



Blubber Experiment

Introduction

Blubber is a thick, fat layer found in marine mammals, such as seals, whales, walruses, and sea lions. It serves several purposes, including storing energy and increasing buoyancy. Blubber helps in another way that we will discover through this experiment.

Materials

- 2 plastic bags
- Petroleum jelly, shortening, or bubble wrap
- Shallow bowl or container
- Cold water
- Ice

Methods

1. Create a blubber glove using the two plastic bags and your chosen filler. If you are using petroleum jelly or shortening, place it into one of the bags (approximately $\frac{3}{4}$ cup for a sandwich bag and $1\frac{1}{4}$ cup for a quart bag). Place your hand into the second bag and then insert it into the first, so it is fully inside. Remove your hand from the bag and knead the petroleum jelly or shortening to cover the surface between the two bags. If you are using bubble wrap, cut a length that will fit around the outside on of the bags. Then insert the bag and bubble wrap inside the second bag. You can use these pictures as references in constructing your own glove.

Petroleum jelly or shortening example:



Bubble wrap example:



2. Draw a picture of your blubber glove in the space below. Add labels to your drawing to make it more detailed.

3. Now prepare a bowl of ice water. When filling the bowl with cold water, make sure the water is not deeper than the length of your blubber glove. Add ice to chill the water further.

4. Put your bare hand into the bowl of ice water. How does it feel? Would you want to leave your hand in the water for a long time? You can write or draw your reaction in the space below.

5. Remove your hand from the water and dry it off. Now place your hand into the blubber glove and then put it into the bowl of ice water. How does it feel? How does it feel differently from before? You can write or draw your reaction in the space below. If it helps your comparison, you may place your second hand, without a covering, into the bowl with your blubber glove covered hand (be careful not to spill water over the edge of the bowl).

Results

You probably found that the water felt colder to your bare hand than it did when you used the blubber glove. The layer of petroleum jelly, shortening, or bubble wrap insulated your hand and helped keep it warm.

Discussion

Mammals are warm-blooded or endothermic, which means they can generate heat to maintain a consistent body temperature. Humans are mammals and endothermic too. When you start to feel cold, you may shiver. These muscle movements create heat and help to warm us up.

We don't solely rely on responses, such as shivering, for warmth though and will use sweaters, coats, or blankets as additional coverings to help insulate us from the cold. A marine mammal's blubber provides an insulating layer, like our coats, to help keep their body heat from escaping. Your blubber glove acts the same as the marine mammal's blubber layer by insulating you from the cold water.

Next Gen and New York State Science Learning Standards

- Grades K-2
 - **K-ESS3-1:** Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.
- Grades 3-5
 - **3-LS4-3:** Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.
 - **4-LS1-1:** Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.