New York Science

MS. Structure, Function, and Information Processing

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A Performance Expectations MS.LS1.SF

1. Plan and 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
2. 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
3. Construct an explanation supported by evidence for how the body is composed of interacting systems consisting of cells, tissues, and organs working together to maintain homeostasis. MS.LS1.3
4. Gather and synthesize information that sensory receptors respond to stimuli, resulting in immediate behavior and/or storage as memories. MS.LS1.8

B Science and Engineering Practices MS.SF.SEP

1. Developing and Using Models MS.SF.SEP.1
   a. Develop a model to describe phenomena. (MS-LS1-2) MS.SF.SEP.1A
2. Planning and Carrying Out Investigations MS.SF.SEP.2
   a. Conduct an investigation to produce data to serve as the basis for evidence that meet the goals of an investigation. (MS-LS1-1) MS.SF.SEP.2A
3. Constructing Explanations and Designing Solutions MS.SF.SEP.3
   a. 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 the natural world operate today as they did in the past and will continue to do so in the future. (MS-LS1-3) MS.SF.SEP.3A
4. Obtaining, Evaluating, and Communicating Information MS.SF.SEP.4
   a. Gather, read, and synthesize information from multiple appropriate sources and assess the credibility, accuracy, and possible bias of each publication and methods used, and describe how they are supported or not supported by evidence. (MS-LS1-8) MS.SF.SEP.4A

C Disciplinary Core Ideas MS.SF.DCI

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1 LS1.A: Structure and Function MS.SF.DCI.LS1.A

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). (MS-LS1-1) MS.SF.DCI.LS1.A.1

b Within cells, special structures are responsible for particular functions, and the cell membrane forms the boundary that controls what enters and leaves the cell. (MS-LS1-2) MS.SF.DCI.LS1.A.2

c 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. (MS-LS1-3) MS.SF.DCI.LS1.A.3

2 LS1.D: Information Processing MS.SF.DCI.LS1.D

a Each sense receptor responds to different inputs (electromagnetic, mechanical, chemical), transmitting them as signals that travel along nerve cells to the brain. (MS-LS1-8) MS.SF.DCI.LS1.D.1

b (NYSED) Plants respond to stimuli such as gravity (geotropism) and light (phototropism). (MS-LS1-8) MS.SF.DCI.LS1.D.2

D Crosscutting Concepts MS.SF.CC

1 Cause and Effect MS.SF.CC.1

a Cause and effect relationships may be used to predict phenomena in natural systems. (MS-LS1-8) MS.SF.CC.1A

2 Scale, Proportion, and Quantity MS.SF.CC.2

a Phenomena that can be observed at one scale may not be observable at another scale. (MS-LS1-1) MS.SF.CC.2A

3 Systems and System Models MS.SF.CC.3

a Systems may interact with other systems; they may have sub-systems and be a part of larger complex systems. (MS-LS1-3) Structure and Function MS.SF.CC.3A

b 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 structures/systems can be analyzed to determine how they function. (MS-LS1-2) MS.SF.CC.3B

4 Interdependence of Science, Engineering, and Technology MS.SF.CC.4

a 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. (MSLS1 1) MS.SF.CC.4A

5 Science is a Human Endeavor MS.SF.CC.5

a Scientists and engineers are guided by habits of mind such as intellectual honesty, tolerance of ambiguity, skepticism, and openness to new ideas. (MS-LS1-3) MS.SF.CC.5A