

Science: Respiration and Breathing Knowledge Organiser

Year 8: TERM 3 Date : _____

Key definitions:

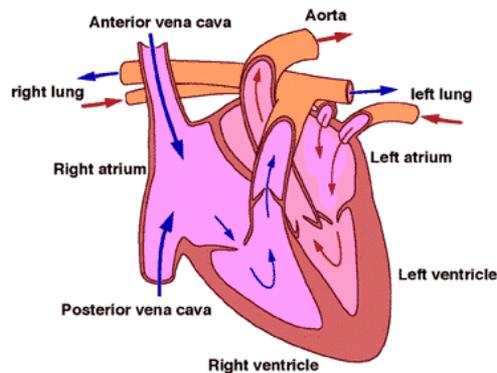
Respiration	The process by which energy is released from food inside cells Glucose + oxygen → water + carbon dioxide
Atria	The top two chambers of the heart which receive blood
Ventricle	The bottom two chambers of the heart which pump blood
Valves	Flaps found in the heart and in veins which stop blood flowing backwards
Haemoglobin	The substance in red blood cells that carries oxygen
Artery	Blood vessel that carries blood away from the heart to all parts of the body. Strong and elastic
Vein	Blood vessel which returns blood to the heart. Flimsy and shapeless and contains valves.
Capillary	Thin walled blood vessel which carries blood to tissues. Carries one blood cell at a time
Ventilation	The scientific word for moving gases in breathing
Trachea	Also called the windpipe
Diaphragm	The sheet of muscle below the ribs that controls breathing
Bronchus	One of the two tubes that join the trachea to the right and left lungs
Bronchioles	The smaller tubes that branch off from the 2 bronchi
Alveoli	Air sacs at the ends of the tubes in the lungs where exchange of gases with the blood takes place
Mucus	Sticky substance that traps particles on the internal surfaces of the body
Diffusion	Movement of particles from an area of high concentration to low concentration. It's how oxygen move from the air into the blood.
Exhale	Breathing out

Plants and animals release energy mainly by aerobic respiration.

Respiration takes place in the mitochondria of all living cells.

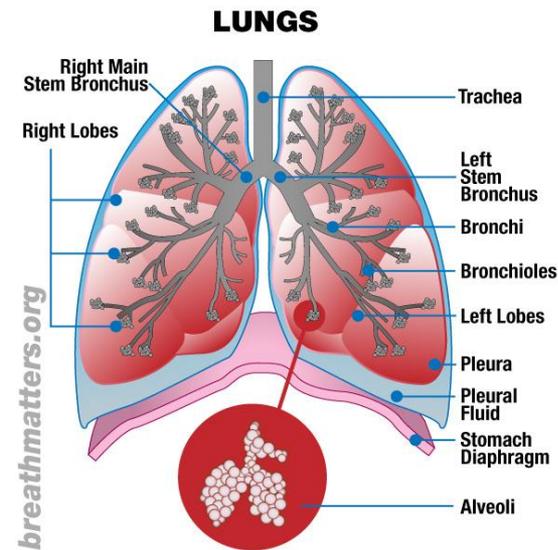
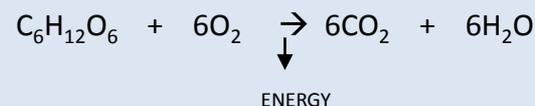
The oxygen and glucose is transported to cells in the circulatory system (heart & blood vessels). Plants can transport glucose in the phloem system.

The oxygen is taken into our bodies using the breathing (respiratory) system (lungs). Plants can take in oxygen through the stomata



Aerobic Respiration Reaction:

glucose + oxygen → carbon dioxide + water



Anaerobic respiration

This type of respiration occurs during exercise when the heart and lungs are supplying as much oxygen as they can but it's not enough.

Glucose is broken down to make lactic acid, which can cause pain in muscles.

It doesn't release as much energy as aerobic respiration. The lactic acid will need to be broken down after exercise.

- Glucose → Lactic acid
- Lactic acid + oxygen → carbon dioxide + water