

## SB8a Efficient transport and exchange

Word	Pronunciation	Meaning
aerobic respiration	<i>air-O-bick res-pir-ay-shun</i>	A type of respiration in which oxygen is used to release energy from substances such as glucose.
alveolus	<i>al-vee-O-lus</i>	A small pocket in the lungs in which gases are exchanged between the air and the blood. (Plural is alveoli.)
capillary		A tiny blood vessel with thin walls to allow for the transfer of substances between the blood and tissues.
circulatory system		The system that moves blood through the body. It consists of the heart, arteries, veins and capillaries.
diffusion	<i>diff-yoo-zshun</i>	The random movement and spreading of particles. There is a net (overall) diffusion of particles from a region of higher concentration to a region of lower concentration.
excretion	<i>ex-kree-shun</i>	The removal of waste materials that have been produced inside an organism.
gas exchange		A process in which one gas diffuses across a membrane and another gas diffuses in the opposite direction.
metabolism		All the chemical reactions that occur in an organism.
multicellular organism		An organism that is made up of many cells.
surface area : volume (SA : V) ratio		The total amount of surface area of an object divided by its volume. The bigger the ratio, the more surface area something has per unit volume.
urea	<i>yoo-ree-a</i>	A waste product made in the liver from excess amino acids.

## SB8b Factors affecting diffusion

Word	Pronunciation	Meaning
concentration	<i>con-sen-tray-shun</i>	The amount of solute dissolved in a certain amount of solution.
concentration gradient	<i>con-sen-tray-shun gray-dee-ent</i>	The difference between two concentrations. There will be an overall movement of particles <i>down</i> a concentration gradient, from higher concentration to lower concentration.
directly proportional		A relationship between two variables in which if one variable doubles, the other also doubles.
Fick's law		The relationship between the different variables that affect diffusion: rate of diffusion $\propto$ $\frac{\text{surface area} \times \text{concentration difference}}{\text{thickness of membrane}}$
inversely proportional		A relationship between two variables in which if one variable doubles, the other halves.
linear relationship		A relationship between two variables shown by a straight line on a graph.

## SB8c The circulatory system

Word	Pronunciation	Meaning
antibody		A protein produced by lymphocytes. It attaches to a specific antigen on a microorganism and helps to destroy or neutralise it.
artery		A blood vessel that carries blood away from the heart.
blood		The fluid that carries oxygen and other substances from the heart to the body.
capillary		A tiny blood vessel with thin walls to allow for the transfer of substances between the blood and tissues.
erythrocyte	<i>er-ree-throw-site</i>	Another term for red blood cell.
haemoglobin	<i>hee-mO-gIO-bin</i>	The red, iron-containing pigment found in red blood cells.
heart		A muscular organ in the circulatory system that pumps blood around the body.
lymphocyte	<i>lim-fO-site</i>	A type of white blood cell that produces antibodies.
phagocyte	<i>fag-O-site</i>	A white blood cell that is capable of engulfing microorganisms such as bacteria.
plasma		The straw-coloured liquid component of blood.
platelet		Cell fragments that are important in the clotting mechanism of the blood.
pulse		A shock wave caused by the contraction of the heart muscles, which travels through the walls of arteries leading from the heart.
red blood cell		A biconcave disc containing haemoglobin that gives blood its red colour and carries oxygen around the body to the tissues. Also known as an erythrocyte.
valve		A structure made of flaps of tissue that stops blood flowing in the wrong direction.
vein		A blood vessel that transports blood towards the heart.
white blood cell		A type of blood cell that forms part of the body's defence system against disease. There are many different types of white blood cell, including lymphocytes and phagocytes.

## SB8d The heart

Word	Pronunciation	Meaning
aorta		The major artery leading away from the heart.
atrium		An upper chamber in the heart that receives blood from the veins. (Plural is atria.)
cardiac output		The volume of blood the heart can pump out in one minute. It is calculated using the equation: cardiac output = stroke volume × heart rate
chamber		An enclosed space. A human heart has four chambers.

Word	Pronunciation	Meaning
<b>contract</b>		To become smaller. When muscles contract, they shorten and become fatter.
<b>deoxygenated blood</b>		Blood in which the red blood cells are only carrying small amounts of oxygen. Deoxygenated blood is a dark red colour.
<b>heart attack</b>		When the heart stops pumping properly due to a lack of oxygen reaching part of it.
<b>heart rate</b>		The number of heart beats in a unit of time, usually per minute (beats/min).
<b>heart valve</b>		A structure made of flaps of tissue between an atrium and a ventricle of the heart. The heart valve stops blood flowing in the wrong direction when the heart muscle contracts.
<b>impulse</b>		An electrical signal transmitted along a neurone.
<b>oxygenated blood</b>		Blood in which the red blood cells are carrying large amounts of oxygen. Oxygenated blood is a bright red colour.
<b>pulmonary artery</b>		An artery that carries deoxygenated blood from the right atrium to the lungs.
<b>pulmonary vein</b>		A vein that carries oxygenated blood from the lungs to the left atrium.
<b>septum</b>		A wall of tissue. The septum in the heart completely separates the chambers on the right from those on the left.
<b>stroke volume</b>		The volume of blood the heart can pump out with each beat.
<b>tendon</b>		A strand of tissue used to connect other tissues. The tendons in the heart connect the valves with the heart walls.
<b>vena cava</b>	<i>vee-na kay-va</i>	A major vein leading to the heart.
<b>ventricle</b>		A lower chamber in the heart that pumps blood out into the arteries.

### SB8e Cellular respiration

Word	Pronunciation	Meaning
<b>aerobic respiration</b>	<i>air-O-bick res-pir-ay-shun</i>	A type of respiration in which oxygen is used to release energy from substances such as glucose.
<b>anaerobic respiration</b>	<i>an-air-O-bick res-pir-ay-shun</i>	A type of respiration that does not need oxygen.
<b>cellular respiration</b>		Chemical process by which living cells produce energy in the cell.
<b>exothermic</b>		A type of reaction in which energy is transferred to the surroundings from the reactants. This energy transfer usually causes the temperature of the surroundings to rise.

Word	Pronunciation	Meaning
<b>glucose</b>		A sugar produced by the digestion of carbohydrates and needed for respiration.
<b>lactic acid</b>		The waste product of anaerobic respiration in animal cells.
<b>mitochondrion</b>	<i>my-toe-kon-dree-on</i>	A sub-cellular structure (organelle) in the cytoplasm of eukaryotic cells, where aerobic respiration occurs. (Plural is mitochondria.)