Yeast carries out anaerobic respiration which is called fermentation.

The equation for anaerobic fermentation is:

Glucose ⟶ Alcohol + Carbon dioxide (+ energy)

The rate of fermentation can be affected by temperature.

The lungs are the organs used for breathing and gas exchange.

Oxygen diffuses into the blood through the alveoli in the lungs.

Carbon dioxide diffuses from the blood into the alveoli and is then breathed out of the body.

Breathing in air occurs as the volume of the chest cavity increases by ribs moving up and out, diaphragm moving down decreasing the air pressure in the lungs and forcing air in.

Breathing out occurs when volume decreases by ribs moving down and in, diaphragm moving up and pressure increasing in the lungs forcing air out.

Breathing is a physical process.

Respiration is a chemical reaction that takes place in all cells in the body of an organism.

Gas exchange in the lungs is effective because the alveoli provide a large surface area, are moist and thin and have a good blood supply.

Things that effect our breathing are exercise (+) Asthma (-) and smoking (-).

Plants obtain their gases for photosynthesis and respiration through the stomata in the leaf's lower surface.

Stomata are holes that can be opened and closed by guard cells to allow carbon dioxide, oxygen and water vapour to go in and out of the leaf.

Stoma (singular)

Stomata (plural)