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Technology Integration Workshop 2016

Unit Title: Biochemistry - Macromolecules and Enzymes

Subject Area: ***Biology 11***

Duration/Length/Number of class periods: ***5 class periods***

Description: Learn about the 4 macromolecules and how the structure and function are important to cells and life.

Established Goals (National, State, Local):

- **Standard:** Cells and cell structures have specific functions that allow an organism to grow, survive and reproduce.
  - **9.4.1.2.1:** Recognize that cells are composed primarily of a few elements (carbon, hydrogen, oxygen, nitrogen, phosphorus, and sulfur), and describe the basic molecular structures and the primary functions of carbohydrates, lipids, proteins and nucleic acids.
  - **9.4.1.2.2:** Recognize that the work of the cell is carried out primarily by proteins, most of which are enzymes, and that protein function depends on the amino acid sequence and the shape it takes as a consequence of the interactions between those amino acids.

What Enduring Understandings are desired? There are various elements and molecules essential to life. The way in which these molecules interact help maintain homeostasis necessary for living systems.

What Essential Questions will be considered?

- What is the chemical basis of life?
- What is life and what conditions are necessary to sustain it?

Students will know / be able to:

- List and understand internal and external factors that affect chemical reactions, such as pH and temperature. 9.4.1.1.1
- Understand that cells are composed of carbon, hydrogen, oxygen, nitrogen, phosphorous, and sulfur. 9.4.1.2.1
- List the characteristics of carbohydrates, proteins, and lipids. 9.4.1.2.1
- Distinguish between carbohydrates, lipids, proteins, and nucleic acids. 9.4.1.2.1

- Analyze the role that enzymes (ie. *amylase, catalase, lactase, pepsin, trypsin*) play as catalysts in the processes of the cell. 9.4.1.2.2

Description *Units must include at least one of each formative, summative, introductory activity and learning activity. Check the appropriate box; one per row.*	Formative	Summative	Introductory Activity	Learning Activity	Student Technology Used	Teacher Technology Used	ISTE Standards
Day 1 - Intro to Macromolecules - Carbs, Lipids, Nucleic Acids, Interactives built in with Pear Deck	X		**X**	**X**	**X**	**X**	**6abcd** 1c
Day 1 - Concept Map of Macromolecules - group activity				**X**			
Day 2 - PowerPoint interactive with Pear Deck - Proteins	X			**X**	**X**	**X**	**6abcd** 1c
Day 2 - Paper Protein Activity	X			**X**			
Day 3 - Macromolecule Quiz		**X**					
Day 3 - Enzyme Demo - Amylase			**X**				
Day 3 - PowerPoint interactive, Chemical Reactions and Enzymes	X			**X**	**X**	**X**	**6abcd** 1c
Day 3 - Enzyme Worksheet using Google Forms	X			**X**			
Day 4 - HHMI video "Got Lactase" Pear Dock	X			**X**	**X**	**X**	**6abcd** 1c
Day 4 - Lactase Lab	X			**X**			
Day 5 - Lactase Lab Follow Up				**X**			
Day 5 - Biochemistry Review - Using Kahoot	X			**X**	**X**	**X**	**6abcd** 1c

Commented [1]: You can add rows to the table to include this stuff. If you have some things to link, I can help with that as well. If not, you might want to be a little more descriptive. Think like a mini sub plan.

Day 6 - Biochemistry Test		x					

Materials, tools and resources - Computer, Projector, Chromebooks, Lab materials
Unit Plan Author - William Thoreson, Andover High School