

# Mammals

Investigation Data Sheet



## Whale Blubber & Insulation

Insulation is anything that helps to keep something warm. Blubber, which is similar in texture and consistency to shortening, provides ideal insulation to whales. This insulation is so effective, in fact, that whales can keep their bodies warm — as all warm-blooded mammals must — in freezing, Arctic temperatures.

### Objective

Observe how a layer of fat helps to insulate the body and keep it warm in cold water.

### Materials

- a plastic bucket
- a small plastic sandwich bag
- a large plastic freezer bag
- a can of cooking shortening
- a timer
- some ice
- water
- a friend to help

**Safety Notice:** All applicable laboratory safety rules must be followed. Students should not perform any experimental activity without the teacher's supervision and express permission. Students must follow safety guidelines and wear appropriate protective gear.

### Procedure

1. Fill the bucket halfway with ice and water. Then fill the large storage bag halfway with shortening and set this item aside.
2. Place the small plastic sandwich bag on one hand, and submerge this bag-covered hand in the bucket of ice water.

Have a friend time how long you can keep your hand in the ice. When your hand feels too cold, remove it and tell your partner to stop the timer. Record how long you kept your hand in the ice water.

3. Get the large bag of shortening and place it in the ice water. Place your hand in the small sandwich bag, and place this bagged hand into the bag with the shortening in it.

Have your partner time how long you can keep your hand in the ice water without it becoming too cold. Again, remove your hand when your hand gets too cold, make sure to stop the timer and record how long your hand was in the ice water.

### Conclusions

- How much of a difference did the shortening make in protecting your hand from the cold water in the plastic bucket?

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- What role might habitat play in the amount of blubber a whale has?

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- Brainstorm a list of other types of insulation different mammals have to protect themselves from freezing temperatures.

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