mystery science

Grades K-5
Mini-Lesson: “How do polar animals survive the cold?”

VIDEO TRANSCRIPT

[Video Call]

- Hi, Doug!
- Hi, Zakhar!
- I have a question for you. How do polar animals survive the cold?
- Ooh, that's a great question.

Maybe you visited or even live in a really cold place, a place that has freezing temperatures or snow, or maybe even blizzards. If you have, then you know it can be really hard to stay warm sometimes. Our body is always giving off some warmth, but in cold places, all that cold air is taking heat away from your body faster than your body can keep you warm. In fact, on some days, even our jackets aren't enough to keep the heat in to keep us warm. Now, imagine having to survive outside in the freezing snow with no jacket, no gloves, not even a winter hat. Well, for the animals who live in the areas surrounding the North and South Poles, that's exactly what they have to do every day, and it isn't easy. The polar regions are the coldest places on Earth where temperatures can fall to 90 degrees below zero. How cold is that exactly? Well, at temperatures like that, you or I would have trouble surviving for even 10 minutes. So how do these animals do it? Before I say anything more, I'm curious, how do you think polar animals stay warm?

When discussing this question, a lot of you may have thought of fur, and you're right. Polar animals like Arctic foxes do have a lot of fur. Their fur acts like a jacket, keeping the cold air from touching their skin and trapping a warm layer of body heat around them. But just like wearing a jacket isn't warm enough for us sometimes, having a coat of fur isn't warm enough for polar animals either. It's just too cold out there. So polar animals have to rely on a lot more than just fur. Like, check out this walrus. You notice how its skin looks kind of wobbly when it moves? That's because of blubber, a thick layer of fat on their bodies that actually acts like a super warm blanket. A lot of polar animals like walruses and polar bears need that blubber to keep freezing air and icy cold water from stealing the heat from their bodies. Now you would think that staying warm is the hardest part of living in the polar regions. But surprisingly, scientists have discovered that for polar bears and walruses, staying cool is the real challenge. Really? Yes. It turns out that having all that fur and blubber works a little too well. Like, have you ever tried running around with a super warm jacket on? It can get pretty hot. That's what it's like for these animals. If they run too much or do too much physical work, they'll overheat. If you've ever noticed that it seems like these animals do a lot of just lounging around, this might explain why.

Now you might know that some polar animals don't even have for at all, like these emperor penguins. Maybe you've never looked closely at these animals before, but, let's have a look up close. Notice something? Those are actually feathers on them, not fur. They are birds, after all. Emperor penguins live near the South Pole, the coldest place on Earth. So when it comes to keeping warm, they have to get a little creative. Notice how they're huddling and a huge group? What's going on here? These emperor penguins are huddling so that they don't freeze. The penguins on the inside of the huddle are protected from the icy winds, by the wall of penguins on the edges. Now you might be thinking, that's not really fair to the penguins on the outside of

the huddle. But don't worry. Penguins have that problem covered. They take turns so that each one of them gets a chance to stay warm on the inside. Now, standing on the ice all day, even in a huddle, would be freezing. Just think of how cold your feet would be. But a Penguin's body has a solution for that too. See how they're leaning back on their heels and holding their toes up? The less of their bodies that touch the ice, the warmer they'll be. But what about the really small polar animals, like this lemming? It doesn't have a lot of fur or blubber. Could it survive in the cold? It can. It may not have any blubber, but it does know how to dig. Lemmings are masters at digging cozy tunnels under the snow. Some of them even have rest areas and bathrooms. These tunnels keep them away from the cold outside air. And lemmings aren't the only ones that build shelters in the snow. Arctic foxes, squirrels, and even polar bears curl up in holes or tunnels to stay warm.

So in summary, polar animals have special ways to keep their bodies heat in and the cold polar air out. From fur to blubber to digging tunnels, or tipping back so their toes don't touch the ice. These animals have no problem surviving in the coldest places on earth.

That's all for this week's question. Thanks, Zakhar for asking it.