

Scientists Put Tardigrade DNA Into Human Stem Cells. They May Create Super Soldiers.

Here's why water bears could help us withstand nuclear warfare.



BY [TIM NEWCOMB](#)

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- Chinese military scientists believe the tardigrade's cells improve a human's ability to withstand radiation and potentially other diseases.
 - The scientists put this plan in motion, already placing the water bear's genes into a human embryonic stem cell and testing it successfully against X-ray radiation.
 - The miniature water bear is considered arguably the hardiest creature known to humans.
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Tardigrades—also known as water bears and, occasionally, moss piglets—are spectacular. They are so spectacular, in fact, that Chinese military scientists think the tiny animal's powerful genes could be used to create radiation-resistance within humans. At least, that's the latest plan in motion: creating super soldiers able to withstand nuclear warfare.

In a report first published in Chinese in *Military Medical Sciences* and reported by *South China Morning Post*, researchers from the Academy of Military Sciences in Beijing say they believe inserting a gene from the microscopic water bear into a human embryonic stem can help significantly increase the cells' ability to withstand radiation. And they have some data to back it up.

“[Researchers] said success in this unprecedented experiment could lead to super-tough soldiers who could survive nuclear fallout,” *SCMP* reports.

Before getting into any discussion of the obvious ethical ramifications of the experiment, we'd be remiss to not highlight how the tardigrade is basically the exact animal you'd want to replicate if trying to withstand anything, including a nuclear fallout.

THE INCREDIBLE TARDIGRADE



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The undisputed hardest animal around, the range of these microscopic creatures spans all seven continents, and they're good to go on land or in the ocean. At smaller than 1 millimeter long, the eight-legged animals have survived trips to the Moon and back (yes, the real Moon), can handle boiling water for an hour, and endure temperatures in the multiple hundreds of degrees below zero for much longer. The wonders of the water bear continue to astound.

If scientists can take even a smidge of that toughness and translate it to humans, the concept of a super soldier isn't a major leap to make.

According to the report, scientists used the CRISPR/Cas9 gene-editing tool to take genes from the water bear that produce shielding proteins and insert them into an artificially cultured (a distinction the team claims made the experiment legal) human embryonic cells. This reportedly allowed the cells to survive "lethal exposure to X-ray radiation." Okay, then.

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“This is amazing, considering the big difference between the water bear and a human,” the *SCMP* says a researcher told them, while requesting anonymity due to the sensitivity of the project.

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The act of mixing genes across species can both potentially lead to unknown safety issues and increase the risk of failure in the experiment. So, the fact that the water bear-to-human trial seemingly worked was a surprising result.

The research paper, according to the *SCMP*, not only showed that there was a clean transfer—and that the new cells functioned normally—but also demonstrated an increased rate of cell growth. “The expression does not damage the vitality of cells, but can promote cell proliferation to a certain extent,” the study says. “The study will move on to the next stage based on these findings.”



While it may not be the *very* next stage, the eventual goal is super soldier. By creating these water bear-infused cells and placing them within new blood cells, the tardigrade genes could help stave off acute radiation sickness, along with potentially helping to ward off other diseases.

Of course, scientists claiming they can alter human genetics via the genes of a water bear puts us in an entirely new world of science.



TIM NEWCOMB

Tim Newcomb is a journalist based in the Pacific Northwest. He covers stadiums, sneakers, gear, infrastructure, and more for a variety of publications, including Popular Mechanics. His favorite interviews have included sit-downs with Roger Federer in Switzerland, Kobe Bryant in Los Angeles, and Tinker Hatfield in Portland.

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