Molecules Cells Are Made Of Capture Sheet

**Directions:**

The organic molecules in cells also provide the chemical energy in our food. You will apply what you have learned about atoms, molecules, and chemical bonds to gather more information on critical molecules for life. Use the images provided by your teacher to complete this capture sheet.

Key to reading the molecules:

|  |  |  |  |
| --- | --- | --- | --- |
| **Black circle:** | Carbon atom | **Red circle:** | Nitrogen atom |
| **Blue circle:** | Oxygen atom | **Yellow bond:** | High energy bond |
| **White circle:** | Hydrogen atom | **Grey bond:** | Low energy bond |

**Digestion** means: **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Biosynthesis** means: **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Carbohydrates:**

|  |  |  |
| --- | --- | --- |
| **Atoms Present** | **Types of Bonds Present** | **Examples** |
|  |  |  |

1. What small organic molecules (monomers) are put together during Biosynthesis? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What is the byproduct of biosynthesis? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. What large organic molecules (polymers) are taken apart during digestion? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. What small inorganic molecule is used during digestion? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Fats:**

|  |  |  |
| --- | --- | --- |
| **Atoms Present** | **Types of Bonds Present** | **Examples** |
|  |  |  |

1. What small organic molecules (monomers) are put together during Biosynthesis? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
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4. What small inorganic molecule is used during digestion? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Proteins:**

|  |  |  |
| --- | --- | --- |
| **Atoms Present** | **Types of Bonds Present** | **Examples** |
|  |  |  |

1. What small organic molecules (monomers) are put together during Biosynthesis? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
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4. What small inorganic molecule is used during digestion? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Organic Molecules in all cells:**

1. What atoms are organic molecules in cells made of? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Which category of organic molecule has the most chemical energy? How do you know? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Minerals in Cells:**

1. What is the function of minerals in cells? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What kinds of atoms might you find in minerals? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Cells are really complicated!**

* Large organic molecules are really larger than our pictures:
  + Fats: 50-100 carbon atoms (+ H and O)
  + Proteins: hundreds of carbon atoms (+ H, N, and O)
  + Starch: thousands of carbon atoms (+ H and O)
  + Cellulose (fiber): thousands of carbon atoms (+ H and O)
* There are also other large organic molecules, such as deoxyribonucleic acid (DNA) - which we will study later in the year.
* There are many more small organic molecules than the ones in this lesson.

**Connecting back to the Food Label analysis**

Review the data you collected about the six different food types in the Food Label analysis activity. Based on what you have learned, use the CER organizer to construct an explanation for why the beef and peanuts had significantly higher amounts of chemical energy (Calories) than the foods based on plant parts even though they all had the same mass?

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| --- |
| Claim: |
| Evidence |
| Reasoning |