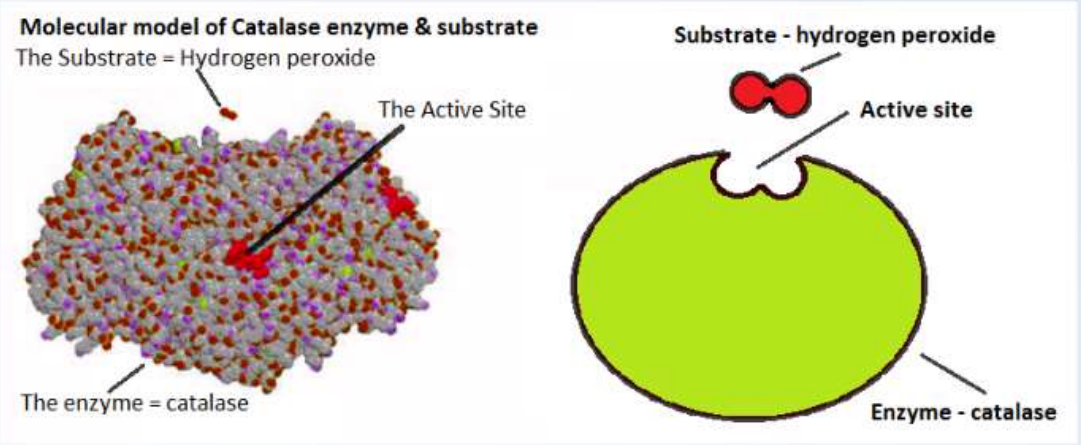
The Lock and Key Theory of Enzyme Function

Aim: To learn the structure of enzymes and how to describe the parts of an enzyme, and how enzymes function.

Note: Enzymes are proteins which work as biological catalysts. They speed up the rate of a chemical reaction without themselves being changed.

The actual structure of enzymes is complex; they are often large proteins with a specific 3D shape. The most important part of the shape on an enzyme is the active site. The active site must fit the shape of the enzyme's substrate. It is where the substrate molecules bind and undergo a chemical reaction.



Each enzyme has a particular shape of active site. They can each only catalyse one specific reaction. This is known as "enzyme-substrate specificity."

Questions

1. What is an enzyme?

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2. Define the active site?

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3. Explain how an enzyme attaches to a substrate using the lock and key hypothesis.

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Research how temperature, pH and the concentration of substrate can speed up an enzyme catalysed reaction.

5. What changes when an enzyme becomes denatured?

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6. For each factor complete the table below.

Factor	How can this factor speed up an enzyme reaction?
Concentration of substrate	
pH	
Temperature	

7. Draw your own diagrams showing an enzyme and substrate reacting to produce a new