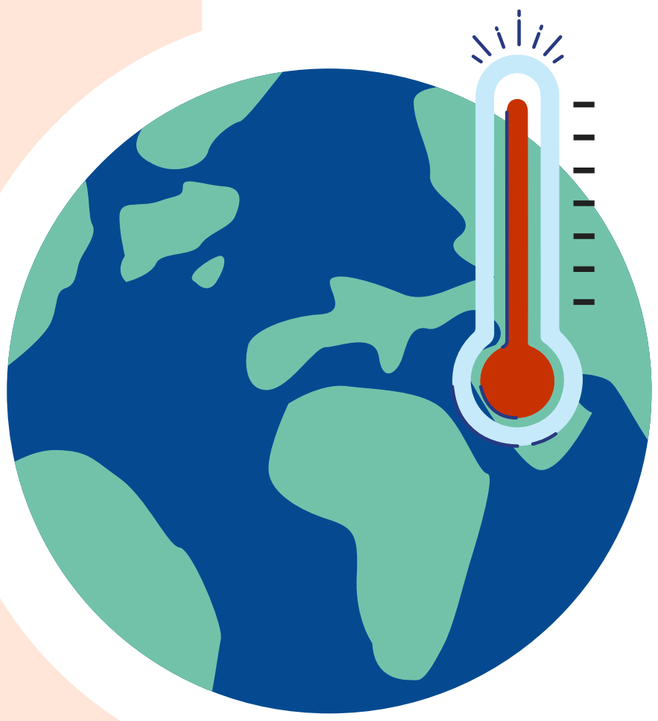
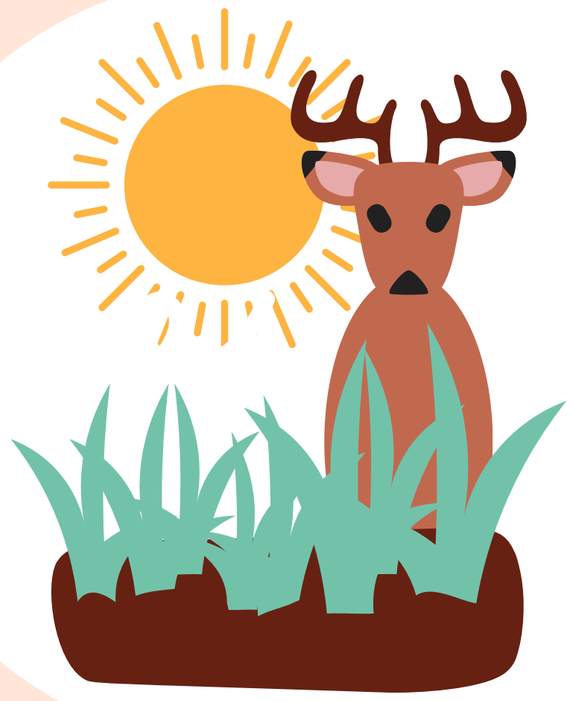
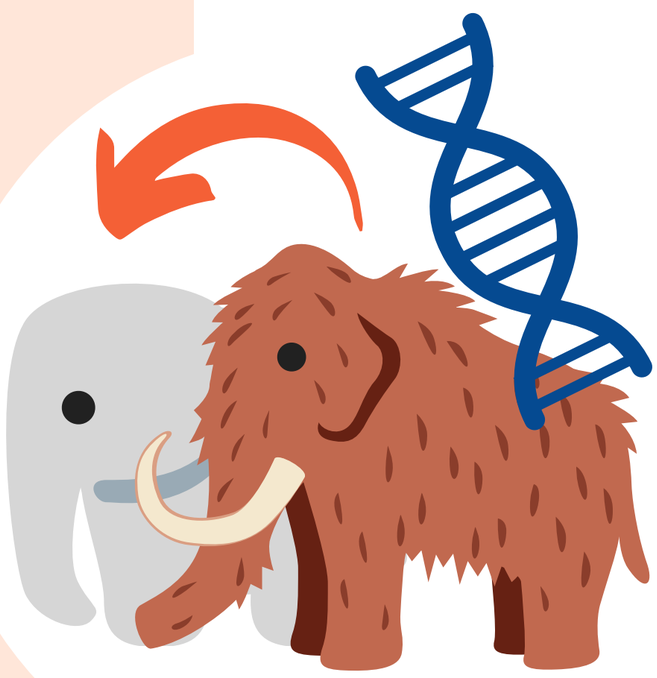
WOOLLY MAMMOTH DE-EXTINCTION: CAN IT COMBAT CLIMATE CHANGE?







THE BIG IDEA:

‘DE-EXTINCTION’ IS THE PROCESS OF REVIVING OR CREATING AN ANIMAL THAT RESEMBLES AN EXTINCT SPECIES.

The woolly mammoth is a de-extinction candidate because its presence in the Arctic could slow the thawing of permafrost (frozen soil).

PERMAFROST THAWING IS HAVING SIGNIFICANT IMPACTS ON OUR ENVIRONMENT.

As global temperatures rise, the thawing permafrost releases greenhouse gases into the atmosphere, making temperatures rise more quickly.

PERMAFROST THAWING CAN BE SLOWED OR EVEN REVERSED.

When woolly mammoths roamed the earth, the Arctic was covered in grasslands. Grasslands reflected sunlight in the summer and kept the ground cool. And big grazers moved the snow around, exposing the ground to the cold air in the winter.

RESTORING ARCTIC GRASSLANDS COULD BE THE SOLUTION.

Scientists brought grazing animals to a 5,000-acre reserve in the Arctic to re-produce grasslands. Initial results demonstrated a decrease in ground temperature to slow permafrost thawing. But, giant animals are needed to produce this effect on a larger scale.

WOOLLY MAMMOTHS WERE ONCE AN IMPORTANT PART OF THE ARCTIC GRASSLAND ECOSYSTEM.

Some scientists believe reintroducing woolly mammoth-like animals to the Arctic could be key to restoring those grasslands. But, their closest living relatives, Asian elephants, are not adapted to cold climates.

GENETIC TECHNOLOGIES CAN BE USED TO MODIFY AN ORGANISM’S TRAITS.

Scientists are using a process called genome editing to combine woolly mammoth and Asian elephant DNA to create a cold-resistant “woolly” elephant, or a “mammophant”, with traits needed to thrive in the Arctic.

BEYOND TECHNICAL CHALLENGES, THERE ARE A NUMBER OF QUESTIONS TO CONSIDER.

- How might mammophants impact the Arctic ecosystem and the people that live there?
- What questions would YOU have, if you were told a mammophant would roam your backyard in the near future?

PERSONAL GENETICS EDUCATION & DIALOGUE

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