**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.png   1. 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 | | | | |



