

GEORGE MASON UNIVERSITY SCIENTISTS SUGGEST LINK BETWEEN SMALLPOX VACCINATION AND HIV INFECTION

MANASSAS, Va.--Researchers at George Mason University's National Center for Biodefense announce preliminary findings demonstrating that smallpox vaccination may confer a measurable degree of immunity to HIV infection. The evidence for protection against HIV was found in laboratory studies conducted on the blood cells of recently vaccinated individuals.

While cautioning that this evidence may not translate into direct immunity in humans, the scientists are optimistic about the potential applications of their results to the development of an HIV vaccine. "Our outcomes are very encouraging," says Ken Alibek, the center's executive director for education. "Additional studies that may lead us to more definitive conclusions already are under way."

Alibek credits Raymond Weinstein, an NCBD research professor, for developing the original hypothesis. Weinstein's son, Michael, also assisted with the development of the hypothesis. Both Alibek and Weinstein collaborated on the research.

Based on the natural history or spread of HIV in Africa, Weinstein and Alibek proposed that declining immunological responses to smallpox -- due to the elimination of the disease and the discontinuation of immunizations -- may have been associated with the emergence of HIV.

To confirm their hypothesis, Weinstein and Alibek directed a study at an HIV-approved laboratory at George Washington University Medical Center in Washington, D.C. Michael Bukrinsky, vice chairman of George Washington's department of microbiology and tropical medicine, and Beda Brichacek, a research scientist at George Washington, participated in the study. Weinstein and Alibek now are actively pursuing their work at a new laboratory approved for HIV research at George Mason's Prince William Campus in Manassas, Va.

The study was conducted using blood cells from 10 vaccinated and 10 unvaccinated subjects. Despite the small number of subjects involved, there was a statistically significant difference in resistance to HIV infection between the blood cells from the vaccinated and the unvaccinated subjects. HIV failed to grow or grew at substantially reduced levels in the cells from the vaccinated group when compared to the unvaccinated group. Weinstein and Alibek explain that these results suggest smallpox vaccination may be adapted to provide an individual with significant protection to subsequent HIV infection.

The preliminary results will be further explored by testing a larger number of blood samples from both vaccinated and unvaccinated subjects. George Mason scientists also are planning additional studies to investigate how the smallpox vaccine is conferring protection against the HIV virus.

More than 23 million people have died from AIDS, and it is estimated that another 40-45 million are infected with the HIV virus, explains Alibek, making it one of the most deadly epidemics in recorded medical history. "It is imperative that even preliminary research findings be shared among scientists so additional research can be initiated by the scientific community," he says. "Scientists have a moral obligation to collaborate with their colleagues to combat this lethal disease." Alibek also stresses the importance of strategic partnerships to secure additional funding for advanced studies to benefit those suffering from AIDS.

George Mason has filed patent applications covering prophylactic and therapeutic uses of the smallpox vaccine and its applications to HIV vaccine research.

Charles Bailey, NCBD's executive director for research, says, "This is evidence of the caliber of bioscience research and out-of-the-box thinking that is ongoing at George Mason," adding that the center continually seeks partners from foundations, government agencies, and medical, pharmaceutical and biotechnology industries for joint research endeavors.

"This is an exciting event in the history of George Mason," says university President Alan Merten. "We're looking forward to the next challenge -- the additional research that will test the hypothesis at new levels and potentially produce dramatic, practical benefits for future generations."

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Smallpox vaccination is not advised for certain segments of the population, including individuals with weakened immune systems or those infected with HIV; pregnant women; children; individuals over the age of 65; and other individuals who are at risk for an adverse reaction to the vaccine. Vaccination should never be undertaken without consulting a physician or other health care provider. Refer to www.cdc.gov for additional information.

George Mason University is the second-largest public university in Virginia. It serves approximately 28,000 students at three campuses and offers more than 135 degree programs at undergraduate, master's, doctoral and professional levels. Research expenditures are expected to climb to \$100 million within the next five years, while the quality and visibility of research initiatives are propelling the university to the forefront of premier research institutions. Because of its unique location in the Washington, D.C., metropolitan area, George Mason is positioned to

reach out to the world as a center of inquiry, knowledge and professional expertise in fields with vital implications for human needs and future opportunities. (www.gmu.edu)

The National Center for Biodefense was established by the university in December 2001 to promote awareness of the national and international security challenges and medical and public health threats posed by biological terrorism and biological weapons proliferation. Its scientists are engaged in innovative biomedical research to develop unique approaches and techniques for the prophylaxis and treatment of infectious diseases and biological threat agents. Through consultation, education and training outreach to government agencies, the scientific community and the general public, the center offers expertise on medical and public health responses to biological terrorism and educates a new generation of researchers to better understand biological weapons threats and how to mitigate them. (www.gmu.edu/centers/biodefense)

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