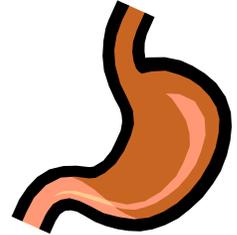


Murder and a Meal

The Case

A murder has occurred right here in our peaceful little town of East Peoria, IL. As top-notch biology students at East Peoria 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 the time of death. Upon questioning the victim's friends and family, detectives working the case have learned that the victim enjoyed eating at the following places.



Davis 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.

What macromolecules would you expect to find in the stomach contents of the victim if the victims final "pie" was eaten here?



Buffalo Wild Wings

The victim would hang out here to watch sporting events while feasting on Blazin' wings and celery.

What macromolecules would you expect to find in the stomach contents of the victim if the victims final meal was eaten here?



Avanti's Restaruante

The victim loved to go here for a night of bread, olive oil, and pasta.

What macromolecules would you expect to find in the stomach contents of the victim if the victims final meal was eaten here?

The forensic pathologist has removed the contents of the victim's stomach for you to analyze in order to determine where the victim had his last meal.

Name _____ Hour _____ Date _____

Procedure

Before analyzing the stomach contents of the deceased, you must determine the procedure to be used to test for each organic macromolecule. Using information given in class, write out the procedure for testing for each of the following macromolecules. For each macromolecule you must (1) describe the procedure (in enough detail so that others can repeat your work) you will follow to perform each test, (2) describe how a positive result for the macromolecule will look and record this information in Table 1, and (3) describe how a negative result for the presence of the macromolecule will look and record this information in Table 1.

NOTE: Before you may begin your investigation, you must obtain approval from your teacher.

Lipid Test



Protein Test

Carbohydrate—Glucose Test

Carbohydrate—Starch Test

Teacher Approval _____ Date _____

Name _____ Hour _____ Date _____

Table 1. Positive and Negative Results for the Presence of Organic Macromolecules

Macromolecule	Chemical Test	Positive Test Result	Negative Test Result
Lipids			
Proteins			
Carbohydrates— Glucose			
Carbohydrates— Starch			

Table 2. _____

Test for Lipids	Test for Proteins	Test for Glucose	Test for Starch
Observations:	Observations:	Observations:	Observations:
Present? _____	Present? _____	Present? _____	Present? _____
Not Present? _____	Not Present? _____	Not Present? _____	Not Present? _____

Lab Analysis

- 1) Write out a descriptive title for Table 2, and fill in the table with your results.
- 2) Report your findings in discussion format. Open the discussion with a statement regarding which restaurant the victim visited for his last meal (**1 point**). Provide a logical explanation, using data from the tests on the stomach contents, that explains how you reached that conclusion (**4 points**). The discussion should explain the results of the investigation in regard to the scientific concepts that are being applied in the investigation. In this case, the scientific concept being applied are *macromolecules* and the specific chemical tests used to determine their presence (**5 points**).

Name _____ Hour _____ Date _____

Teacher Notes:

To make the vomit, blend the following materials:

Corn (not sweetened)

Beans

Potato

Noodles

Vegetable oil

Red food coloring

** I don't recommend using the food coloring if you are going to use "Sudan III" to test for lipids. You can use it, however, if you use the "brown bag test" for lipids.

Test your mixture before hand. It should only have starches and lipids.

I put the contents in a beaker and made the kids "handle" it. They loved and hated it!

The ultimate goal is to show that the last meal was "Avanti's".

Need more information? Visit these sites for ideas ...

Food Chemistry

http://www.sciencecompany.com/sci-exper/food_chemistry.htm

Testing for Lipids, Proteins, & Carbohydrates

<http://seplessons.ucsf.edu/node/362>

Food Chemistry Testing

<http://www.scribd.com/doc/3371524/Food-Chemistry-Testing-SUGAR-STARCH-ETC>

Einstein Project – Food Chemistry

<http://www.einsteinproject.org/einstein/for+educators/unit+offerings/food+chemistry/default.asp>