

- o quaternary, three such polypeptide chains wound together, held together by bonds between the adjacent amino acids of adjacent chains
- o collagen is found in tendons

ENZYMES

- globular proteins, act as catalysts, remain chemically unchanged so are v effective at low concentrations
- specific 3D shape, region of enzyme that is functional = active site, made of only a few amino acids
- induced fit model
 - o active site forms fully as enzyme and substrate interact
 - o **proximity of substrate leads to a change in the enzyme and the formation of a functional active site**
 - o active site already has general shape
 - o enzyme moulds around substrate
 - o as the enzyme changes shape, a **strain is put on the substrate molecule**
 - distorts a **particular bond or bonds in the substrate and consequently lowers the activation energy needed to break the bond**
- old model was lock and key model
 - o supported by enzymes being specific
 - o considered the enzyme rigid, which couldn't have been true as other molecules can bind with enzymes @ places other than their active site
- measuring enzyme catalysed reactions- either measure the formation of the product(s) or the disappearance of the substrate
 - o steep graph @ first bc lots of substrate, easy for enzyme to come into contact with
 - o eventually all active sites are filled at any given point, rate is maximum, substrate rapidly broken down
 - o as reaction proceeds, less and less substrate and more and more product, rate slows
 - more difficult for enzyme to come into contact with substrate molecule, fewer substrate molecules, product molecules get in the way
 - o rate continues to slow until no further change can be detected, graph tails off and flattens
 - o gradient = rate, use a tangent
- temperature
 - o **all enzymes have an optimum**
 - o raising increases E_k and therefore rate up to a point