

Lesson Self-Check

CAN YOU EXPLAIN IT?

FIGURE 22: A ballerina awaits her cue backstage.



Recent research has shown that the nervous system and digestive system are very closely connected. Nerves not only send signals to the digestive system to function when needed, but the digestive system sends signals to the nervous system. In fact, scientists refer to the portion of the nervous system associated with the gut as our “second brain,” because it can operate without any input from the brain to continue the digestive process. The second brain contains around 100 million neurons, more than the spinal cord or the peripheral nervous system. Thus, part of our emotions may be tied to the nerves in our digestive system.



Explain Use your model of the nervous and digestive systems and the evidence you have gathered in your Evidence Notebook to construct an explanation of how sensations, such as “butterflies” in the stomach, might arise. Which organs do you think are communicating, how are they communicating, and what is the function of this communication?

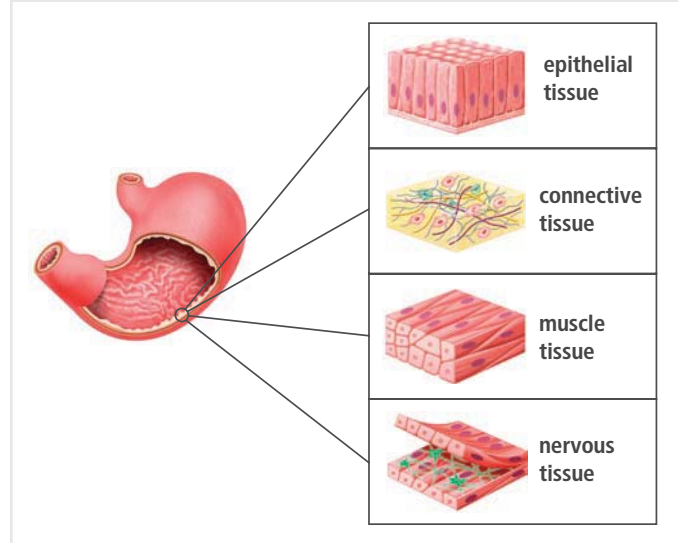
1. State your claim.
2. Summarize the evidence you have gathered to support your claim, and explain your reasoning.
3. Use your model to illustrate your claim. Revise the model as needed based on new evidence you gathered.

CHECKPOINTS

Check Your Understanding

- Which of the following correctly describes the relationship between tissues and organs?
 - Several organs interact to help a tissue carry out a specialized function.
 - One type of specialized tissue is found in each organ.
 - Organs are made up of different types of tissue that work together.
 - Tissues compete with each other to carry out the main function of the organ.
- Which of the following organ systems must work together to bring oxygen to the body's cells? Select all correct answers.
 - digestive system
 - skeletal system
 - immune system
 - respiratory system
 - circulatory system
- The word *organ* comes from the Latin word *organum*, meaning "instrument" or "implement." Describe how this meaning relates to the definition of a living organ.
- Draw a diagram to show the relationship between cells, organs, tissues, organ systems, and organisms. Include media and text in your diagram.
- Explain how the structure of a plant cell helps the plant system maintain its shape.
- Which organelles are found in plant cells but not animal cells? How are these structures related to functions at the organism level?
- List the main organ systems that would interact to help a person play the violin, and explain how they would work together to help the person complete this task.

FIGURE 23: Organs such as the stomach are made up of four main types of tissues.



- How do the four types of tissue shown in Figure 23 interact to help the stomach carry out its function of breaking down food?

MAKE YOUR OWN STUDY GUIDE



In your Evidence Notebook, design a study guide that supports the main idea from this lesson:

Systems in organisms interact at different levels to carry out functions necessary for life.

Remember to include the following information in your study guide:

- Use examples that model main ideas.
- Record explanations for the phenomena you investigated.
- Use evidence to support your explanations. Your support can include drawings, data, graphs, laboratory conclusions, and other evidence recorded throughout the lesson.

Consider how the information in this lesson can help you model interactions within and between systems at different levels.