# Macromolecules Worksheet

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## Part 1: Building a Foundation

**Which of the following is a type of macromolecule?**

*Hint: Think about the different types of biological molecules.*

- ◯ Water
- ◯ Protein
- ◯ Carbon Dioxide
- ◯ Oxygen

**Which of the following are considered macromolecules? (Select all that apply)**

*Hint: Consider the large biological molecules.*

- ☐ Lipids
- ☐ Amino Acids
- ☐ Carbohydrates
- ☐ Nucleic Acids

**Describe the primary function of carbohydrates in living organisms.**

*Hint: Think about energy and structure.*

**List the four main types of macromolecules and provide one example of each.**

*Hint: Think about the major classes of biological molecules.*

1. Carbohydrates

2. Proteins

3. Lipids

4. Nucleic Acids

## Part 2: Understanding and Interpretation

**What is the primary role of nucleic acids in cells?**

*Hint: Consider genetic information.*

- ◯ Energy storage
- ◯ Genetic information storage and transfer
- ◯ Structural support
- ◯ Catalyzing reactions

**Which of the following statements about proteins is true? (Select all that apply)**

*Hint: Think about the functions and structures of proteins.*

- ☐ They are made of nucleotides.
- ☐ They can function as enzymes.
- ☐ They are involved in immune response.
- ☐ They are a primary energy source.

**Explain how the structure of phospholipids contributes to their function in cell membranes.**

*Hint: Consider the hydrophilic and hydrophobic properties.*

## Part 3: Application and Analysis

**If a cell needs to quickly mobilize energy, which macromolecule is it most likely to use?**

*Hint: Think about the energy sources available to cells.*

- ◯ Lipids
- ◯ Proteins
- ◯ Carbohydrates
- ◯ Nucleic Acids

**Which processes involve the breakdown of macromolecules? (Select all that apply)**

*Hint: Consider metabolic processes.*

- ☐ Dehydration synthesis
- ☐ Hydrolysis
- ☐ Photosynthesis
- ☐ Cellular respiration

**Describe a real-world scenario where enzymes play a crucial role in a biological process.**

*Hint: Think about digestion or metabolism.*

## Part 4: Evaluation and Creation

**Which level of protein structure is characterized by alpha helices and beta sheets?**

*Hint: Consider the different levels of protein organization.*

- ◯ Primary
- ◯ Secondary
- ◯ tertiary
- ◯ Quaternary

**Analyze the following statements and identify which are true about the polymerization of macromolecules. (Select all that apply)**

*Hint: Think about the processes involved in forming macromolecules.*

- ☐ It involves the removal of water molecules.
- ☐ It requires energy input.
- ☐ It is a spontaneous process.
- ☐ It results in the formation of monomers.

**Compare and contrast the roles of DNA and RNA in genetic information processing.**

*Hint: Think about structure and function.*

**Which of the following scenarios would most likely disrupt protein function?**

*Hint: Consider factors that affect protein stability.*

- ◯ Increase in temperature
- ◯ Decrease in light exposure
- ◯ Increase in oxygen levels
- ◯ Decrease in water availability

**Evaluate the impact of lipid structure on its function in the following scenarios. (Select all that apply)**

*Hint: Think about the roles of lipids in biological systems.*

- [ ] Lipids in cell membranes
- [ ] Lipids as hormones
- [ ] Lipids in energy storage
- [ ] Lipids in photosynthesis

**Propose a hypothetical experiment to test the effect of temperature on enzyme activity, including your expected outcomes and reasoning.**

*Hint: Consider how temperature affects molecular interactions.*