

How Animal Fur Works

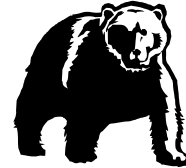
Goal: To understand how fur works to keep an animal warm and highlight the similarities in heat conservation strategies between furred creatures and ourselves.

Objective: Students will be able to:

1. Demonstrate that body temperature remains constant across changes in environmental temperature.
2. Understand that animals and humans with a constant internal body temperature also shiver.

Grade: 4-6

Standard: NCTE English Language Arts #1 & #8
NAP Life Science
NCTM Representation



Activity:

Part One: Introduction

Inform your students that the next day you will be teaching about body temperature and heat regulation. Have them record the following four temperatures as homework: inside their home, of their body inside their home, outside their home, and of their body outside their home. Caution them not to take their body's temperature soon after vigorous activity.

The next day, set up two graphs on the board, one to record indoor temperature; the other, outdoor temperatures. Graph the results provided by students. This demonstration should emphasize for students that body temperature remains relatively constant across changes in environmental temperature.

Part Two: Shivers and Goosebumps

Ask students if they've ever had chattering teeth and the shivers. Explain how chattering teeth and shivers occur because the muscles in our bodies start to contract when we get cold. The work the muscles do to make our teeth chatter and our bodies shiver keep us warm. You may choose to ask your students to run in place for a minute to demonstrate how working muscles heat the body. Point out that humans are not the only animals that shiver; other animals that maintain a constant internal body temperature also shiver.

Now ask your students the following questions:

- Have they ever had goosebumps. Again, all hands should go up.
- Ask them if they have any ideas about how goosebumps keep us warm.
- Ask your students what happens to the hair on their arms when they have goosebumps. How does hair standing on end keep us warm?



They should respond that goosebumps make their hair stand up. Point out that humans are not the only animals to get goosebumps: we just can't see them on animals with thick fur coats. Explain that in animals with thick fur coats getting goosebumps actually does keep the animal warm. Goosebumps occur when muscles in the skin pull on hair follicles so that the hair (or fur) stands up straight at the base. This creates a space filled with air between the animal's fur and their skin. It is this air space that insulates the animal from the cold.

Assessment:

1. Students explain what occurs to animal and human muscles when they are in contact with the cold.
2. Students explain what goosebumps are.

Extension Activity:

Since this biological process doesn't work to keep humans warm, we developed other heat conserving strategies and these strategies have changed with time and technological advancements. As a post-exercise assignment, have students research how humans have used animal products (e.g., fur, blubber) to keep themselves warm and the advances of technology (e.g., solar power, synthetic materials) that have reduced or eliminated this need.

With the knowledge of how fur works to keep an animal warm and the alternatives to using animal products to warm our own bodies, your students will want to keep fur coats where they are most appreciated—on the backs of their rightful owners.