# DCPS: 7th Grade Science

## Advisory 1, Units 1-2, Lesson 4
## Cells and Body Systems

**Summary**

- In this lesson, students will read "Super Sniffers" (pp. 32-39) and "The Skin You're In" (pp. 48-55) to understand how the senses of smell and touch help animals survive.

### Science Background

Many things help animals survive. Two of the most basic are their senses of smell and touch.

Detecting smells can help animals find food, sense danger, or even find their way home. Animals collect smells through a variety of different body structures, including the nose, tongue, and antennae.

Decoding these smells is the job of the olfactory system. Although the process only takes about half a second, it involves many different steps. In humans, scents enter the nose and flow through the nasal cavity where they are grabbed by sense receptors at the tips of nerve cells. Nerves then transmit the information to the brain where it is interpreted.

The sense of touch is detected through a huge network of nerve endings and touch receptors in the skin. It allows people to feel pressure and pain. This keeps people away from danger and helps them stay healthy.

Skin is the largest organ in the human body. It is made up of three main layers of tissue—the epidermis, dermis, and hypodermis. In addition to sensing pressure, skin keeps helps regulate temperature and cushions the body from blows. Glands in the dermis produce an oil that waterproofs. And fat cells in the hypodermis store energy for times when food is scarce.

## ENGAGE

Encourage students to flip through the articles and turn and talk with a partner to discuss what they see. Invite students to ask questions or share what they already know about the senses of smell and touch.

## EXPLORE

Instruct students to examine the photo on pages 32-33 of their Readers. **Ask:** *Which body part do these bears use to smell?* (nose) *Which body part gives them a sense of touch?* (skin) Brainstorm ideas about how the senses of smell and touch could help these bears survive where they live.

## EXPLAIN

Point out to students that smell and touch are two of the basic sensory systems that animals rely on to survive and understand their world. **Ask:** *Which body system is responsible for the sense of smell?* (olfactory system) *How can we feel when something pokes us?* (Nerves sense the pressure.) Have students turn and talk as they review the articles for details about how the senses of smell and touch work. Challenge students to identify ways that the sense of smell helps animals survive. (find food, find the way home, sense danger) Point out that the sense of touch helps you feel pain. Encourage students to turn and talk as they discuss how feeling pain helps people and animals stay healthy. Challenge them to identify other ways skin helps people survive. (regulates temperature, provides energy, protects from invaders, cushions blows, etc.)

## ELABORATE

Can river otters smell underwater? Encourage students find out as they examine the National Geographic activity "Sniffing Out Otter Behavior" (*www.nationalgeographic.org/media/sniffing-out-otter-behavior/*).

## EVALUATE

Have students complete the **Content Assessment** for this lesson. Encourage them to share and compare their results in small groups.

Name _____ Date _____

## CONTENT ASSESSMENT: Cells and Body Systems, Lesson 4

Make a checkmark to show if you think each sentence is true or false.
Use information from the articles to explain each of your answers.

| Sentence | True | False | Explanation |
|---|---|---|---|
| 1. Many animals have a better sense of smell than people. | | | |
| 2. Many animals could not survive without an excellent sense of smell. | | | |
| 3. Animals analyze and interpret smells in their nasal cavities. | | | |
| 4. The epidermis is not an important layer of skin because all of the cells in it are dead. | | | |
| 5. Feeling pain helps keep you healthy. | | | |