

# ENZYMES

Purpose : Examine the role of naturally occurring catalase enzymes in a variety of animal tissues. The substrate for these enzyme reactions will be hydrogen peroxide. ( $H_2O_2$ ) The reactions will be:




Procedure :

### Computer:

Double-click on the file Enzyme/Temp. This should give you a graph with Time (0-50 sec.) on the X-axis and (14-40°C) on the Y-axis. Below the X-axis your temperature probe should be recording room temperature.

### Laboratory Set-Up:

Your group will be assigned one of the different animal tissues and a single plant tissue.

Cut a small  piece of animal tissue on a piece of toweling. Place the tissue section on a piece of Kimwipe that has been zeroed-in on the top-loader balance. If your piece weighs more than .4 gms., trim and reweigh it. Your final weight should be somewhere between .3 and .4 gms.

Place the tissue in the Sample Tube. (You may need to push it down to the bottom with a glass rod)

Remove the thermometer probe from the Water Rinse and place it in the top clamp. (See Diagram)

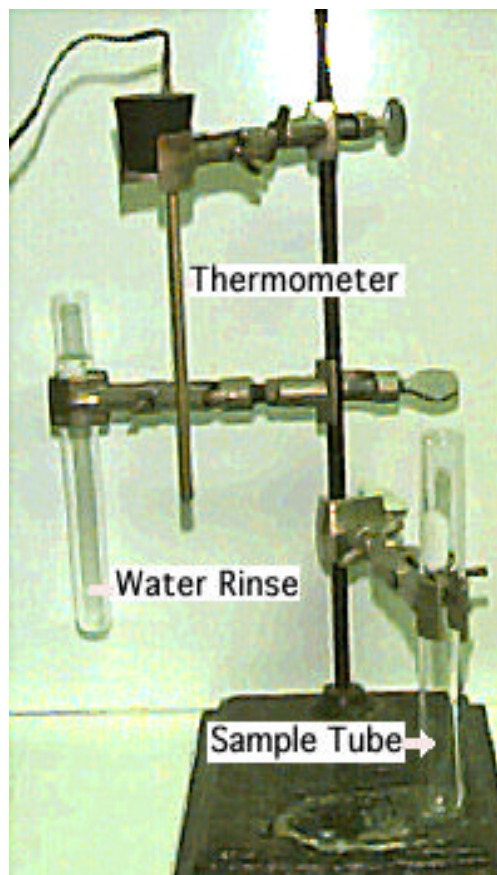
Draw  $H_2O_2$  up the 5 ml. pipette until you reach the point where you can deliver 4 ml. of  $H_2O_2$ .

Dispense the  $H_2O_2$  into the test tube and place the temperature Probe in immediately afterward. As soon as the temperature probe is in, start the computer sampling. At the end of the run save the graph to your disk.

Weigh out two more samples of the same tissue. Hold one of the sample in the boiling water for 5 seconds and then run the experiment with  $H_2O_2$ . Save the graph on your disk.

Hold your next sample in the boiling water for 30 seconds, run the experiment with  $H_2O_2$  and then save this graph to your disk.

Make a last run with your .3-.4 gm. plant tissue, run the experiment with  $H_2O_2$  and save the graph to your disk.



## Results:

1. Are the above reactions exothermic? Comment.
2. Check your text: What are some other possible variables -- that you might test for -- that could affect the rate of this chemical reaction?

<u>Samples</u>	<u>Weight</u> (gms.)	<u>Conditions</u> (if any)
1:		
2:		
3:		
4:		
5:		

Print-out a portion of each labeled graph and calculate the slope. (Have your answer in degrees centigrade/second)\_\_\_\_\_