

U of M earns four more research chairs

Beta, Cadogan, Marshall and Stetefeld bring total to 47

Four University of Manitoba researchers have been awarded Canada Research Chairs in recognition of their research achievements.

The new awards for Trust Beta, Sean Cadogan, Aaron Marshall and Joerg Stetefeld bring the total number of Canada Research Chairs at the University of Manitoba to 47.

The announcement was made in Ottawa on Dec. 7 by Maxime Bernier, minister of industry and minister responsible for the Canada Research Chairs Program.

"The Government of Canada recognizes the importance of investing in university research," said Bernier. "This investment will enable our universities to develop the expertise and innovative ideas that fuel economic competitiveness and create new jobs for Canadians."

Joanne Keselman, vice-president (research) at the University of Manitoba, said: "The University of Manitoba is very fortunate to have been dealt such a fine hand of four 'aces' who are outstanding in their fields. This announcement will ensure

that the University of Manitoba remains in a leadership role, solidly at the forefront of food science, materials science, biology and health research."

The four new chairs represent an investment of more than \$3.3 million for the University of Manitoba. The Canada Research Chairs program will contribute \$2.9 million, while an additional \$494,000 for infrastructure support will come from the Canada Foundation for Innovation (CFI).

Two of the new researchers, Sean Cadogan and Joerg Stetefeld, were recently recruited to the University of Manitoba from universities in Australia and Switzerland, respectively.

The Canada Research Chairs program has created 1,733 research positions at 73 Canadian universities since it was launched in 2000. The program helps universities attract and retain the best researchers and achieve research excellence in natural sciences and engineering, health sciences, and social sciences and humanities.

TRUST BETA

Canada Research Chair in Food Processing and Grain-Based Functional Foods

Beta, food science, is working to understand the molecular structure and function of major antioxidant components of whole grains like wheat, barley and sorghum. She is



also looking at how whole grains are affected by specific processing methods, including milling, baking, extrusion, malting and fermentation. Ultimately, her research will not only identify and enhance the beneficial components of whole grains; it will also determine the dietary concentrations of these components that can play a major role in reducing obesity, cardiovascular disease, diabetes and cancer.

SEAN CADOGAN

Canada Research Chair in Advanced Materials

Cadogan, physics and astronomy, studies the rare-earth elements, a series of metals that possess a wide range of magnetic properties. He is applying his expertise in advanced nuclear techniques to study magnetic materials which are important in applications like transformer cores used by the electrical power industry. Rare-earth-based compounds form the basis for high-temperature superconductors and the world's strongest permanent-magnet materials, with the potential for unprecedented energy efficiency in applications ranging from advanced motors to new refrigeration technologies while greatly reducing the environmental side effects of current technology.



AARON MARSHALL

Canada Research Chair in Molecular Immunology

Marshall, immunology, is examining the signaling mechanism that controls the activities of immune cells. Called signal transduction, this process takes signals from different locations on a cell's surface and delivers those signals to the interior of the cell through a complex series of molecular events. These signals instruct immune cells to take specific actions, including division, differentiation, migration or even death. The information derived from this work is critical to understanding the molecular events leading to certain types of cancer, and will potentially identify new targets for treatment.



JOERG STETEFELD

Canada Research Chair in Structural Biology

Stetefeld, chemistry, is studying the extracellular matrix (ECM), a complex structure that surrounds and supports cells in mammalian tissues. He uses advanced techniques, like nuclear magnetic resonance imaging (NMR) and X-Ray crystallography to examine the structure of proteins and determine their function, both in health and disease. Disorders involving the ECM are associated with a variety of human diseases and conditions, including muscular dystrophy, arthritis, multiple sclerosis and tumor progression.



A new front in the fight against HIV

A University of Manitoba-led randomized controlled trial conducted in Kenya as part of an international collaboration has demonstrated that male circumcision is an effective measure for reducing HIV incidence in heterosexual young men, reducing HIV acquisition by more than 50 per cent.

University of Manitoba researcher Stephen Moses, along with J.O. Ndinya-Achola from the University of Nairobi and Robert C. Bailey from the University of Illinois, presented their research results at a Data Safety and Monitoring Board (DSMB) meeting in Washington on Dec. 12.

The DSMB, which oversees the safety, validity and integrity of the trial, decided to stop the study prior to its completion because sufficient evidence had been accumulated to show that the surgical procedure reduces the risk of acquiring HIV. Another clinical trial in Uganda with similar results was also ended early.

The National Institute of Allergy and Infectious Diseases (NIAID), part of the National Institutes of Health (NIH), announced that an interim review of trial data revealed that medically performed circumcision significantly reduces a man's risk of acquiring HIV through heterosexual intercourse. The trial in Kisumu, Kenya, of 2,784 HIV-negative men showed a 53 per cent reduction of HIV acquisition in circumcised men relative to uncircumcised men, while the trial of 4,996 HIV-negative men in Rakai, Uganda, showed that HIV acquisition was reduced by 48 per cent in circumcised men.

"Evidence has been accumulating that male circumcision may play an important role in explaining the substantial variations in the HIV epidemic in different parts of Africa", said Stephen Moses, principal investigator for the University of Manitoba. "But now we have conclusive data demonstrating that male circumcision reduces the risk of HIV acquisition in men."

The Canadian Institutes of Health Research (CIHR), provided over \$2.5 million in funding for the Kenyan trial, which was also supported by NIH.



File photo
University of Manitoba researcher Stephen Moses is part of an international team of researchers that have found that male circumcision can reduce the chance of acquiring HIV by 50 per cent.

The University of Manitoba/University of Nairobi collaborative research group in Kenya was among the first to identify the association between lack of male circumcision and risk for HIV infection. A landmark

study in the mid-1980s noted that uncircumcised men attending a sexually transmitted diseases clinic in Nairobi had much higher HIV infection rates than men who were circumcised. By the late 1990s, Moses said, it became clear that the observational results would need to be confirmed by randomized, controlled trials, which are the gold standard for scientific evidence.

"After much discussion within our group, we decided to embark on the daunting and lengthy task of conducting a randomized trial," Moses said. "Working with Robert Bailey, an anthropologist from the University of Illinois who had been working in this area for some time, and J.O. Ndinya-Achola, a long-time colleague from the University of Nairobi, we began talking to people, and the response from the community in general, and from many men in particular was very positive. After enlisting the support of community political, religious and cultural leaders, we were fortunate to obtain funding support from CIHR and NIH."

The trial began in 2001 and combined the expertise of researchers from three countries in a team-based approach. Over 2,700 men between the age of 18 and 24 from the district of Kisumu in western Kenya were recruited to take part in the trial. The study was originally scheduled to end in September 2007, but the DSMB concluded there was enough evidence to stop the trial early.

"This trial has been a complex undertaking, requiring expertise in a variety of different disciplines, including epidemiology, medicine, social sciences and immunology," Moses said. "Fortunately, it has confirmed an important new modality for HIV prevention, one which is desperately needed in many areas of high HIV prevalence in the developing world. Although circumcision alone does not prevent someone from becoming infected with HIV, it clearly lowers the risk of becoming infected, and the results of this trial show that male circumcision can be considered an important HIV prevention strategy."