

Burnaby Now

Fighting disease with math; Burnaby-based group is providing tools to help African scientists cope with serious disease pandemics

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Byline: Jennifer Moreau
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Illustrations: Photo: Larry Wright, Burnaby Now / POWER OF NUMBERS: Arvind Gupta is the scientific director of MITACS - Mathematics of Information Technology and Complex Systems, a national research network with headquarters at Simon Fraser University. ;

A Burnaby-based group is arming African scientists and health officials with a powerful weapon in the fight against serious disease pandemics: math.

Mathematics of Information Technology and Complex Systems, or MITACS for short, is a national research network with headquarters at Burnaby's Simon Fraser University.

"Now is the time to connect with our African colleagues to identify how mathematical modelling can shed new light on how we can more effectively prevent the spread of these devastating diseases," said Arvind Gupta, scientific director of MITACS.

Gupta was one of six Canadians sent by MITACS in November to meet with African scientists, health officials, politicians and front-line workers, who are trying to stop serious diseases from spreading, especially in sub-Saharan Africa.

The meeting was in Kampala, Uganda.

The two delegations formed three Canadian-African research groups to put together research plans for different diseases, such as HIV, AIDS and malaria.

Gupta has just received preliminary documents from the research groups, detailing plans for collaborating on development of mathematical models for diseases.

Gupta explained how mathematicians can use mathematical models and computers to simulate disease outbreaks in specific populations.

Scientists can then test various strategies to control diseases.

"Since we can't allow an outbreak of tuberculosis to take place in order to see what happens, mathematical modelling is a useful tool because it provides proper and accurate ways to decide who to quarantine and how effective your quarantine needs to be," Gupta said.

He used a SARS outbreak as an example: a predictive, mathematical model could show the effects of a hypothetical airport quarantine.

That kind of information helps public health officials get the most out of limited resources.

African health officials aren't just concerned about major diseases like HIV and AIDS, Gupta said.

Malaria, tuberculosis and cholera are having a much bigger and worrying impact, he said.

The African delegates expressed that they were tired of just pouring money into drugs and they would rather prevent diseases from spreading, Gupta said.

"If we can do some modelling and understand how to get ahead of the disease, (it) is much more cost-effective," Gupta said.

If MITACS members decide to continue with the initiative, they will look for funding from government and non-profit agencies.

For more about MITACS, visit www.mitacs.ca.