

# Enzymes

by Sophia



## WHAT'S COVERED

In this lesson, you are going to learn about the structure and function of enzymes as well as the role that they play in your body. Specifically, this lesson will cover:

## 1. Enzyme Structure

If you remember from earlier lessons, ribosomes are the part of a cell that makes proteins, and proteins can perform various roles in your body. One of those roles is that they can become **enzymes**.



### TERM TO KNOW

#### Enzyme

A special type of protein that speeds up a chemical reaction by rapidly converting the substrate into the product.

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## 2. Enzyme Function

Enzymes are made up of proteins and speed up chemical reactions in your body. An enzyme can actually make a chemical reaction happen millions of times faster than it would otherwise. This makes them very important to your body.

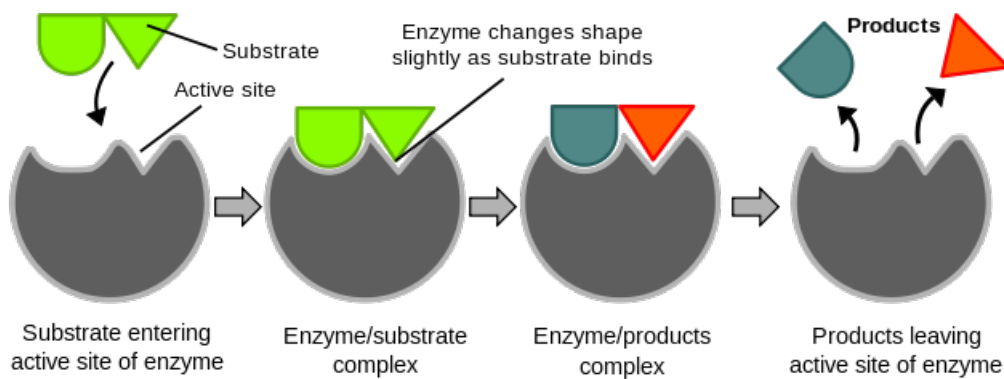
Enzymes are very specific to the type of reaction in which they participate. Enzymes can join substances together or break them apart.

➞ **EXAMPLE** Salivary amylase is an example of one of the enzymes that you have in your body. The purpose of salivary amylase is to break down starches into simple sugars. If you eat something that has a lot of starch in it, the salivary amylase in your saliva will begin to break down those starches into simple sugars in your mouth. This enzyme will not take part in any other reaction in your body; its role is very specific.

However, enzymes can sometimes also join substances together into a larger compound.

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## 3. Enzyme Function Process



Take a look at the diagram above. The gray part represents the enzyme and the green parts represent **substrates**. A substrate is whatever the enzyme is working on to either join together or break down. The other area is called the active site. The **active site** is the part of the enzyme where the substrates will attach. These are the three main parts that you'll need to know in relation to an enzyme.

It is important to note that when the substrate attaches to the enzyme, the enzyme will generally mold itself around the substrate; this is called induced fit. That puts pressure on the bonds of the substrate and either bonds those substrates together or helps to break that substrate apart into two separate **products**.

Again, substrates will attach to an enzyme at the active site. From there, the enzyme will either break those substances down or join them together.

An enzyme, after it participates in this type of reaction, is going to remain unchanged. Therefore, the enzyme can actually be used again. It's going to be the same at the end as it was at the beginning. Conversely, the substrate has changed and become a product; it's different at the end of the process than it was at the beginning.



#### TERMS TO KNOW

##### Substrate

The molecule that is acted on by an enzyme.

##### Active Site

The area on an enzyme where the substrate attaches.

##### Product

The result of a chemical reaction where an enzyme has acted on a substrate.



#### SUMMARY

Today's lesson has been a brief overview of the **structure and function of enzymes** in your body. You also got a closer look at the **process** of an enzyme joining substances together or breaking them apart.

Keep up the learning and have a great day!

Source: THIS WORK IS ADAPTED FROM SOPHIA AUTHOR AMANDA SODERLIND



## ATTRIBUTIONS

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### Enzyme

A special type of protein that speeds up a chemical reaction by rapidly converting the substrate into the product.

### Product

The result of a chemical reaction where an enzyme has acted on a substrate.

### Substrate

The molecule that is acted on by an enzyme.