

# ENZYMES

**Printable  
Worksheets**



Published in Australia  
by ACTIVE SCIENCE  
Heidelberg VIC 3084  
Australia

First published 2021  
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# ENZYMES

1. Fill in the missing words:

Enzymes are chemicals that act as biological \_\_\_\_\_, meaning that they speed up \_\_\_\_\_ without being used up themselves. Enzymes are extremely important because without them, our various internal reactions would occur too \_\_\_\_\_ to keep us alive and healthy.

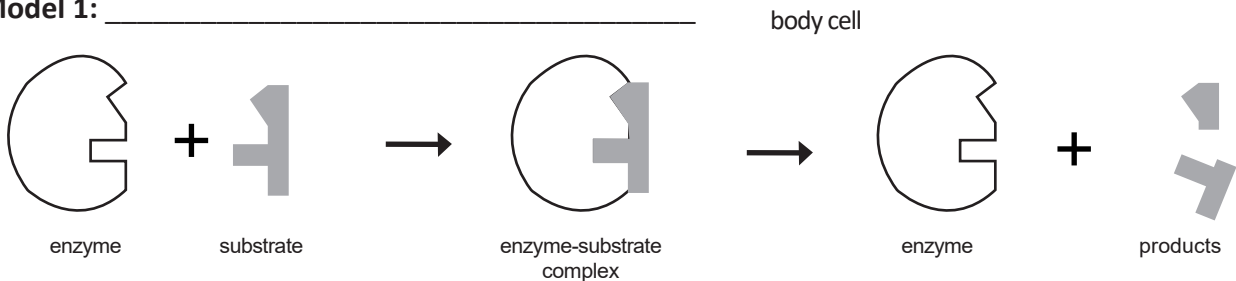
Enzymes are \_\_\_\_\_, consisting of one or more polypeptide chains. They work by reducing the amount of \_\_\_\_\_ required to 'kick-start' a reaction. This makes the reaction go \_\_\_\_\_.

Enzymes are highly specific, that is, each one has a particular type of substance that it acts on, referred to as its \_\_\_\_\_. An enzyme binds to its \_\_\_\_\_ at a specialized region known as the \_\_\_\_\_.

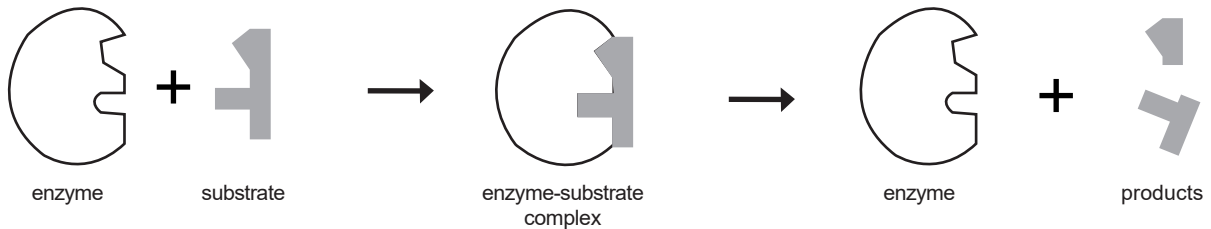
Enzymes tend to have \_\_\_\_\_ conditions under which they work best, such as particular temperatures or pH. They can be \_\_\_\_\_ at high temperatures, meaning that the shape of the \_\_\_\_\_ has been permanently changed and can no longer bind to the \_\_\_\_\_. They can also be \_\_\_\_\_, or their activity may be \_\_\_\_\_, by cold temperatures or changes in pH.

2. Scientists have put forward two different models to explain how enzymes bind to their substrates. These are shown below:

**Model 1:** \_\_\_\_\_



**Model 2:** \_\_\_\_\_



(a) On the diagrams, name the two models.

(b) In your own words, explain the differences between these two models.

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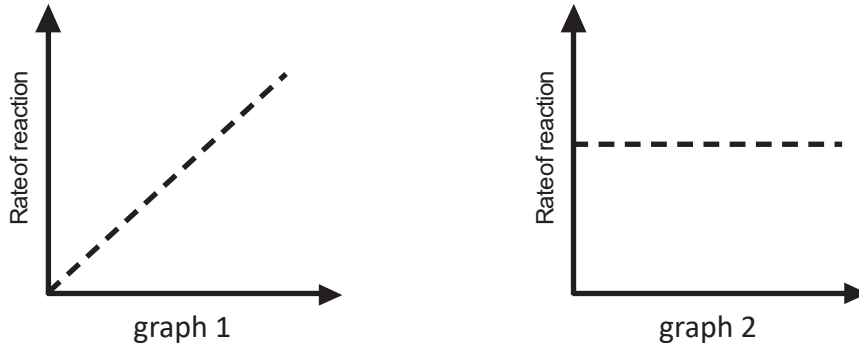


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3. Look carefully at the following graphs showing data from a reaction involving an enzyme and its substrate:



(a) Which graph shows what happens to the reaction rate when you increase (i) the substrate concentration (ii) the enzyme concentration?

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(b) Explain your answer to 3 (a).

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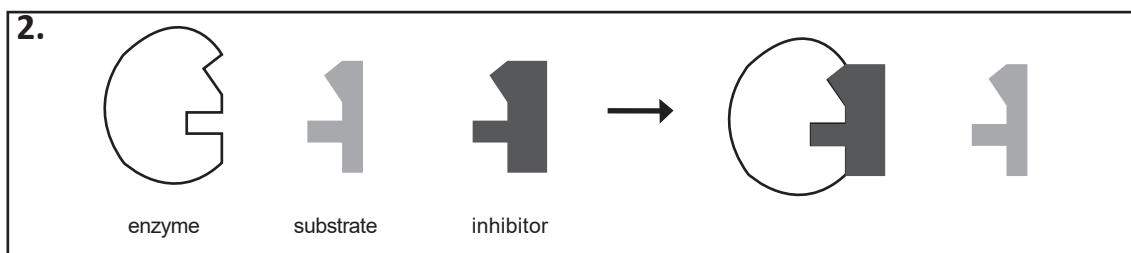
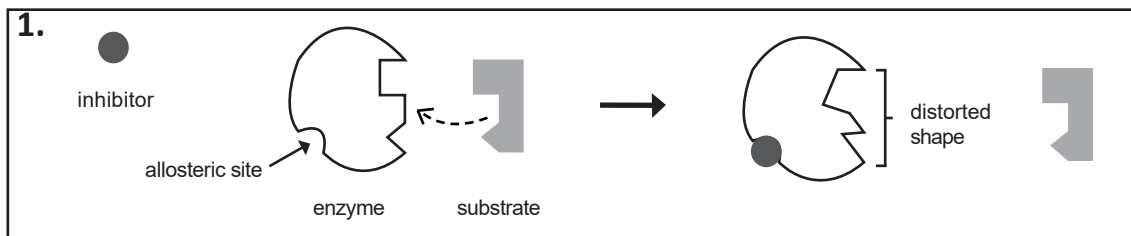


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4. Certain chemical substances - including many poisons - can inhibit or interfere with enzyme activity. Two types of enzyme inhibition are *competitive* inhibition and *non-competitive* inhibition, both shown below:



Which diagram shows (i) competitive inhibition (ii) non-competitive inhibition? Explain.

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# ENZYMES WORD FIND

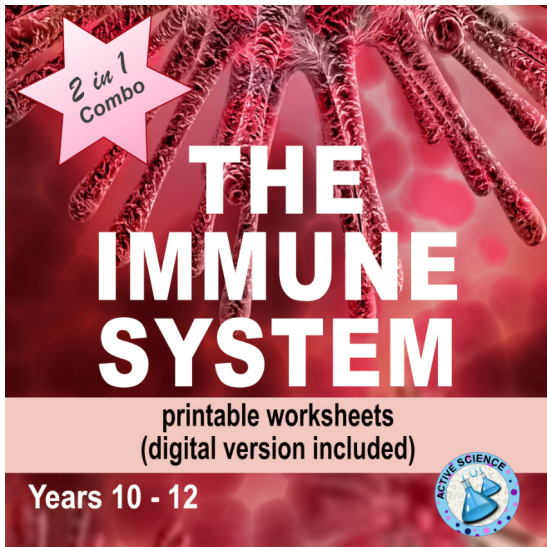
Work out each of the 20 clues below, then find and highlight those words in the following word find.

I G N G X E L P M O C O R Q  
N L E N Z Y M E G B I P O S  
D A N Y I S U B S T R A T E  
U M L O C K A N D K E Y C M  
C I N L I E C Z O I T A A Y  
E T A V I T C A N I S W F Z  
D P D M H I A M T Q O U O N  
F O P S D S D V F A L T C E  
I R R E V E R S I B L E K O  
T N T J B V A X C T A Y L C  
I N H I B I T I O N C H S C  
U P R O S T H E T I C A X T  
U H O S T C U D O R P R L W  
K E R U T A N E D S T T N F  
V Y L E L B I S R E V E R A

## Clues:

1. Enzymes can \_\_\_\_\_ at high temperatures.
2. You can't go back with this type of inhibition.
3. Non-protein component of an enzyme that is essential for its proper functioning.
4. The energy needed to kick-start a chemical reaction.
5. Speeds up chemical reactions without itself being used up.
6. Enzyme model where you have a perfect fit.
7. Area where an enzyme binds to its substrate.
8. Site on an enzyme where a non-competitive inhibitor binds.
9. Describes groups of organic cofactors that bind tightly to enzymes.
10. Can be competitive or non-competitive.
11. Substance that an enzyme acts on.
12. Enzyme model where there is an imperfect fit.
13. Organic cofactors that bind loosely to enzymes.
14. The binding of enzyme and substrate form the enzyme-substrate \_\_\_\_\_.
15. What you get at the end of a chemical reaction.
16. Cold temperatures can \_\_\_\_\_ enzymes.
17. A biological catalyst.
18. Type of inhibition that can be undone.
19. Enzymes work best under these conditions.
20. Important coenzyme involved in photosynthesis.

Other available resources:

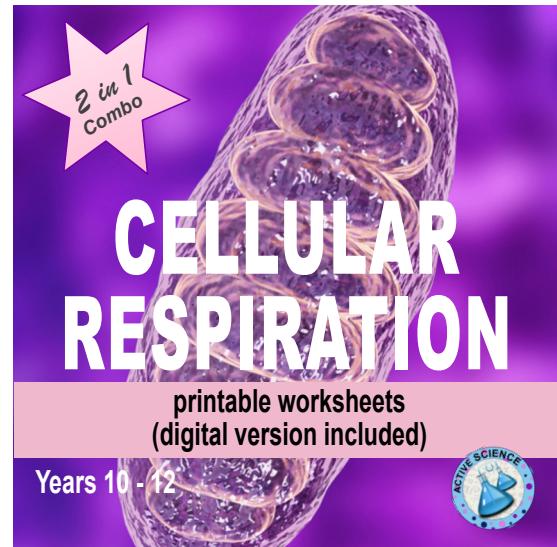



**2 in 1 Combo**

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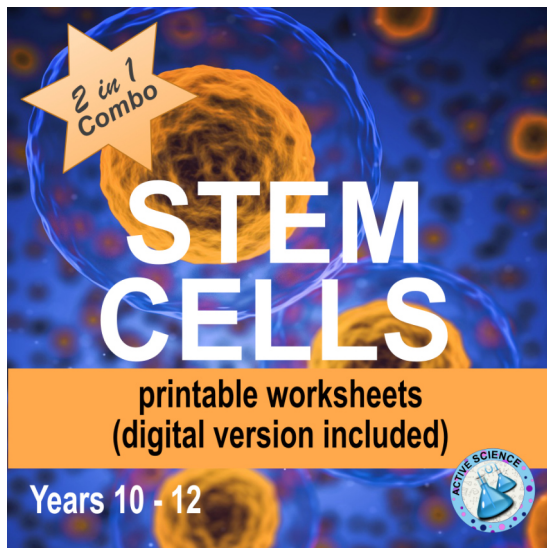



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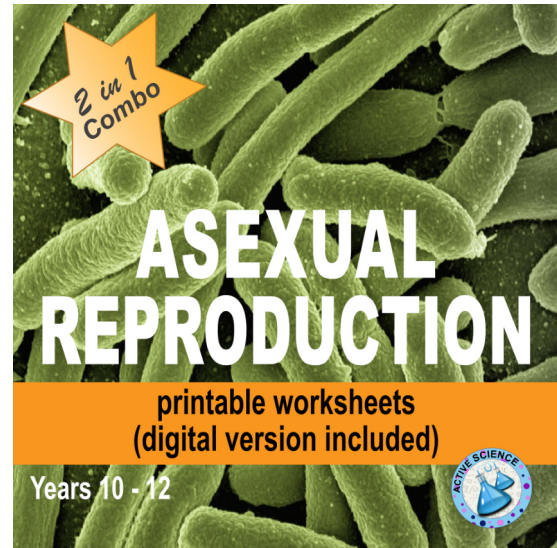



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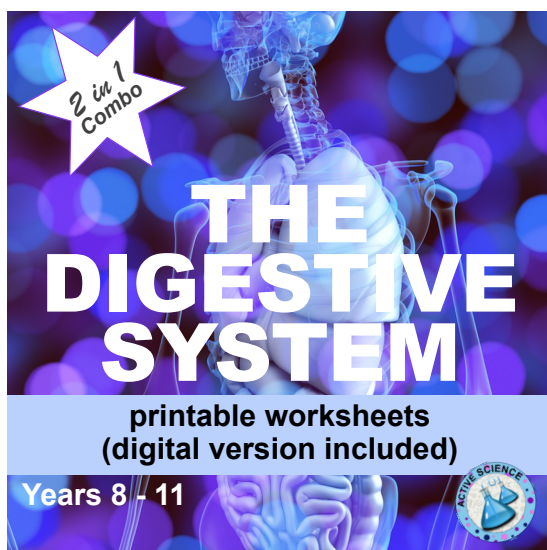



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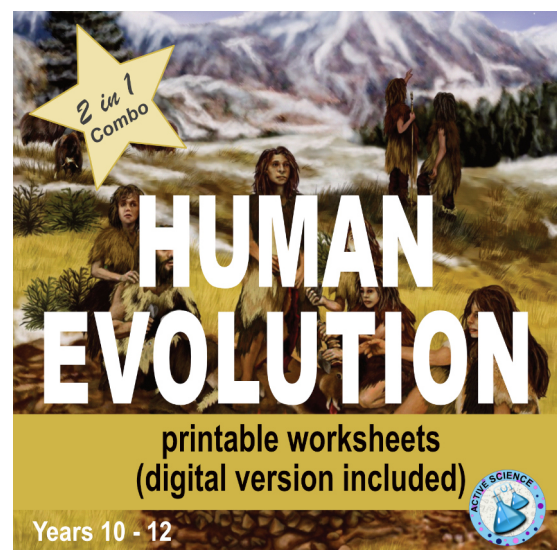



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