



B8: Exchange and Transport in Animals

1. Efficient Exchange & Transport

Transport	Moving substances around the body.
Exchange	Moving substances in and out of our cells.
Diffusion	The way substances move in and out of cells – they diffuse from high to low concentration.
Alveoli	Air sacs in lungs where CO ₂ and O ₂ are exchanged

2. Circulatory System

Circulatory System	Your heart, arteries, capillaries and veins which work together to pump blood around the body.
The Role of Blood	To carry oxygen and nutrients to our cells and take waste products away.
Arteries	Role: Carry blood away from the heart
Capillaries	To exchange nutrients and waste between the blood and cells.
Veins	Role: To carry blood towards the heart

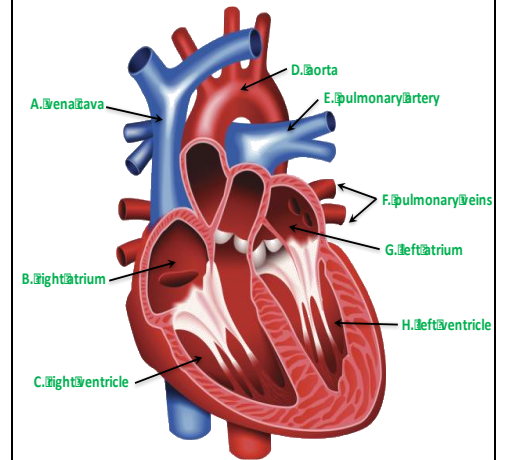
Components of Blood	Plasma, red blood cells, white blood cells, platelets.
Plasma	A straw-coloured liquid that carries the blood cells and dissolved substances such as urea, carbon dioxide and glucose.
Red Blood Cells	Erythrocytes Contain haemoglobin to carry oxygen around the body.
White Blood Cells	Fight pathogens. Phagocytes – engulf ('eat') pathogens. Lymphocytes – produce antibodies to attack pathogens.
Platelets	Small fragments of cells that help the blood to clot when you are cut.

3. The Heart

Heart	A double pump that pumps blood: Right side: to lungs Left side: around the whole body
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Atria (Atriums)	The two chambers at the top of the heart. Right: receives blood from body Left: receives blood from lungs
Ventricles	The two chambers at the bottom of the heart Right: pumps blood to lungs Left: pumps blood to body
Valves	Prevent blood from flowing from the ventricles back to the atria
Vena Cava	Carries blood from the body into the right atrium.
Pulmonary Artery	Carries blood from the right ventricle to the lungs.
Pulmonary Vein	Carries blood from the lungs to the left atrium.
Aorta	Carries blood from the left ventricle to the body.
Cardiac Output	Cardiac output = stroke volume x heart rate
Increasing Cardiac Output	Stronger heart beats (higher stroke volume), higher heart rate.

Structure of the Heart



4. Respiration

Respiration	An exothermic reaction carried out in all living cells to release energy from food molecules such as glucose.
Aerobic Equation	glucose + oxygen → carbon dioxide + water
Anaerobic Equation	Glucose → lactic acid
Lactic Acid	A poison that builds up in muscles during anaerobic respiration leading to muscle tiredness and cramp.