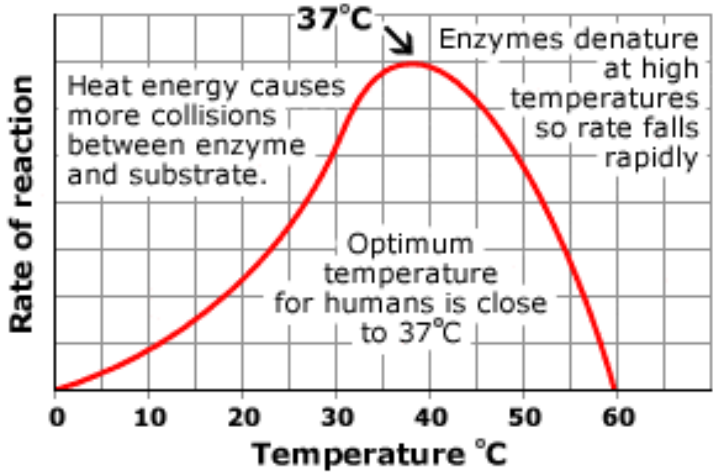
Biology: Enzymes

Key word	Definition
Catalyst	A molecule which speeds up chemical reactions.
Enzyme	A biological catalyst.
Substrate	A molecule which attaches to an enzyme.
Specific	Enzymes are specific. They have a unique shape, that only one substrate will fit.
Optimum	Ideal/best. Enzymes work best in optimum conditions.
Denature	Change shape.

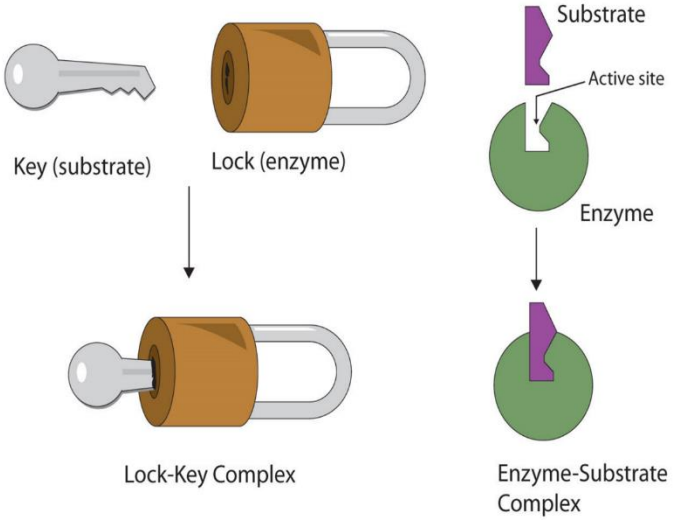
Enzymes in the human body work best at around 37°C, as this is body temperature.

Too cold and the enzymes will work slowly.

Too hot, and enzymes will denature and the substrate will no longer fit the active site.



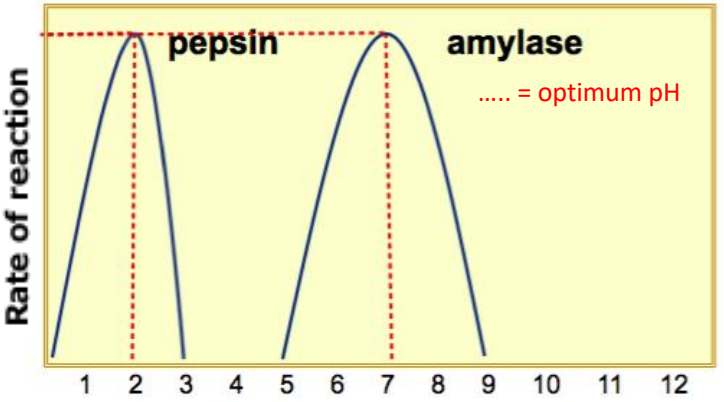
Enzymes have an **active site** where substrates attach to be digested. The active site has a specific shape, which fits a specific substrate. This is known as the **lock and key theory**.
The shapes are complementary



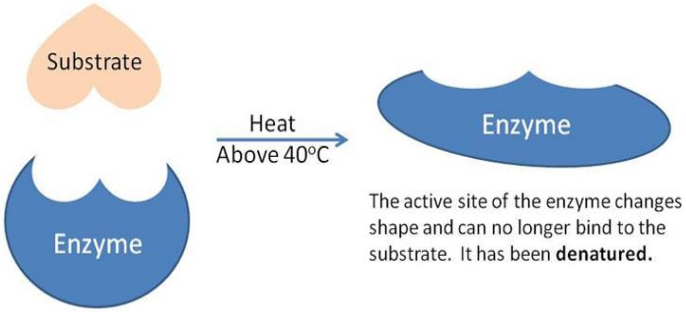
Enzymes in the human body work best at different pH.

Example: pepsin is found in the stomach so works best at pH2, the pH of stomach acid.

Amylase is found in the mouth, so works best at pH7.



The limitation of this theory is that in the model it is the lock (enzyme) that changes. It is in fact the substrate that changes by breaking into smaller molecules.



The active site of the enzyme changes shape and can no longer bind to the substrate. It has been **denatured.**