Hamilton Biology | Week 5 - Macromolecule Informational Text

Name:_____

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Carbon atoms can be used to make carbon molecules. These carbon molecules are large molecules called **macromolecules**. Another name for a macromolecules is **polymers**, **organic molecules**, and **biomolecules.** These macromolecules are organized into four categories. Macromolecules are broken down into smaller pieces called monomers. The four categories of macromolecules are: **carbohydrates, lipids, proteins, and nucleic acids.**

Carbohydrates:

Carbohydrates are compounds that are made from carbon, hydrogen, and oxygen. Carbohydrates are made out of the monomer **monosaccharide**. The monosaccharide named **glucose** is important because it is the turned into energy by the **mitochondria** in our cells. In other words, glucose is the energy source of the cell. Carbohydrates are made during photosynthesis in the **chloroplast**. In addition to providing energy for the cell, carbohydrates also form the cell wall in plant cells. The cell wall supports the structure of the plant cell and provides protection for plant cells.

Two types of carbohydrates are found in our foods. **Simple carbohydrates** are sugary and sweet. If a scientist wants to see if a food has a simple carbohydrate, then they add **Benedict's** reagent to the food. If the test turns from blue to orange, then there are sugars or simple carbohydrates in the food. The second type of carbohydrate is a **complex carbohydrate**. A complex carbohydrate is starchy or bready. Scientists test a food for complex carbohydrates by adding **Lugol's iodine** to the food. If the Lugol's Iodine turns from brown to blackish purple, then there is a complex carbohydrate in the food.

Reading Questions:

1. Identify the macromolecule associated with each test
2. Circle the positive colors
3. Read what the question is asking for

Substance	Benedict's	Biuret's	Lugol Iodine
Apple	Orange	Blue	Purple
Chicken Broth	Blue	Purple	Brown
Potato	Red	Blue	Black
Yogurt	Orange	Purple	Brown

Which foods contain simple carbohydrates?

Justify your answer with evidence:

Which foods contain complex carbohydrates?

Justify your answer with evidence:

Biuret's	Lugol's Iodine	Benedict's	Sudan's
Purple	Black	Blue	Clear

Does the substance in this chart contain carbohydrates? What type?

Justify your answer with evidence.

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Lipids:
Another macromolecule in our cells is a lipid. Lipids are also made of carbon, hydrogen, and oxygen. This macromolecule are made from smaller pieces called **fatty acids**. The main function of a lipid is to store long-term energy, but they are also used to form the cell membrane in all cells. Scientists can test a food to see if there are lipids in two ways. First a scientist can add **Sudan's Red** (III) if Sudan's Red turns red then the food contains a lipid. The second way a scientist can test for lipids is by using a **Brown Paper Bag**. If the food leaves a grease spot which is translucent on the paper bag, then the food contains a lipid.

Proteins:
Proteins are a building block of all cells. Proteins are built from the monomer **amino acids**. Amino acids and proteins are made from carbon, hydrogen, oxygen, nitrogen, and sometimes sulfur. Proteins make up 15% of your total weight in your body. Proteins are used for many different purposes. Proteins make up your muscles, your hair and nails, and your skin. One of the most important examples of proteins are **enzymes**. Enzymes are used in your body to speed up chemical reactions. Enzymes can be found in lysosomes.

Scientists test foods to see if they have proteins by adding **Biuret's reagent** to the food. If the reagent turns from blue to purple, then the food has a protein in it.

Substance	Benedict's	Biuret's	Lugol Iodine
Apple	Orange	Blue	Purple
Chicken Broth	Blue	Purple	Brown
Potato	Red	Blue	Black
Yogurt	Orange	Purple	Brown

Which foods contain proteins?

Justify your response with evidence from the chart

Biuret's	Lugol's Iodine	Benedict's	Sudan's
Purple	Black	Blue	Clear

Does the substance tested in this chart contain proteins?

Justify your answer with evidence from the chart.