



7

HOW POLAR ANIMALS KEEP WARM

Objective:

Discover how blubber insulates from the cold and other physical adaptations that help keep animals warm.

Materials:

Student workbook, Crisco, two sandwich bags, duct tape, a rubber band or hair tie, a large bowl of ice water, a piece of animal fur or a furry friend, a feather the following animal cards: walrus, beluga, chinstrap penguin, arctic wolf.



Lesson:

Some animals do not migrate or hibernate but instead have special parts of their bodies that make it possible to survive in the cold. The way an animal's body works specifically for its environment is called its physical adaptations. One adaptation that many animals of the arctic and antarctic have is blubber. Blubber is a layer of fat between skin and muscle of marine mammals that insulates them, or puts something between their bodies and the cold of the ocean that holds heat in.

Activity:

To experience the insulating power of blubber get a bowl of ice water and stick your hand in it. **How long before it starts to get too uncomfortable?** (leave it in for no more than a minute to prevent injury) Pull your hand out and mark in your student workbook on the physical adaptations page how cold that water felt to you. Then put on a "blubber glove". (A blubber glove is made from filling a bag with Crisco then sticking another bag inside it and taping along the top so the fat can't escape, I also used a hair tie to help the glove stay on our wrists when we put it on.) Stick your gloved hand back in the water. **How long can you keep it there this time?** Mark in your workbook how cold the water felt with the glove on. Learn more about Blubber covered animals like the Walrus, Beluga Whales, and Chinstrap Penguins on the animal fact cards.

Lesson:

Some animals like polar bears, caribou, and sea otters have thick layers of fur that trap air against their bodies for insulation against wind and water. In the winter many animals will grow a thick soft undercoat or long topcoat as extra protection from the elements.

Student Work:

Investigate a piece of fur or your own furry friend to see if you notice different layers of fur then read about arctic wolves on the fact cards.

Lesson:

Feathers can often work in much the same way as fur, protecting from the wind and water with the outside feathers and insulating with the thick warm downy feathers underneath.

Student Work:

Explore a feather and guess whether it was a downy feather close to the body, in between, or a sturdy outer specialty feather.



PHYSICAL ADAPTATIONS

Blubber

Stick your hand in ice water for as long as you can stand it (or about 45 seconds) mark below how cold the water felt.

Freezing-----Cold-----Warm----- Hot

Stick your hand in a rubber glove then surround your gloved hand in crisco with saran wrap around it. Stick your gloved and fattened hand in the ice water again. Mark below how cold the water felt.

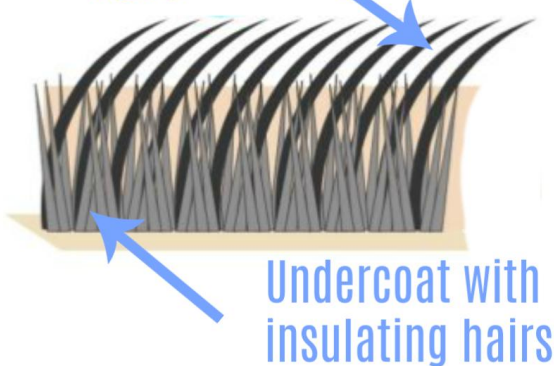
Freezing-----Cold-----Warm----- Hot

Fat insulates your hand from cold and polar marine animals use "blubber" or a thick layer of fat as their first defense against cold.

Fur

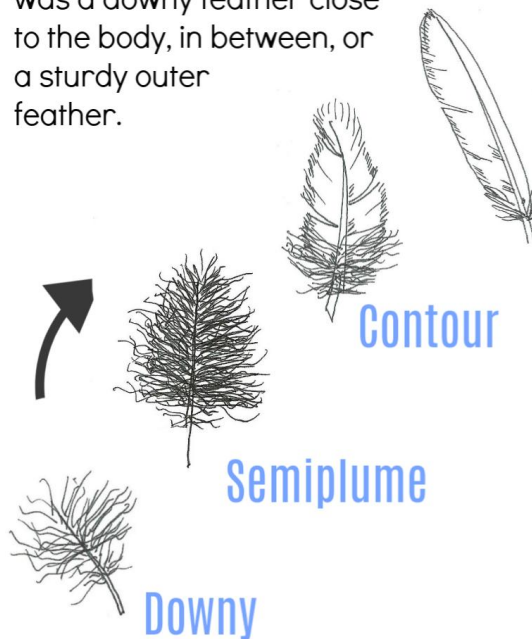
Some animals like polar bears, caribou, and sea otters have thick layers of fur that trap air against their bodies for insulation against wind and water. In the winter many animals will grow a thick soft undercoat as extra protection from the elements. Investigate a piece of fur or your own furry friend to see if you notice different layers of fur.

Topcoat with guard hairs



Feathers

Feathers can often work in much the same way as fur, protecting from the wind and water with the outside feathers and insulating with the thick warm downy feathers under neath. Explore a feather and guess whether it was a downy feather close to the body, in between, or a sturdy outer feather.



Specialty Outer Feather