

# How do Penguins Stay Warm?

Antarctica is one of the coldest places on Earth - the lowest temperature recorded there was an incredible  $-89^{\circ}\text{C}$ ! Visiting humans like us have to be prepared with specialist clothing and equipment to survive these extreme temperatures.

## So How Do Animals Survive the Cold?

Emperor penguins are one of the only animals to stay in Antarctica over the winter period, where there is 24-hour darkness, high winds and extremely low temperatures. To survive these tough conditions, the penguins huddle together to keep warm, and take turns being the ones on the outside of the huddle.



Some of the Dynamic Earth team in our Polar gallery modelling the kit used by scientists at the British Antarctic Survey (BAS). Find out more about the BAS [here](#).



Image Credit: Rod Long, Unsplash

Check out [this great video](#) by BBC Earth, explaining how the huddle works using hot chocolate and a thermal camera!

Penguins also have bodies that are evolved for this environment. They have a thick layer of waterproof feathers covering most of their body, and beneath that is a vital layer of thick fat called blubber.



Image Credit: Andy Holmes, Unsplash



## Blubber Gloves!

Make sure you get an adult's permission to try this experiment at home.

Watch [this video](#) to see how to assemble your blubber gloves

### You will need:

- 2 sandwich bags
- Vegetable shortening (or any another solid fat)
- Thick tape (electrical tape is ideal)
- A basin filled with ice
- Timer

### Method:

1. Half fill one of the sandwich bags with the vegetable fat
2. Place the other bag inside the first one
3. Fold the open edges of the bags over and take them down using the electrical tape
4. Time how long you can hold your bare hand in the ice basin
5. Place your hand into the blubber glove you made and then put it into the ice. How long can you hold your hand in now?

Did you notice that it was much easier to keep your hand in the ice with the blubber glove on? Fat is an insulator, which means heat cannot move through it. By having bodies covered in a thick layer of fat, penguins can keep the heat inside their bodies in the cold winter months.

## Meanwhile, In Scotland...:

It's not just Antarctic birds that use layers of fat to keep them warm, many birds right here in the UK do the same thing (although, not as much as blubber-y penguins!).

If you feed birds in your garden, scientists advise that you swap the food to something that contains lots of fat as the birds prepare for the colder winter months.

The RSPB have lots of [great information](#) on how to help out birds in your local area.