

**Higher Human Biology**

**Human cells: Metabolism and Enzymes (Key area 6)**

By the end of this section I will be able to:

1. Define metabolism as the combination of all the enzyme catalysed reactions within a cell.
2. Understand that the genes which code for some enzymes are always expressed which means they are always present in the cell.
3. Understand that the availability of substrates and removal of products will affect the direction and rate of the reactions.
4. State that pathways can be either anabolic or catabolic as well as reversible or irreversible or have an alternative route.
5. Describe anabolic pathways as requiring energy and involving biosynthetic processes.
6. Describe catabolic pathways as releasing energy and involving the breakdown of molecules.
7. Give an accurate description of enzyme structure with reference to the active site, its role in arranging reactants and its affinity to specific substrates.
8. Describe the concept of induced fit.
9. State that enzymes lower the activation energy of the transition state.
10. Describe the effects of substrate and product concentration on the rate of enzyme reactions
11. Describe how metabolic pathways can be regulated by competitive (binds to the active site) or non-competitive (does not bind to the active site) inhibitors.
12. Describe the process of feedback inhibition where an end product binds to an enzyme which is active early in the pathway to inhibit the reaction.