

Did the end of smallpox vaccination cause the explosive spread of HIV?

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Vaccinia immunization, as given to prevent the spread of smallpox, produces a five-fold reduction in HIV replication in the laboratory. Researchers writing in the open access journal *BMC Immunology* suggest that the end of smallpox vaccination in the mid-20th century may have caused a loss of protection that contributed to the rapid contemporary spread of HIV.

Raymond Weinstein, a family doctor turned laboratory scientist at George Mason University, Manassas, Virginia, USA, worked with a team of researchers from George Washington University and UCLA. The researchers looked at the ability of [white blood cells](#) taken from people recently immunised with vaccinia to support [HIV replication](#) compared to unvaccinated controls. They found significantly lower [viral replication](#) in blood cells from vaccinated individuals.

Weinstein said, "There have been several proposed explanations for the rapid spread of HIV in Africa, including wars, the reuse of unsterilized needles and the contamination of early batches of [polio vaccine](#). However, all of these have been either disproved or do not sufficiently explain the behavior of the HIV pandemic. Our finding that prior immunization with vaccinia virus may provide an individual with some degree of protection to subsequent [HIV infection](#) suggests that the withdrawal of such vaccination may be a partial explanation".

Smallpox immunization was gradually withdrawn from the 1950s to the 1970s following the worldwide eradication of the disease, and HIV has

been spreading exponentially since approximately the same time period. Weinstein and his colleagues propose that vaccination may confer protection against HIV by producing long term alterations in the immune system, possibly including the expression of a certain receptor, CCR5, on the surface of a person's white blood cells which is exploited by both viruses. Speaking about the results, Weinstein said, "While these results are very interesting and hopefully may lead to a new weapon against the HIV pandemic, they are very preliminary and it is far too soon to recommend the general use of vaccinia immunization for fighting HIV".

More information: Significantly Reduced CCR5-tropic HIV-1 Replication in vitro in Cells from Subjects Previously Immunized with Vaccinia Virus, Raymond S Weinstein, Michael M Weinstein, Kenneth Alibek, Michael I Bukrinsky and Brichacek Beda, BMC Immunology (in press), www.biomedcentral.com/bmcimmunol/

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