Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Life and Its Major Molecules**

**By the end of the lesson you should be able to:**

* Describe the 8 characteristics of life
* Recognize the structure of the 4 molecules of life
* State the function and give examples of the 4 molecules of life

**The 8 Characteristics of Life**

 1. All life is made up of at least \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 2. All life must obtain and use \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 3. All life \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - increasing its biomass

 4. All life \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 5. All life \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to its environment

 6. All life \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 7. All life maintains \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)

 8. All life ends

**4 Molecules of Life**

* Cytoplasm is made of 4 types of molecules

 1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

****These molecules are composed mostly of four elements: C, H, O & N

**Carbohydrates**

* Function: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_for the cell and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* There are 3 types:

 1. Monosaccharides

 2. Disaccharides

 3. Polysaccharides

* ****\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are a single unit of sugar
* If two monosaccharides are combined together, the result is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* If there are many monosaccharides combined, the resulting molecule is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ . \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is an example of a structural carbohydrate at it forms plant cell walls

**Examples of Carbohydrates**

* Monosaccharides: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, fructose, galactose
* Disaccharides: sucrose, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, maltose
* Polysaccharides: starch, chitin, glycogen, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Lipids (Fats)**

* There are 3 types:

 1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: long term energy storage

 2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: used to make cell membranes

 3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: hormones

****

**Proteins**

* Proteins are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for muscle, cell structures, enzymes, immune system etc …
* Proteins are made up of smaller units called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* The amino acids link together to form a chain
* These long chains of amino acids \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* The differences between proteins is the sequence of the amino acids and how they are folded up

****

**Nucleic Acids**

* Nucleic acids contain \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* There are two types of nucleic acids: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* A nucleic acid is made up of small molecules called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ which include a base (ACTG&U), a sugar and phosphate group.
* **Deoxyribonucleic Acid (DNA)**

 Largest molecule on earth!

Contains all the genetic information (a

\_\_\_\_\_\_\_\_\_\_\_\_) to build a living organism

Fits into the nucleus and is twisted into a

 double stranded helix

* **Ribonucleic Acid (RNA):** there are 3 types

 1. Messenger RNA (mRNA) a \_\_\_\_\_\_\_\_\_

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from the DNA

 that exits the nucleus

 2. Transfer RNA (tRNA)

 3. Ribosomal RNA (rRNA) (makes ribosomes)

* All are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and help DNA make proteins
* Has a U base instead of the T base

 **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (ATP)**

 This is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ molecule of life

 There are 3 phosphate molecules bonded together

 The last two have a lot of energy \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

