

# Cold Adapted Creatures

When it's cold outside you put on a coat to stay warm. This is a way you adapt to your habitat. While animals don't have clothes, they do have adaptations that help them to stay the right temperature and make them well suited to living in their own unique habitat.



In the polar regions one of the main challenges animals face is the extremely cold temperatures. Animals need to be able to keep warm enough while also finding food, avoiding predators and rearing young in these extreme conditions. Animals must therefore be well adapted to their environment if they are to survive in this habitat. Adaptations can either be structural, meaning the way an animal's body is made up, or behavioural meaning the way an animal acts in its environment.

Your challenge is to create your own creature that is well adapted to the cold using inspiration from the animals of the polar regions below. You can draw your creature or maybe even make them in 3D out modelling clay or plasticine.

**Here are some things to think about when creating your creature for a life in the freezer:**

## How will your creature stay warm?

### Structural adaptations:

- Does it have thick fur like a polar bear? They have a dense layer of underfur and a top layer of guard hairs which are hollow. This traps air, keeping it close to their bodies, warming them up. Their hairs are translucent and their skin is black which is the best colour for absorbing UV rays from the sun. They are so good at trapping heat they are nearly invisible under infrared photography!
- Does it have a thick layer of blubber like a beluga whale? Blubber is a thick layer of fat underneath an animal's skin. It traps heat in its body, keeping it warm.





*Emperor penguins huddling for warmth  
Image credit: Fred Olivier via Nature Picture Library*

**Behavioural adaptations:**

- Can your creature dig a den like a polar bear? When there's snow or a storm, polar bears can dig deep dens. These protect them from the extreme weather and keep them warm by trapping heat under the snow. Polar bears have large paws which are great for digging.
- Does your creature huddle like an emperor penguin? To shelter from strong winds and trap heat, emperor penguins huddle together in tightly packed groups. Penguins rotate who is on the edge of the huddle and who is in the middle. This stops the ones on the edge from getting too cold but it also stops the ones in the middle getting too hot! The huddles are so good at trapping heat that temperatures at the centre can reach 37 degrees!

**How will your creature blend in with its surroundings?**

- Will its fur change colour like an arctic fox? Arctic foxes are very good at camouflage meaning they blend into their surroundings making them difficult to see. They even change colour so that in the winter when there's lots of snow they have a white coat to match. Then in the summer they moult, meaning they grow a new coat. This one is brown to match the darker vegetation that grows once the snow has melted.



**How does your creature find food?**

- Can it see in ultraviolet like a reindeer? Reindeer like to eat a type of lichen sometimes known as reindeer moss. Reindeer can see ultraviolet light which comes in handy when they're searching for their favourite food. Reindeer Moss appears black against the snow in UV, making it much easier for the reindeer to find in winter months.
- Does it have a good sense of smell like a polar bear? Polar bears track down seals to eat using their amazing sense of smell. They can smell a seal a whole kilometre away!



### How will your creature move about?

- Will it be good at swimming like penguins? Penguins have wings shaped like flippers for powerful swimming. They don't have feathers on their wings instead they have microfilaments that trap air and then release tiny bubbles in the water which help them glide smoothly through it.
- Will it have furry paw pads to stop it sliding on ice like an arctic fox? Unlike other foxes, Arctic foxes have fur on the pads on their paws which helps keep them warm and also stops them from sliding on ice.
- Will it have hooves like reindeer? Reindeer hooves are adapted to both arctic summer and winter conditions. In summer, pads on their hooves expand and become spongier to help grip ground that has thawed and become softer. In winter these pads shrink allowing the harder hoof to move through snow more easily.



*Gentoo penguin swimming in an Aquarium  
Image credit: Ken FUNAKOSHI*



### How will your creature look after its babies in the cold?

- Will it have a brood pouch to keep its egg in like an emperor penguin? In the Antarctic, penguins can't let their eggs touch the frozen ground, they balance it on their feet and keep the egg toasty by covering it with their feathered brood patch.
- Will it dig a den with its big paws like a polar bear? Polar bears protect their young from the worst of the Arctic conditions by raising them in a den. Female polar bears spend months in the den without leaving!

