

MS-LS1-3 From Molecules to Organisms: Structures and Processes

California Science Test—Item Content Specifications

# MS-LS1-3 From Molecules to Organisms: Structures and Processes

Students who demonstrate understanding can:

Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.

[Clarification Statement: Emphasis is on the conceptual understanding that cells form tissues and tissues form organs specialized for particular body functions. Examples could include the interaction of subsystems within a system and the normal functioning of those systems.] [*Assessment Boundary: Assessment does not include the mechanism of one body system independent of others. Assessment is limited to the circulatory, excretory, digestive, respiratory, muscular, and nervous systems.*]

| Science and Engineering Practices | Disciplinary Core Ideas | Crosscutting Concepts |
| --- | --- | --- |
| Engaging in Argument from Evidence  Engaging in argument from evidence in 6–8 builds on K–5 experiences and progresses to constructing a convincing argument that supports or refutes claims for either explanations or solutions about the natural and designed world(s).  Use an oral and written argument supported by evidence to support or refute an explanation or a model for a phenomenon. | LS1.A: Structure and Function  5. 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. | Systems and System Models  Systems may interact with other systems; they may have sub-systems and be a part of larger complex systems.  Connections to Nature of Science  Science is a Human Endeavor  Scientists and engineers are guided by habits of mind such as intellectual honesty, tolerance of ambiguity, skepticism, and openness to new ideas. |

## Assessment Targets

Assessment targets describe the focal knowledge, skills, and abilities for a given three-dimensional Performance Expectation. Please refer to the Introduction for a complete description of assessment targets.

### Science and Engineering Subpractice(s)

Please refer to appendix A for a complete list of Science and Engineering Practices (SEP) subpractices. Note that the list in this section is not exhaustive.

7.1 Ability to construct scientific arguments

### Science and Engineering Subpractice Assessment Targets

Please refer to appendix A for a complete list of SEP subpractice assessment targets. Note that the list in this section is not exhaustive.

7.1.1 Ability to identify evidence/data that supports a claim

7.1.3 Ability to use reasoning to explain how relevant evidence/data supports or refutes the claim; the reasoning should reflect application of scientific concepts, principles, ideas, and models

### Disciplinary Core Idea Assessment Targets

#### LS1.A.5

* Recognize that the body of a multicellular organism is a system comprised of multiple interacting subsystems
* Identify that these subsystems are groups of cells working together to form tissues and organs
* Recognize that tissues and organs are specialized for particular body functions
* Identify and describe evidence that supports the claim that specialized groups of cells work together to form tissues, that specialized tissues comprise each organ, and that different organs can work together to carry out complex functions

### Crosscutting Concept Assessment Target(s)

CCC4 Identify that systems may interact with other systems that may have subsystems and be a part of larger complex systems

## Examples of Integration of Assessment Targets and Evidence

Note that the list in this section is not exhaustive.

Task provides a claim about the interacting subsystems within the body of a multicellular organism:

* Identifies pieces of evidence or data (e.g., appropriate level of organization) that would support the claim (7.1.2, LS1.A.5, and CCC4)
* Provides support for the claim illustrating an interaction between two or more body systems (7.1.2, LS1.A.5, and CCC4)

Task provides a claim and evidence about the interacting subsystems within the body of a multicellular organism:

* Explains whether the provided evidence is sufficient to defend the claim (7.1.3, LS1.A.5, and CCC4)
* Evaluates arguments in terms of the types and number of sources of the evidence (7.1.3, LS1.A.5, and CCC4)
* Constructs reasoning that 1) links the evidence and the claim and 2) reflects an application of a scientific concept, principle, and big idea (7.1.3, LS1.A.5, and CCC4)

## Possible Phenomena or Contexts

Note that the list in this section is not exhaustive.

* Cells that are organized to form tissues (e.g., different kinds of cells make up muscle tissue)
* Tissues that are organized to form organs (e.g., specific muscle fibers make up the heart)
* Organs that work together in a system (e.g., skeletal, smooth, and cardiac muscle tissues make up the muscular system)
* Organ systems that work together to perform necessary functions for survival and growth of an organism (e.g., breathing or exercising)

## Common Misconceptions

Note that the list in this section is not exhaustive.

* Each organ system functions independently.
* Cells function independently in multicellular organisms.

## Additional Assessment Boundaries

None listed at this time.

## Additional References

MS-LS1-3 Evidence Statement [https://www.nextgenscience.org/sites/default/files/evidence\_statement/black\_white/MS-LS1-3 Evidence Statements June 2015 asterisks.pdf](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-LS1-3%20Evidence%20Statements%20June%202015%20asterisks.pdf)

The *2016 Science Framework for California Public Schools Kindergarten through Grade 12*

Appendix 1: Progression of the Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts in Kindergarten through Grade 12 <https://www.cde.ca.gov/ci/sc/cf/documents/scifwappendix1.pdf>

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