3 Enzymes – Part 1

Name: _____ Class: _____ Date: _____

Vocabulary

Write each word three times.

English	**Write it 3 times** (English)		
enzyme			
catalyst			
lowering the activation energy			
active site			
substrate			
denatures			
inhibitor			

Recall

You already know that living things use enzymes:

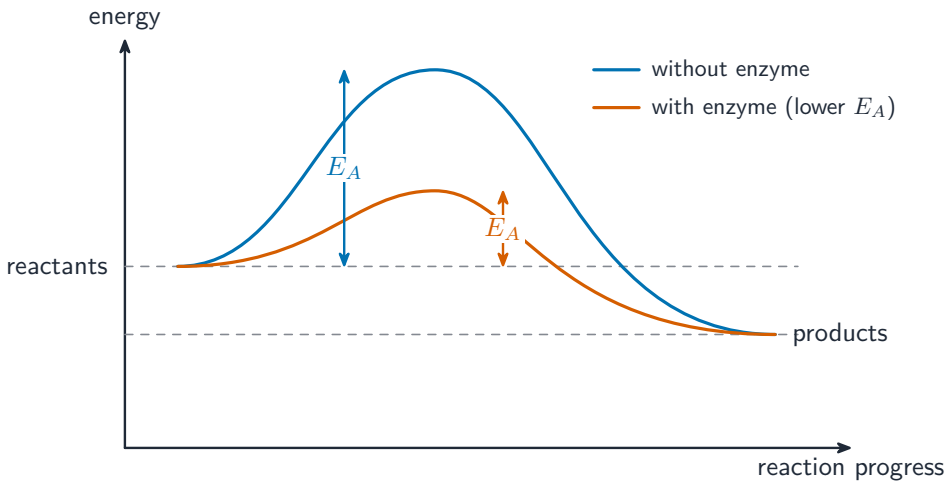
- Enzymes speed up the reactions in your body, like digesting food.
- They work best at a certain temperature (about body temperature) and pH.
- Too much heat "kills" an enzyme.

This sheet makes enzyme action exact. Each idea has a short worked example.

New ideas

1 Enzymes lower the barrier

An **enzyme** is a protein **catalyst** : it speeds up a reaction by **lowering the activation energy** , and is not used up.

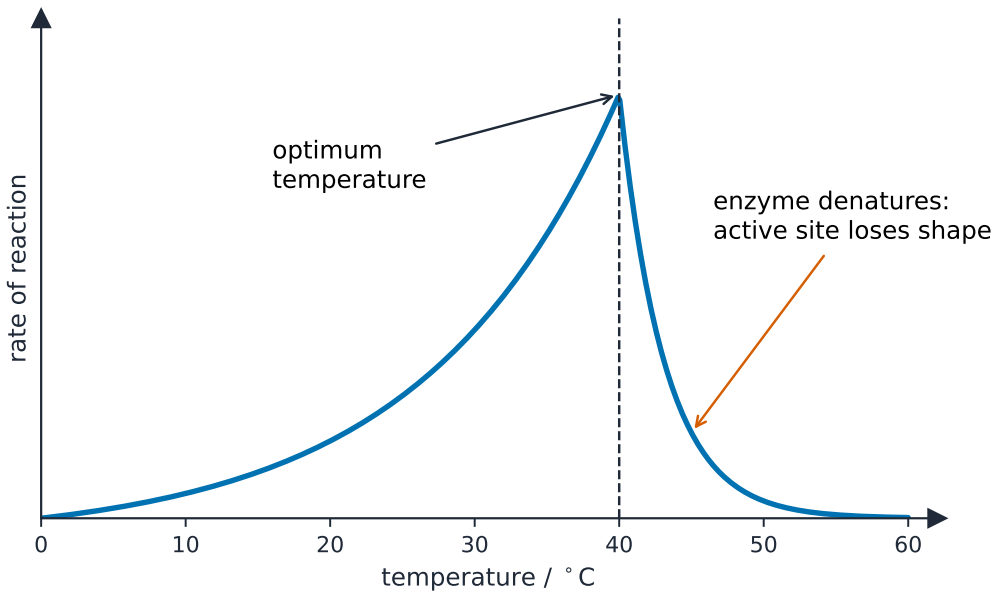


2 The active site

Each enzyme has an **active site** shaped to fit one particular **substrate** – like a lock and key. This makes each enzyme highly **specific** to its reaction.

3 Temperature and pH

Each enzyme has an **optimum** temperature and pH where it works fastest. Beyond that, the protein **denatures** (loses its shape) and stops working.



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■ 4 Inhibitors

An **inhibitor** slows an enzyme down – by blocking the active site, or by changing the enzyme's shape.

Watch out: raising the temperature speeds an enzyme up only **up to its optimum**. Past that, the heat denatures the enzyme and the rate **drops** – unlike an ordinary reaction, which just keeps speeding up.

Practice

Try these in order. The methods are all above.

2.1 State how an enzyme speeds up a reaction. [2]

2.2 Explain why each enzyme only works on one particular substrate. [2]

2.3 State what happens to an enzyme when it is heated well above its optimum temperature. [2]

2.4 Sketch in words how the rate of an enzyme reaction changes as temperature rises from cold to very hot. [2]

2.5 State what an enzyme inhibitor does. [1]

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