Student Name _____ Period # _____

S7L2 a&b - "Cell Structure and Function"

Unit Graduation Competency:

As a Henry County graduate, I will apply scientific and engineering practices to understand and analyze molecular, structure and chemical biology as they relate to biological systems and each level of organization from cells to organ systems. GA Standard Code

S7L2 Obtain, evaluate, and communicate information to investigate the diversity of living organisms and how they can be compared

scientifically.

a. Develop a model and construct an explanation of how cell structures (specifically the nucleus, cytoplasm, cell membrane, cell wall, chloroplasts, lysosome, and mitochondria) contribute to the function of the cell as a system in obtaining nutrients in order to grow, reproduce, make needed materials, and process waste. (Clarification statement: The intent is for students to demonstrate how the component structures of the cell interact and work together to allow the cell as a whole to carry out various processes. Additional structures, beyond those listed, will be addressed in high school Biology.)

b. Develop and use a conceptual model of how cells are organized into tissues, tissues into organs, organs into systems, and systems into organisms.

<u>Key Terms</u>: A. Cell, prokaryote, eukaryote, organelle, nucleus, cytoplasm, cell, cell membrane, cell wall, chloroplasts, lysosome, mitochondria, chloroplast, osmosis, diffusion, active transport, passive transport

b. Body Systems, Circulatory System, Respiratory System, Muscular System, Skeletal System, Digestive System, Excretory System, Integumentary System, Nervous System

Learning Targets: Beginning (DOK 1)

- I can state the 3 parts of the cell theory.
- I can identify and label all cell parts and organelles in a plant or animal cell.
- I can distinguish plant cells from animal cells.
- I can distinguish between active and passive transport.

Learning Targets: Developing (DOK 2)

- I can explain what it means to be selectively (or semi-) permeable.
- I can explain how equilibrium is established as a result of diffusion.
- I can explain why active transport is necessary in certain situations.

Learning Targets: Proficient (DOK 3)

- I can demonstrate that learning individual structures and functions of cells are associated with each systems interact to support life process.
- I can demonstrate how the component structures of the cell interact and work together to allow the cell as a whole to carry out various process.

Learning Targets: Distinguished (DOK 4)

DATA & GOALS SHEET

This is a must do and must be accurately kept. You must be reviewing this daily

LEARNING PREFERENCES

- ❏ Independently (by yourself)
- ❏ Collaboratively (small group with peers)
- ❏ Teacher Workshop (small group instruction)
- ❏ Conference with Teacher (Sign up on Google Classroom Calendar.)

Cell Structure and Function

Graduation Competency & Georgia Standard of Excellence

Graduation Competency:

GSE: **S7L2 Obtain, evaluate, and communicate information to investigate the diversity of living organisms and how they can be compared scientifically.**

GSE Element: a. Develop a model and construct an explanation of how cell structures (specifically the nucleus, cytoplasm, cell membrane, cell wall, chloroplasts, lysosome, and mitochondria) contribute to the function of the cell as a system in obtaining nutrients in order to grow, reproduce, make needed materials, and process waste. (Clarification statement: The intent is for students to demonstrate how the component structures of the cell interact and work together to allow the cell as a whole to carry out various processes. Additional structures, beyond those listed, will be addressed in high school Biology.)

b. Develop and use a conceptual model of how cells are organized into tissues, tissues into organs, organs into systems, and systems into organisms.

Performance Task

Overarching/Driving question

"Cell City"

Floating around in the cytoplasm are small structures called organelles. Like the organs in your own body, each one carries out a specific function necessary for the cell to survive. Imagine the cells as a miniature city. The organelles might represent companies, places. Or parts of te city because they each have similar jobs.

Below are the descriptions of important parts of the Cell City:

City Part Function Cell Part - City Limits controls what goes in and out of the city. Road System allows for movement throughout the city. City Hall controls all the activities in the city. City Auditor stores all the records of the city and passes them on as the city grows. City Planning Office is a place in the city hall where plans are made for the construction of the city, ect.

As you move through this task you will be able to associate the important parts of the city with the specific organelles found in cells.

Now, you are ready! In order to develop your city, you will need to CAREFULLY review the Task

	Sheet and Task Scoring Rubric below. Once reviewed, you will need to assess your ability to complete this task without further instruction. Do this by self-assessing your knowledge of all parts of the task. At the end of this unit you will be able to ….. • Task Sheet (Directions) • Task Scoring Rubric is included within the Directions • Complete the Cell City Analogy Place Analogy in Google Classroom.

	**OTHER THINGS I'LL LEARN ALONG THE WAY** **21st Century Skills** **Communication, Critical Thinking, Collaboration, & Creativity** **Communication** - Demonstrate organized, purposeful, and precise communication in English. **Collaboration** - Students perform with others so that together they will set and achieve goals, conduct investigations, solve problems, and create solutions. **Creativity** - Combine ideas in original ways to solve a problem, address an issue, or make something new. **Critical Thinking** - Demonstrate flexibility and persistence, including the ability to learn, take responsible risks, and persevere in challenging situations.

Cell Structure and Function

DOK LEVEL	STEPS FOR TASK	EVIDENCE OF MASTERY	PACING
	Step 1: Review Task and Self-Assess Complete Self Assessment Form	Checkpoint: • Pre-Assessment ____ • DOK 1 - Vocab _____ • DOK 2 - Score _____ • DOK 3 - Score _____ • Post Assessment _____ • Review the Task	
	Step 2: S.M.A.R.T. Goal Creation	Directions Using the pre-assessment score AND your Self-Assessment of the Mission, create a SMART goal to be accomplished by the end of the unit. Review the learning targets for the unit before creating your goal. • Upload to Learner Profile	
DOK 3	• **CELL MODEL RESEARCH PROJECT**	S7L2.a&b DOK 3 Resources	
DOK 2	Activities are to be done during class time or as HOMEWORK. • *Start with 1 and 3 then complete 1 other activity (choose 2, 4, 5).* • *Finish with number 6!* • You **MUST** complete 1 other	S7L2.a&b DOK 2 Resources	

	activity. • **Optional**: Do all boxes for extra practice.		
DOK 1	Activities are to be done as HOMEWORK or during your visit to the TEACHER WORKSHOP. • Choose two boxes to complete from 1, 2, 3, or 4 • You **MUST** complete 5 and end with 6 • **Optional**: Do all boxes for extra practice.	S7L2.a&b DOK 1 Resources	
DOK 4	At the end of this unit you will be able to ….. • Task Sheet (Directions) • Task Scoring Rubric is included within the Directions • Complete the Cell City Analogy Place Analogy in Google Classroom.	"Cell City" - See Performance Task	
	EXTENSIONS History of Classification A Brief History of Classification Learn Biology - Classification How to Read Scientific Names Heterotroph vs Autotroph Prokaryote vs Eukaryote	Resources Hyperlink Gallery of Cells JPEG Image Nucleus, Cytoplasm, Membrane *QuickTime* Video Cell Membrane: Just Passing Through *Flash* Interactive Organelles in the Cytoplasm Cells are the Starting Point	
	INTERVENTIONS	Resources Hyperlink	

Reflect

The **cell** is the basic unit of a living **organism**. In multicellular **organisms**(**organisms** with more than one **cell**), a collection of **cells** that work together to perform **similar functions** is called a tissue. In the next higher level of organization, various tissues that perform coordinated **functions** form organs.