

Biology 2: Organisation

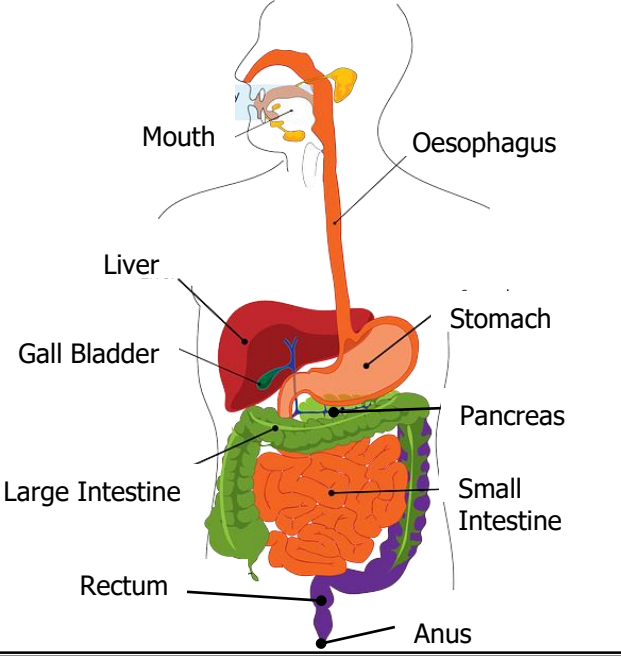
Section 1: Organisation

1 Tissue	A group of cells with a similar structure and function e.g. muscle tissue
2 Organ	A group of tissues performing a specific function e.g. heart, leaf
3 Organ System	A group of organs that perform a specific function e.g. digestive system.

Section 2: Human Digestive System

4 Order of movement of food through the digestive system:

Mouth	Many
Oesophagus	Ordinary
Stomach	Students
Small intestine	Struggle
Large intestine	Learning and
Rectum	Remembering
Anus	Answers



Section 3: Enzymes Key Terms

5 Enzyme	A biological catalyst that can speed up the rate of reaction without being used itself. Made of a large protein molecule .
6 Substrate	The chemical that fits into the active site of an enzyme.
7 Lock and Key Model	Only one type of substrate can fit into the active site of an enzyme, like a key fits into a lock.
8 Denatured	When the active site of an enzyme changes shape and the substrate can no longer fit in . Can be caused by pH or temperature .

Section 4: Testing for Biological Molecules

Molecule	Chemical Test	Positive Result
9 Starch	Add orange/brown iodine solution .	Colour turns to blue/black .
10 Sugar	Add blue Benedict's solution . Place in a boiling water bath for 5 minutes .	Colour turns green/ yellow/ orange/ brick red .
11 Protein	Add blue Biuret solution .	Colour turns to lilac/ purple .
12 Lipid	Add ethanol and decant into water .	Cloudy white emulsion .

Section 5a: Human Digestive Enzymes

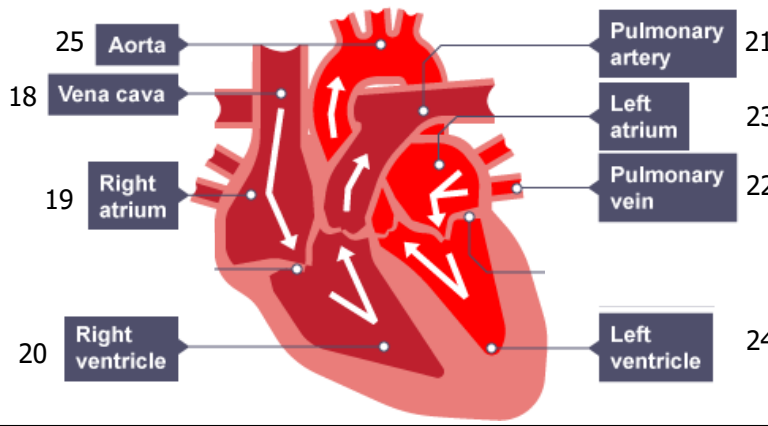
Enzyme	Function	Sites of production	Sites of action
13 Amylase	Breaks starch into sugars .	Salivary glands Pancreas Small intestine	Mouth Small intestine
14 Protease	Breaks proteins into amino acids .	Stomach Pancreas Small intestine	Stomach Small intestine
15 Lipase	Breaks lipids (fats) into fatty acids and glycerol .	Pancreas Small intestine	Small intestine

Section 5b: Other Chemicals

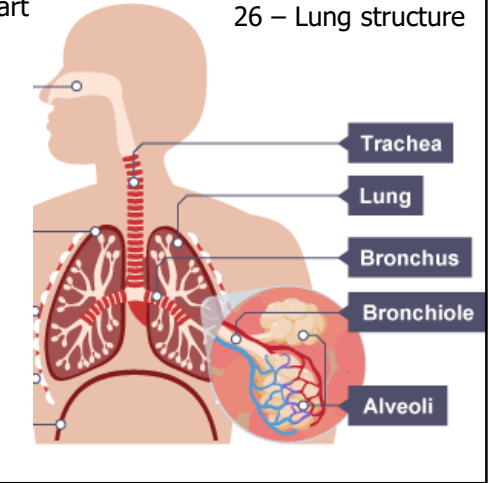
16 Hydrochloric Acid	Acid with pH of 2 produced by the stomach. Unravels proteins .
17 Bile	Emulsifies fats (turns them into droplets to give a greater surface area). It is alkaline so neutralises acid from the stomach . Produced in liver, stored in gall bladder and is released into the small intestine .

Section 6: Heart and Lungs

Orders of numbers is the way in which blood flows through the heart



26 – Lung structure



Section 6a: Structures in the Heart

27 Pacemaker	Group of cells in the right atrium that controls resting heart rate .
28 Right ventricle	Pumps deoxygenated blood to the lungs for gas exchange .
29 Left ventricle	Pumps oxygenated blood to the body . Thick, muscular wall .
30 Valve	Stops blood flowing the wrong way / leaking.

Section 6b: Structures in the Lungs

31 Alveoli	Small sacs where gas exchange occurs. Surrounded by capillaries . Oxygen moves from the alveoli into the capillaries , carbon dioxide moves from the capillaries into the alveoli
32 Trachea and Bronchi	Tubes through which gases move. Lined with cartilage so they don't collapse.

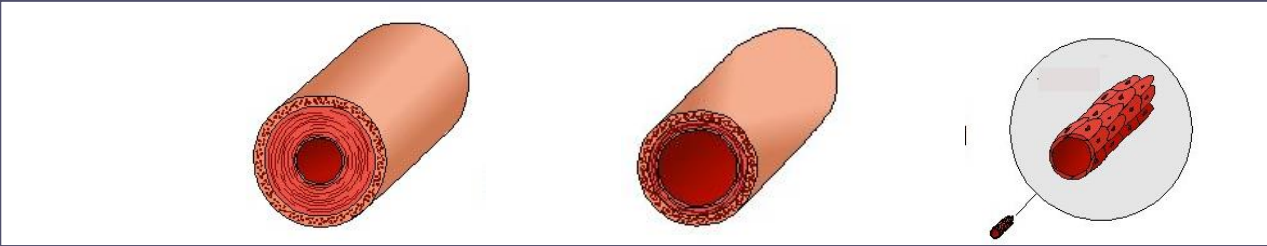
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Section 7: Heart Disease

33 Coronary Heart Disease Build up of **fatty material in coronary arteries**. Can lead to a **blood clot** and a **heart attack**.

Treatment	What it is	Advantage	Disadvantage
34 Stent	Wire mesh that opens up a blocked artery .	Keeps artery open. Low-risk surgery.	Fatty material can rebuild.
35 Statin	Drug that reduces cholesterol .	Reduces fat being deposited in arteries.	Side effects e.g. liver damage.
36 Heart transplant	Replacement heart from a donor.	Long-term.	Major surgery. Could be rejected.
37 Artificial heart	Man-made heart used while waiting for a transplant .	Not rejected. Keeps patient alive.	Short life-time. Battery has to be transported. Limited activity.
38 Mechanical heart valve	Mechanical replacement of faulty heart valve.	Can last a life-time.	Can damage red blood cells.
39 Biological heart valve	Biological replacement of faulty heart valve.	Don't damage red blood cells.	Valve hardens and may need replacing.

Section 8: Blood Vessels



	40 Artery	41 Vein	42 Capillary
Purpose	Takes blood away from the heart .	Takes blood back to the heart .	Exchange of substances between blood and cells .
Adaptations	Thick wall to withstand high pressure	Thin wall. Valves to prevent backflow of blood .	Wall is one cell thick to allow quick diffusion of substances.

Section 9: Components of the Blood

43 Plasma	Liquid part of the blood. Transports blood cells as well as carbon dioxide, proteins, glucose, hormones and urea .
44 Red Blood Cells	Carries oxygen . Packed with haemoglobin , a protein that binds to oxygen. No nucleus to create extra space for haemoglobin. Biconcave shape to give a large surface area .
45 White Blood Cells	Destroy pathogens . Some can produce antibodies .
46 Platelets	Cell fragments that help to clot wounds .

Section 10a: Movement within Plants

47 Transpiration	The loss of water vapour from the leaves by evaporation from cells and then out through the stomata .
48 Transpiration Stream	The movement of water from the roots , up the stem to the leaves .
49 Translocation	The movement of dissolved sugars around the plant.

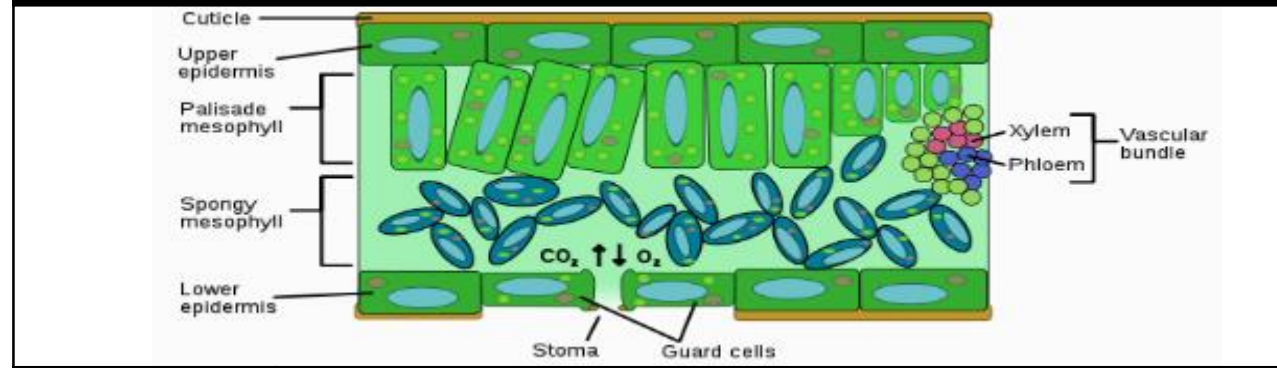
Section 10b: Factors Affecting Transpiration

50 Temperature	Increasing temperature increases the transpiration rate as water evaporates quickly.
51 Humidity	Increasing humidity decreases the rate of transpiration as water evaporates slowly.
52 Wind speed	Increasing wind speed increases the transpiration rate as water evaporates quickly.
53 Light	Increasing light increases the rate of transpiration as stomata open .

Section 11: Cell Adaptations for Movement Within Plants

54 Root hair cell Extension gives a large surface area to absorb water and minerals .	55 Xylem Vessels are strengthened by lignin to withstand pressure . Cell walls are waterproof .	56 Phloem End of cells contain pores to allow dissolved sugars to move between cells.	57 Guard Cells and Stoma Guard cells can open the stoma to allow gas exchange or close to prevent water loss .

Section 12: Leaf Structure and Plant Tissues



58 Epidermis	Cover the surfaces of the leaf; lets light penetrate .59
59 Xylem	Carries water and minerals from the roots around the plant.
60 Phloem	Carries dissolved sugars made through photosynthesis around the plant. 6
61 Palisade mesophyll	Where most photosynthesis takes place. Cells contain many chloroplasts . Absorbs light .
62 Spongy mesophyll	Some photosynthesis . Has air spaces for diffusion of CO ₂ and O ₂ .
63 Guard cells	Cells that open and close stomata .
64 Stoma	Opening that allows CO₂ and O₂ to diffuse in and out of the leaf.