

Name \_\_\_\_\_

Date \_\_\_\_\_

## CREATE YOUR OWN ENDOTHERM

It's time to get creative and build your own unique endotherm! Draw your creature in the space below, on another piece of paper, or craft a 3D model using your choice of materials. Your creature can be based on a real animal or completely imaginary, but they should have adaptations to help it survive in a cold weather environment. For ideas on adaptations, see the examples on Page 2, or conduct research on your own. Be sure to include your creature's habitat and label the physical, behavioral, or physiological adaptations it has.

### GUIDING QUESTIONS

- What **habitat** does the animal live in (arctic, boreal forest, wetland pond, alpine, tundra, cold desert)?
- What happens to this species when it gets **cold outside**, either during the winter or nighttime?
- How does the animal use **physical adaptations** and/or **behaviors** to maintain their body temperature?
- What **other adaptations** does this animal have to survive through the winter or in a cold climate?

### DRAW YOUR ENDOTHERM

## ENDOTHERM COLD WEATHER ADAPTATIONS

### PHYSICAL

#### Insulation: Fat or Blubber



Marine mammals like whales, dolphins, seals, walrus, and sea lions have a layer of blubber under their skin to keep them warm in frigid waters. Other mammals like bears, beavers, and even humans, benefit from fat to keep them warm.

#### Insulation: Fur, Hair, Wool, Feathers



Animals that live in cold climates have unique adaptations in the type of hair, fur, or feathers that cover their bodies to keep them warm. Some endotherms have hollow hair or fur, like alpaca and polar bears. Some animal fur, like that of the beaver or American pika, is extra dense. Birds' feathers are also excellent at insulating by trapping air near their bodies.

#### Waterproofing



Staying dry is also key to staying warm. The outer feathers found on waterfowl, like the Canada goose, allow water droplets to roll right off. Beavers and other furry mammals that live near water have a greasy or oily substance on their coat to keep water from soaking in.

### BEHAVIORAL

#### Dormancy: Torpor and Hibernation



Dormancy is when animals go into a state of sluggishness or inactivity during winter. Some animals will go in and out of a sleep-like state called torpor, while others remain completely inactive throughout the entire winter, known as true hibernation.

#### Migration



Some endotherms travel to warmer regions during the winter. For example, the hoary bat migrates to more temperate regions in the US and Mexico, where they are able to find plenty of insects to eat. Canada geese are also well-known migratory birds, flying south for the winter after the breeding season.

#### Kleptothermy



Beavers, and many other animals, “huddle” together when the temperature drops in order to share each other's body warmth. Polar bear mothers sleep with their cubs close to keep them warm.

#### Caching



Many animals, like the American pika, store extra food so they have enough energy to last the winter when many food sources are scarce. You may even notice a black-capped chickadee taking seeds from a feeder and hiding them in a hole in a tree, saving them for later!

Name \_\_\_\_\_

Date \_\_\_\_\_

## EMBODY YOUR ENDOTHERMY

Using items found around your home, act out an endotherm in a cold climate. Look for objects, or think of behaviors, that can represent different methods of staying warm. Remember, humans are endotherms, so ask yourself, "what would I do if I was outdoors in the cold for a long time?" Use the board below to help you brainstorm ideas and feel free to fill in the extra spaces with your own ideas!

**Insulation:**  
put on "puffy"  
clothing or  
blankets.

**Migration:**  
find the warmest  
place in your  
home.

**Metabolism:**  
eat a snack.

**Movement:**  
do some  
jumping jacks.

**Kleptothermy:**  
cuddle with  
pillows or  
blankets.

**Caching:**  
store some  
snacks for later.

**Waterproofing:**  
put on a rain  
jacket or poncho.

**Dormancy:**  
take a nap in a  
warm place.

**Insulation:**  
put on a hat,  
gloves/mittens,  
and socks.

**Movement:**  
take a brisk walk.