

German Scientists Cure HIV in Mice

By Chris Weller / Thu, Dec 19, 2013

Drug Search

Scientists from Germany's Dresden University of Technology have discovered a potential treatment method that not only delayed the growth of HIV cells in laboratory mice, but fully cured some of the subjects, according to a new study published in *PLoS Pathogens*.

The process utilizes what researchers call, "molecular scissors." These scissors (essentially an HIV-cutting enzyme, known as tre-recombinase) help weed out the virus from infected cells after scientists have injected it into the host with a combination of genetically altered stem cells. This process is known as somatic genetic therapy, and it's one the research team claims could break new ground in the search for a robust, effective cure for one of the world's deadliest viruses.

"There are various methods and similar approaches, but removing the virus from infected cells is unique," Professor Joachim Hauber, head of the antiviral strategy section at Hamburg's Heinrich Pette Institute, told *The Local*, adding that the method is unique because it is only one so far to reverse an HIV infection yet still leave the treated cells healthy.

Should Failing To Disclose HIV Be A Crime?

The entire process begins with extracting blood samples from the humanized mice — i.e., mice that have been introduced to human genes, cells, tissues, or organs. These samples are then harvested for their stem cells, which can then be used to form new, genetically altered blood cells. When scientists reintroduce the newly engineered samples, which now contain the HIV-cutting enzyme, the enzyme locates the genes on the end of the virus' genome, removes it from the host DNA's genome, and effectively cures the cell of infection.

According to Hauber, the proposed theory sees the genetically altered immune cells reproducing, so that all future cases of HIV would be wiped clean from the body through the use of these "scissors." "In the humanized mice model, he said, "the amount of virus was clearly reduced, and even no longer to be found in the blood."

"It is one of the most exciting things of all," he added. "There is a vague hope of cure, but that must first be proven." Use of molecular scissors in clinical trials may still be a decade away, the team notes.

New Data Challenges Popular HIV/AIDS Assumptions

Despite the advances made by the current study, the research team expressed little hope that their findings would advance in the current climate. Large prescription drug companies have a vested interest in keeping patients on their medications — repeat customers, in essence — and any breakthrough options that hint at a cure are actually a negative, even with the incomparable benefits of worldwide cure.

"The potential is not being used," Hauber said, referring to the large banks of scientific knowledge concerning HIV/AIDS. According to the World Health Organization (WHO), the disease has already claimed 36 million lives so far, and another 35 million were living with the disease in 2012. More harrowing even is that the majority of disease carriers live in sub-Saharan Africa, a region of the world with scant access to proper treatment options. Nearly one in 20 people live with HIV in this region, which, in itself, makes up 69 percent of the world's infected population.

In the U.S. alone, an estimated 1,148,200 people 13 years and older were living with an HIV infection. Of those, 18 percent (or 207,600) hadn't yet been diagnosed. That equates to a prevalence in sub-Saharan Africa roughly 17 times greater than in the U.S.