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Scientists Say They'll "De-extinct" the Woolly Mammoth by 2027

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Like so many science fiction classics whose technology has now become a reality, it appears that a real-life *Jurassic Park* may soon be coming to a city near you — except it would probably have to be called "Cenozoic Park."

Genetic engineering continues to advance, opening up a broad realm of possibilities and ethical dilemmas. One of the most astounding facts with which humanity will soon have to grapple is the technology to genetically modify species in the womb — to the point that formerly extinct species can be revived.

According to the Texas-based genetics and bioscience company Colossal, this ability will be at humanity's disposal within four years. The company expects that its project to resurrect the famous yet extinct woolly mammoth will be complete by 2027, per a recent Medium post.

The effort has captured the imagination of investors, scoring an additional $60 million in funding just last year for the gene-editing work that began in 2021.

"In the minds of many, this creature is gone forever," Colossal writes on its website. "But not in the minds of our scientists, nor the labs of our company. We're already in the process of the de-extinction of the Woolly Mammoth. Our teams have collected viable DNA samples and are editing the genes that will allow this wonderful megafauna to once again thunder through the Arctic."

The company explains that they are using Asian elephants, which are currently endangered, to incubate woolly mammoth embryos — which is made possible due to mammoth DNA Colossal has obtained on previous ventures. The woolly mammoth's DNA is a 99.6 percent match with the Asian elephant's.

The embryo will be created in the womb of an Asian elephant by employing CRISPR genome editing to replace any missing links in the mammoth's DNA with Asian elephant DNA.

Then, genetic engineers will transfer the embryo to an African elephant in order to avoid putting strain on the endangered Asian elephant species (African elephants are more plentiful) and because the African elephants are larger in size than Asian elephants and would thus have an easier time delivering a hybrid calf.

Once the new woolly mammoths are born, Colossal wants to use them to repopulate parts of the Arctic where they historically lived. The company says that doing this will help restore ancient plant life and combat climate change.

The Medium article explains:

> When mammoths once roamed the vast tundras of the arctic, they would graze on different

> plants and trees of the grassland. As they were roaming, they would also help to disrupt the snowpack, allowing the plants to grow.
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> Since their extinction, there hasn't been anything to disrupt the ice-pack, and plants lost their ability to survive. A once flourishing ecosystem of grasslands that could absorb the carbon had been lost. But, with the reintroduction of the Wooly Mammoth; they could bring back the balance to the arctic grasslands by allowing the growth of these plants, and restoring a surface of snow that reflects the sun's radiation.

Colossal says it is working with the Alaskan government and Arctic Native corporations to choose the best sites for rewilding the reborn mammoth, ensuring that the selected locations avoid disrupting other keystone species.

The resurrection of the woolly mammoth raises many questions and considerations of its own: Where should it be placed? What effect will it really have on the environment and other animals? How will this affect people?

But it also leads to a wider discussion about reviving species in general, particularly long-extinct species such as the mammoth. It's one thing to bring back an animal or plant species that only recently went extinct and with which humanity is familiar.

But what happens when we start engineering animals we only vaguely know about? Whose behavior we don't understand? Whose interactions with contemporary plant and animal life — including human beings — we can only guess at?

Can we fully anticipate that these resurrected species won't, either directly through feeding patterns or indirectly through disease, precipitate the extinction of vital plant and animal life — or even our own extinction?

And what happens when these techniques are applied to human beings? If the genetic match between the ancient woolly mammoth and the modern Asian elephant is so close that the latter can be turned into the former through genetic engineering, does that mean that different races of human beings will be able to turn their offspring into other races? Will this lead to a new era of eugenics in which entire races are wiped out via selective breeding?

In *Jurassic Park*, fictional mathematician Ian Malcolm famously tells the park's creator, John Hammond: "Your scientists were so preoccupied with whether or not they could that they didn't stop to think if they should."

Despite the movie having driven this theme deep into the popular consciousness for decades now, it seems that today's scientists are in danger of falling into the same trap. Are they truly weighing all the ramifications of these technologies? Or are they so mesmerized by their own creations that they are turning a blind eye to the consequences?