

Keyword	Definition
Respiration	Process in living things which oxygen is used to release the energy from food. Glucose + Oxygen → Carbon Dioxide + Water (+energy)
Aerobic Respiration	Respiration that requires oxygen.
Anaerobic Respiration	Respiration without oxygen.
Lactic Acid	A chemical produced during anaerobic respiration
Mitochondria	Structures in the cytoplasm of all cells where aerobic respiration takes place.
Oxygen Debt	The amount of extra oxygen required by the body for recovery after vigorous exercise.
Alveoli	Tiny air sacs in the lungs, where gas is exchanged during breathing.
Bronchi	Branches off the trachea that distribute air to both lungs.
Bronchioles	Branches of the bronchi, that distribute the inhaled air throughout all of the lungs.
Diaphragm	Expands and moves down so lungs have room to fill with air – inhalation. Contracts and moves upwards to force air out of the lungs (exhalation).
Lung	Soft organ that inflates to draw in oxygenated air and deflates to expel air.
Trachea	Windpipe, air passes between mouth and lungs.

Aerobic Respiration

Respiration is a series of reactions that takes place in the cells of animals and plants. Energy is released in the reaction. The mitochondria, found in the cell cytoplasm, is where respiration happens.



'Energy' is in brackets because it is not a substance. This type of respiration, where oxygen is used, is known as aerobic respiration. Oxygen (from breathing) is carried from the lungs to all the cells of the body in the blood. The waste products (carbon dioxide and water) are taken away from the cells by the blood and breathed out from the lungs.

Anaerobic Respiration

Although anaerobic respiration does release some energy, it does not release as much as aerobic respiration does.



The lactic acid produced during anaerobic respiration builds up in muscles. This can be felt as an aching in muscles during or after exercise.



Anaerobic Respiration In Microbes

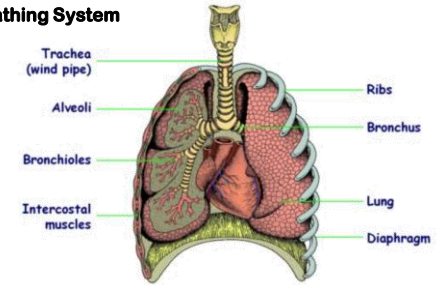
Anaerobic respiration happens in microorganisms such as bacteria because they need to release energy from glucose. Yeast (unicellular fungi), carry out a process called fermentation.



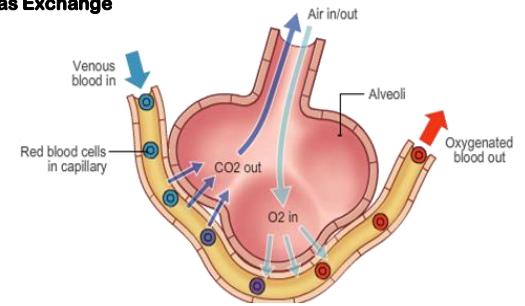
The ethanol (alcohol) is useful for brewers, and carbon dioxide is useful to bakers because it helps their bread rise.



The Breathing System



Gas Exchange



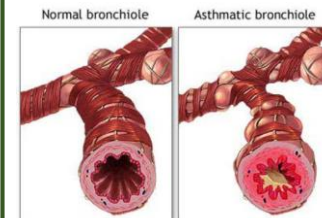
The alveoli are adapted to make gas exchange in the lungs happen easily and efficiently.

- Alveoli give the lungs a large surface area.
- Alveoli have thin cells walls (just one cell thick)
- Alveoli are surrounded by lots of blood capillaries.

The gases move by diffusion from where they have a high concentration to a lower concentration.

Oxygen diffuses from the air in the alveoli into the blood. Carbon dioxide diffuses from the blood into the air in the alveoli.

Asthma and Respiration



Air passage for people who are asthmatic become reduced.

This is why they often struggle during exercise as there is reduced volume of oxygen getting into the blood stream, so rate of respiration is reduced.