

# LAB 9: Enzymes

pp.79-86

## **GOALS:**

- Draw a diagram of enzyme action. Label the enzyme, substrate, active site, and products.
- Describe how an enzyme works.
- Describe the breakdown of hydrogen peroxide.
  - \*What is the enzyme for the reaction?
  - \*What is the substrate?
  - \*What are the products?
  - \*Why are bubbles produced?
- Using the breakdown of hydrogen peroxide as your example, explain how the rate of an enzyme reaction is affected by the following:
  - \* temperature
  - \* enzyme and substrate concentration
  - \* pH

## **KEY TERMS:**

metabolism	catalyst	reactants
products	degradation	synthesis
enzymes	substrate	active site
denaturation	catalase	hydrogen peroxide
exergonic	endergonic	

## **~IMPORTANT~**

***Whenever the manual says "swirl well to mix", disregard that instruction. DO NOT SWIRL the test tube. This will avoid creating bubbles that are not due to the reaction.***

## **I. Introduction:**

pp. 79-80: read

## **II. Catalase activity:**

pp. 80-81: read and follow directions.

## **III. Effect of temperature on enzyme activity:**

p.82: read and follow directions

- Use ice bath, room temperature and boiling water as the three temperature treatments
- Wear goggles when placing and removing test tube from hot water

## **IV: Effect of concentration on enzyme activity:**

p. 83: read and follow directions

## **V: Effect of pH on enzyme activity:**

pp.84-85: read and follow directions

- Use gloves and goggles when using the pH 3 and pH 11 solutions

## **VI: Review:**

p. 86: answer all of the review questions