SCIENCE PARENT GUIDE – UNIT 3

IMPORTANT CONCEPTS YOUR STUDENT SHOULD KNOW AND ACTIVITIES TO DO AT HOME

CELLS AND MICROORGANISMS

DESCRIPTION

In this unit, students will contrast the parts of animal and plant cells. Students will also argue from evidence on how microorganisms can be beneficial or harmful to other organisms.

KEY WORDS TO KNOW

- Microscope- a scientific tool that makes very small objects appear larger
- Cells: the smallest unit of an organism; they are enclosed by a membrane and perform life functions
- Magnification: the process of enlarging the size of something as an optical image
- Multi-celled organisms- organisms that contain trillions of cells that perform specific functions
- Microorganisms: organisms or infectious agents of microscopic or submicroscopic size
- Beneficial: producing or promoting a favorable result; advantageous
- Harmful: causing or capable of causing harm; injurious
- Nucleus: a membrane-bound organelle within a eukaryotic cell that contains most of the cell's genetic material
- Chloroplasts: an organelle in plant cells that is the site of photosynthesis
- Organelle- structures within a cell that perform specific functions
- Cells: the smallest unit of an organism; they are enclosed by a membrane and perform life functions
- Magnification: the process of enlarging the size of something as an optical image
- Cell membrane: the thin tissue that forms the outer surface of the cytoplasm of a cell and regulates the passage of materials in and out of the cell; the membrane is considered semipermeable
- Cell wall: the tough outermost layer of plant cells; provides protection and support
- Cytoplasm: the jelly-like substance that fills the inside of a cell and supports and contains all of the cell's internal structures and organelles

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CELLS AND MICROORGANISM

Important Concepts Addressed in this Unit	Sample Problems	How You Can Help Your Child
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.	1. Why does technolgoy have to be used to view a cell? 2. Compare and contrast an animal and plant cell by creating a model. 3. Use the model created above, construction a written explanation about the differences between the structure of plant and animal cells. 4. Construct an argument supported by evidence that microorganisms are beneficial. 5. Why is food safety needed? How does it relate to harmful microorganisms?	**Online Resources** • Science Curriculum: STEMscopes via MyBackpack • Milestones Assessment Guide https://lorpub.gadoe.org/xmlui/bitstream/handle/123456789/49665/Gr_05_Assessment_Guide_10.25.17.pdf?sequence=1 • Plant Cells http://studyjams.scholastic.com/studyjams/jams/science/plants/plant-cells.htm • Animal Cells http://studyjams.scholastic.com/studyjams/jams/science/animals/animal-cells.htm • Microbes Games https://www.brainpop.com/games/microbes/

(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.		
<u>Changes to Science Standards:</u> Students are expected to perform the practices while learning the content and understanding the crosscutting concepts.		

Science and Engineering Practices

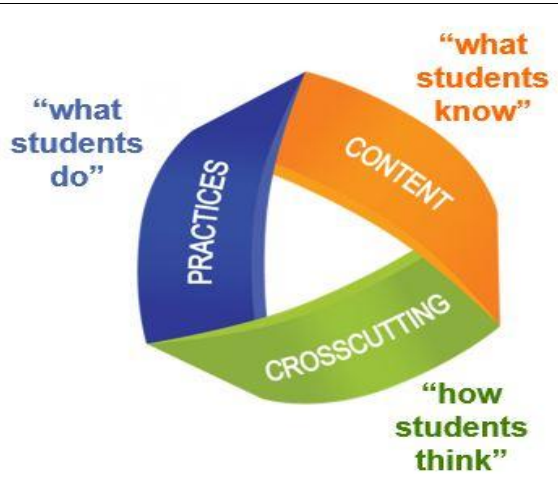
Students can use their understanding to investigate the natural world through the practices of science inquiry, or solve meaningful problems through the practices of engineering design.

Crosscutting Concepts

Provide students with connections and intellectual tools that are related across the differing areas of disciplinary content and can enrich their application of practices and their understanding of core ideas

Core Ideas

Core ideas cover the four domains: physical sciences, earth and space sciences, life science, and engineering and technology.



Quoted text from Peter A'Hearn