

Macromolecule CER Lesson Plan for Biograph

Note to my readers, these two links ([Macromolecules stations](#) and [Original CER guided worksheet](#)) are to a station activity for practicing CERs and macromolecule identification. I have updated this lesson plan to incorporate some of the argumentation activities and ideas presented in Module 4 of Biograph like evidence card sorts and creating definitions. Finally, this lesson is intended to be used as a culminating activity after learning about the four macromolecules. Depending on timing and sequence, this lesson could be done with 3 of the 4 macromolecules.

Overarching question: Can you identify a given macromolecule based on its characteristics and explain your thinking using the CER approach?

Objective: The goal of this lesson is to have students examine different macromolecules and classify them as being one of the four types of macromolecules using the CER process.

Materials: Computers, printed macromolecule evidence card sort cards (bottom of page), and printed [Macromolecules stations](#) pages

Lesson Outline:

1. Students will complete a warm-up activity (socrative, kahoot, etc.) about macromolecules and be asked to take out their resources (binders, folders, etc. with classwork).
2. Students will then perform a macromolecule card sort (cards and organizer are below) using their resources to come up with the characteristics of the four different types of macromolecules. When complete, their work should look like the table below. Check in with students can be done with the small groups or as a whole class.

Carbohydrates	Nucleic Acids	Lipids	Proteins
Atoms: CHO Structure: Typically rings called monosaccharides; can be chains of rings Function: Short term (or long term) energy and structure for cell walls	Atoms: CHONP Structure: Composed of nucleotides that are single or double stranded Function: Heredity and codes for proteins	Atoms: CHO Structure: Made of fatty acids (long chains of hydrocarbons with single or double bonds) Function: Long term energy storage and cell membranes	Atoms: CHONS Structure: Chains of amino acids that are folded in particular ways to function properly Function: Highly varied - enzymes, transport, immune system, movement

3. Then students will travel to examine the evidence present on different [Macromolecules stations](#) to determine how to classify each macromolecule using their sorted card.
4. Students will use worksheets like [Original CER guided worksheet](#) and [CER guided worksheet with extra scaffolding](#) either on paper or in a digital format to write CER statements.
5. If time allows, students will peer edit each other's work before submission for grading.
6. An exit ticket/socrative will be given to students that is specific to CER at the end of the period.

Macromolecule Card Sort Cards

Cut these cards out and sort them into the columns of the card sort organizer.

Atoms: CHO	Atoms: CHONP	Atoms: CHO
Function: Short term (or long term) energy and structure for cell walls	Function: Heredity and codes for proteins	Function: Long term energy storage and cell membranes
Structure: Typically rings called monosaccharides; can be chains of rings	Structure: Made of fatty acids (long chains of hydrocarbons with single or double bonds)	Atoms: CHONS
Structure: Composed of nucleotides that are single or double stranded	Function: Highly varied - enzymes, transport, immune system, movement	Structure: Chains of amino acids that are folded in particular ways to function properly

Macromolecule Card Sort Organizer

Using your resources (notes, worksheets, electronic versions), place the evidence cards in the correct columns and when finished, check your sorting with your teacher.

Carbohydrates	Nucleic Acids

Lipids	Proteins