Columbus County Schools Science Curriculum Guide

SUBJECT: Science	GRADE LEVEL: 7th	GRADING PERIOD: 1st 9 Weeks
Module(s): Cells and Heredity(A) and Diversity of	Time Frame: 4 Weeks (+ 1 Week for procedures,	Unit: Cells and Microbiology
Living Things (B)	safety, etc.)	

Essential Standard: 7.L.1: Understanding the processes, structures and functions of living organisms that enable them to survive, reproduce and carry out the basic functions of life.

Lesson: Single Celled Organisms (Time Frame:1 Week)	Technology and Literacy Standards and Tasks	Academic Vocabulary:	Assessment(s):	Additional Resources:
Clarifying Objective: 7.L.1.1: Compare the structures and life functions of single-celled organisms that carry out all of the basic functions of life including:	Science Fusion Online Components and Digital Lessons Write to Learn (See Additional Resources) Other Strategies: • Use Graphic Organizers to compare and contrast Euglena, Amoeba, Paramecium, and Volvox. • Bell Ringers and Exit Tickets Technology Standards 7.TT.1 7.SE.1 Literacy Standards CCSS.ELA-Literacy.RST.6- 8.1 CCSS.ELA- Literacy.RST.6-8.3	 Euglena amoeba paramecium Volvox cilia flagella pseudopods 	Formative: Write to Learn Assignments Quiz Review Games Group Assignments Bell Ringers/Exit Tickets Science Formative Assessment: 75 Practical Strategies (Keeley) KWL Variations page 128 Juicy Questions page 121 Muddiest Point page 138 Student Annotated Drawings page 53 Uncovering Student Ideas in Science Vol. 1 (Keeley) Functions of Living Things page 147 Vol.1 Summative: Classroom Tests County Benchmarks Projects ExamView Test Bank Schoolnet Assessments	Middle School Science Wiki by Jane Wright (See link below) http://dpisciencejanewright. pbworks.com/w/page/18172 894/FrontPage Write to Learn Cells and Heredity: 1.1 Discovering Cells
Lesson:				

Plant and Animal Cells	Technology and Literacy	Academic Vocabulary:	Assessment(s):	Additional Resources:
(Time Frame: 2 Weeks)	Standards and Tasks			
Clarifying Objective: 7.L.1.2: Compare the structures and functions of plant and animal cells, including major organelles (cell membrane, cell wall, nucleus, chloroplasts, mitochondria, and vacuoles). Essential Questions: What are living things made of? What are the different parts that make up a cell?	Science Fusion Online Component/Digital Lessons Write to Learn (See Additional Resources) Other Strategies: • Group Project: Prezi on Cells and how they function. • Venn Diagrams Comparing and Contrasting Cells Organelles. • Summarizing Videos • Descriptive Writing for Lab on Blood Cells • Bell Ringers/Exit Tickets Technology Standards • 7.SI.1 • 7.TT.1 • 7.RP.1 Literacy Standards • CCSS.ELA- Literacy.RST.6-8.1 • CCSS.ELA- Literacy.RST.6-8.3	cell cytoplasm prokaryote organism organelle eukaryote cell membrane nucleus atom molecule lipid protein carbohydrate nucleic acid phospholipids cytoskeleton mitochondrion ribosome endoplasmic reticulum Golgi complex cell wall vacuole chloroplast lysosome photosynthesis homeostasis diffusion active transport osmosis endocytosis exocytosis. cellular respiration passive transport	Formative: Write to Learn Assignment Bell Ringers/Exit Tickets Uncovering Student Ideas in Science Vol. 2 (Keeley) Plants in the Dark and Light page 107 Whale and Shrew page 137 Uncovering Student Ideas in Science Vol. 1 (Keeley) Is it living? Page 123 Functions of Living Things page 147 Uncovering Student Ideas in Science Vol. 3 Respiration page 131 Science Formative Assessment: 75 Practical Strategies (Keeley) First Word, Last Word page 88 Thinking Log Stems page 191 Annotated Student Drawings page 53 Popsicle Stick Questions page 158 Summative: Classroom Tests County Benchmarks Projects ExamView Test Bank Schoolnet Test Bank	McDougal Littell 7 th Grade North Carolina page 9C – 69C Write to Learn: Science 4 1.1 What are the building blocks of life? Science 6 2.1 What is a cell? Science 6 2.2 What are the functions of organelles?

Lesson: Hierarchical Organization of Multicellular Organisms (Time Frame: 1 Week)	Technology and Literacy Standards and Tasks	Academic Vocabulary:	Assessment(s):	Additional Resources:
Clarifying Objective: 7.L.1.3: Summarize the hierarchical organization of multi-cellular organisms from cells to tissues to organs to systems to organisms. Essential Question: How are living things organized?	Science Fusion Online Component/Digital Lessons Write to Learn (See Additional Resources) Other Strategies: Bell Ringers/Exit Tickets Graphic Organizers Group Work Summarizing Worksheet Technology Standards 7.SI.1 7.TT.1: 7.SE.1: Literacy Standards CCSS.ELA- Literacy.RST.6-8.5 CCSS.ELA- Literacy.RST.6-8.7 CCSS.ELA- Literacy.RST.6-8.7	 cell tissue organ organ system homeostasis cellular respiration organism 	Formative: Write to Learn Assignments Graphic Organizers Quiz Group Work Assignments Bell Ringers/Exit Tickets Group Assignments Review Games Uncovering Student Ideas in Science Vol. 3 Cells and Size page 117 Sam's Puppy page 125 Summative: Classroom Tests County Benchmarks Projects ExamView Test Bank Schoolnet Test Bank	McDougal Littell 7 th Grade North Carolina page 9B – 12B Write to Learn Science 6 4.1 How is the body organized?

Technology Standards used in this Unit:

- 7.TT.1: Use technology tools to organize information and explore new ways to communicate with peers and teachers.
- 7.SE.1: Learn safe practices when using online resources and the proper way to summarize retrieved information.
- 7.SI.1: Research topics, use graphic organizers, and evaluate the validity of resources both online and in text.
- 7.RP.1: Group work and individual research activities using online resources.

Literacy Standards used in this Unit:

CCSS.ELA-Literacy.RST.6-8.1 Cite specific textual evidence to support analysis of science and technical texts.

<u>CCSS.ELA-Literacy.RST.6-8.3</u> Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

<u>CCSS.ELA-Literacy.RST.6-8.5</u> Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.

<u>CCSS.ELA-Literacy.RST.6-8.7</u> Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

<u>CCSS.ELA-Literacy.RST.6-8.9</u> Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.

Day 1	Day 2	Day 3	Day 4	Day 5
Lesson: Procedures/Safety	Lesson: Procedures/Safety	Lesson: Procedures/Safety	Lesson: Procedures/Safety	Lesson: Procedures/Safety
Clarifying Objective:	Clarifying Objective:	Clarifying Objective:	Clarifying Objective:	Clarifying Objective:
Classroom procedures/	Classroom procedures/	Classroom procedures/	Classroom procedures/ Inquiry/	Classroom procedures/ Inquiry/
Inquiry/ Lab	Inquiry/ Lab	Inquiry/ Lab	Lab	Lab
Academic Vocabulary:	Academic Vocabulary:	Academic Vocabulary:	Academic Vocabulary:	
"Get to Know you Day"	Lab Procedures	Lab Procedures	Hypothesis	Academic Vocabulary:
				Hypothesis/ Experiment
Bell Ringer:	Bell Ringer:	Bell Ringer:	Bell Ringer:	Bell Ringer:
List three things you would like the teacher to know about you. Instructional Tasks:	List three things you may find in a science lab.	List an important lab safety rule and explain the importance of this rule.	Uncovering Student Ideas in Science (Keely) Vol 3- pg 101-What is a hypothesis?	What is the importance of creating a hypothesis before an experiment? Use complete
Class Rules/ Procedures	Instructional Tasks:		Instructional Tasks:	sentences.
Get to know you worksheet/ Activity. Think-pair —share among students. Students share with one another interesting facts about themselves. Summarizer: Have students share one or two things about their partner in front of the class.	Students will pair up and be given a science lab procedure. They will be required to reword the procedure and create a matching picture. Lab procedure worksheet. Find the problems in the picture(in dropbox resources) Summarizer: Exit Ticket- Write a quick summary about today's lesson.	Instructional Tasks: Review homework worksheet Demonstrate lab tools such as, microscopes, slides, beaker, test tubes, etc. Youtube video- safety procedure rap- Students enjoy this video so I show it twice https://www.youtube.com/watch?v=xJG0ir9nDtc Summarizer: Exit Ticket- The most important thing I learned today was	Review Homework/ Class discussion of Procedures/Safety Discuss the importance of hypothesis. D&T group activity. Students will be grouped and pull words to create a hypothesis. (Directions are on the worksheet, as well as discussion questions.) Draw a picture to illustrate your final hypothesis, be sure to use at least 4 different colors. Summarizer: Write 3-5 complete sentences on what you learned by doing this activity and be sure to incorporate some of the things we discussed in class.	Instructional Tasks: Show examples of Ifthenbecause hypothesis and explain why the science community chooses this written form of hypothesis. (Good Hypothesis-Situations Only-Worksheet in dropbox) Summarizer: Discuss a couple of the hypothesis to insure the students understand how to write a thorough educated guess.

Assessment:	Assessment:	Assessment:	Assessment:	Assessment:
Observation	Homework, observation/ if the lab procedure worksheet is not completed, students will finish this for homework.	SpongeBob Lab safety worksheet. Students need to highlight what Patrick and Spongebob are doing wrong and fix three errors created by Spongebob or Patrick and implement the correct procedure.	Observation	Observation

<u>Day 6</u>	Day 7	Day 8	Day 9	<u>Day 10</u>
Lesson: Labor Day (No School)	Lesson: Single Celled Organisms			
Clarifying Objective: 7.L.1.1: Compare the structures and life functions of single-celled organisms that carry out all of the basic functions of life including:	Clarifying Objective: 7.L.1.1: Compare the structures and life functions of single-celled organisms that carry out all of the basic functions of life including:	Clarifying Objective: 7.L.1.1: Compare the structures and life functions of single-celled organisms that carry out all of the basic functions of life including:	Clarifying Objective: 7.L.1.1: Compare the structures and life functions of single-celled organisms that carry out all of the basic functions of life including:	Clarifying Objective: 7.L.1.1: Compare the structures and life functions of single-celled organisms that carry out all of the basic functions of life including:
	you go through them.			

	Optional: Intro to Protists Flipchart Summarizer: Identify the four types of protists that we learned today and give 2 characteristics for each! (You can do one fact and an illustration if you like!)	Optional: Science Fusion Engage and Explore Activities pg. 126 TE Probing Questions: Plant Like or Animal Like Summarizer: 3-2-1 3 new ideas you learned, 2 concepts you liked, and 1 question you still have!	Summarizer: Write a brief summary detailing the activity your group chose to complete. Remember that a summary should tell what you did, how you completed it, and what was the final conclusion. Use complete sentences and appropriate grammar/punctuation.	Summarizer: Free Write: Reflection on Quiz Questions
Assessment: N/A	Assessment: Observation and participation	Assessment: Observation and participation	Assessment: Lab activity	Assessment: Summative

<u>Day 11</u>	<u>Day 12</u>	<u>Day 13</u>	<u>Day 14</u>	<u>Day 15</u>
Lesson: Plant and Animal	Lesson: Plant and Animal	Lesson: Plant and Animal	Lesson: Plant and Animal	Lesson: Plant and Animal
Cells	Cells	Cells	Cells	Cells
Clarifying Objective: 7.L.1.2: Compare the structures and functions of plant and animal cells, including major organelles	Clarifying Objective: 7.L.1.2: Compare the structures and functions of plant and animal cells, including major organelles	Clarifying Objective: 7.L.1.2: Compare the structures and functions of plant and animal cells, including major organelles	Clarifying Objective: 7.L.1.2: Compare the structures and functions of plant and animal cells, including major organelles	Clarifying Objective: 7.L.1.2: Compare the structures and functions of plant and animal cells, including major organelles
(cell membrane, cell wall, nucleus, chloroplasts, mitochondria, and vacuoles).	(cell membrane, cell wall, nucleus, chloroplasts, mitochondria, and vacuoles).	(cell membrane, cell wall, nucleus, chloroplasts, mitochondria, and vacuoles).	(cell membrane, cell wall, nucleus, chloroplasts, mitochondria, and vacuoles).	(cell membrane, cell wall, nucleus, chloroplasts, mitochondria, and vacuoles).
Academic Vocabulary: cell, cytoplasm, prokaryote, eukaryote, organism, organelle, cell membrane, nucleus, mitochondrion, ribosome, cell wall, vacuole, chloroplast	Academic Vocabulary: cell, cytoplasm, prokaryote, eukaryote, organism, organelle, cell membrane, nucleus, mitochondrion, ribosome, cell wall, vacuole, chloroplast	Academic Vocabulary: cell, cytoplasm, prokaryote, eukaryote, organism, organelle, cell membrane, nucleus, mitochondrion, ribosome, cell wall, vacuole, chloroplast	Academic Vocabulary: cell, cytoplasm, prokaryote, eukaryote, organism, organelle, cell membrane, nucleus, mitochondrion, ribosome, cell wall, vacuole, chloroplast	Academic Vocabulary: cell, cytoplasm, prokaryote, eukaryote, organism, organelle, cell membrane, nucleus, mitochondrion, ribosome, cell wall, vacuole, chloroplast
Bell Ringer: First Word Activity: CELLS Students will create an acrostic using complete sentences to activate prior knowledge on cells.	Bell Ringer: Cells Pretest Science Fusion: Cells and Heredity Unit 1- Lesson 1 Lesson Assessment: Lesson Quiz (Assessment Guide) Unit 1 scroll up to Lesson 1 Pretest	Bell Ringer: What are the main ideas of cell theory? Hint: there are three! Instructional Tasks: Optional activities: Reinforcing Vocabulary	Bell Ringer: 2 Multiple Choice EOG Prep questions focused on 7L1.2 Instructional Tasks: Lesson 1 Quiz on Cell Characteristics	Bell Ringer: Engage your brain activity Science Fusion TE pg. 52 (Predict and Relate) Instructional Tasks: Science Fusion: Cells and Heredity Unit 1-Lesson 3
Instructional Tasks: Science Fusion PowerPoint notes on their website Unit 1 lesson 1- Characteristics of cells (under lesson teacher support). Copy and paste to a	Instructional Tasks: Activity: Research a Scientist (The Cell Theory) Science Fusion Cells and Heredity Teacher Edition Unit 1-Lesson 1 pg. 17	(4 square/ word triangle) pg. 21 TE Venn Diagram: Compare and contrast prokaryotic and eukaryotic cells. pg. 21 TE	OR Use Alternative Assessment (Tic Tac Toe Board) Unit 1- Lesson 1 The Characteristics of Cells	Cell Structure and Function Virtual Lab Click on the play button under virtual lab (Additional resources: Lesson Student Resources: Virtual Lab
word document to create your own skeleton notes.	Optional activity: Science Fusion Digital Lesson from online Lesson Teacher			Recording Sheet (blank) Summarizer:

Discuss each PowerPoint as	Support Cells and Heredity	Summarizer:	Summarizer:	3-2-1 Activity on Virtual
you go through them.	Unit 1- Lesson 1	Choose 2 vocabulary words	Self-assessment and	Lab3 new ideas you
Summarizer: Reflect on	Summarizer:	from our current list and	reflection on quiz	learned, 2 ideas you ideas you
Cell Theory: Standing on	Reflection on Research:	make an illustration that		liked, and 1 question you still
the Shoulders of Giants	Students will summarize the	relays the definition without		have.
Put the following quote on	research methods that they	words!		
the board and ask the students	chose to use when working			
to <i>think</i> about the meaning of	on this activity. Also,			
the quote. Sir Isaac Newton	question students: What are			
once said,	some tips that you could			
"If I have seen further, it is	share with your classmates			
because I was standing on the	that would help them			
shoulders of giants."	research?? Think about			
Students should write down	validity of website and			
their own interpretation of the	accuracy of information.			
quote and how it applies to				
the scientists that contributed				
to cell theory. Ask the				
students to share their				
thoughts about the meaning				
of this quote with the class.				
Assessment:	Assessment:	Assessment:	Assessment:	Assessment:
Observation	Participation and observation	Participation, Observation	Observation	Assignment
				checked/feedback on Virtual
Writing Assignment checked				Lab

<u>Day 16</u>	<u>Day 17</u>	<u>Day 18</u>	<u>Day 19</u>	<u>Day 20</u>
Lesson: Plant and Animal Cells	Lesson: : Plant and Animal Cells			
Clarifying Objective:				
7.L.1.2: Compare the structures and functions of plant and animal cells, including major organelles (cell membrane, cell wall, nucleus, chloroplasts, mitochondria, and vacuoles). Academic Vocabulary: cell, cytoplasm, organelle, cell membrane, nucleus, mitochondrion, ribosome, cell wall, vacuole, chloroplast, endoplasmic reticulum, Golgi complex, lysosome, cytoskeleton	7.L.1.2: Compare the structures and functions of plant and animal cells, including major organelles (cell membrane, cell wall, nucleus, chloroplasts, mitochondria, and vacuoles). Academic Vocabulary: cell, cytoplasm, organelle, cell membrane, nucleus, mitochondrion, ribosome, cell wall, vacuole, chloroplast, endoplasmic reticulum, Golgi complex, lysosome, cytoskeleton	7.L.1.2: Compare the structures and functions of plant and animal cells, including major organelles (cell membrane, cell wall, nucleus, chloroplasts, mitochondria, and vacuoles). Academic Vocabulary: cell, cytoplasm, organelle, cell membrane, nucleus, mitochondrion, ribosome, cell wall, vacuole, chloroplast, endoplasmic reticulum, Golgi complex, lysosome, cytoskeleton	7.L.1.2: Compare the structures and functions of plant and animal cells, including major organelles (cell membrane, cell wall, nucleus, chloroplasts, mitochondria, and vacuoles). Academic Vocabulary: cell, cytoplasm, organelle, cell membrane, nucleus, mitochondrion, ribosome, cell wall, vacuole, chloroplast, endoplasmic reticulum, Golgi complex, lysosome, cytoskeleton	7.L.1.2: Compare the structures and functions of plant and animal cells, including major organelles (cell membrane, cell wall, nucleus, chloroplasts, mitochondria, and vacuoles). Academic Vocabulary: cell, cytoplasm, organelle, cell membrane, nucleus, mitochondrion, ribosome, cell wall, vacuole, chloroplast, endoplasmic reticulum, Golgi complex, lysosome, cytoskeleton
Bell Ringer: Visualize it Activity, Science Fusion Cells and Heredity Unit 1- Lesson 3 TE pg. 53 Instructional Tasks: Cell Organelle Research Worksheet/ Webquest See additional resources on county website	Bell Ringer: In small groups or pairs, distribute organelle matching card sort. Students will match the cell structure to its corresponding function. Instructional Tasks: (continued from Monday) Cell Organelle Research Worksheet/ Webquest Students will research each	Bell Ringer: Organelle/Function Matching Instructional Tasks: The Cell PPT (See additional resources on county website)	Bell Ringer: Visual Summary Cells and Cell Theory Science Fusion Student Edition p. 12 and Cell Structure and Function Visual Summary p. 34 Instructional Tasks: Lesson Review "The Characteristics of Cells" Science Fusion Student Edition p. 13 and "Cell	Bell Ringer: N/A Instructional Tasks: Write to Learn Cells and Heredity: 1.1 Discovering Cells

Students will research each cell part to find out location, details, and functions from a reliable source. Summarizer: Choose 4 of the organelles we have studied and write down 3 "quick facts" about each one.	cell part to find out location, details, and functions from a reliable source. Summarizer: Movers and Shakers OR Line Dance (STEM Strategy) Students will make two equal parallel lines facing each other. This strategy allows students to question each other one-on-one. The line will move after students complete the first question. The student at the END of the line will then dance through the middle to return to the beginning.	Summarizer: List 3 organelles that you are certain of their function and tell their function. List one organelle that you are still unsure of its function.	Structure and Function" Lesson Review p. 35 Summarizer: Discuss student answers to the Lesson Reviews	Summarizer: Discuss completed Write to Learn Summary
Assessment:	Assessment:	Assessment:	Assessment:	Assessment:
Observation, Graded	Observation, Graded	Participation, Discussion	Observation, Graded	Completed Write to Learn
Assignment	Assignment		Assignment	Summary

<u>Day 21</u>	<u>Day 22</u>	<u>Day 23</u>	<u>Day 24</u>	<u>Day 25</u>
Lesson: Levels of Cellular	Lesson: Levels of Cellular	Lesson: Levels of Cellular	Lesson: Levels of Cellular	Lesson:: Levels of Cellular
Organization	Organization	Organization	Organization	Organization
Clarifying Objective:	Clarifying Objective:	Clarifying Objective:	Clarifying Objective:	Clarifying Objective:
7.L.1.3: Summarize the hierarchical organization of multicellular organisms from cells to tissues to organs to organ systems to organisms.	7.L.1.3: Summarize the hierarchical organization of multicellular organisms from cells to tissues to organs to organ systems to organisms.	7.L.1.3: Summarize the hierarchical organization of multicellular organisms from cells to tissues to organs to organ systems to organisms.	7.L.1.3: Summarize the hierarchical organization of multicellular organisms from cells to tissues to organs to organ systems to organisms.	7.L.1.3: Summarize the hierarchical organization of multicellular organisms from cells to tissues to organs to organ systems to organisms.
Academic Vocabulary: cell, tissue, organ, organ system, organism, homeostasis, cellular respiration	Academic Vocabulary: cell, tissue, organ, organ system, organism, homeostasis, cellular respiration	Academic Vocabulary: cell, tissue, organ, organ system, organism, homeostasis, cellular respiration	Academic Vocabulary: cell, tissue, organ, organ system, organism, homeostasis, cellular respiration	Academic Vocabulary: cell, tissue, organ, organ system, organism, homeostasis, cellular respiration
Bell Ringer: Engage Your Brain Questions 1, 2 and 3 p. 39 Science Fusion Student Edition Instructional Tasks: Digital Lesson "Levels of Cellular Organization" with Fill in Notes Summarizer: Explain the levels of cellular organization	Bell Ringer: Questions 6 and 7 p. 41 Student Edition Instructional Tasks: "Cells to Organisms" FoldNote p. 66 Teacher's Edition Summarizer: Formative Assessment Discussion Questions p. 67	Bell Ringer: Explain how structure relates to function and give two examples. Instructional Tasks: Use Alternative Assessment Tic-Tac-Toe Worksheet (Choose one or more assignments for the students) Summarizer: Have students show their	Bell Ringer: Question #11 Student Edition p.45 Instructional Tasks: Lesson Review p. 49 Student Edition Summarizer: Go over student answers to Lesson Review	Bell Ringer: No Bell Ringer Instructional Tasks: Write to Learn: Science 6.4.1: How is the body organized?
	Teacher's Edition Discuss	products from the assessment.		Summarizer: Completed Write to Learn Activity
Assessment: Participation, Discussion	Assessment: Discussion, Participation	Assessment: Graded Assignment	Assessment: Participation	Assessment: Written Assignment