



## Whale World: Blubber

### What you need

- 2 quart sized zip-lock bags
- 1 container of shortening (e.g., Crisco)
- Duct tape
- Bucket of ice water
- Old newspaper or paper towels
- Stopwatch or timer
- Cloth towel

Follow the steps below to make your own “blubber glove” & learn how whales stay warm in polar seas.

### Preparation

1. Place some old newspaper or some paper towels down on your work surface in case of spills.
2. Scoop about 2 cups of shortening into one zip-lock bag.
3. Place your hand inside a clean zip-lock bag, and then put the clean zip-lock bag inside the one with shortening. Knead the shortening to make sure it spreads into a thick layer between the two bags. Try not to let any shortening squeeze out the top of the bags!
4. Fold the top edge of the inner plastic bag over, and then use duct tape to tape down the fold. This will seal the shortening in between the two bags and therefore form a “blubber glove.”



### What to do

1. Place one bare hand into the bucket of ice water and use the stopwatch/timer to observe how long it takes to feel cold. Dry off your cold, wet hand using the cloth towel.
2. Place your other hand within the blubber glove into the bucket of ice water and use the stopwatch/timer to observe how long that hand takes to feel cold. Which hand could stay submerged the longest?



### What is happening?

The hand inside the “blubber glove” can stay submerged in icy water for a long time. This is because the shortening acts as an insulator, providing a dense layer protecting your skin from the cold. Whales and other marine mammals that migrate to / live in cold ocean water have adapted to the extreme temperature via blubber – a specialized type of fat (adipose tissue) beneath their skin. Blubber is central to their thermoregulation capabilities; despite being submerged in very cold water, a whale’s blubber enables it to maintain a constant temperature. Interestingly, blubber reflects both nutritional state and life history stage of individual marine mammals (Iverson, 2009).