CAN A MOUSE BE CLONED INDEFINITELY?

When Wakayama's work on indefinite recloning of mice was published in 2013 (1), it had the impact of a lightning bolt on the scientific community. That paper appeared to shatter every established dogma. It suggested that, through the use of Trichostatin A (TSA) for epigenetics reprogramming, a way had been found to make a genetic lineage potentially immortal, overcoming the biological limits of cellular decay.

In March 2026, however, a more in-depth study published by the same team has produced opposite results (2); see also a commentary in Nature (3). The experiment lasted a full 20 years. While the first study had focused on the cell's "software" (epigenetics), this new work went on to examine the integrity of the "hardware" (the DNA itself). Recloning of mice continued for over 30,000 attempts, going well beyond the 25 generations of the 2013 experiments. And that is where the surprise emerged: recloning is not infinite. The lineage terminated at the 58th generation. Despite the clones appearing healthy and living as long as normal mice, their DNA was silently accumulating enormous, lethal structural mutations. As early as the 27th generation, the success rate began to collapse, until total extinction.

The conclusion stands as a perfect antithesis of the one from ten years prior: serial cloning in mammals has an insurmountable biological ceiling. Notably, when these "terminal" clones were mated with normal males, meiosis (sexual reproduction) managed to "clean up" most of those genetic errors, allowing healthy offspring to be born, a finding that calls to mind the work titled "Sexual selection protects against extinction" appeared in Nature in 2015 (2648.pdf).

1. http://dx.doi.org/10.1016/j.stem.2013.01.005
2. https://doi.org/10.1038/s41467-026-69765-7
3. https://doi.org/10.1038/d41586-026-00945-7
4. https://doi.org/10.1038/nature14419