

ARCTIC FOX

T H E R M O R E G U L A T I O N



LAPLAND

This fact file compliments
Lesson 5 in the Lapland
Science Expedition.

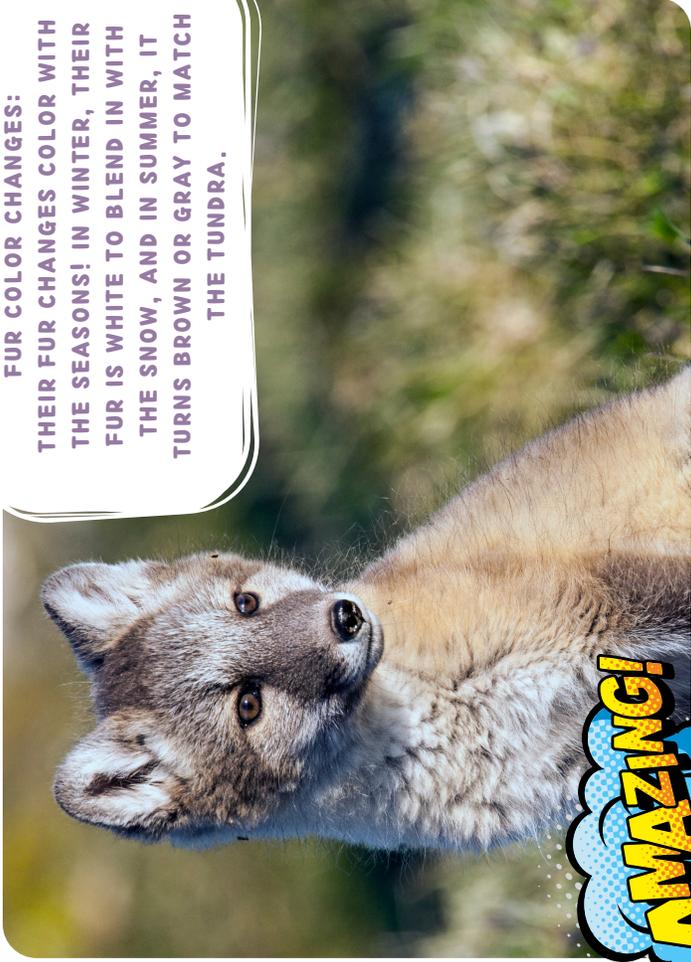
fact file

**LITTER OF PUPS:
A MOTHER ARCTIC FOX CAN
GIVE BIRTH TO A LITTER OF 5
TO 14 PUPS IN THE SPRING!**



**SCAVENGER SKILLS:
WHEN FOOD IS SCARCE, ARCTIC
FOXES ARE GREAT SCAVENGERS.
THEY FOLLOW POLAR BEARS AND
EAT LEFTOVER SCRAPS FROM
THEIR KILLS.**

**WHAT'S AN ARCTIC
FOX'S FAVORITE
GAME?**



**FUR COLOR CHANGES:
THEIR FUR CHANGES COLOR WITH
THE SEASONS! IN WINTER, THEIR
FUR IS WHITE TO BLEND IN WITH
THE SNOW, AND IN SUMMER, IT
TURNS BROWN OR GRAY TO MATCH
THE TUNDRA.**

AMAZING!

THERMOREGULATION

What is Thermoregulation?

Thermoregulation is how animals and people keep their bodies at the right temperature. Your body needs to stay warm enough to work well but not too hot. When it's cold outside, your body works hard to stay warm. When it's hot, it works to cool you down. This helps you feel comfortable and stay healthy, no matter the weather!

How Arctic Foxes Stay Warm

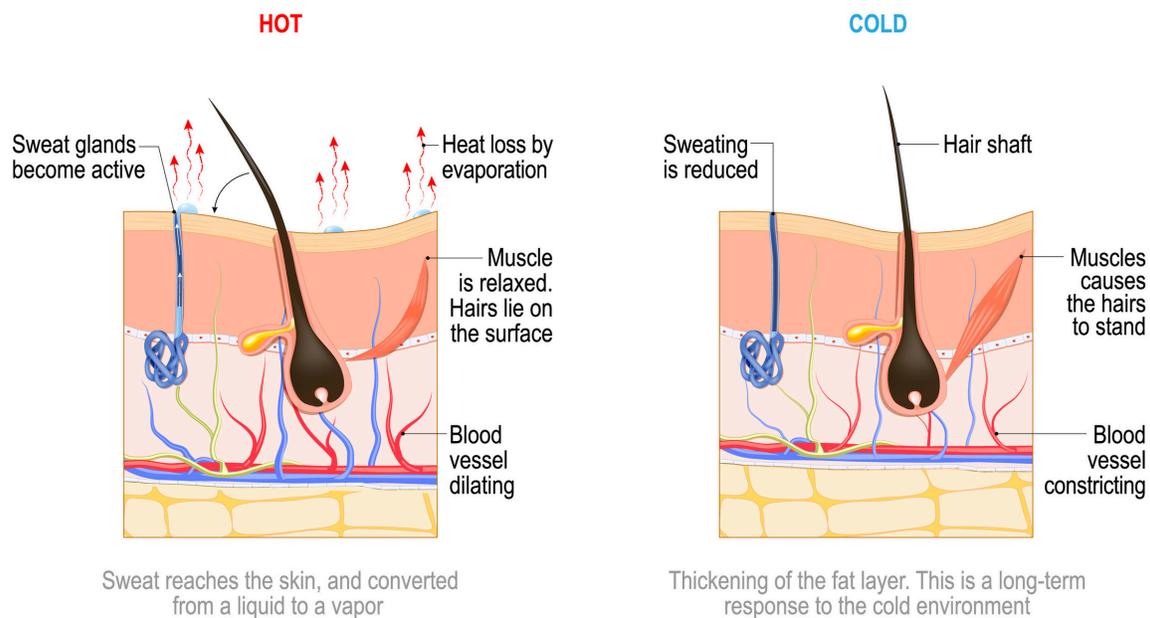
Arctic foxes are amazing at keeping warm in freezing places like Lapland. Their thick, fluffy fur traps heat close to their bodies, like a warm coat. In the winter, their fur is white to help them hide in the snow, but it also keeps them warm! When they sleep, they curl up and cover their nose with their bushy tails, just like a built-in blanket.

Arctic foxes eat extra food whenever it's available, usually in the fall, to build up fat in their bodies. This fat helps them stay warm and gives them energy to survive during the cold winter months when food is harder to find.

How Humans Stay Warm and Cool

Humans can't grow thick fur like Arctic foxes, but we have other ways to stay warm. When it's cold, we wear jackets, hats, and gloves to trap heat, like the Arctic fox's fur. Our bodies also make our muscles shiver to create heat.

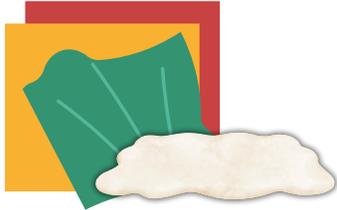
When it's hot, we sweat! Sweat cools us down when it evaporates from our skin. Humans also use fans or go swimming to stay cool, while Arctic foxes just enjoy the cold!



FUR AND INSULATION TEST

Science Activity

You will need:



Real or faux fur, cotton, felt and other materials to test (e.g., thin fabric or paper towel)



Ice packs
bags of ice)



Stopwatch
or timer



Insulated gloves
(optional)

Method:

SET UP THE EXPERIMENT:

1. Gather all materials, including fur swatches, cotton, and another material like thin fabric or paper towels.
2. Place an ice pack on a flat surface.

TEST INSULATION:

1. Cover the ice pack with one of the materials.
2. Place your hand over the material and use a timer to record how long it takes for the cold to come through the layer.
3. Repeat the process with all materials.

OBSERVE AND REFLECT:

1. Discuss which material worked best as an insulator.
2. Relate findings to how the Arctic fox's thick fur helps it survive extreme cold.

For Younger Students (Junior Explorers): Use your senses to explore the materials (touch, sight). Identify which material feels the warmest.

For Older Students (Explorers): Record your observations, compare the times for each material, and analyze which is the most effective insulator.

Arctic foxes are incredible survivors in extreme cold. Their thick fur provides exceptional insulation, trapping heat close to their bodies and preventing it from escaping into the icy environment. This fur, combined with their compact bodies, helps conserve heat.

The Arctic fox's fur not only changes color with the seasons (white in winter, gray or brown in summer) but also serves as a form of thermoregulation, adjusting to the environment to keep the fox warm. Their small ears and short muzzle also help reduce heat loss, while their bushy tail acts like a blanket when they curl up to sleep. Insulation works by slowing the transfer of heat from the body to the environment. Different materials mimic this ability, such as fur, cotton, and other insulating layers. By studying how well these materials insulate against cold, we can learn how the Arctic fox stays warm in the harsh Arctic climate.

SURVIVAL SPECIALISTS the science behind it

SURVIVAL SPECIALISTS lets talk about it

How did the cold feel through each material you tested? Which materials provided the most insulation and why?

Why do you think the Arctic fox has such thick fur compared to other animals?

If you could design a winter coat inspired by the Arctic fox, what features would you include to stay warm?

What do you think would happen if the Arctic fox didn't have fur that changes with the seasons?

How does the design of the Arctic fox's body help it survive in such cold temperatures?

Arctic Fox Facts

Reading Comprehension Activity



Read the text about arctic fox and write true or false for each statement.

Arctic foxes are amazing animals that live in the cold regions of the Arctic, including Lapland. They are well-known for their thick fur, which changes color with the seasons. In the winter, their fur is white to blend in with the snow, and in the summer, it turns brown or gray to match the tundra.

These small foxes are built for the cold. Their compact bodies, short legs, and small ears help them conserve heat. They even use their bushy tails as blankets to stay warm while they sleep. Arctic foxes are excellent hunters, feeding on lemmings, birds, and fish. When food is scarce, they are scavengers, often following polar bears to eat scraps left behind.

Arctic foxes play an important role in their ecosystem by keeping the population of small animals like lemmings in balance. They are also known for their ability to travel great distances in search of food, sometimes walking hundreds of miles!

- ① Arctic foxes live in warm regions. _____
- ② Their fur changes color with the seasons. _____
- ③ Arctic foxes' tails keep them warm while they sleep. _____
- ④ They only eat plants. _____
- ⑤ Arctic foxes help balance the population of small animals. _____
- ⑥ Arctic foxes never travel far. _____
- ⑦ They live in Lapland, among other Arctic regions. _____
- ⑧ Arctic foxes have large ears to stay warm. _____



Arctic Fox Facts

Answer Key.

Read the text about arctic fox and write true or false for each statement.

Arctic foxes are amazing animals that live in the cold regions of the Arctic, including Lapland. They are well-known for their thick fur, which changes color with the seasons. In the winter, their fur is white to blend in with the snow, and in the summer, it turns brown or gray to match the tundra.

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- | | |
|--|--------------|
| ❶ Arctic foxes live in warm regions. | <u>False</u> |
| ❷ Their fur changes color with the seasons. | <u>True</u> |
| ❸ Arctic foxes' tails keep them warm while they sleep. | <u>True</u> |
| ❹ They only eat plants. | <u>False</u> |
| ❺ Arctic foxes help balance the population of small animals. | <u>True</u> |
| ❻ Arctic foxes never travel far. | <u>False</u> |
| They live in Lapland, among other Arctic regions. | <u>True</u> |
| Arctic foxes have large ears to stay warm. | <u>False</u> |



Name: _____

Date: _____

FACT FILE: ARCTIC FOX



Adaptations for Survival:

Habitat: _____

Diet: _____

Interesting fact: _____
