

Using NewsHour Extra Feature Stories

STORY

DNA Discovery May Bring Long-extinct Woolly Mammoth Back to Life, 12/09/08

http://www.pbs.org/newshour/extra/features/science/july-dec08/mammoth_12-09.html

Estimated Time: One 45-minute class period with possible extension

[Student Worksheet](#) (reading comprehension and discussion questions without answers)

PROCEDURE

1. WARM UP

Use initiating questions to introduce the topic and find out how much your students know.

2. MAIN ACTIVITY

Have students read NewsHour Extra's feature story and answer the reading comprehension and discussion questions on the student handout.

3. DISCUSSION

Use discussion questions to encourage students to think about how the issues outlined in the story affect their lives and express and debate different opinions.

INITIATING QUESTIONS

1. What is DNA?

2. Can scientists clone extinct animals using DNA?

3. What are some ethical concerns about cloning?

READING COMPREHENSION QUESTIONS – [Student Worksheet](#)

1. What did scientists recently do with a woolly mammoth hair?

ANSWER

Scientists have mapped out most of the genetic code of the woolly mammoth, marking the first time an extinct animal's DNA has been decoded and raising the possibility that the creature could be cloned and return to life.

2. What is the difference between a woolly mammoth and an African elephant?

ANSWER

Woolly mammoths, which roamed the planet 10,000 years ago, are relatives of the modern African elephant, but were covered with thick hair, had larger tusks and smaller ears.

3. Where did the woolly mammoth hair come from?

ANSWER

By analyzing the genetic code in mammoth hair bought off of eBay.com, researchers at Penn State were able to pinpoint the 400,000 DNA differences between mammoth and modern elephant.

4. How is cloning an animal similar to trying to build a car?

ANSWER

“Currently we only have a partial mammoth genome, with a sizeable number of errors in the genetic code. It’s a bit like trying to build a car with only 80 percent of the parts and knowing that some of the parts are already broken,” Jeremy Austin, of the Australian Centre for Ancient DNA at the University of Adelaide, told the Times of London.

5. How would scientists grow a baby mammoth?

ANSWER

If scientists could unlock the remaining mammoth genome, they could potentially use cloning technology to genetically engineer a baby mammoth inside of a modern elephant mother.

“By deciphering this genome we could, in theory, generate data that one day may help other researchers to bring the woolly mammoth back to life by inserting the uniquely mammoth DNA sequences into the genome of the modern-day elephant,” Schuster told the Times.

6. What is keratin?

ANSWER

The finding that keratin, the material in hair and hooves, can preserve DNA for up to 60,000 years means that museums could hold a treasure trove of animal genomes for scientists to decode.

7. What ethical questions are raised by this discovery?

ANSWER

The New York Times reported that scientists expect to discover the genome of Neanderthals, an ancient species of humans that went extinct about 40,000 years ago. This discovery could make it possible to clone an ancient person, but it would raise serious ethical questions about whether scientists should recreate a being so similar to a modern human.

Dr. George Church, a genome expert at Harvard Medical School, said that while there would be outrage at cloning a Neanderthal within a human, scientist may be able to create one inside of a chimpanzee, which are about 98 percent genetically similar to humans.

“The big issue would be whether enough people felt that a chimp-Neanderthal hybrid would be acceptable, and that would be broadly discussed before anyone started to work on it,” Church said.

DISCUSSION QUESTIONS (more research might be needed)

1. Do you think scientists should make a new woolly mammoth? Why or why not?

2. What is the difference between a chimp-Neanderthal hybrid and a human-Neanderthal hybrid?

3. Do you think scientists should make a Neanderthal? Even if you think they shouldn't, do you

think someone will? What might happen if a Neanderthal is born after 40,000 years of extinction?

4. Do you think this discovery will lead to a scenario like the movie Jurassic Park? Why or why not?

Extension Activity

Have students write a 300-500 word essay on this topic providing clear examples. Send your completed editorial to NewsHour Extra (extra@newshour.org). Exceptional essays might be published on our Web site.