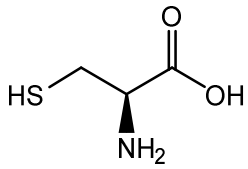
Name:
Date:

QA4 -Tertiary Structure and Specificity

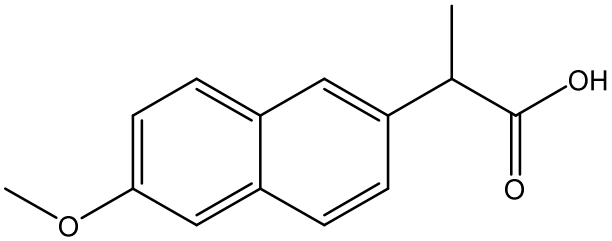
1. The amino acid cysteine is shown below. How can cysteine contribute to the overall tertiary structure of a polypeptide?



2. How does the tertiary structure, and protein folding relate to the complementary of an enzyme's active site?

3. The catalytic triad is a set of three amino acids in the active site which often catalyses a desired chemical reaction. Explain why it is useful to have amino acids in the triad which have very different side chains.

4. Naproxen, shown below, is a non-steroidal anti-inflammatory drug, which is used for pain relief. By using naproxen as an example, explain why it is important to consider stereospecificity in active sites.



Produced by Adam Stubbs at Newcastle University as part of a summer outreach project.

5. How does a drug which shows specificity differ from one which shows selectivity towards an enzyme?

6. Describe how the lock and key model of an enzyme differs from the induced fit model, and explain the advantage of each model.

7. Proteins can be categorised into two different groups, based on their tertiary/quaternary structures, as either globular or fibrous. Explain the structural differences between them, and describe how this relates to their functions.