As you complete the webquest please answer the questions and collect your data on this sheet.

**Polymers**

1. What is a polymer?

2. What are the small molecules that make up a polymer called?

3. What is another name for a polymer?

4. Name the four biological polymers found in the body.

5. Describe the process by which polymers are made and broken apart in the body.

**Carbohydrates**

1. What is the main function of a carbohydrate?

2. What is cellulose? Name one source of cellulose?

3. What do simple carbohydrates taste like?

4. Are all simple carbohydrates good for you?

5. What are the two types of simple carbohydrates?

6. What elements make up carbohydrates?

7. What are monosaccharides the most important sugars in nutrition?

8. What is the most important monosaccharide in the human body and why is it the most important?

9. What is a disaccharide? What monosaccharide is contained in all disaccharides?
10. Why are complex carbohydrates called polysaccharides?

11. What complex carbohydrate is a human’s stored source of energy?

12. In what types of food are starches found?

13. What is fiber and where do you get fiber from in your diet?

14. Why is it important to eat fiber?

15. How are excess carbohydrates stored?

16. Where does most carbohydrate digestion take place?

17. Which food would you eat to sustain you on a cross country run: a candy bar (mostly monosaccharides) or a bowl of pasta (polysaccharides)?

Lipids

1. What are the three basic functions of food fats?

2. What is a fatty acid?

3. Which fatty acids cannot be made by the body?

4. What is the name given to all fats and fat related compounds? What are the three types?

5. What makes up a triglyceride?

6. What does cholesterol do in your body? Do you need to eat cholesterol to obtain it for your body?
7. What is the difference between saturated and unsaturated fatty acids?

8. What foods contain saturated fats in general? Which foods would contain mostly unsaturated fats?

9. Why is it worse for your health to consume saturated fats?

10. Where does most fat digestion take place?

11. What is the role of bile and pancreatic enzymes in the breakdown of proteins?

Proteins

1. What are proteins made of?

2. What makes each amino acid different from one another?

3. How many common amino acids are there that make up the proteins in the body?

4. How are amino acids connected to one another?

5. How are proteins that you eat used in the body?

6. What enzymes break down protein?

7. Why are enzymes important?

8. Name at least two functions of proteins in the body.

9. What is meant when we say some amino acids are “essential”?
10. Why do vegetarians need to practice protein combination?

11. What is the most common form of malnutrition? Why is it dangerous?

12. Why is protein not the best choice to provide energy in the body?

**Metabolism**

1. What is metabolism and how do the four macromolecules fit into this process in general?

**Online Labs**

**Carbohydrates**

1. What type of carbohydrate does Benedict’s reagent test for?

2. What color will the Benedict’s reagent turn in the presence of sugar?

**Benedict’s Test Results**

<table>
<thead>
<tr>
<th></th>
<th>Color Of Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benedict’s reagent + water + heat (control)</td>
<td></td>
</tr>
<tr>
<td>Benedict’s reagent + glucose + heat</td>
<td></td>
</tr>
</tbody>
</table>

**Iodine Test**

(Note: It does not say so in the lab, but iodine tests for the presence of starch and turns a dark purple/brown when starch is present)

<table>
<thead>
<tr>
<th></th>
<th>Color of Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iodine + water (control)</td>
<td></td>
</tr>
<tr>
<td>Iodine + starch solution</td>
<td></td>
</tr>
</tbody>
</table>
**Fats/Lipids**

1. What color will Sudan IV change fats?

<table>
<thead>
<tr>
<th></th>
<th>Color of Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sudan IV + water</td>
<td></td>
</tr>
<tr>
<td>Sudan IV + vegetable oil</td>
<td></td>
</tr>
</tbody>
</table>

**Proteins**

1. What color will Biuret reagent turn in the presence of proteins?

<table>
<thead>
<tr>
<th></th>
<th>Color of Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biuret reagent + water</td>
<td></td>
</tr>
<tr>
<td>Biuret reagent + protein solution</td>
<td></td>
</tr>
</tbody>
</table>

**Food Testing**

Based on the test results for each food check off which macromolecules are present in each food.

<table>
<thead>
<tr>
<th>Food</th>
<th>Monosaccharide Present</th>
<th>Starch Present</th>
<th>Lipid Present</th>
<th>Protein Present</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potato</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orange Juice</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Almonds</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eggs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salmon</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Milk</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Suspect Report:**

1. **Delia “Delicious” Drake: Cake Baker**
   Claims that the red substance is icing that she dropped and stepped in while frosting her cake.

2. **Jerry “Wiggle” Jones: Jell-O Mold Sculptor**
   Claims the red substance on his shoes was a batch of red colored Jell-O that he spilled and stepped in.

3. **Freddy “Fats” Finchel: Popcorn Maker**
   Claim the red substance on his shoes was his new red popcorn butter that he spilled and then stepped in.
Test Results

**Pizza Sauce:**
Benedict’s reagent turned green after heating for 5 minutes.
Iodine solution turned dark purple when added.
Biuret reagent turned purple when added.
Sudan IV turned red when added.

**Red substance from Delia’s shoe:**
Benedict’s reagent turned orange after heating for 5 minutes.
Iodine solution turned purple when added.
Biuret reagent remained a pale blue.
Sudan IV turned red.

**Red substance from Jerry’s shoe:**
Benedict’s reagent turned orange after heating for 5 minutes.
Iodine solution remained orange.
Biuret solution turned violet when added.
Sudan IV did not turn red.

**Red substance from Freddy’s shoe:**
Benedict’s reagent turned green after heating for 5 minutes.
Iodine solution turned dark purple when added.
Biuret reagent turned purple when added.
Sudan IV turned red when added.

Determine what substance is on each person’s shoe:

Substance on Delia’s shoe: ____________________________________

Substance on Jerry’s shoe: ____________________________________

Substance on Freddy’s shoe: ________________________________
OFFICIAL WARRANT

We, the detectives of the ______________________________________________ police department

believe that ______________________________________________________

is guilty of the crime of

________________________________________________________________________________________

________________________________________________________________________________________

Based on the evidence that

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

Team Signatures

____________________________________

____________________________________

____________________________________

____________________________________

(Printed)

____________________________________

____________________________________

____________________________________

____________________________________

Approved _____________

Denied________________

Judge’s Signature___________________