

QUIZ • 30 MIN

Enzymes, Enzyme Discovery and Engineering

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## Enzymes, Enzyme Discovery and Engineering

TOTAL POINTS 11

1.

Which of the following statements is true?

☐ Some cells in your body do not contain any enzymes

☐ Enzymes are generally DNA molecules

☐ The primary purpose of all enzymes is digestion

☐ The primary purpose of all enzymes is metabolism

☒ Enzymes are generally protein molecules

1 point

2.

How might an enzyme speed up a certain chemical reaction?

☐ By binding to the substrate(s) in the active site in an optimal orientation

☐ By creating an environment suitable for catalysis (e.g. acidic / basic residues)

☐ By stabilising the highest energy part of the reaction (transition state)

☐ By expelling water/unwanted reatants from the active site

☒ All of the above

1 point

3.

Which of the following definitions is wrong?

☐ Enzymology is the study of enzyme structure, function and catalytic mechanism

☒ Coenzymes are protein components which assist some enzymes in catalysis

☐ The active site is the area of an enzyme where substrate binding and catalysis occur

☐ Activation energy is the minimum energy required for a specific reaction to proceed

☐ Quantum tunnelling is a phenomenon by which small reactants become product without possessing the classical activation energy

1 point

4.

In terms of molecular evolution, which statement is true?

☐ Sequence motifs important for function are likely to vary over time

☐ Sequence motifs important for function are never present in homologous enzymes

☐ Sequence motifs important for function are unlikely to be present in related sequences

☐ Sequence motifs important for function are likely to occur randomly / by coincidence in unrelated sequences

☒ Sequence motifs important for function are likely to remain conserved overtime

1 point

5.

Which of the following definitions is wrong?

☐ Molecular evolution is the process by which sequences change over evolutionary time

☐ Bioinformatics is the use of computational approaches to analyse biological data

☐ Homologues are sequences descended from a common ancestor

☐ Phylogenetics is the study of evolutionary relationships

☒ A metagenome is the entire complement of DNA in an organism

1 point

6.

Which of the following parameters is a measure of the affinity of the enzyme for its substrate in kinetic analysis?

☐ Vmax

☐ 1/2 Vmax

☐ Substrate Concentration

☒ KM

☐ Reaction Rate

1 point

7.

Which of the following is not a method for determining the structure of an enzyme?

☐ Cryo-Electron Microscopy

☐ Nuclear Magnetic Resonance

☒ High Pressure Liquid Chromatography

☐ Electron Paramagnetic Resonance

☐ X-ray Crystallography

1 point

8.

In which of the following situations might it be desirable to produce an enzyme in laboratory strain bacteria, rather than the original host organism

☐ When the original host is a plant with slow growth rate

☐ When the original host only produces low levels of the enzyme

☐ When the enzyme needs to be tagged and purified for study

☒ All of the above

1 point