



Name \_\_\_\_\_ Hour \_\_\_\_\_ Date \_\_\_\_\_

## Murder and a Meal: A Forensic Investigation

### The Case

A murder has occurred in a peaceful little town here in Michigan. A young gentle man was found in an unfortunate state, his body was discovered by local custodians in the dumpster behind the high school. As top-notch biology students at Mount Clemens High School you have been asked to assist in the investigation of this most unfortunate incident. Central to identifying the individual who committed this crime is establishing where the victim was the day of the crime so that detectives can question the individuals with whom the victim came into contact. An autopsy was performed on the victim has revealed that the victim ate just prior to his time of death. Detectives need your help in determining the location of the victim's last meal, with this knowledge they hope you can fill in the remaining details, identify their suspects and help make an arrest for this tragic crime.

Upon questioning the victim's friends and family, detectives working the case have learned that the victim enjoyed eating at the following places.



### ***Bologna Brother's Pizza***

The victim would never eat thin crust pizza from anywhere else! The victim would typically order a pizza with sausage, pepperoni, and bacon. BB's as the local's call it is located 3 blocks from the high school and offers student specials on Tuesday's and Thursday's.

**Additional Notes:** Davis brother's pizza is owned by Mr. Paul Sausage a wealthy businessman. The victim attends the local high school with Mr. Sausage's daughter Rebecca. Witnesses at the high school claim Rebecca and the victim were in a spicy relationship.



### ***Buff's Wilder Wings***

The victim would hang out here to watch sporting events while feasting on Blazin' wings and celery. This local dive is just minutes from the high school and is a popular destination for adults and teens alike.

**Additional Notes:** The victim was often seen hanging out afterschool with one of the wait staff from the restaurant. More than one witness claims they were more than just friends, but no one was for certain they were a couple.



## ***Avanti's Ristorante***

The victim loved to go here for a night of bread, olive oil, and pasta. This restaurant is a high class venue in which reservations are suggested. Their pasta has won the "spaghetti of the year" award three years in a row.

**Additional Notes:** The victim's best friend, Charlie Davis is currently employed at the restaurant as a bus boy. Charlie and the victim have been best friends since they early childhood, they often spend time together playing video games and hanging out. Recently the victim and Charlie have been seen arguing, though witnesses were not clear on the reason for the disagreement

The forensic pathologist has removed the contents of the victim's stomach for you to analyze. Your job is to determine where the victim had his last meal. Before you begin your investigation think about the following pre-lab questions.

1. What organic macromolecules would you expect to find in the stomach contents of the victim if the victims final "pie" was eaten at BB's Pizza?
2. What organic macromolecules would you expect to find in the stomach contents of the victim if the victims final meal was eaten at Buff's?
3. What organic macromolecules would you expect to find in the stomach contents of the victim if the victims final meal was eaten at Avanti's?

## **Procedure: (10pts)**

### **Food Test 1: Sugar test-Benedict's solution**

1. Label one test tube Food Test 1; add your names to this test tube as well.
2. Mix small amount of the stomach sample with distilled water to make a test liquid.
3. To a test tube, add 40 drops of liquid to be tested.
4. Add 10 drops of Benedict's solution to the test tube. Carefully heat the test tubes by suspending in a hot water bath at about 40-50 degrees Celsius for five minutes.

5. Note any color change. If sugar is present solution will turn green, yellow, or brick-red, depending on sugar concentration.

### Food Test 2: Starch - Lugol's iodine

Caution: Observe proper laboratory safety. Iodine will stain be careful not to spill.

1. Label one test tube Food Test 2
2. To the test tube add 40 drops of liquid to be tested.
3. Add three (3) drops of Lugol's Iodine to each test tube sample. Agitate sample and mix thoroughly
4. Note any color change. If starch is present the solution will turn a blue/black color

### Food Test 3: Protein - Biuret solution

Biuret solution is used to identify the presence of protein. Biuret reagent is a blue solution that, when it reacts with protein, will change color to pink-purple. Proteins are large polymers made from amino acids. Proteins are found in animal flesh, nuts, and some dairy products

1. To a test tube, add 40 drops of liquid to be tested.
2. Add 3 drops of Biuret reagent solution to each test tube. Shake gently to mix.
3. Note any color change. Proteins will turn solution pink or purple.

### Food Test 4: Fat - Sudan III stain

1. To a test tube, add equal parts of test liquid and water to fill about half full.
2. Add 3 drops of Sudan III stain to each test tube. Shake gently to mix.
3. Note any color change. A red-stained oil layer will separate out and float on the water surface if fat is present.

Data Table 2

Food Test Results

Test for Lipids	Test for Proteins	Test for Carbohydrates (Glucose)	Test for Carbohydrates (Starch)
Present _____	Present _____	Present _____	Present _____
Not Present ____	Not Present ____	Not Present ____	Not Present ____

**Conclusion and Analysis, (10pts)**

Where do you believe the victim ate his last meal? What evidence supports your claim?

**Fill in the Story (up to 20pts)**

Several suspects were identified in the additional notes; use these suspects to create your own narrative (story) of the crime. Be creative, identify who you believe committed the crime as well as the motive behind their actions.

Your Story should

- Clearly identify a suspect from the list of known acquaintances
- Clearly explain the motive behind the crime
- Be creative, unique and well thought out
- Typed or neatly hand written