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Message from the Scientific Director

Supporting the Future Uptake of Research

One of the many rewards I experience as Scientific Director of the Canadian Institutes of Health Research Institute of Infection and Immunity (III) is seeing the significant impact infection and immunity research results have in helping to improve the health of Canadians.

Since its inception in 2000, III has supported more than 400 research projects across Canada. These projects and other initiatives are yielding beneficial health outcomes for society. For example:

- *Results from a project supported under the Novel Technology Applications in Health Research Program have led to new technology for rapid and simultaneous detection of different infectious agents;*
- *The Pilot Projects Program has contributed to new understanding and treatments for allergic inflammation;*
- *A *C. difficile* project supported by the Partnerships for Health System Improvement Program is helping shape regional and provincial committee guidelines for managing and preventing *C. difficile*-associated diseases;*
- *The results of clinical trials on male circumcision are*

contributing to the development of international guidelines on circumcision as a method of HIV prevention.

The Institute is working with researchers and research-users to increase translation of research results and evidence-based implementation. As described in CIHR's Knowledge Translation Strategy: Niche and Focus 2005-2009, knowledge translation is: "*the exchange, synthesis and ethically-sound application of knowledge - accelerates the capture of the benefits of research for Canadians through improved health, more effective services and products, and a strengthened health care system.*" We need to ensure important discoveries in infection and immunity are achieving this goal.

Accordingly, beginning in January 2008, the Institute is embarking on a project which will be looking to the future in order to develop key directional activities that in turn will help support and facilitate knowledge translation within the infection and immunity research community. The project will also review knowledge translation activities carried out by the Institute since its inception and include a discussion of knowledge translation as it relates to infection and immunity. The results of this project will be recommendations that the Institute

can put in place to help researchers and researchers work together to realize the translation of the many exciting research breakthroughs in our areas.

Finally, one of the key roles of the Institute is to facilitate and encourage interaction and sharing of knowledge among researchers in universities, hospitals, federal and provincial agencies and departments, the private sector and other institutions. We will continue to seek ways to do this - to synergize our knowledge translation initiatives with our partners and stakeholders. However, we cannot do it alone and we strive to support the research com-

munity to engage in the full range of activities from knowledge creation to its translation. Your activity in support of knowledge translation, especially with your partners, stakeholders and community remains a crucial factor in supporting the uptake of health research to the benefit of the health of Canadians.

I look forward to working with you on this important initiative.

Bhagirath Singh, PhD
Scientific Director
CIHR Institute of Infection and Immunity



CIHR Grant Application News

Operating Grants 2007-2008

Applicants to the Operating Grant: 2007-2008, and all Meetings, Planning and Dissemination Grant funding opportunities will be required to use CIHR's ResearchNet application program to electronically submit their applications. Do not use the CIHR Web Forms to apply to these funding opportunities. Applicants who start their applications to these funding opportunities on existing CIHR Web Forms will not be able to transfer this information to ResearchNet.

Meetings, Planning and Dissemination Grants

The Institute's new Meetings, Planning and Dissemination Grant Program (MPD) will provide funding for workshops, symposia and conferences in the area of infection and immunity and may also extend funding to dissemination activities in the future. There will be three competitions annually (application deadlines planned for October, February and June 2008) and applications will be submitted electronically through ResearchNet. Access to the application interface is obtained by searching the CIHR Funding Opportunities Database (<http://www.cihr-irsc.gc.ca/e/780.html>). All meetings taking place after April 1, 2008 must apply for support through the MPD program.

III Focus on Research Results and Knowledge Translation

New signaling pathway found to help reduce allergic inflammation

University of Manitoba researcher, Dr. Aaron Marshall and his collaborators in the CIHR National Training Program in Allergy and Asthma, have identified critical information that will help to provide new tools and concepts for the study of allergy and asthma. Dr. Marshall's team has found a 'new signaling pathway' critical for allergic sensitization and allergen-induced airway inflammation. By using a combination of genetic inactivation and pharmacological approaches, Dr. Marshall's team found compelling evidence that blocking the p110 δ isoform of PI 3-kinase greatly reduces production of inflammatory mediators and reduces asthma-like disease in a pre-clinical model. In actual fact, the blockade of p110 δ was found to enhance B cell production of IgE, a key pro-inflammatory molecule present at high levels in allergic asthmatic patients.

What this means for asthma and allergy sufferers is that by targeting this new signaling pathway it is possible to reduce allergic inflammation even in the face of high IgE levels. Dr. Marshall's results indicate that p110 δ is a new therapeutic target for atopic asthma and other atopic diseases.

With the recent success of the pharmaceutical industry in developing compounds selectively targeting PI 3-kinase isoforms, the clinical effectiveness of these agents in relieving or reversing atopic diseases can soon be determined. Dr. Marshall's IgE work has been submitted for publication in the journal *Blood* and he has also published his results in the *Journal of Immunology* (Feb. 15, 2007; 178(4):2328-35 issue) and the *European Journal of Immunology* (Feb. 2007;37(2):416-24).

For more information contact: Dr. Aaron Marshall marshall@ms.umanitoba.ca

Helping to revise guidelines for the management and prevention of *C. difficile*



Results from a CIHR-III Partnerships for Health Systems Improvement research project completed this past summer show that the most effective way to eliminate *Clostridium difficile* (*C. difficile*) bacteria from the hands of health care workers is with regular soap and water. The research project entitled, 'Efficacy of alcohol-based hand disinfection versus liquid soap and water for the removal of *Clostridium difficile* from hands' led by Dr. Michael Libman at the McGill University Health Center (MUHC),

acknowledges that previous studies have shown that alcohol-based hand rubs are very effective for decontaminating hands and remain a critically important component of hand hygiene in the health care setting. However, when hands of health care workers are contaminated with *C. difficile*—soap and water are the preferred agents.

Dr. Libman and his team have presented their project findings in local infection control conferences in Montreal, and an abstract of their findings has been communicated to the local infection control community. Dr. Libman reports that there is considerable interest in the results throughout the infection and immunity community because several regional and provincial committees are in the process of reviewing and revising guidelines for the management and prevention of *C. difficile*-associated disease.

The project findings were presented at the Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC) in Chicago this past October and they are also scheduled to be presented at the Association of Medical Microbiology and Infectious Disease Canada in Vancouver this March 2008.

For more information contact: Dr. Libman Michael.libman@mcgill.ca

Moving one step closer to a simple cervical cancer screening test

Results of CIHR-III Novel Technology Applications in Health study entitled, “Developing Diagnostic tools through in vitro molecular evolution,” [for human papillomavirus (HPV) diagnosis] is good news for Canada's primary care clinics looking for a simple HPV diagnostic kit to help with cervical cancer screening. HPV is responsible for the majority of cervical cancers and is currently the subject of much debate and discussion in the media because of the new HPV vaccine—the first of its kind proven to prevent cervical cancer.

Lead researcher Dr. Damian Labuda and team members Drs. Maja Krajnovic, Ivan Brukner and Izabela Gorska-Flipot of the University of Montreal and Hopital Sainte-Justine Research Centre are one step closer to developing a prototype HPV diagnostic kit capable of discriminating between 39 mucosotropic HPV types.

They have found a series of type-specific oligonucleotide probes obtained by in vitro selection from a mixture of random oligonucleotides, through forward and subtractive DNA hybridizations with the HPV targets. Given the existence of numerous types of HPV, finding the series

of probes is important to accurately distinguish between malignant and benign HPV types that are found in clinical samples. Moreover, this approach is very low cost and easy compared to conventional assays: one polymerase chain reaction and one hybridization between the probes and the HPV targets are needed to detect and distinguish the different types.

In addition, the researchers are working with Univalor, the commercial arm of the University of Montreal and its affiliated schools and hospitals to bring the prototype kit to the diagnostic market. Univalor will be managing both the technology transfer of the prototype and the IP protection stage of the technology described in the US patent application (# 60/882,153) “Nucleic acid probes, methods for their preparation and uses thereof” filed last year.

Univalor is actively seeking a license agreement with a partner that will commercialize the technology. The team's research was published in the Nucleic Acid Research Journal and Journal of Clinical Virology.

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Reducing health risks caused by bacterial pathogens

SAFE FOOD AND WATER INITIATIVE



Research results from a CIHR-III Safe Food & Water Initiative project is welcome news for hundreds of Canadian communities living through frequent boil water advisories. The major health risk with drinking water is caused by contamination of source water of unknown origin.

Dr. Asit Mazumder, a University of Victoria B.C. researcher and the Natural Sciences and Engineering Research Council (NSERC) Industrial Research Chair in the Environmental Management of Drinking Water, has established a fully equipped laboratory complete with robust genetic fingerprinting technology capable of tracking sources of coliform bacteria in source water under various land-uses.

His research team achieved this result through assessing the impact of various land-use activities in fecal contamination of source water; developing and validating the robustness of different methods

in tracking the sources of *E. coli* contamination; and, assessing and modeling how different environmental factors regulate the transport, viability and outbreak potentials of *E. coli*.

In addition, Dr. Mazumder has also been able to ensure that these results are available to many stakeholders, including health policy makers and public health officers through the creation of an inter-disciplinary team of researchers and significant partnerships with key federal agencies such as the Public Health Agency of Canada, Agriculture and Agri-Food Canada as well with provincial government departments, livestock industries and local communities.

The innovative bacterial source tracking tools and the knowledge developed from this project are currently being used by several organizations, communities and water utilities in assessing sources of health risks from bacterial pathogens and in the development of best land management practices to reduce pathogen risks from water.

Links to recent publications of Dr. Mazumder and team's research are available at

<http://web.uvic.ca/water/publications/papers.html>

For more information contact: Dr. Asit Mazumder mazumder@uvic.ca

Events in I & I

Canadian Microbiome Initiative Consultation Meeting

The National Institutes of Health (NIH) has launched the Human Microbiome Project (HMP) with the goal to better understand the symbiotic relationship between host and microbiome. The aim of the Project includes: analyzing the entire set of microbial species in the human body at various sites; developing experimental approaches to manipulate the microbiome; and measuring the impact of the microbiome on human health and disease. The IIR has initiated the Canadian Microbiome Initiative (CMI) to encourage the participation of Canadian researchers in the project. IIR held a consultation meeting on September 24, 2007 in Vancouver to begin the process of facilitating the development of a conceptual Canadian framework and identifying the Canadian priorities, parameters and key Can-

adian researchers to be engaged in the CMI. Given that the National Human Genome Research Institute at NIH is preparing to organize an international consortium for the purpose of sharing information, technologies and minimizing duplicate research efforts it is important for Canada to have a presence. The next steps for the CMI may include: applications to NIH sponsored RFA in HMP and applications to regular CIHR operating grants program such as Team Grants. Under its Strategic Priority "Emerging Infections and Microbial Resistance: Solutions from innovation in tools and technologies," IIR with relevant partners may sponsor meetings and launch RFAs to develop CMI-related programs, new tools to support Canadian goals and participation in NIH-sponsored HMP Consortium meeting.

A Systems Biology Approach to Immune Modulation and Inflammation Consultation Workshop

A workshop entitled “**A Systems Biology Approach to Immune Modulation and Inflammation**” was organized by the Institute of Infection and Immunity on January 22-23, 2008 in Montreal. The Institute hosted 50 invited participants, including two international speakers and representatives from interested partner organizations. The goal of the workshop was to explore opportunities for the application of systems biology approaches in our understanding of complex disease processes, specifically immune systems such as immunotherapy and inflammation and to build research capacity in this relatively new, but rapidly expanding field.



III Café Scientifique

The Institute, in partnership with CIHR, hosted a Café Scientifique on infectious diseases in Montreal on January 22, 2008 at Segafredo Zanetti Café. The free Café featured three of Canada's top infectious disease experts and moderator Gerri Barer, Montréal's CBC-TV health specialist, discussing questions such as: How do we live with infectious diseases? How do we prevent them? Can we control infectious diseases? The experts included:



- **Dr. Michel G. Bergeron MD, FRCP**, Director, Division of Microbiology and Centre de recherche en infectiologie de l'Université Laval;
- **Dr. Vivian Loo MD, MSc, FRCP(C)**, Chief of Microbiology, McGill University Health Centre, Associate Professor, McGill University; and,
- **Dr. Eduardo Franco MPH, Dr.P.H.**, James McGill Professor and Director Division of Cancer, Epidemiology, Departments of Oncology and Epidemiology, McGill University

More than 65 people attended the Café and the public was eager to discuss infectious disease topics such as *C. difficile*, HPV vaccine and super bugs.

Canada/UK Collaboration Workshop on Antibiotic Resistance

The workshop was organized by III in partnership with the UK MRC and Canadian High Commission, and was hosted by the Canadian High Commission. It took place at Canada House, Trafalgar Square on February 6-7, 2008. The topic of the workshop was antibiotic resistance and built upon the Institute's recent "**Novel Alternatives to Antibiotics**" initiative. Approximately 40 participants - half from the UK and half from Canada - attended. The intention of the workshop was to explore the possibility of Canada/UK research collaborations with a view to co-fund joint research teams that show a true "value added" in working together.



Influenza Research Network Application Development Workshop

As part of the federal government plan to strengthen Canadian health care and research capacity in pandemic flu preparedness, the Public Health Agency of Canada and CIHR will fund one Influenza Research Network. In order to enhance the development of one successful application, an application development workshop for principal applicants with a serious interest in participating in the network was held in Ottawa on February 26, 2008. The purpose of this workshop was to:

- *Assist researchers in gaining an understanding of the application process, the expectations of the sponsoring organizations and the key components of writing a successful grant application.*
- *Enable researchers who are interested in being part of the network to meet each other, exchange information and begin preparation of an application for the funding opportunity.*

Representatives from the Public Health Agency of Canada and CIHR were present at the workshop to answer questions about the funding opportunity.

Upcoming Meetings of Interest to III

- Association of Medical Microbiology and Infectious Disease Canada Annual Conference – February 27-March 2, 2008 in Vancouver, BC
- Canadian Society for Immunology Annual Meeting – April 11-13, 2008 in Mont Tremblant, QC
- 17th Annual Canadian Conference on HIV/AIDS Research Meeting – April 24-27, 2008, Montreal, QC
- Canadian Society of Microbiologists Annual Meeting – June 9-12, 2008 in Calgary, AB
- III Advisory Board Meeting – May 14-15, 2008 in Guelph, ON
- 8th Canadian National Immunization Conference – November 30 - December 3, 2008 in Toronto, ON

What's New?

III Strategic Funding Decisions

- **Operating Grant: Pandemic Preparedness Research - Influenza Diagnosis, Transmission, Ethics Review and Antivirals**
- **Team Grant: Pandemic Preparedness - Influenza Transmission and Prevention**
- **Emerging Team Grant: HIV/AIDS**
- **Operating Grant: HIV Prevention**
- **Meetings, Planning and Dissemination Grant**
- **Emerging Team Grant: Novel Alternatives to Antibiotics**

For more details on these funding decisions visit <http://www.cihr.gc.ca/e/26644.html>

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