**Materials:**

|  |  |  |
| --- | --- | --- |
| Hydrogen Peroxide (H2O2) | Beakers/Test Tubes | Forceps |
| Fresh liver (chicken or beef) | Frozen liver (chicken or beef) | Cooked liver (chicken or beef) |
| Fresh potato | Frozen potato | Cooked potato |
| Water | Micropipettes and Tips | Stirring rod |

**Safety:** As we will be working with both chemicals and glassware in this lab, goggles are required (start through cleanup)

**Procedure:** *Do not mix up samples in test tubes! All cleanup is your responsibility!* 😊

1. Prepare your work space (working in groups of 4- lab benches are divided to facilitate this) by clearing the lab bench of everything other than this handout and the lab tools/safety equipment.
2. Obtain a test tube rack with three labeled test tubes (one is labeled fresh, one frozen, and one cooked)
   1. Fresh = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ b. Frozen = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ c. Cooked = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Using the micropipette, transfer 2mL of **water** to each of the test tubes. After doing so, eject the tip and discard it in the trashcan.
   1. Do you expect the enzymes to do anything in the water setup? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ discuss why or why not with your team.
4. Use forceps to place a piece of fresh liver in the appropriate test tube. Record what happens on your data table.
5. Use forceps to place a piece of frozen liver in the appropriate test tube. Record what happens on your data table.
6. Use forceps to place a piece of cooked liver in the appropriate test tube. Record what happens on your data table.
7. Use the forceps to remove the liver from each beaker and discard it (trashcan). Rinse each test tube with water at the sink, then return them to your test tube rack.
8. Using the micropipette, transfer 2mL of **hydrogen peroxide** to each of the test tubes. After doing so, eject the tip and discard it in the trashcan.
   1. Do you expect the enzymes to do anything in the H2O2 setup? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ discuss why or why not with your team.
9. Use forceps to place a piece of fresh liver in the appropriate test tube. Record what happens on your data table.
10. Use forceps to place a piece of frozen liver in the appropriate test tube. Record what happens on your data table.
11. Use forceps to place a piece of cooked liver in the appropriate test tube. Record what happens on your data table.
12. Use the forceps to remove the potato from each beaker and discard it (trashcan). Leaving the labels on the test tubes, clean each test tube and return to the rack upside down to dry.
13. Wash the forceps with soap and water, then dry them with a paper towel and bring to the container in the front.

**Data:**

You will judge the reaction by the volume of bubbles of gas given off. Judge the rate of each reaction using the following scale. If you see just a few, very small bubbles, rate the reaction as a “+”. If the bubbling is so extreme that it bubbles over the top of the test tube, rate the reaction a “++++”. After completing each test, record the reaction rate in your data table. *Data collected is qualitative - we will not be graphing our results!*

− No reaction ++ Medium reaction ++++ Extremely large reaction

+ Very small reaction +++ A somewhat large reaction