

3.2.1 What are Action Molecules?

Part A: Research:

- Enzyme: An enzyme is a protein in the human body that is used as a catalyst to stimulate a specific chemical reaction.
- Substrate: A substrate is a molecule that an enzyme bonds with in a reaction.
- Importance of Enzymes: Enzymes control the speed of chemical reaction in the body. They allow these react at speeds which are necessary for the body to function properly and stay alive. Also, they allow for communication and control between cells.
- How enzymes are named: Enzymes are named depending on what type of substrate they bond with, and are followed by the ending -ase.
- Where enzymes are made: Enzymes are made from amino acids, which are the building blocks of protein. To make an enzyme, 100 to 1000 amino acids are put together.
- Lock and key model: The lock and key is a theory that enzymes only fit to a specific substrate, like keys only fit in certain locks. If the enzyme does not exactly fit in the substrate, it will not bond.
- Induced fit model- The theory of the induced fit model says that the substrate helps determine the final shape of the enzyme, and that the enzyme will change shape to bind to the substrate.
- Active sites- The specific places where enzymes bond with the substrates.

Part B: Coenzymes:

- Co enzymes function to help enzymes because some enzymes need them to carry out their functions. They also carry electrons and certain atoms in some reactions.
- Three different co enzymes include:
 1. niacin
 2. riboflavin
 3. pantothenic acid
- Fish, chicken, and pork are foods that are good sources of the co enzyme niacin. Cheese, almonds and beef are rich in riboflavin. And mushrooms, avocados, and sweet potatoes are rich in pantothenic acids.

Conclusion Questions:

1. Enzymes only work on their specific substrates because of their specific shape. According to lock and key model, the enzyme has to be the exact shape of the substrate to fit and connect. And in an induced fit model, it doesn't have to be the exact shape because it says the enzyme and substrate are more flexible. However is the enzyme and substrate change too much, they will no longer work in a reaction.
2. If there were no enzymes in the human body, chemical reaction would not be able to take place, food would not be able to be digested, and the nutrients from the food would not be able to be transported and broken down. Enzymes are needed for most chemical reaction to take place at the right speed, and enzymes aid in breaking down food and transporting nutrients to the body.
3. It is important to eat a balanced diet containing nutrients to allow your body to receive the right amount of nutrients, including enzymes and co enzymes, so your body can function. It is also important to eat a balanced diet so your body has energy, and can function properly.