### 4-LS1 From Molecules to Organisms: Structures and Processes

**Students who demonstrate understanding can:**

**4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.**  
*Clarification Statement: Examples of structures could include thorns, stems, roots, colored petals, heart, stomach, lung, brain, and skin.*  
*Assessment Boundary: Assessment is limited to macroscopic structures within plant and animal systems.*

**4-LS1-2. Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.**  
*Clarification Statement: Emphasis is on systems of information transfer.*  
*Assessment Boundary: Assessment does not include the mechanisms by which the brain stores and recalls information or the mechanisms of how sensory receptors function.*

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**The performance expectations above were developed using the following elements from the NRC document: A Framework for K-12 Science Education.**

<table>
<thead>
<tr>
<th><strong>Science and Engineering Practices</strong></th>
<th><strong>Disciplinary Core Ideas</strong></th>
<th><strong>Crosscutting Concepts</strong></th>
</tr>
</thead>
</table>
| **Developing and Using Models**      | **LS1.A: Structure and Function**  
Modeling in 3-5 builds on K-2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.  
- Use a model to test interactions concerning the functioning of a natural system. (4-LS1-2)  
**Engaging in Argument from Evidence**      | **LS1.D: Information Processing**  
Different sense receptors are specialized for particular kinds of information, which may be then processed by the animal’s brain. Animals are able to use their perceptions and memories to guide their actions. (4-LS1-2)  
**Disciplinary Core Ideas** | **Crosscutting Concepts**  
- Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction. (4-LS1-1)  
**Crosscutting Concepts** | **Systems and System Models**  
- A system can be described in terms of its components and their interactions. (4-LS1-1),(4-LS1-2)  
*The performance expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.*

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