

Computer model suggests frozen cells could be used to save northern white rhino from extinction

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A team of geneticists and computer scientists from the San Diego Zoo Wildlife Alliance, Cornell University and the University of California, Santa Cruz, has created a computer model that shows it should be possible to save the northern white rhino from extinction by using frozen cells of 12 individuals. Their paper is [published](#) in the journal *Evolutionary Applications*.

Conservationists have been predicting the extinction of the [northern white rhino](#) as the population dwindles. Currently, there are only two infertile elderly females remaining. But hope for saving them has not been lost—the team reports that cell lines collected from 12 of the rhinos and cryogenically frozen and stored at the San Diego Zoo could be used to impregnate a [southern white rhino](#), thereby perpetuating the species.

To use the cells, they would need to be either cloned into embryos or made into sperm and egg cells that could be used for in vitro fertilization—the process would involve reprogramming them into pluripotent stem cells with the ability to grow into the desired cells. First, however, researchers require evidence that the rhinos produced would be genetically diverse—without diversity, the species would soon die out.

To provide evidence, the research team sequenced the genes of both northern and southern white rhinos as a way to measure the degree of diversity in both subspecies. They then used a [computer model](#) to mimic the creation of a set number of northern white rhinos with the expected degree of genetic diversity.

They found evidence (in comparison with thriving southern white rhinos) that such diversity was adequate to sustain a future population of the rhinos. The team then turned their attention to the likelihood of

genetic mutations in the engineered animals and their offspring and found no evidence of fitness declines over 10 generations.

The research team concludes that northern white rhinos resuscitated from frozen cells would be diverse enough to allow for restoration of the species.

More information: Aryn P. Wilder et al, Genetic load and viability of a future restored northern white rhino population, *Evolutionary Applications* (2024). [DOI: 10.1111/eva.13683](https://doi.org/10.1111/eva.13683)

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