Dire wolves went extinct about 100,000 years ago. While they are a close relative to the gray wolves, they are much larger in size. Recently, scientists have created three wolf pups through genetic engineering that resemble these extinct wolves to bring them back. This was done by scientists working with Colossal who learned about the unique traits that dire wolves have by examining DNA from fossils, including a tooth and a skull fragment, which were 13,000 and 72,000 years old, respectively, to create these pups through genetic engineering.

To create these pups, scientists took cells from gray wolves and genetically modified them at 20 sites using Clustered Regularly Interspaced Short Palindromic Repeats (CRIPSR). They then inserted this genetic material into an egg cell from a domestic dog and transferred the cell to a surrogate, which was also a domestic dog, who then gave birth to the pups.

There is a lot of speculation among the scientific community about whether these pups should be considered dire wolf pups. Some say that they are not because, although they like the ancient species, it is not possible to fully revive extinct species due to the nature of how they are created. Others agree, saying that while they resemble dire wolves, they will not be able to act as dire wolves would because they do not have parents to observe to learn how to hunt, considering that their biological parents are domestic dogs, meaning they cannot play the ecological role they used to in their habitats.

Based on a review article by Beth Shapiro, one of the scientists involved in this breakthrough, about pathways to de-extinction, the popular press information appears to be well-rounded and accurate. In her article, Shapiro reviews the main methods taken to de-extinct an organism, including back-breeding, cloning with somatic cell nuclear transfer (SCNT), and genetic engineering. Following her in-depth explanation of each step in genetic engineering, the popular press article is further validated, though, as the steps it describes are the same as Shapiro's, just in a simple format.

Shapiro begins by explaining that the genomes of extinct species are first aligned to those of the living species that are most closely related, just like the article reports that the dire wolf genome was based on the grey wolf, a close relative. Shapiro continues, saying that after discovering key differences, the relative's genome can be edited to result in live cells with this extinct species' genome. This cell is then transformed into a living organism using SCNT with a proper surrogate, as also mentioned in the news article, who then gives birth to the "extinct" organism.

The popular press article is further validated by its inclusion of speculations of whether the dire wolf should indeed be considered a dire wolf. In Shapiro's review article, she explains how the organisms created by the three ways to de-extinct an organism will create proxies and not copies, meaning that they will not produce the birth of an organism that is an identical copy to the extinct organism. With each process, the desired phenotype can be produced due to its genes being edited to present that phenotype; however, it is hard to tell that this phenotype will persist when considering the entire genome at work, specifically when released in the ecosystem today with all its varying factors. This supports the point in the news article that displaying the dire wolf phenotype versus behaving as a dire wolf in the wild was a key point in the discussion among scientists.

Something that was not mentioned in the news article, though, was how, although these pups aren't identical to dire wolves, they still serve the purpose of de-extinction projects, which have the goal of creating functional organisms similar to extinct species that fill their ecological niche. It appears that half that goal has been fulfilled, but only more research in the future will tell if these pups can fulfill the niche that dire wolves once did many years ago.

References

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