This module, Biology Module A: CELLS and CELL PROCESSES is one half of a year-long exploration of biology. The content and assignments are organized in a manner consistent with the Pennsylvania Keystone Biology blueprint. In Biology Module A, the theme of Cells and Cell Processes is explored through four big ideas. Students address the big ideas of basic biological principles, the chemical basis of life, bioenergetics, and homeostasis and transport through the exploration of the following essential questions:

- How do organisms live, grow, respond to their environment, and reproduce?
- How do the structures of organisms enable life's functions?
- How do organisms grow and develop?
- How and why do organisms interact with their environment and what are the effects of these interactions?
- How do organisms obtain and use the matter and energy they need to live and grow?

The resources in this Module will enable students to reinforce the concepts within the Chemical Basis of Life as well as resources for teachers to utilize in the classroom.

BIO A: THE CHEMICAL BASIS FOR LIFE

Module Title	Message	Assignment / Call to Action	Content Directions	Resource / URL	Info about the URL (published on the "i" button of a resource/url)	Notes
BIO A: BIOENERGETICS	In this unit, students will investigate explanations for the chemical basis of life including atoms, molecules, and the larger biological macromolecule groups that are composed of monomers and polymers. Students will gain an understanding of how macromolecules function to sustain life function. Students will explore the unique qualities of water that allow it to support life on Earth. Students will increase their understanding through using models, conducting investigations, and critical reading.					
Biochemical Organization	Students investigate the structure and function of carbohydrates, lipids, proteins, and nucleic acids in organisms while examining how carbon is uniquely suited to form biological macromolecules and how these form from monomers. SAS Standards 3.1.B.A7, 3.2.C.A 2, 3.1.B.A8, 3.1.B.A2, 3.1.C. A2, 3.1.C.A7	READ the text on Macromolecules Ch. 2 Sec 1.		https:// itunes.apple.com/ us/book/ck-12- biology-interactive/ id574071922? mt=13		
		WATCH the You Are What You Eat video.		https:// www.youtube.com/ watch? v=H8WJ2KENlK0		
		COMPLETE the worksheet on cafeteria macromolecules.		https:// drive.google.com/ open? id=0B99Um_mvTW dGdWVtN1R0dXZI V3M	PDF - Biological Macromolecules	

		INTERACT with 3D carbohydrates.		http://www.echalk.co.uk/3Dmolecules/carbohydrates/amylose.htm?_USE=HTML5		
		WATCH the Amoeba Sisters explain biomolecules.		Video - The Biomolecule Band - YouTube[720p]		
		COMPLETE the Amoeba Sisters video recap worksheet.		https://drive.google.com/open?id=0B99Um_mvTWdGTU1MbUNkSTRfV28	PDF - Amoeba Sisters: Video REcap	
		CREATE Chatterpix for each of the four macromolecules to describe their key characteristics.		https://itunes.apple.com/us/app/chatterpix-kids-by-duck-duck/id734046126?mt=8		
		TEST your knowledge of the biological macromolecules.		http://www.phschool.com/science/biology_place/biocoach/bioprop/quiz.html		
Enzymes - Nature's Catalyst	Students examine the role of an enzyme as a catalyst in regulating biochemical reactions while factors such as pH, temperature, and concentration levels can affect enzyme function. SAS Standards 3.1.B.A2, 3.1.B.A7	READ the text on Enzymes Ch 2. Sec. 2.		https://itunes.apple.com/us/book/ck-12-biology-interactive/id574071922?mt=13		

		WATCH a video on allosteric regulation of enzymes.		https://www.youtube.com/watch?v=WAZXqhtduFw		Had to change!!! Broken link in Itunes
		WATCH the Amoeba Sisters explain enzymes.		https://www.youtube.com/watch?v=XUn64HY5bug		
		ANALYZE the effects of temperature on enzymes activity by completing this lab.		https://drive.google.com/open?id=0B99Um_mvTWdGQ2JpQ0xqQVMtUWc	PDF - Enzyme Lab.docx	
		INVESTIGATE the rate at which catalase converts substrate to product.		http://www.phschool.com/science/biology_place/labbench/lab2/intro.html		
		ANALYZE the results from your experiment on enzyme catalysis.		https://drive.google.com/open?id=0B99Um_mvTWdGbTJ5WEVYNFkydHc	PDF - _enzymes_virtual_lab	
		ASSESS your understanding of enzymes catalysis based on the experiment.		http://www.phschool.com/science/biology_place/labbench/lab2/quiz.html		
		TEST your knowledge of Enzymes.		http://www.sciencegeek.net/Biology/review/U2Enzymes.htm		

Water - The Magic Molecule	Students investigate the unique properties of water and how these properties support life on Earth. SAS Standards 3.1.B.A8, 3.1.B.A5 , 4.2.5.C	READ the text on Water Chemistry Ch. 2 Sec. 3.		https://itunes.apple.com/us/book/ck-12-biology-interactive/id574071922?mt=13		
		READ the article How Water Works.		http://science.howstuffworks.com/environmental/earth/geophysics/h2o.htm		
		READ the article Unusual Properties of Water.		http://chemwiki.ucdavis.edu/Physical_Chemistry/Physical_Properties_of_Matter/Bulk_Properties/Unusual_Properties_of_Water		
		WATCH a video in the properties of water.		http://www.schooltube.com/video/b36a222fcdfef2db9af8/Properties-Of-Water		
		COMPLETE the review worksheet on water properties.		https://drive.google.com/open?id=0B99Um_mvTWdGSGRuNkRUbVh4QlE	PDF - Properties of Water Review Worksheet	

		TEST your knowledge of water.		http://science.howstuffworks.com/environmental/earth/geophysics/water-quiz.htm		
Review - Chemical Basis of Life	Students describe and interpret relationships between structure and function at various levels of biochemical organization (i.e., atoms, molecules, and macromolecules). SAS Standards 3.1.B.A7, 3.2.C.A2, 3.1.B.A8, 3.1.B.A2, 3.1.C.A2, 3.1.C.A7.	WATCH a vodcast on biochemistry and the molecules of life.		Video - CRSD Videocast 1		
		COMPLETE the viewing guide for the vodcast on biochemistry.		https://drive.google.com/open?id=0B99Um_mvTWdGTXZTVTA1UnlDUUk	Word - Topic 1 Viewing Guide(1)	
		STUDY the biochemistry and the molecules of life.		https://drive.google.com/open?id=0B99Um_mvTWdGeG9QM09zNjBXbzA	Word - Topic 1 Quick Facts(1)	
		QUIZ yourself on biochemistry and the molecules of life.		http://www.crsd.org/Page/32653		