

Blubber Gloves Experiment

Explore how blubber keeps animals warm in cold water!

Blubber is the thick layer of fat under the skin of marine mammals such as whales, seals, and walruses. It keeps them warm and provides energy.

Materials Needed:

Large container of water, vegetable shortening, spatula or large spoon, Ziploc bag (quart or gallon size), disposable gloves*, towels.

**You can use a second Ziploc bag instead of disposable gloves, if desired.*

Instructions:

Caution: This activity can be messy!

Step 1: Fill a container about halfway with cold water. If available, add ice to make it extra cold! Make sure the container is large enough to put both hands in.

Step 2: Scoop several spoonfuls of shortening into a Ziploc bag. For smaller hands, use a quart-size bag. The shortening will insulate your hands, like blubber.

Step 3: Put a disposable glove on one hand, and put your hand in the Ziploc bag. Squish the shortening around so it covers the glove in a fairly even layer.

Step 4: Put a disposable glove on your other hand. To make it easier, ask a friend to help you pull the glove on.

Step 5: Put both hands in the water container. Be careful not to let the water splash over the sides! Which hand gets colder first? How long can you keep each hand in the water?

Watch a video demonstrating this activity:

<https://www.youtube.com/watch?v=DQGAcqhkGs>



Blubber and Marine Mammals

Blubber is the thick layer of fat under the skin of marine mammals such as whales, seals, and walrus. For these animals, blubber has several uses, helping them survive in icy Arctic waters.



Bearded Seal. Image: NOAA/John Jansen.

Keeping Warm: Blubber is like a warm winter coat! Fat is a good insulator: it keeps heat in and cold out. In marine mammals, the layer of blubber traps body heat in, keeping the animal warm. Depending on species, the blubber layer can be 2 inches (5 cm) to 12 inches (30 cm) thick!

Blubber also contains many more blood vessels than the fat in land animals. These blood vessels constrict, or get smaller, in cold water. Constricted blood vessels decrease the amount of blood flow and conserve body heat.

Providing Energy: Blubber stores a lot of energy in the form of proteins and lipids (a type of fat). The animal can use this energy when food is scarce. For example, nursing mothers build up thick stores of blubber before giving birth.



Right: Beluga whale blubber. Image: Marci Trana, fisheries.org.

Floating: Blubber is less dense than the ocean water surrounding it, so animals with blubber naturally float. This allows the animal to conserve energy while swimming, and float near the surface to breathe while resting.



In many Arctic cultures, including the Iñupiat and Yup'ik peoples, blubber is an important part of their diet. It is an important source of energy, vitamin D, and vitamin C. Thick slices of whale blubber and skin are known as *maktak* in the Iñupiaq language.

Left: Cutting maktak, ca. 1960s. Image: Steve McCutcheon Collection, Anchorage Museum. AMRC-B1990-014-5-AKNative-3-165.