

# ENZYME INVESTIGATIONS

Name \_\_\_\_\_

## LAB #1: POOR PEROXIDE

**Background:** Living things make hydrogen peroxide as a result of their metabolism (chemical reactions of life). The problem is...hydrogen peroxide can damage cells. So...nature has found a way to get rid of it. The enzyme is called **Catalase**. Catalase speeds up the break down of hydrogen peroxide into water and oxygen that won't hurt us. (You see this as bubbles!)

**Materials:** Piece of Fresh Chicken Liver                      Aluminum Foil (easy cleanup)  
Pipet    Safety Equipment  
Piece of Cooked Chicken Liver                                      Hydrogen Peroxide

### Procedure:

1.) Get a piece of fresh chicken liver and lay it on a small piece of aluminum foil. (\*Remember that the enzyme Catalase is in the liver) Put 5-10 drops of hydrogen peroxide on the liver. Watch what happens. Write what happens below.

\_\_\_\_\_

2.) In your own words, what caused this. Hint: Look in background.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

3.) Now, get a piece of cooked chicken liver. Put 5-10 drops of hydrogen peroxide on the liver. Watch what happens. Write what happens below.

\_\_\_\_\_

4.) In your own words, but using vocabulary we learned, write what happened and why.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5.) **CLEAN UP AS INSTRUCTED**

## LAB #2: PEPPY PINEAPPLE PROTEASE

**Background:** Proteases are a group of enzymes that regulate the break down of protein. **Papain** is a protease found in the papaya fruit. **Bromelin** is a protease found in pineapple. **Pepsin** is a protease found in our stomach to help break down proteins. It only works in acidic conditions (wonder why?)

Gelatin (Jell-O) is made from a protein called collagen, which comes from the joints of animals. (Yummy huh?)

Directions on Jell-O read, A Fresh or frozen pineapple must be cooked before adding@

**Materials:** Liquid Gelatin (from teach)  
2 Sample Cups  
Fresh Pineapple (1 piece/group)

Sharpie/Other Writing Tool  
Canned Pineapple (1piece/group)

### Procedure:

#### Day#1

- 1.) Fill 2 sample cups about 2 full with hot gelatin liquid.
- 2.) Label each cup. 1) Fresh Pineapple 2) Canned Pineapple
- 3.) Label each cup with group initials or code name
- 4.) Put a piece of fresh pineapple in one, canned pineapple in one (in properly labeled cups)
- 5.) Refrigerate over night.

#### Day #2

- 1.) Remove cups from fridge & answer the following questions

A.) What macromolecule is in the gelatin? \_\_\_\_\_

B.) Describe each cup of gelatin

Fresh Pineapple

Canned Pineapple

C.) Why does pineapple need to be cooked before adding it to gelatin?

\_\_\_\_\_  
\_\_\_\_\_

D) What does cooking the pineapple do to the enzyme bromelin?

\_\_\_\_\_

E) Fresh pineapple is used as a meat tenderizer. Why is this?

\_\_\_\_\_  
\_\_\_\_\_

**-CLEAN UP AS INSTRUCTED**

