Enzymes

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A substance that speeds up a chemical reaction—without being a reactant—is called a catalyst. The catalysts for biochemical reactions that happen in living organisms are called enzymes. Enzymes are usually proteins, though some RNA molecules act as enzymes too.

Enzymes perform the critical task of lowering a reaction's activation energy. Enzymes work by binding to reactant molecules and holding them in such a way that the chemical bond-breaking and bond-forming processes take place more readily.

**Mechanism of enzymes**

To catalyze a reaction, an enzyme will grab on to one or more reactant molecules. The part of the enzyme where the substrate binds is called the active site. These molecules are the enzyme's substrates.

In some reactions, one substrate is broken down into multiple products. In others, two substrates come together to create one larger molecule or to swap pieces.

An enzyme changes shape slightly when it binds its substrate. This adjustment of the enzyme to snugly fit the substrate is called induced fit.

Some enzymes speed up chemical reactions by bringing two substrates together in the right orientation. Others create an environment inside the active site that's favorable to the reaction. Some enzymes lower activation energies by taking part in the chemical reaction themselves. At the end of the reaction the enzyme will return to its original state. A property of enzymes is that they aren't altered by the reactions they catalyze. When an enzyme is done catalyzing a reaction, it just releases the product.

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