

## CB8a 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.  |

## CB8b 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.   |

| Word                    | Pronunciation | Meaning  |
|-------------------------|---------------|--|
| <b>plasma</b>           |               | The straw-coloured liquid component of blood.  |
| <b>platelet</b>         |               | Cell fragments that are important in the clotting mechanism of the blood.  |
| <b>pulse</b>            |               | A shock wave caused by the contraction of the heart muscles, which travels through the walls of arteries leading from the heart.   |
| <b>red blood cell</b>   |               | 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.                     |
| <b>valve</b>            |               | A structure made of flaps of tissue that stops blood flowing in the wrong direction.   |
| <b>vein</b>             |               | A blood vessel that transports blood towards the heart.  |
| <b>white blood cell</b> |               | 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. |

### CB8c The heart

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

| Word                  | Pronunciation        | Meaning   |
|-----------------------|----------------------|---|
| <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.  |

### CB8d 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. |
| <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.)                                     |