

## AP Biology Biochemistry HW Sheet

Test Date: \_\_\_\_\_

### Resources:

Campbell Textbook Chapters: 2, 3, 4, 5

Background on atoms, molecules, isotopes, ions, bonding at OpenStax  
Chapter 2, Section 1

<https://cnx.org/contents/bDluMp-w@18.4:MlkVKoYw@15/2-1-Atoms-Isotopes-Ions-and-Molecules-The-Building-Blocks>

### Lesson 1: Water

Read OpenStax Chapter 2, Section 2

<https://cnx.org/contents/bDluMp-w@18.4:iD94bty5@13/2-2-Water> to help you to do the following:

1. Fill in the chart

Property of Water	Description	How it works	Example
High Heat Capacity			
High Heat of Vaporization			
Universal Solvent			
Cohesion/Adhesion			

2. Water does not behave the way that most molecules do when it undergoes a state change. Explain what are the expected changes of state changes, and how is water different?

3. Relate water's solvent properties to the concept of pH and how the pH scale works.

### Lesson 2: Isomers and Carbon

Read OpenStax Chapter 2, Section 3

<https://cnx.org/contents/bDluMp-w@18.4:6ADz0JPd@12/2-3-Carbon>

1. Make notes on the following types of isomers:
  - A. Geometric
  - B. Enantiomers
  - C. Cis/Trans isomers (look this up separately (it's not in the chapter))
2. Practical Application of different atomic structure. Read the article at this link: (Eliminating the "Twin" Drug)  
<http://news.uark.edu/articles/9685/eliminating-the-twin->  
Summarize the article and relate it to what you know about isomers.

3. In Lewis Carroll's "Alice in Wonderland", Alice poses the question: "Is looking-glass milk good to drink?"

*[Alice:] 'How would you like to live in Looking-glass House, Kitty? I wonder if they'd give you milk in there? Perhaps Looking-glass milk isn't good to drink—'*

Respond to this question and justify your answer based on what you have learned about the importance of isomers and the biological relevance of molecular shape.

4. Relate the concept of functional groups to organic chemical nomenclature.
5. List 3 questions that you still have about isomers. If you don't have 3 questions, write questions to predict how this material can show up on your test.

### **Lesson 3: Organic Molecules**

Use the link below as a resource to complete the concept map and answer the questions.

OpenStax Chapter 3, all sections

<https://cnx.org/contents/bDluMp-w@18.4:QPYyAMBv@11/Introduction>

Concept Map-(recreate if you need more space)

1. What do all of the biochemical families have in common?
2. All organic molecules are large (polymers). Using the article and your concept map what are the MONOMERS of each biochemical?
3. Compare and contrast starch and cellulose in terms of their structures and functions.
4. How do lipids relate to the endocrine system?
5. List 3 questions that you still have about organic molecules and biochemical families. If you don't have 3 questions, write questions to predict how this material can show up on your test.

### **Lesson 4: AP Progress Check**

Log in to your AP Classroom account and complete the Unit 1 Progress Check: MCQ (Note: This assignment will not open for you until 2 class days before the Unit test)

