

4

Cells and Body Systems

Objectives

You will be able to

- Understand that the sensory receptors respond to a stimuli, which results in a response.
- Gather information and use the information to develop a model of the neural pathway.
- Share your understanding of the nerve to produce one neural pathway.
- Write down and discuss facts from a video.
- Describe evidence and give examples to communicate your ideas.



How do body systems interact with each other to communicate and collaborate?

Evaluation and Feedback

To evaluate your work, you will

- Use the “Obtaining, Evaluating, and Communicating Information” row and “Developing and Using Models” row of the Science and Engineering Practices Rubric.
- Use other criteria determined by your teacher.

Task 4: Your Senses—Communicating with the Outside World

As a group:

- Watch a nervous system video and write down facts.
- Discuss pictures of the nervous system.
- Research how the nervous system works in one of the five senses.
- Choose an activity that involves your sense.
- Draw pictures to show the neural pathway, starting at the stimuli and ending at the response.
- Present your sense and response neural pathway.

Vocabulary

- neuron
- neural pathway
- memory
- stimulus (plural stimuli)
- sensory organs
- receptor
- response

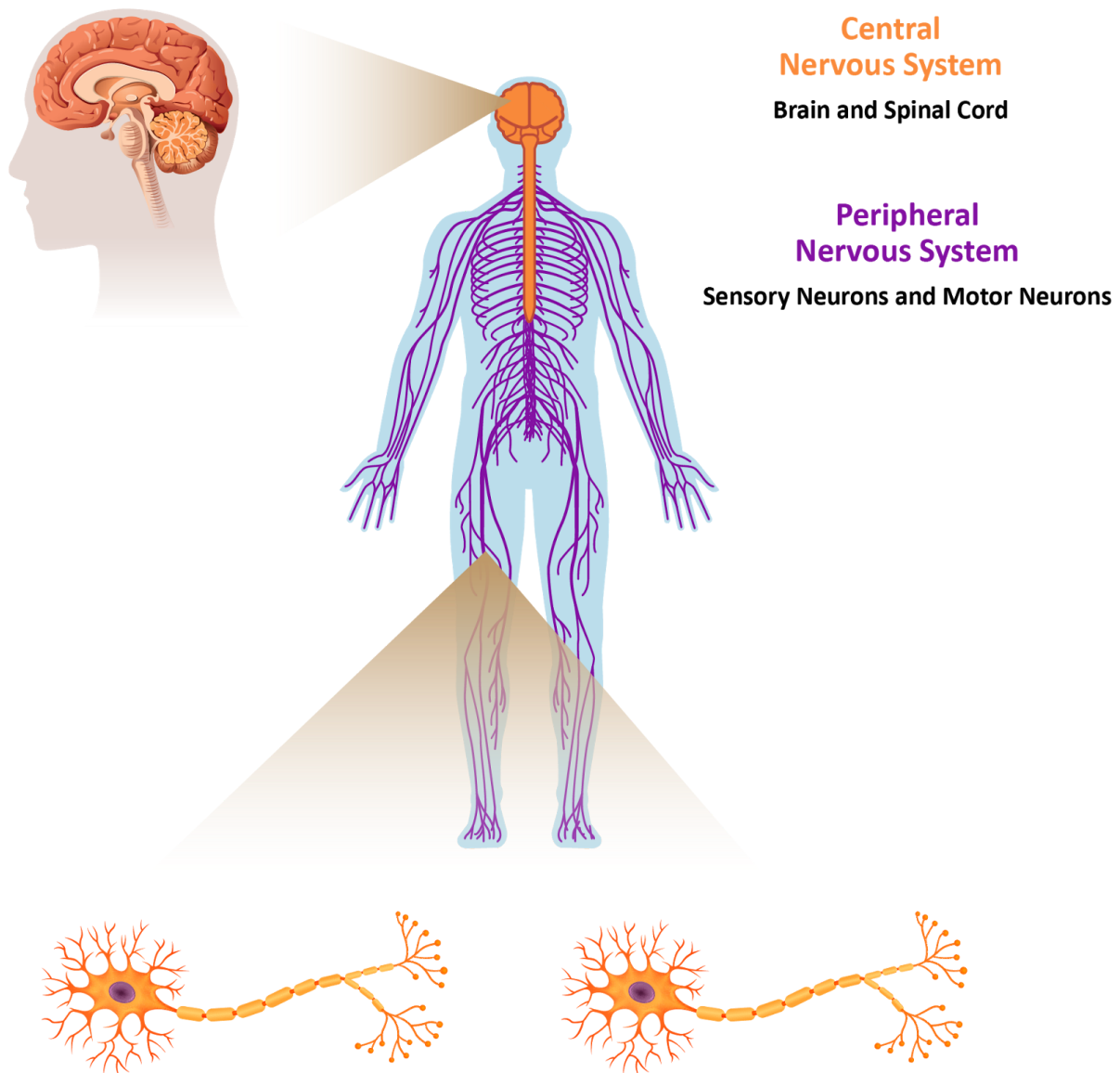
Connect to the Culminating Project

Plan and organize your Activity Brochure in your Individual Project Organizer:

- Diagram your activity showing the senses and the neural pathways that result in responses or memories.


Part I • Gather Information about the Nervous System

1. While watching the *Nervous System* video (<https://youtu.be/sjyl4CmBOA0>), add notes and labels on the diagram below to help you remember interesting facts to share with the class.

Nervous System Diagram

2. After watching the *Nervous System* video, discuss and complete the table that follows.

Nervous System Data Table

<p>A. On the picture to the right, label the following:</p> <ul style="list-style-type: none"> • sensory nerve • spinal cord • brain • motor nerve • skin (touch organ) • apple (stimulus) • move apple to mouth (response) • muscle 	
<p>B. In numbered list or flowchart form, write the order of body parts from the time the person touches the apple (stimulus) until the time they take a bite (response). You will have to use <i>spinal cord</i> twice.</p>	

Part II • Become an Expert on One Sense

Show the Neural Pathway

Your Goal

Show the neural pathway from the point of stimulation in your body to the response or memory in your body for a particular sense (hearing, sight, etc.).

Your Tools

- ☐ A 10 foot piece of string to represent the neural pathway from the point of stimulation to the response
- ☐ Paper on which to draw pictures that represent the pathway from the point of stimulation to the response or memory

Your Project

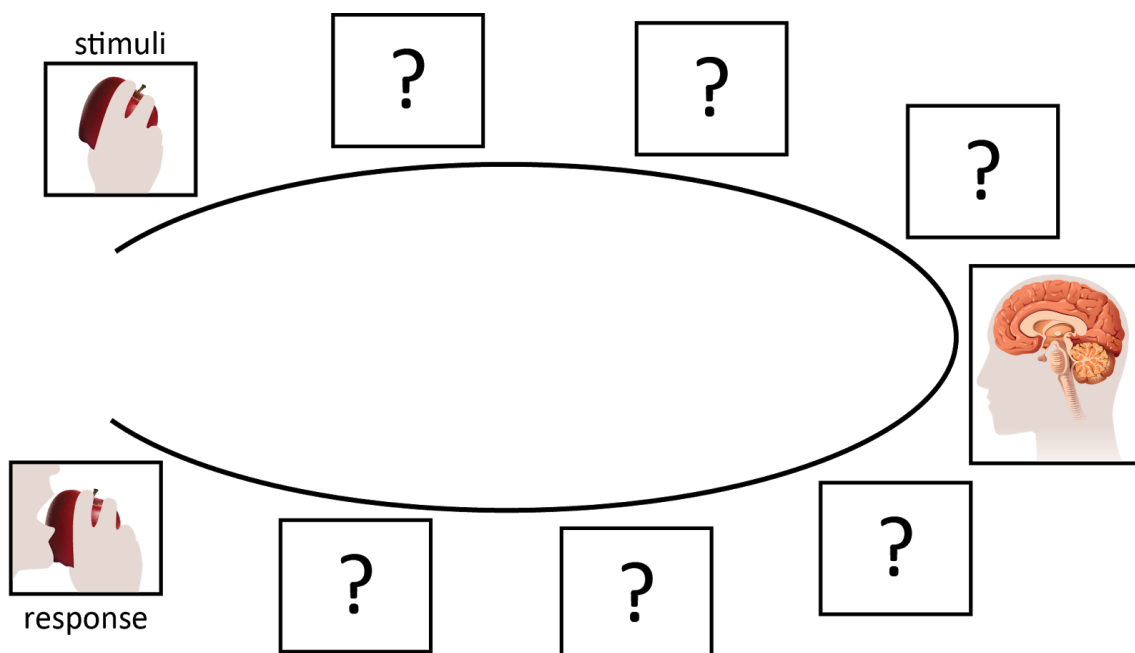
- ☐ Attach your pictures to the string to represent the pathway of a nerve response or memory.

Your Presentation

- ☐ One person in your group will narrate (explain) the pathway of the stimulus to the response.
- ☐ The rest of the group will move along the string to represent the movement of the message from one place in the body to another as the narrator explains each picture.

An Example

If you were to choose the sense of touch, and the stimulus was an apple and the response was to eat an apple, the neural pathway might look like the following string. The “?” represents possible pictures. You may make as many pictures as you want to represent your pathway.



Nerve Cells Resource Cards

1. Choose a sense (touch, sight, smell, taste, hearing).

2. Research your sense using the Nerve Cells Resource Cards and by watching the videos. (Links are provided on the Nerve Cells Resource Cards.)



- ☐ First write notes in your science notebook.
- ☐ Then collaborate and put all your ideas together below.

Write notes about the stimuli, sensory receptors, sensory nerves, spinal cord, brain, motor nerves, and response (or memory).

3. Decide on a real-life situation that would use the sense you chose.

- Identify the stimulus, type of sensory input, sensory organs, sensory receptor, and the response or memory for your situation.

Stimulus	Type of Sensory Input	Sensory Organs	Sensory Receptor	Response or Memory

- Draw and label a plan for your neural pathway string from the stimuli to the response or memory of the stimulation.

- Make labeled pictures for the neural pathway string.
- Attach the pictures in order to the string using tape.
- Assign jobs to present your stimulus-response neural pathway to the class.
- Practice your presentation.
- Present your pathway.

Part III • Connect to the Culminating Project and Assessment

Complete the Individual Project Organizer for this task.

