**Ch. 4: Carbon and the Molecular Diversity of Life**

* **Learning Objective: Describe the composition of macromolecules required by living organisms.**

|  |  |
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| 1. Why study carbon?
 |  |
| 1. What are **ORGANIC** compounds?
 |  |
| 1. Why is Carbon (C) so diverse?
 | 1. It has \_\_\_\_ valence electrons
2. I can form up to \_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bond
3. Can form \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, or triple bonds

http://chemwiki.ucdavis.edu/@api/deki/files/8564/=image080.png1. Can form \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ macromolecules such as:
2. Carbon compounds can be \_\_\_\_\_\_\_\_\_\_\_, rings, or \_\_\_\_\_\_\_\_\_\_\_\_\_
3. Forms \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: molecules with the same molecular formula but different arrangement of \_\_\_\_\_\_\_\_\_\_\_\_\_\_
	1. Different structure 🡪 different \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
 |
| 1. What are different types of **ISOMERS**?
 | **Structural Isomer** | **Cis-Trans Isomer** | **Sterioisomer** |
| Varies in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ arrangement | Differ in \_\_\_\_\_\_\_\_\_\_\_\_\_\_ arrangement | \_\_\_\_\_\_\_\_\_\_\_\_ images of molecules |
|  |  |  |
| 1. What are **FUNCTIONAL GROUPS** and why are they important?
 | 1. Parts of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ molecules that are involved in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Affect \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Ex:  |
| 1. What are formulas and properties of the most common organic functional groups?
 | **Functional Group** | **Details / Examples** | **Functional Properties** |
| Hydroxyl |  |  |
| Carbonyl |  |  |
| Carboxyl |  |  |
| Amino |  |  |
| Sulfhydryl |  |  |
| Phosphate |  |  |
|  | Methyl | 04_09_bChemicalGroups-L.jpg |  |
| 1. What are **MACROMOLECULES**? List the “BIG 4”
 |  |
| 1. What are **POLYMERS**?
 |  |
| 1. How are polymers **BUILT**?
 | * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: joins monomers by “taking” \_\_\_\_\_\_\_\_\_\_ out
* requires \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ & \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 |
| 1. How is a polymer **BROKEN DOWN**
 | * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: add \_\_\_\_\_\_\_\_\_\_\_ to break down polymers
* requires \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ & \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy

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