Bringing Research to LIFE

In Brief

Honours from India

Two faculty members – both of them leading cardiovascular sciences research scientists at St. Boniface Hospital Research (formerly Centre) – were recently honoured in India for their work.

Naranjan Dhalla, Distinguished Professor at the Institute of Cardiovascular Sciences and director of cardiovascular development at St. Boniface Hospital Research, was recently elected Honorary Foreign Fellow of the Romanian Academy of Medical Sciences. Dhalla was also elected Honorary Fellow of the Punjab Academy of Sciences in recognition of outstanding research contributions and achievements in medical sciences. He received the honour Feb. 7 during the 13th Punjab Science Congress in Chandigarth, India.

Grant Pierce, professor of physiology in the Faculty of Medicine and executive director of research at St. Boniface Hospital Research, received the Manjeet Singh Oration Award in New Delhi on Feb. 3. Presented during the Joint International Conference of the International Society for Heart Research and the International Academy of Cardiovascular Sciences, the award recognizes outstanding contributions in cardiovascular sciences.

Upcoming

Public Forum

Human Wrongs:
Making Things Right

Wednesday, March 31, 2010

2:00 PM - 4:30 PM

Room 210, University Centre,
University of Manitoba

For more information e-mail:
johanne2@cc.umanitoba.ca

Bringing Research to Life Speaker Series

The Pursuit of Better Roads: Safe, Smart and Sustainable

Wednesday, April 14, 2010

7:00 PM

Room 290

Education Building

FREE ADMISSION

For more information e-mail:
Lindsay_Fagundes@umanitoba.ca

Exceptions to the Rule

Pursuit of AIDS vaccine takes new turn in study of HIV-resistant women

BY KATIE CHALMERS-BROOKS

Photo by Katie Chalmers-Brooks

Researcher Keith Fowke from the Faculty of Medicine says recent findings in the study of HIV-resistant sex-trade workers in Kenya suggest having a "calm" immune system helps ward off the virus.

The discovery was huge: a group of women in Kenya, all of them sex-trade workers, were somehow evading HIV infection despite repeated exposure to the deadly virus.

It was Keith Fowke's job as a graduate student in the late 1980s, guided by lead investigator Frank Plummer, to go to the AIDS-ravaged East African country and collect data to determine whether or not these women had some sort of natural immunity. If so, it would be a major breakthrough in the global pursuit of a vaccine.

Fowke, now a medical microbiology professor, remembers well the evening the results became clear. Perched on the balcony of his tiny 600-square-foot flat in a Nairobi suburb, a cold beer nearby, a full moon above, he did the calculations from lab data collected earlier that day. In a test tube, he had combined HIV cells with blood samples from exposed but uninfected women and noted whether or not – and to what extent – the women's blood cells would go after the virus. HIV cells under attack released a radioactive compound. Fowke did the same comparison for infected women.

An analysis of the numbers (which measured radioactivity levels) showed the healthy women's cells were killing the HIV virus "very aggressively," Fowke says, suggesting they were in fact "naturally vaccinated."

"That was an amazing moment. I remember calling Dr. Plummer and saying this is what the result is and he said, 'Are you sure? Did you double-check'?" Fowke recalls. "He said, 'Wow, I think it's real.' We were both excited about that."

Three decades later, Plummer, Fowke, and their University of Manitoba colleagues Blake Ball and Ma Luo are leading the way worldwide in HIV vaccination research. Roughly 3,000 women have taken part in their Kenya study – between five and 10 per cent are HIV resistant. There are individuals in other countries who have been exposed but not infected – including some heterosexual wives and husbands, homosexual men, and babies born to HIV-positive mothers – but the Kenyan sex-trade workers was one of the first groups discovered and is one of the best understood.

"Our group in Africa is one of the oldest and best characterized in the world and that's why we're fortunate enough to be leading an international consortium of researchers, because we've been in it for a long time," explains Fowke.

Africa is particularly hard hit by AIDS; Kenya alone is home to more than one million people living with HIV. The disease has claimed so many adults in their prime the continent faces teacher and doctor shortages. Stories of orphans as young as eight having to raise their toddler siblings are what motivate Fowke, who admits it can be frustrating their research results aren't felt immediately. But the wait may be over before long – he predicts in 10 to 15 years they could have an effective vaccine capable of stopping the spread and saving millions of lives.

"It's frustrating because you want to help right away but learning the mysteries of the immune system takes a long time," says Fowke. "The answer is there. We just need to be smart enough to find it."

Developing an HIV vaccine is particularly difficult since the virus mutates quickly and kills the main controlling cell of the entire immune system.

U of M researchers continue to try to figure out which part of the virus is being targeted by the immune systems of HIV-resistant individuals in order to stop the virus from taking hold. But recent findings have steered them in a new direction as well, suggesting a calm immune system may play a role.

The cells of the naturally immune women have shown to be in a resting state. They ramp up to fight infection but then return to calm. The virus infects and replicates better in highly active cells so finding a way to keep the immune system quiet may prevent the virus from propagating. "This is a brand new area," Fowke says, noting their investigations are funded by the Melinda and Bill Gates Foundation and the Canadian Institutes of Health Research. The hope is to create a vaccine that silences the cells first exposed to HIV and render them a poor target for the virus.

The research team is also taking a closer look at AIDS on on the Canadian prairies. "The epidemic in Manitoba and Saskatchewan is really exploding, especially among young women," says Fowke, who is joining forces with other top researchers at the Canadian Conference on HIV/AIDS Research in Saskatoon in May to figure out why.

U of M researchers are following a group of HIV-infected Manitobans that doesn't require medication since their bodies are effectively controlling the virus naturally. Around the world, these people are known as "elite controllers," Fowke says.

"And interestingly, some of those individuals who are controlling their infection are Aboriginal," he says. "We're trying to understand if there's a commonality there."

To learn more, join Fowke for HIV Vaccines: The Frustration and the Hope March 17 at 7 p.m. in the Education Building, Room 290. The free public presentation is part of the Bringing Research to Life Speaker Series.

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