

Murder and a Meal

The Case

A murder has occurred right here in our peaceful little town of Grafton, WI. As top-notch biology students at Grafton High School you have been asked to assist in the investigation of this most unfortunate incident involving the death of Deja Viau. 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.



Triominos's Pizza

The victim would never eat thin crust pizza from anywhere else! The victim would typically order a chicken alfredo pizza.

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



Larry's Chicken Shack

The victim would hang out here to watch sporting events while feasting on fried hot 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?



L'ULTIMA CENA

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

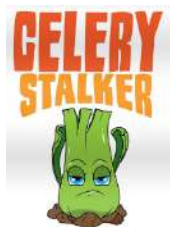
What macromolecules would you expect to find in the stomach contents of the victim if the victims final meal was eaten here?

The Naked Cow-



The victim was infatuated with the naked cheeseburger (a bun less cheeseburger) and creamed spinach. This restaurant specializes in keto-friendly fare.

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



The Celery Stalker

After many nights of dining on carbs and cows, the victim would eat a tofu and veggie omelet to cleanse her palate and detoxify.

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.

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.



Last Name_____ First Name _____ Hour_____ Date_____

Lipid Test

Protein Test

Carbohydrate—Glucose Test

Carbohydrate—Starch Test

Teacher Approval _____

Last Name _____ First 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? _____

1) Write out a descriptive title for Table 2, and fill in the table with your results.

Last Name_____ First Name _____ Hour_____ Date_____

CASE REPORT:

1. A. State which restaurant the victim visited for his last meal

B. Justify your answer. Provide a logical explanation, using data from the tests on the stomach contents, that explains how you reached that conclusion. Use terms such as positive results, negative results, macromolecule, protein, lipid, carbohydrate and sugars. Remember to include the name of each test. UNDERLINE these terms in your justification.

C. List one of the restaurants that you ruled out and UNDERLINE THE NAME OF THE RESTAURANT. Then, explain IN DETAIL how you ruled out that location. Repeat this process for the other 4 restaurants.

Last Name _____ First Name _____ Hour _____ Date _____

KEY Teacher Notes:

To make the vomit, blend the following materials:

Noodles

Vegetable oil

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 at: _____

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>

Last Name _____ First Name _____ Hour _____ Date _____

