Marietta City Schools

2023–2024 District Unit Planner

Grade 5 Science

Theme	*Unit 3 Cells and Microorganisms*	**Unit duration**	*8 weeks*

Mastering Content and Skills through INQUIRY (Establishing the purpose of the Unit): *What will students learn?*

GaDoE Standards/3D Science Elements

Georgia Standards:

S5L3. Obtain, evaluate, and communicate information to compare and contrast the parts of plant and animal cells.

a. Gather evidence by utilizing technology tools to support a claim that plants and animals are comprised of cells too small to be seen without magnification.

b. Develop a model to identify and label parts of a plant cell (membrane, wall, cytoplasm, nucleus, chloroplasts) and of an animal cell (membrane, cytoplasm, and nucleus).

c. Construct an explanation that differentiates between the structure of plant and animal cells.

S5L4. Obtain, evaluate, and communicate information about how microorganisms benefit or harm larger organisms. (Clarification statement: Possible microorganisms could include Tardigrades, Lactobacillus, Probiotics, Rotifers, Salmonella, Clostridium botulinum (Botox), E-coli, Algae, etc. Students are not expected to know these specific microorganisms. The list is provided to give teachers examples.)

a. Construct an argument using scientific evidence to support a claim that some microorganisms are beneficial.

b. Construct an argument using scientific evidence to support a claim that some microorganisms are harmful.

Unit Objectives:

- Use technology tools to gather evidence that plants and animals are composed of cells.
- Observe plant cells using magnification to see parts of the cell: wall, cytoplasm, chloroplasts, and nucleus.
- Observe animal cells using magnification to see that the animal cell does not have a wall or chloroplasts, but does have a membrane, cytoplasm, and nucleus.
- Construct an explanation for decomposition and argue from evidence whether decomposition is harmful or beneficial.
- Construct an argument to support evidence that microorganisms are present though usually invisible to the naked eye.

Unit Phenomena: **Unit Phenomena:**

Decomposition of multi-celled organisms by single-celled organisms

Watch this video of decomposing fruit and vegetables. Ask students what they notice and wonder. Record their thinking on a T-chart and refer back to the chart throughout the unit.

Page Keeley Probes: Click here for an introduction to Page Keeley Probes
Page Keeley probes can be used as phenomena. They are intended to elicit student understanding about science concepts. Starting a unit or lesson with a probe will help you uncover misconceptions and see what students already know about a topic. Using a probe at the beginning of a lesson and then at the end of the lesson serves the purposes of pretesting and then formatively evaluating student thinking. Below is a list of probes from Page Keeley's book Uncovering Student Ideas in Primary Science, that are appropriate for this unit. This book has been purchased for your grade level by the Office of Academic Achievement and can be found in your media center.

- Is It an Animal? (Volume 1)
- Is It Living? (Volume 1)
- Is It Made of Cells? (Volume 1)
- Is It a Plant? (Volume 2)
- Cell Size (Volume 2)

Science & Engineering Practices:	**Disciplinary Core Ideas:**	**Crosscutting Concepts:**
• Asking questions • Developing and using models • Construct Explanations • Engage in Argument from Evidence	● Magnification tools are needed to observe very small things ● Plant cell structure and function ● Animal cell structure and function ● Microorganisms can be helpful or harmful	• Systems and System Models • Scale, Proportion, Quantity • Structure and function

Misconceptions:

- Students believe that the only microorganisms are bacteria. Actually, there are multicellular organisms that are microscopic in size.
- Students believe that all bacteria are harmful. In reality, most bacteria are beneficial or harmless.

Math/ELA Connections/STEM Connections

ELAGSE5RI2 Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.
ELAGSE5RI3 Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.
Convert like measurement units within a given measurement system.
MGSE5.MD.1 Convert among different-sized standard measurement units (mass, weight, length, time, etc.) within a given measurement system (customary and metric) (e.g., convert 5cm to 0.05m), and use these conversions in solving multi-step, real world problems.
Represent and interpret data.
MGSE5.MD.2 Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.

STEM

Discovery Education Science Techbook STEM Project Starters
Bacteria Are Everywhere
Cells TeachEngineering Activities

Discovery Education Science Techbook (Log into your DE account using your Google credentials before accessing the DE resources) You will find station rotation activities such as leveled reading passages, interactives, hands-on labs, virtual labs, video clips, and more on the Explore page of each Techbook unit.
Organisms in Action Unit
Discovery Education Science Techbook Cells and Organisms Unit

Discovery Education Hands-on Activities
Hands-On Activity: Classifying Cells
Seeing Cells
Comparing Cells
Interactions in Ecosystems
Exploring Ecosystems
Parts of Ecosystems
Short-Term Changes
Cell Parts

Use the AIMS 5th grade Life Science Book to access the following lessons for more student-centered lessons. Contact your Instructional Coach or Science Coordinator if AIMS books are not available in your Media Center or Workroom.

Page #	Lesson Title	Lesson Description
12	Choosing and Using Microscopes	Reading passage with diagrams explaining the use of microscopes to view cells.
13	Cell Basics	Printable booklet
14	Cell Mates	Students identify structures of plant and animal cells.
29	Focus on Cells	Students prepare a wet mount slide and learn about the structure of an onion cell.
35	The Green Machine	Students observe chloroplast in elodea. (***Your Science Coordinator can obtain some elodea for your classroom***)
46	Cheek to Cheek	Students observe how the structures and functions of cheek and onion cells differ/compare.
52	Cells Are Us	Students compare plant and animal cells.
61	Cellular Construction	Students build models of plant and animal cells.
77	The Cell as a Factory	Students learn the parts of plant and animal cells and their functions.
83	Cell Structure and Function	Printable booklet
170	A Feast for Yeast	Students observe active yeast and identify it as a helpful microorganism.
195	Handing Off Germs	Students draw conclusions about the transfer of germs via glitter.

Essential Questions	
Factual— Are all living things made of cells? How do you know? What is the function of the structures found in cells? **Inferential—** How are plants and animals structurally similar? What systems are formed by cells? **Critical Thinking-** How do the parts of plants differ when viewing them from a hand lens and under the microscope? Why are plants and animals structurally different?	
Tier II Words- High Frequency Multiple Meaning	**Tier III Words-** Subject/ Content Related Words
Beneficial, wall, internal, external	structure, function, parts, cell, nucleus, cell membrane, cytoplasm, chloroplast, microorganism, harmful, bacteria, unicellular, multicellular, organelle
Assessments	
You will find all Unit Summative Assessments in the AMP 5th Grade Science Assessment Team group. 5th Grade Cells & Microorganisms Assessment Added by You · Jan 22, 2020 · 8 associated sections	

Objective or Content	Learning Experiences	Differentiation Considerations
CLE 1-3: S5L3. Obtain, evaluate, and communicate information to compare and contrast the parts of plant and animal cells. S5L4. Obtain, evaluate, and communicate information about how microorganisms benefit or harm larger organisms.	How Small is a Cell? GaDOE Instructional Segment In this instructional segment students differentiate between structure and function in plant and animal cell organelles. Amazing Cells Learning Activities Amazing Cells is an instructional module for grades 5-7 developed by Washington MESA and University of Washington Genome Sciences Education Outreach. The seven activities in this module engage students in learning about cells, the building blocks of life. Making Bread with Yeast Learning Activity Students explain how decomposers impact our everyday lives, beyond being a part of natural ecosystems.	Student Choice Performance Tasks Reflection and Goal Setting Learning Stations Choice Boards Formative Probes Science Journaling Multi-sensory activities Assistive Technology Flexible Grouping Multiple Means of Representation
Recommended High Quality Complex Text By Lexile Band		
Cells By Maria Cohen *Animal Cells* By Penny Dowdy *Plant Cells* By Penny Dowdy *What is Cell Theory* By Maria Cohen *A World in a Drop of Water: Exploring with a Microscope* By Alvin Silverstein *Microbes: Discover an Unseen World* By Christine Burillo-Kirch		