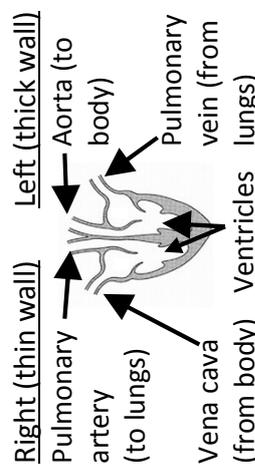
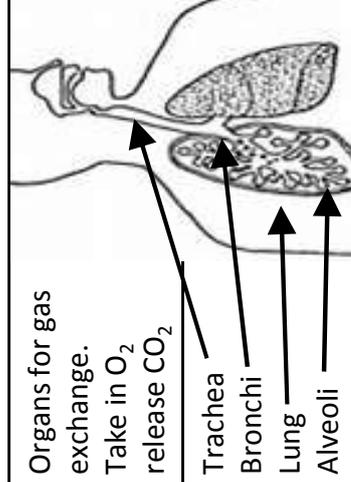
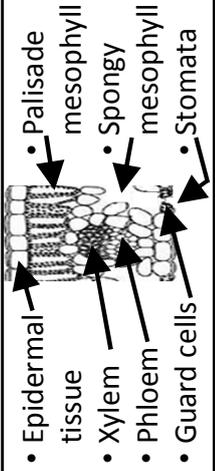


Key points to learn

1. Blood	A tissue of plasma, red blood cells, white blood cells and platelets
2. Plasma	Yellow liquid that transports: <ul style="list-style-type: none"> Red and White Blood cells Waste carbon dioxide to lungs Urea from liver to kidneys Digested nutrients to cells
3. Red blood cells	Biconcave discs with no nucleus. Packed with red haemoglobin that carries oxygen to body cells
4. White blood cells	Part of the body's defence against microorganisms
5. Platelets	Small pieces form scabs over cuts
5. Circulatory system	Transports substances to/from body cells. Made up of: <ul style="list-style-type: none"> Blood Blood vessels (arteries, veins and capillaries) The Heart
6. Arteries	Carry blood away from your heart at high pressure
7. Veins	Carry blood back to your heart. Use valves to stop reverse blood flow
8. Capillaries	Network of tiny, thin vessels connecting to every individual cell. Substances diffuse in/out of blood
9. Coronary arteries	Blood vessels that supply heart with oxygen
10. (Aerobic) Respiration	Process by which all living things get energy from glucose and oxygen Glucose + Oxygen → Carbon + Water dioxide

Key points to learn

11. The Heart	Organ made of muscle that pumps blood in two loops around body 
12. The Lungs	Organs for gas exchange. Take in O ₂ release CO ₂ 
13. Alveoli	Thin sac-like structures within the lungs. Covered in blood vessels to help gas exchange 
14. Plant organs	Leaf – carries out photosynthesis Stem – supports Roots – take in water and minerals
15. Leaf structure cross-section	 <ul style="list-style-type: none"> • Epidermal tissue • Palisade mesophyll • Xylem • Phloem • Guard cells • Stomata
16. Transport within plant	<ul style="list-style-type: none"> • Phloem – moves sugars • Xylem – moves water and ions
17. Transpiration	Evaporation from leaf pulls water through plant xylem. Affected by temperature, humidity, wind, light

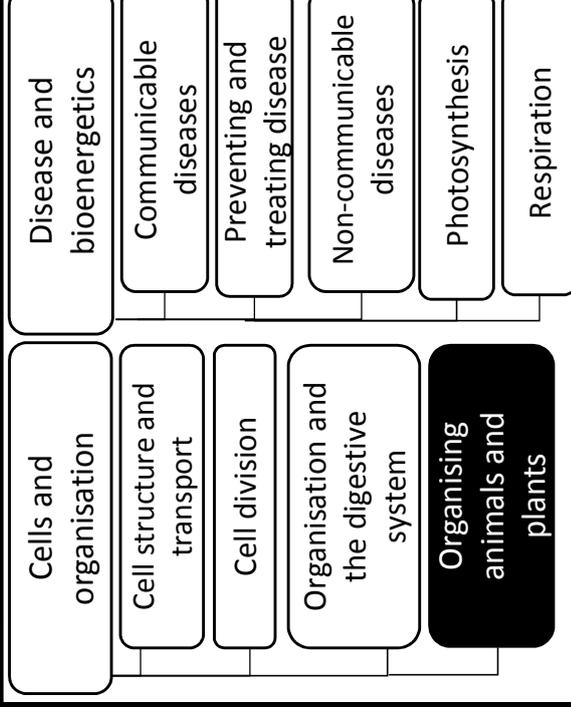
Trilogy B4: Organising animals and plants

Collins Revision Guide: Organisation

Knowledge Organiser



Big picture (Biology Paper 1)



Background

All living cells need glucose and oxygen for respiration. Getting these ingredients to the organism is only part of the struggle. How do you get them to the cells, keep them and get rid of waste products? This topic finds out



Additional information

The heart was first labelled from behind. This means the left and right sides are reversed.

Key points to learn

1. Specialised animal cells	<ol style="list-style-type: none"> 1. Sperm – tail to swim 2. Nerve – carry electrical impulses 3. Muscle – contract and relax
2. Tissue	Group of similar cells
3. Organ	Group of tissues working together
4. Organ systems	Group of organs which work together in organism
5. Digestive system	A group of organs that digest and absorb food
6. Digestion	Breaking large food molecules into small soluble ones
7. Human digestive system	
8. Carbohydrate	<p>Types of sugars: glucose, starch, cellulose. Used for energy</p> <p>Test: Starch turns iodine blue/black</p> <p>Used to make enzymes, tissues and cells. Found in meat, fish, pulses, milk</p> <p>Test: Biuret reagent turns from blue to purple</p> <p>Fats and oils made of fatty acids and glycerol</p>
9. Proteins	Test: Biuret reagent turns from blue to purple
10. Lipids	Fats and oils made of fatty acids and glycerol

Key points to learn

11. Mouth	Chews food, releases saliva
12. Stomach	Churns food. Partial digestion here
13. Liver	Makes bile to be stored in gall bladder
14. Pancreas	Releases enzymes in small intestine
15. Small intestine	Majority of digestion happens here. Makes lots of enzymes
16. Large intestine	Absorbs water
17. Bile	Alkaline to neutralise stomach acid. Added at start of small intestine. Emulsifies fat into small droplets
18. Catalyst	Chemical which speeds up a reaction without being used itself
19. Enzyme	Biological catalysts Like a specific temperature and pH
20. Lock and key theory	<p>Model showing how enzymes work. Substrates fit the enzyme active site, then react, turning into products</p> <p>Substrate → They 'fit' → Products</p> <p>Active site Enzyme</p>
21. Metabolism	The sum of all the reactions in a cell or the body of an organism
22. Protease	Enzyme breaks down protein. Made in stomach, pancreas, small intestine
23. Lipase	Enzyme breaks down lipids. Made in pancreas, small intestine
24. Amylase	Type of carbohydrase enzyme. Breaks down glucose. Made in salivary glands, pancreas, small intestine

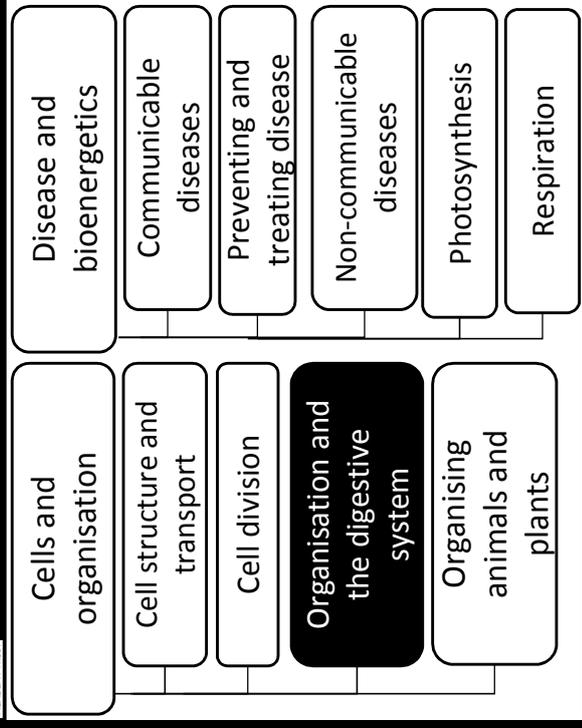
Trilogy B3: Organisation and the digestive system

Collins Revision Guide: Organisation and the digestive system

Knowledge Organiser



Big picture (Biology Paper 1)



Background

Have you ever wondered why the human body temperature is 37°C or why the male testes are outside the body? The answer is enzymes. They are also crucial for digestion...

Key points to learn

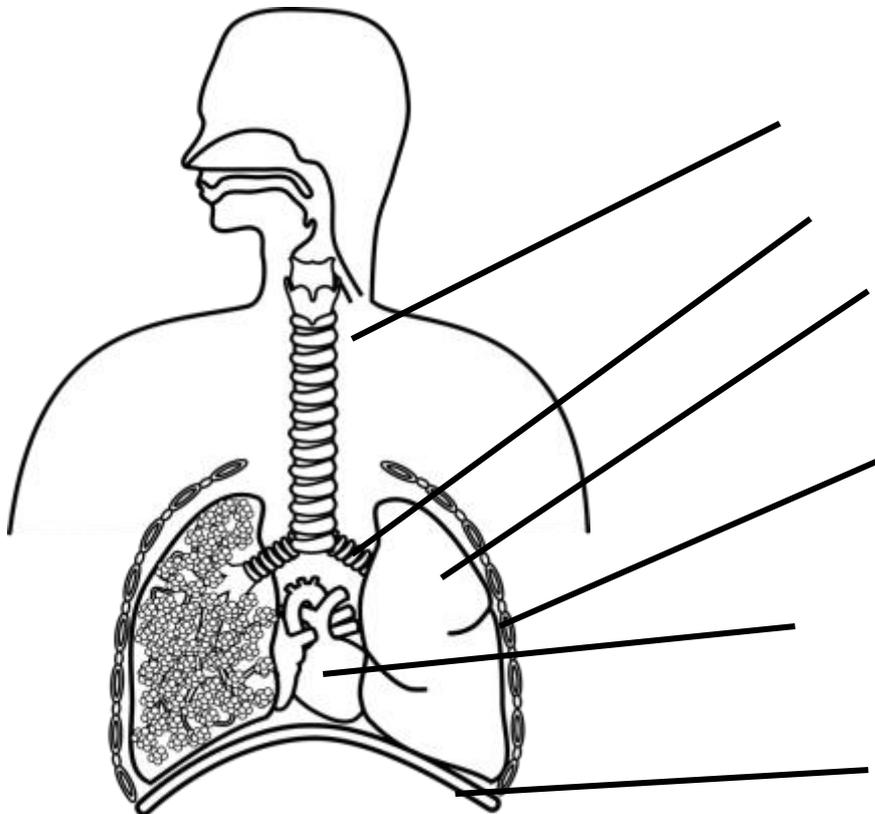
25. Why you can't kill an enzyme	They are not alive so can't die.
	But they will change shape and 'denature' at the wrong temperature or acidity (pH)
	Each one has an ideal temperature and pH they work best at.



Quick fire questions:

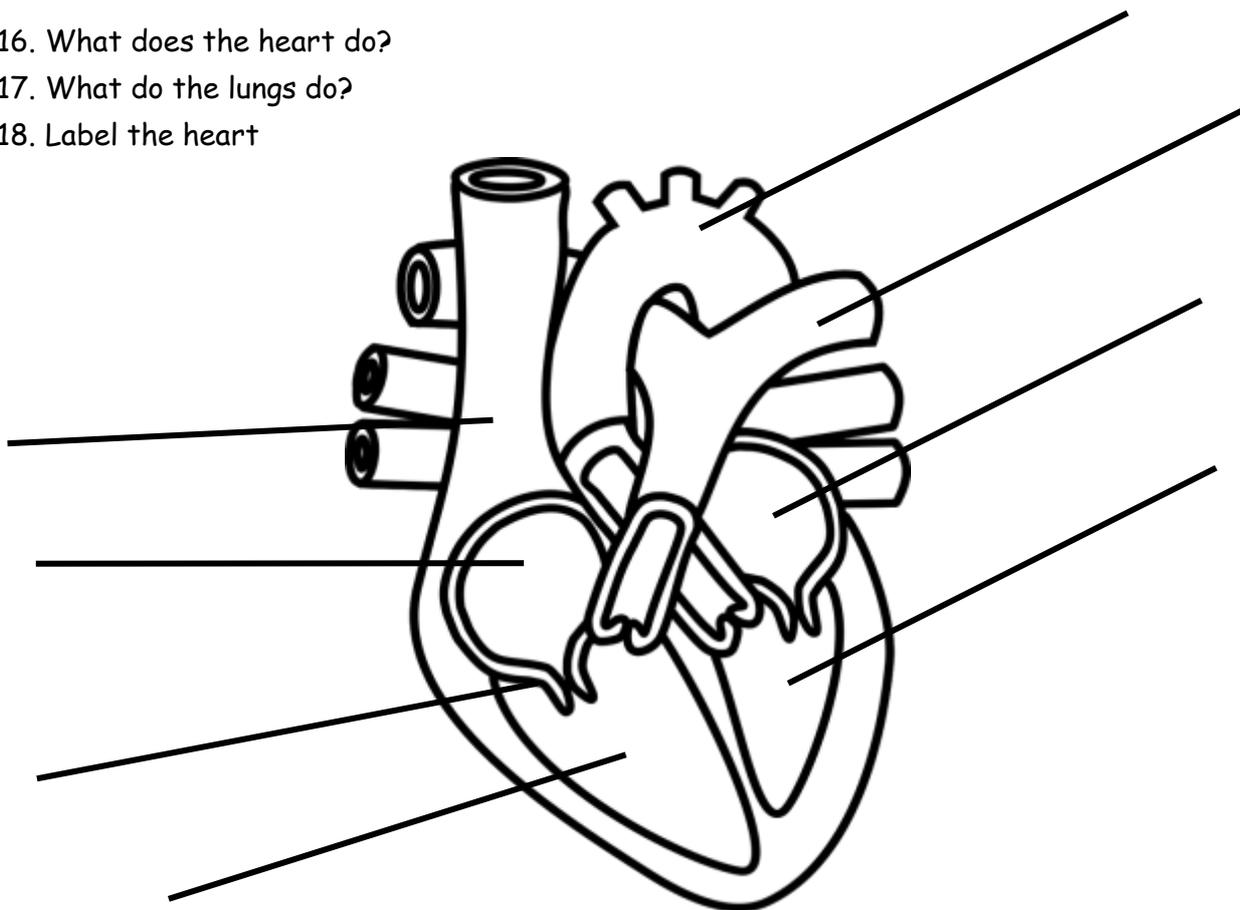
This worksheet is fully supported by a video tutorial; ; <https://youtu.be/QnsRz0Xhup8>

1. What is an organ system?
2. Name the parts of the digestive system?
3. What happens to enzymes at low temperatures?
4. What happens to enzymes at high temperatures?
5. What happens enzymes are there outside their optimal pH?
6. What is the lock and key mechanism?
7. Where is amylase produced?
8. What does amylase do?
9. Where is lipase produced?
10. What does lipase do?
11. Where is protease produced?
12. What does protease do?
13. Where is bile produced?
14. What does bile do?
15. Label the respiratory system

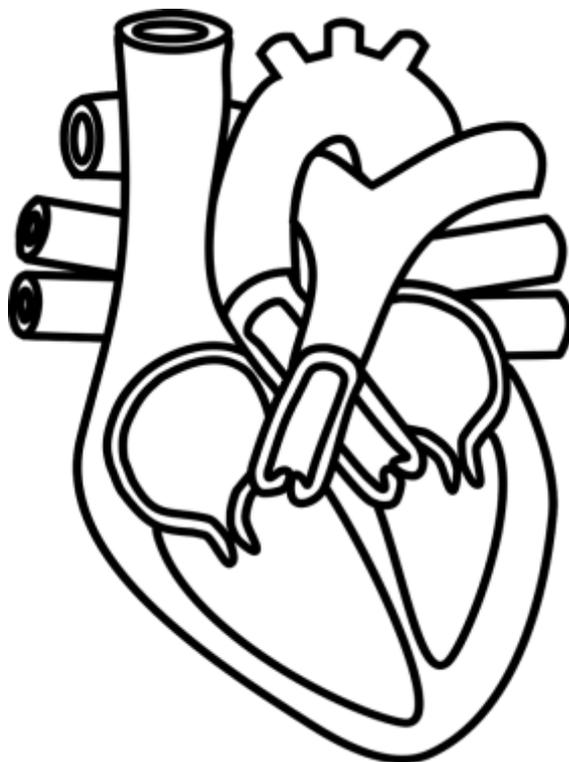




- 16. What does the heart do?
- 17. What do the lungs do?
- 18. Label the heart



- 19. Draw the path the blood takes through the heart





20. What does the aorta do?
21. What does the vena cava do?
22. What does the pulmonary artery do?
23. What does pulmonary vein do?
24. What is natural resting heart rate?
25. Why might you need artificial pacemaker?
26. What do red blood cells do?
27. What do white blood cells do?
28. What do platelets do?
29. What does plasma do?
30. What is cardiovascular disease?
31. What lifestyle factors can affect health?
32. What is cancer?
33. What is a benign tumour?
34. What is a malignant tumour?
35. What is epidermal tissue?
36. What is palisade mesophyll?
37. What is spongy mesophyll?
38. What is the xylem?
39. What is the phloem?
40. What is transpiration?
41. How can we measure transpiration?