



University of Pittsburgh

Schools of the Health Sciences Media Relations

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Four HIV Research Projects at Pitt Receive More than \$11 Million in Grants

PITTSBURGH, Dec. 1 - Researchers at the [University of Pittsburgh Schools of the Health Sciences](#) and [Magee-Womens Research Institute \(MWRI\)](#) have been recently awarded four grants totaling nearly \$11.5 million from the [Bill & Melinda Gates Foundation](#).

According to the foundation's website, there will still be more than 22 million new infections by 2015 despite the current decline in infection rates. The site notes also that the foundation's aims are "to stop the spread of HIV by expanding access to successful prevention strategies and to identify and research new ways to prevent HIV transmission."

Finding A New Way of Detecting Infection

A first-of-its-kind collaboration between the University of Pittsburgh's Center for Vaccine Research (CVR), the Drug Discovery Institute (DDI) and the [Graduate School of Public Health](#), received a \$1 million, three-year grant to develop a novel test to detect HIV in the earliest stages of the disease.

"The earlier you know about an infection, the quicker you can treat it," said Pitt Public Health Dean and CVR director Donald S. Burke, M.D., UPMC-Jonas Salk Chair of Global Health and principal investigator on the project. "Immediately starting antiretroviral drugs greatly reduces the chance of the disease progressing to full-blown AIDS, and reduces person-to-person transmissibility of the virus. The test will also enable extensive epidemiological studies in developing countries, allowing health agencies to effectively target their precious resources."

Currently available tests rely on a few proteins made only by the HIV virus itself to detect anti-HIV antibodies in the blood. In new infections, these antibodies are typically at low levels, so it often takes months before a person tests positive for HIV and sometimes years before they develop symptoms. The Pitt test is taking a new approach. Instead of only looking at proteins made by the virus, this research will examine a novel class of HIV bio-markers in patient blood samples. This approach utilizes synthetic molecules that resemble proteins and can be produced in millions of different variations. This larger diversity of bio-marker targets increases the ability to detect new HIV infections, as well as distinguish between recent and established infections.

Such a test would allow public health workers to determine if a third world country's HIV infections are a recent development and how fast the virus is spreading, and physicians to factor in duration of infection to better tailor anti-HIV regimens.

Pitt co-investigators on this project include Ronald Montelaro, Ph.D., and Ernesto Marques, M.D., Ph.D., of the CVR; Lansing Taylor, Ph.D., and Mark Schurdak, Ph.D., of the DDI; and George Tseng, Ph.D., of Pitt Public Health. Thomas Kodadek, Ph.D. at the Scripps Research Institute in Jupiter, Florida is a key collaborator.

Preventing HIV Infection With Monthly Injections

In the \$4.5 million, two-year Options Now (ON) project led by Ian McGowan, M.D., Ph.D., professor of medicine and obstetrics, gynecology and reproductive sciences, Pitt School of Medicine, co-principal investigator of the federally funded Microbicide Trials Network (MTN) and MWRI investigator, researchers will assess the acceptability and safety of injecting rilpivirine, a long-acting HIV drug, into the muscle of HIV-negative people with the aim of preventing infection. The research team includes Beatrice A. Chen, M.D., M.P.H. and Ross D. Cranston, M.D., also of the University of Pittsburgh School of Medicine and MWRI.

"Depo-Provera has shown us that a system of regular injections is acceptable, feasible, and effective for women worldwide as a method of pregnancy prevention," Dr. McGowan said. "We want to see whether this kind of strategy will be effective at reducing the risk of HIV infection."

This summer, federal officials approved Truvada, another treatment drug, for use as a HIV prevention agent after two large studies showed it was effective in men who have sex with men and serodiscordant couples in which one partner is HIV positive and the other is not. Researchers from the MTN are waiting for results from a major clinical trial called VOICE, which will be key to determining whether Truvada is a viable prevention option for women. In the meantime, researchers are looking at other drug formulations, like topical gels, vaginal rings and monthly injections that might be preferred over a daily pill and more apt to be used.

To enroll in the ON study, participants must be healthy, HIV-negative men or women who are not pregnant or nursing; between the ages of 18 and 45; and willing to be monitored for five to seven months. For more information, call Rita Lisa Labbett, M.P.H. at 412-852-0390.

Exploring the Influence of Hormonal Contraception on HIV Infection

In a \$5 million, three-year project led by Sharon Achilles, M.D., Ph.D., assistant professor, Department of Obstetrics, Gynecology and Reproductive Sciences, Pitt School of Medicine, and MWRI investigator, scientists will examine whether hormonal contraceptive methods cause changes in genital tract immune cells, the cells that HIV targets for infection.

"Some studies have indicated that the use of birth control shots, pills or other hormone-based contraception is associated with a higher risk for HIV," Dr. Achilles said. "This presents a challenge because HIV prevention strategies and contraception should work together, rather than in opposition, in order to maximize the public health benefit."

Her study will assess the impact of hormone-based contraception on the cells of the genital tract, particularly the immune cells that are targeted by HIV. Two hundred fifty healthy women in Harare, Zimbabwe, who are initiating use of one of five commonly used contraceptives will be monitored for six months.

"Characterizing changes in the immune cells of the genital tract could inform the design of future clinical trials aimed at assessing contraception and HIV risk, as well as shape recommendations for women at high risk of HIV exposure," Dr. Achilles said.

Co-investigators include Sharon Hillier, Ph.D., of the University of Pittsburgh, and Mike Chirenje, M.D., of the University of Zimbabwe.

Distributing Anti-HIV Drugs to the Global Community

Lisa Cencia Rohan, Ph.D., an associate professor in Pitt's School of Pharmacy and an investigator at Magee-Womens Research Institute, is leading a 15-month, \$758,000 project that will assess the feasibility of thin film dosage forms for vaginal delivery of contraceptive or HIV prevention drugs.

Dr. Rohan serves as co-principal investigator with Dr. Sharon Hillier on a recently launched, early-stage clinical trial to test the safety of a vaginal film preparation containing a microbicide called dapivirine to ward off HIV infection. But before safety and efficacy trials can be expanded, Dr. Rohan noted, "It must be determined whether such a product can be successfully manufactured and distributed to resource-poor locations and what traits it must have to be acceptable to large numbers of users in a variety of settings."

About the University of Pittsburgh Schools of the Health Sciences

The University of Pittsburgh Schools of the Health Sciences include the schools of Medicine, Nursing, Dental Medicine, Pharmacy, Health and Rehabilitation Sciences and the Graduate School of Public Health. The schools

serve as the academic partner to the UPMC (University of Pittsburgh Medical Center). Together, their combined mission is to train tomorrow's health care specialists and biomedical scientists, engage in groundbreaking research that will advance understanding of the causes and treatments of disease and participate in the delivery of outstanding patient care. Since 1997, Pitt and its affiliated university faculty have ranked among the top 10 educational institutions in grant support from the National Institutes of Health. For additional information about the Schools of the Health Sciences, please visit www.health.pitt.edu.

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