

Chapter 3: Organisation and the digestive system

Knowledge organiser

There are five **levels of organisation** in living organisms. Complete the definitions for each level.

cells

tissues

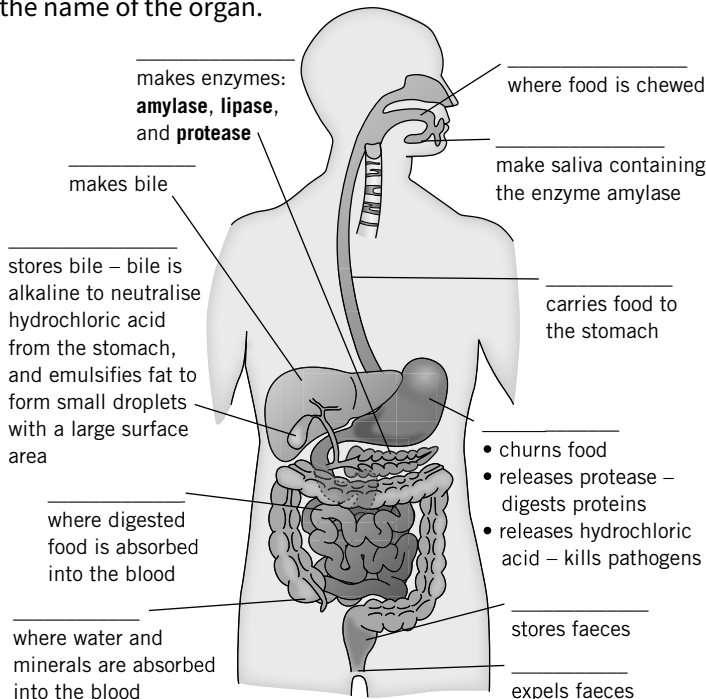
organs

organ systems

organisms

Digestive system

Write the name of the organ.



Digestive enzymes

Digestive enzymes convert food into small, soluble molecules that can then be absorbed into the _____. For example, carbohydrases break down _____ into _____.

Enzyme	Sites of production	Reaction catalysed
	salivary glands pancreas small intestine	starch → glucose
proteases		
lipases		

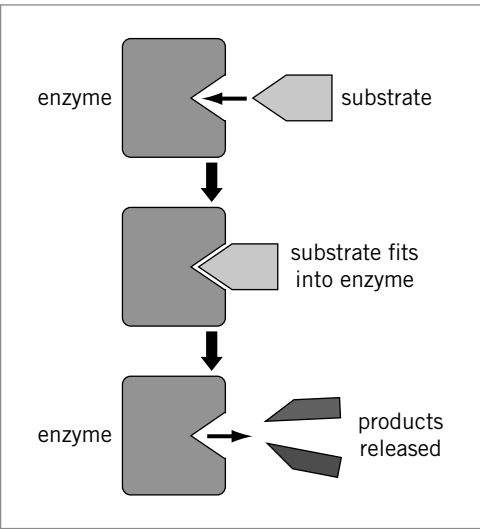
Enzymes

Enzymes are large proteins that _____ (speed up) reactions. Enzymes are not changed in the reactions they catalyse.

Lock and key theory

This is a simple model of how enzymes work:

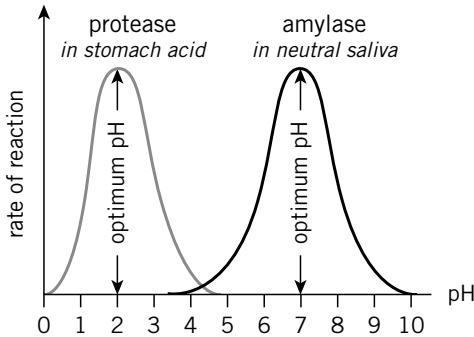
- The enzyme's _____ (where the reaction occurs) is a specific shape.
- The _____ (the lock) will only catalyse a specific reaction because the _____ (the key) fits into its active site.
- At the active site, enzymes can _____ molecules down into smaller ones or bind small molecules together to form _____ ones.
- When the products have been released, the enzyme's active site can accept another substrate molecule.



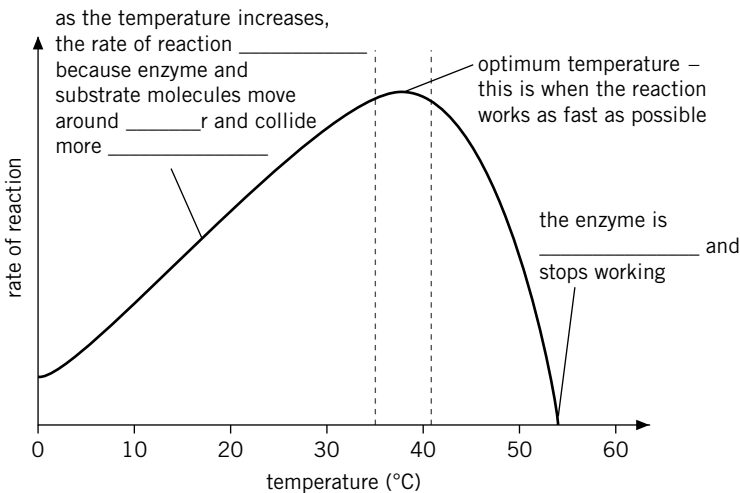
The effect of pH on enzymes

Different enzymes have different _____ pH values.

This allows enzymes to be adapted to work well in environments with different pH values. For example, parts of the digestive system greatly differ in _____.

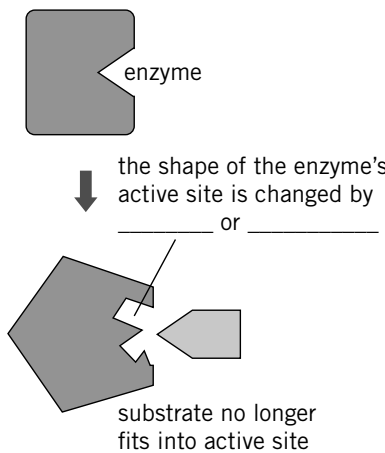


The effect of temperature on enzymes



Denaturation

At extremes of pH or at very high temperatures, the shape of an enzyme's active site can change.



The substrate can no longer _____ to the active site, so the enzyme cannot catalyse the reaction – the enzyme has been **denatured**.



Key terms

Make sure you can write a definition for these key terms.

active site amylase catalyse denatured enzyme lipase optimum organ organ system
pH protease substrate temperature tissue

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Retrieval questions

Answer the following questions using the information from the knowledge organiser.

B3 questions		Answers
1	Name the five levels of organisation.	
2	What is a tissue?	
3	What is an organ?	
4	What is the function of the liver in digestion?	
5	What is the function of saliva in digestion?	
6	Name three enzymes produced in the pancreas.	
7	What are enzymes?	
8	Why are enzymes described as specific?	
9	Describe the function of amylase.	
10	Where is amylase produced?	
11	Describe the function of proteases.	
12	Where are proteases produced?	
13	Describe the function of lipases.	
14	Where are lipases produced?	
15	What are two factors that affect the rate of activity of an enzyme?	
16	What does denatured mean?	
17	Describe the effect of temperature on enzyme activity.	
18	Describe the effect of pH on enzyme activity.	
19	Why do different digestive enzymes have different optimum pHs?	
20	What is an organ system?	