

## Macromolecules Virtual Lab

### Go to the website:

<http://www.occc.edu/biologylabs/Documents/Organic%20Compounds/Organic%20Compounds.htm>

Carbohydrates, proteins, fats, vitamins, and other nutrients provide your body with energy and provide the raw materials necessary to carry on life activities. These compounds are present in the plants and animals you use as food. In this lab, you will test for specific compounds and then determine if these are in a fast food value meal in sufficient quantities.

### Materials:

Benedict's solution: tests for sugar (carbohydrates)

Biuret solution: tests for protein

Lugol's iodine solution: tests for starch (complex carbohydrates)

Sudan III solution: tests for lipids



### Pre-Lab Questions- Answers the questions on lined paper and staple to the lab

1. What are Biomolecules?
2. List the four biomolecules and provide examples of foods that contain them.
3. What is a chemical indicator?
4. For this lab, which are the chemical indicators you will be using and what is their function?
5. Which types of biomolecules do you predict that you will find in a potato, orange juice, almonds, eggs, salmon and milk? Explain your prediction.

Food Substance	Prediction	Explanation
Potato		
Orange Juice		
Nuts		
Eggs		
Salmon		
Milk		

6. Circle any of the following compounds that would be classified as carbohydrates.  
a) Amino acids                      b) Fructose                      c) Maltose                      d) Glucose  
e) Starch                                  f) Hemoglobin                      g) Lactose

### Part I: Testing of Known Substances: Go online for this part!



You will learn how to test for each of these organic molecules by clicking on the boxes shown on the left. Complete each of the tests for carbohydrates, proteins and fats. Write your results in the data table.



### Part II: Test Different Foods: Go online for this part!

When you have finished Part I, you will click on the foods button – shown on the left, to test for the presence of organic compounds that are found in various common foods. Write your results in the data table given below.

**Lab Results**

**Part I: Testing of Carbohydrates, Proteins, and Fats (Lipids):**

a) What substance was used for control? Why?

Food Substance	Reagent test	Describe the Color Change
Protein	Biuret solution	
Simple Sugar	Benedict's solution	
Starch	Lugol's Iodine	
Lipid	Sudan IV	

Food Substance	Reagent test	Color Change	Positive Results (Y/N)
<b>Protein</b>	<b>Biuret solution</b>		
Potatoes			
Orange Juice			
Nuts			
Eggs			
Salmon			
Milk			
<b>Simple Sugar</b>	<b>Benedict's solution</b>		
Potatoes			
Orange Juice			
Nuts			
Eggs			
Salmon			
Milk			
<b>Starch</b>	<b>Lugol's Iodine</b>		
Potatoes			
Orange Juice			
Nuts			
Eggs			
Salmon			
Milk			
<b>Lipid</b>	<b>Sudan IV</b>		
Potatoes			
Orange Juice			
Nuts			
Eggs			
Salmon			
Milk			

**Part II: Testing of Food: Answers the questions on lined paper**

**Answer** these questions briefly but completely! **Work on your own!**

1. What are the macromolecules from which we get energy?
2. What did you find? (Describe your results for each individual test and what it says about various foods). Which foods are healthy? Explain what we did and didn't learn from these tests.

