NGSS CORRELATIONS

FROM CELLS TO ORGANISMS

Crosscutting Concepts		Activity number
Cause and Effect	Cause and effect relationships may be used to predict phenomena in natural or designed systems.	1, 2, 14, 15
Energy and Matter	Matter is conserved because atoms are conserved in physical and chemical processes.	5
	Within a natural system, the transfer of energy drives the motion and/or cycling of matter.	11, 12, 13
	The transfer of energy can be tracked as energy flows through a designed or natural system.	5, 11, 12, 13
Patterns	Patterns can be used to identify cause and effect relationships.	1
	Graphs, charts, and images can be used to identify patterns in data.	1
Structure and Function	Complex and microscopic structures and systems can be visualized, modeled, and used to describe how their function depends on the relationships among its parts; therefore, complex natural and designed structures/systems can be analyzed to determine how they function.	3, 4, 6, 7, 8, 9, 10, 12
Systems and System Models	Systems may interact with other systems and be a part of larger complex systems.	6, 8
	Models are limited in that they only represent certain aspects of the system under study.	8
Scale, Proportion, and Quantity	Phenomena that can be observed at one scale may not be observable at another scale.	1, 2, 3, 4, 6, 7, 8, 9, 10, 14
Connections to Engineering, Technology, and Applications of Science	Engineering advances have led to important discoveries in virtually every field of science, and scientific discoveries have led to the development of entire industries and engineered systems	2, 3, 4, 9, 14
Connections to the Nature of Science	Scientists and engineers are guided by habits of mind, such as intellectual honesty, tolerance of ambiguity, skepticism, and openness to new ideas.	14
	Scientific knowledge can describe the consequences of actions but does not necessarily prescribe the decisions that society takes.	1, 2, 4, 9, 14
	Advances in technology influence the progress of science, and science has influenced advanced in technology.	3, 4, 9

Science and Engineering Practices		Activity number
Analyzing and Interpreting Data	Analyze and interpret data to determine similarities and differences in findings.	3, 9, 13
	Construct and interpret graphical displays of data to identify linear and nonlinear relationships.	1
	Analyze and interpret data to provide evidence for phenomena.	1, 5, 7, 15
Constructing Explanations and Designing Solutions	Construct a scientific explanation based on valid and reliable evidence obtained from sources (including the students' own experiments) and the assumption that theories and laws that describe nature operate today as they did in the past and will continue to do so in the future.	4, 5, 9, 10, 11, 12, 13, 15
	Apply scientific ideas to construct an explanation for real world phenomena, examples, or events.	1, 6, 14, 15
Developing and Using Models	Develop a model to predict and/or describe phenomena.	6, 7, 8
	Develop a model to describe unobservable mechanisms.	5, 7, 11
	Evaluate limitations of a model for a proposed object or tool.	8
Engaging in Argument from Evidence	Use an oral and written argument supported by evidence to support or refute an explanation or a model for a phenomenon.	2, 10
Obtaining, Evaluating, and Communicating Information	Integrate qualitative scientific and technical information in written text with that contained in media and visual displays to clarify claims and findings.	4, 6, 8, 10, 14
Planning and Carrying Out Investigations	Conduct an investigation to produce data to serve as the basis for evidence that meet the goals of an investigation.	3, 5, 7, 9, 13
	Evaluate the accuracy of various methods for collecting data.	3
Using Mathematics and Computational Thinking	Use mathematical representations to describe and/or support scientific conclusions and design solutions.	1
Connections to the Nature of Science	Scientific knowledge is based on logical and conceptual connections between evidence and explanations.	7, 11, 15

Disciplinary Core Ideas		Activity number
Structure and Function (LS1.A)	All living things are made up of cells, which is the smallest unit that can be said to be alive. An organism may consist of one single cell (unicellular) or many different numbers and types of cells (multicellular).	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 15
	Within cells, special structures are responsible for particular functions, and the cell membrane forms the boundary that controls what enters and leaves the cell.	4, 6, 7, 8, 10, 12, 14
	In multicellular organisms, the body is a system of multiple interacting subsystems. These subsystems are groups of cells that work together to form tissues and organs that are specialized for particular body functions.	10, 14, 15
Organization for Matter and Energy Flow in Organisms (LS1.C)	Plants, algae (including phytoplankton), and many microorganisms use the energy from light to make sugars (food) from carbon dioxide from the atmosphere and water through the process of photosynthesis, which also releases oxygen. These sugars can be used immediately or stored for growth or later use.	12, 13
	Within individual organisms, food moves through a series of chemical reactions in which it is broken down and rearranged to form new molecules, to support growth, or to release energy.	5, 11
Energy in Chemical Processes and Everyday Life (PS3.D)	Cellular respiration in plants and animals involves chemical reactions with oxygen that release stored energy. In these processes, complex molecules containing carbon react with oxygen to produce carbon dioxide and other materials.	5, 11, 12, 13
Performance Expectations		**Activity number**
From Molecules to Organisms: Structures and Processes (LS1)	Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells. (MS-LS1-1)	9
	Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function. (MS-LS1-2)	8
	Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms. (MS-LS1-6)	13
	Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism. (MS-LS1-7)	11

COMMON CORE STATE STANDARDS CORRELATIONS

FROM CELLS TO ORGANISMS

Common Core State Standards – English Language Arts		Activity number
Reading in Science and Technical Subjects (RST)	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions. (RST.6-8.2)	11, 15
	Follow precisely a multi-step procedure when carrying out experiments, taking measurements, or performing technical tasks. (RST.6-8.3)	1, 3, 5, 7, 9, 12, 13
	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). (RST.6-8.7)	6, 8, 14
	Compare and contrast the information gained from experiments, simulations, video, or multi-media sources with that gained from reading a text on the same topic. (RST.6-8.9)	2, 4, 6, 10, 11, 14
Speaking and Listening (SL)	Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest. (SL8.5)	8
Writing in History/ Social Studies, Science, and Technological Subjects (WHST)	Write arguments focused on discipline-specific content. (WHST.6-8.1)	15
	Write informative/explanatory texts to examine and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. (WHST.6-8.2)	7, 8
	Draw evidence from informational texts to support analysis, reflection, and research. (WHST.6-8.9)	4, 6, 10