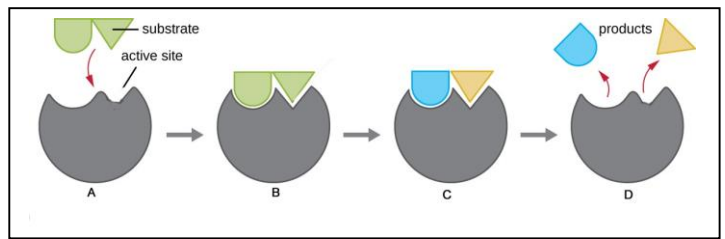


Ongoing revision 14 – cofactors, enzymes, proteins

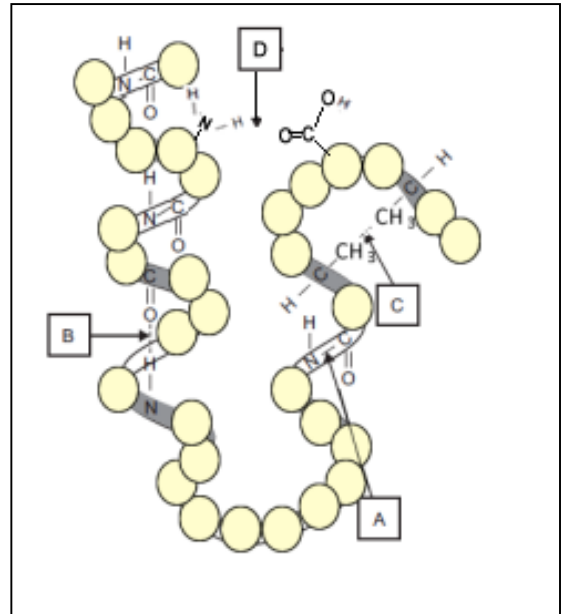
1. Label the following statements as True or False
  - a. A coenzyme is unique to only one type of enzyme.
  - b. An enzyme is unique to the catalysis of only one reaction.
  - c. Coenzymes do not chemically change during a reaction.
  - d. All enzymes require a cofactor with which to perform their role.

- e. The image on the right represents the lock and key model of how an enzyme interacts with the substrates.

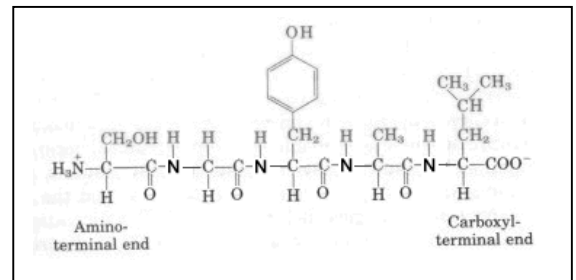


- f. Of the four images shown in the diagram above, “C” represents the enzyme-substrate complex.
- g.  $\text{Ca}^{2+}$  ions are crucial for some enzymes to catalyse their reactions.  $\text{Ca}^{2+}$  is considered a coenzyme.

2. Consider the image on the right of a small peptide. Some of the bonds associated with this peptide are labelled A-D.
- Which bond is unlikely to be disrupted by heat or pH change?
  - Which bond forms the primary structure?
  - Which bond/s is/are responsible for maintaining the tertiary structure?
  - Alpha helices and beta pleats are part of which structure of the protein and which bond is responsible for this structure?
  - Which bonds are likely to be disrupted with a change in pH?



3. Consider the small peptide on the right.
- How many different amino acid residues were involved in forming this peptide?
  - Name each amino acid that formed the peptide.
  - Circle and name the bonds that constitute the primary structure.
  - What is the difference in molar mass between the peptide and the sum of the individual amino acids that formed it?
  - What word best describes the peptide? Explain your answer.
    - Tripeptide
    - Zwitterion
    - Quaternary structure
    - Secondary structure.



4. The rate of an enzyme catalysed reaction is shown on the right.
- Explain why the rate is slow at temperatures below 30 °C.
  - Explain why at temperatures above 40 the rate also decreases.

