

De-extinction: Why CRISPR gene editing might be the most revolutionary development in science ever

Called “de-extinction,” the resurrection of lost species is one of the many applications to be revolutionized by the new gene-editing technology CRISPR-Cas9.

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[A]ll scientists need are organic remnants—such as pieces of bone—that contain fragments of DNA. Those fragments allow geneticists to discover the complete genome of the extinct animal (a process scientists refer to as “sequencing”). Once they have this “recipe” for the extinct species, CRISPR enables scientists to edit the DNA of its closest living relative to create a genome that, as edited, approximates the genetic code of the extinct species. Think of the living animal’s DNA as version 2.0 of a piece of software: the goal is to get back to version 1.0. You compare all of the millions of lines of code to spot differences, and then painstakingly edit the lines with differences to restore the code to its original state. Follow the latest news and policy debates on sustainable agriculture, biomedicine, and other ‘disruptive’ innovations. Subscribe to our newsletter.

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Once the DNA has been edited to reintroduce the key traits of the extinct plant or animal, the edited DNA is inserted into the nucleus of a reproducing cell. The resulting individual may not be genetically identical to the extinct species, but the key traits that made the extinct species unique are reintroduced.

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