***Enzymes***

In a living cell, thousands of biochemical reactions take place every second. The sum of these reactions is called metabolism. A single chain of these reactions is called a metabolic pathway. Without enzymes, these reactions would take place very slowly at normal body temperature. Enzymes Help to Speed up Biochemical Reactions and we therefore can say that:

1. Enzymes are biological catalysts.
2. They increase the rate (speed) of reactions.

Even reactions that ***release*** energy require an input of energy to get them going, e.g. the gas from a Bunsen burner doesn’t burn until you provide heat energy from a match.

This input energy is called the activation energy. A reaction that needs a high activation energy can’t start at a low temperature of 37 °C (i.e. body temperature).

Enzymes reduce the activation energy.

The graph shows the energy of molecules involved in a reaction as the reaction takes place. It shows two curves that represent a reaction taking place with an enzyme and the same reaction taking place without an enzyme.

***Task 1: Label the curves “reaction with enzyme” and “reaction without enzyme”.***

***Back to proteins?!***

***Task 2***: ***Research the following questions about enzymes***

1. Which type of protein are enzymes?
2. What determines the structure (and shape of the active site), and therefore the function of an enzyme?
3. Give an example of an enzyme that helps by breaking large molecules into smaller ones, and an example of an enzyme that joins small molecules together to make a large one. Try to find the name of the enzyme, the small molecules (monomers) it breaks apart or joins up and the large molecule (polymer) they make.
4. What is the function of enzymes?
5. What is activation energy?
6. What do digestive enzymes do?