Enzymes

We've been talking about proteins and the work they do in the body. One very important class of proteins is enzymes. The role of enzymes is to speed up chemical reactions. Some of these reactions tear apart large molecules, this occurs in digestion, as well as on a cellular level. Other reactions are required to build proteins and other molecules you need to function. While many of these reactions could occur on their own, your body needs to speed them up to function properly. For instance, can you imagine how long it would take for a piece of chicken to breakdown without the help of enzymes (or bacteria for that matter?) Or even a cracker. Your mouth, stomach and intestines are loaded with enzymes that help you digest/breakdown your food.

When digestion occurs hydrogen peroxide (H_2O_2) is produced as a natural by-product. In large quantities hydrogen peroxide can be deadly. Your body produces an enzyme called catalase that will breakdown hydrogen peroxide quickly into two harmless substances. What substances you ask? Well look at the formula for hydrogen peroxide H2O2 – do you one of the harmless substances? Water (H_2O)! The other harmless substance is oxygen (O_2).

Enzymes are the biological substance (proteins) that act as **CATALYSTS** and help complex reactions occur everywhere in life.
A catalyst is a substance that increases the rate of a chemical reaction by reducing the amount of energy needed to start that reaction.

LOCKS AND KEYS

Ever go home and find the front door locked and no house key in your pocket? After you are done saying inappropriate things you remember where your parents hid the key. Your key is special, it can't open your neighbor's door or your best friend's door, but thankfully it can open your door. Your key is just the right shape to fit in that lock. Otherwise you're stuck in the cold. Enzymes work in a similar way. Enzymes complete very specific jobs and do nothing else. They are very specific locks and the compounds they work with are the special keys.

Here's the deal... There are four steps in the process of an enzyme working.