

PHENOMENA, DRIVING QUESTIONS AND STORYLINE

FROM CELLS TO ORGANISMS

What are the basic structures of living organisms, and how do they function?

Phenomenon	Driving Questions	Guiding Questions	Activities	PE	Storyline/Flow (How an activity leads to subsequent activities)
Some diseases can be spread from person to person.	How did scientists discover that microbes could cause and spread disease?	<p>How do scientists figure out the source of an infectious disease outbreak? (Activity 1)</p> <p>What can cause an infectious disease? (Activity 2)</p> <p>How can tools such as microscopes help scientists provide evidence about living organisms? (Activity 3)</p> <p>How did the cell theory lead to the germ theory of disease? (Activity 4)</p>	1, 2, 3, 4 (14, 15)	MS-LS3-2	<p>An infectious disease can be transmitted from person to person.</p> <p>Microscopic living organisms are the cause of some infectious diseases.</p> <p>Microscopes provide evidence of organisms at scales too small to be observed by the human eye.</p> <p>The idea that all living organisms are made of cells led to the germ theory of disease.</p>
Even though organisms may look different on the outside, their cells have a lot in common.	What structures and functions do living cells have in common?	<p>What evidence can you gather that cells are alive? (Activity 5)</p> <p>How do the structures in animal and plant cells relate to their functions? (Activity 6)</p> <p>What is the function of a cell membrane? (Activity 7)</p> <p>How do the parts of a cell work together? (Activity 8)</p>	5, 6, 7, 8	MS-LS1-2	<p>Cells are alive and respire.</p> <p>Cells of all organisms have similar structures, and these structures function similarly in each organism.</p> <p>The cell membrane is an example of a cell structure that functions similarly in different organisms.</p> <p>Models can be used to demonstrate and describe cell structures and their functions.</p>

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Some organisms are just one cell, while other organisms have many cells.	What is the difference between unicellular and multicellular organisms?	How do the cells of multicellular organisms compare with the cells of single-celled organisms? (Activity 9) What is the relationship between cells, tissues, organs, and organ systems within a multicellular organism? (Activity 10)	9, 10	MS-LS1-1 MS-LS1-3	Microscopes provide evidence that living things are made of one or many cells and that cells of different organisms share certain structures. Animals and plants have levels of organization, including cells, tissues, organs, organ systems, and organisms.
Living organisms need food to survive.	How do living organisms obtain and use the matter and energy they need to survive?	How does food provide energy and matter for organisms? (Activity 11) What structures in plant cells convert energy from the sun into energy stored in food? (Activity 12) What is the evidence that plants both produce and break down sugars? (Activity 13)	9*, 10, 11	MS-LS1-4	Food is rearranged through chemical reactions that support growth and/or release energy for cells. Plant cells contain structures for photosynthesis, a process that uses sunlight to synthesize food. Experiments can provide evidence of photosynthesis and respiration in plants.
Infectious diseases can be diagnosed and treated.	How can knowledge of cells be used to identify and treat microbial diseases?	How can knowledge of cell structure and function be used to treat disease? (Activity 14) What microbe caused the outbreak? (Activity 15)	14, 15	MS-LS1-1 MS-LS1-2	Knowledge of cell structure and function has helped scientists develop drugs that treat diseases caused by unicellular organisms. An understanding of cells and infectious agents can help identify the source and transmission of infectious diseases.