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CHI CHRONICLES

Centre for
HUMAN IMMUNOLOGY

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CHI Extends Canada-wide!

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Canadian Human Immunology Network is born.

The Canadian Institutes of Health Research has awarded a Network Catalyst grant entitled the “**CIHR Human Immunology Network (CHIN)**” to the Centre for Human Immunology (CHI) at the University of Western Ontario (UWO), along with co-applicants. This network will act as a coordinating resource to help individual researchers to optimize resources and to accelerate the pace of their discoveries and its translation into humans. The Centre at UWO will act as the coordinating node with 7 participant nodes from Dalhousie University, University of Manitoba, McGill University, McMaster University, University of Toronto, University of British Columbia and the University of Western Ontario.

"CHIN will position London and Canada as a world leader in Human Immunology and its translation to improve global health. From vaccines to new therapies to treat



autoimmune diseases and transplant rejection, from food and water safety to preparedness for emerging infections, CHIN will be an invaluable resource to the community. And it all started here, in London, through a committed vision to excellence and innovation" says Dr. J. Madrenas, Lead applicant of CHIN.

CHIN will be a “one-stop-shop” where researchers can go to link up with other groups nationally and internationally with similar interests for collaboration, standardizing protocols for sample processing, biosafety, and ethics, and to facilitate sharing reagents and human samples for research. Likely in conjunction with the Canadian Society of Immunology

annual meeting, CHIN will plan an annual human immunology conference.

As a research network, CHIN will operate as a resource “umbrella” network, facilitating communication between nodes, each with their specialized expertise in human immunology, collaboration and knowledge exchange. The spirit of CHIN is to be inclusive to the interested parties doing research in human immunology and to become an information resource for investigators considering research in human immunology. CHIN will promote and enhance human immunology research in Canada and its international projection, and effectively limit duplication of resources by developing synergies between existing teams. The establishment of CHIN will ensure that Human Immunology in Canada remains at the forefront of the international effort.

Making a Move

Taking on New Challenges

The Associate Director of CHI, Joaquin Madrenas is moving on to tackle new challenges. He will be leaving Western to take on the position of Chair of the Department of Microbiology & Immunology at McGill University in August 2011. Although Quim will continue to be closely associated with CHI and remain the lead on the newly established CIHR Human Immunology Network (CHIN) we want to thank him for his vibrant contribution to creation and direction of the Centre. His incredible energy and enthusiasm for science, research and the Centre will be missed. "Bonne chance" and best wishes on your future challenges, Quim!



On the International Scene



Human ImmunoPhenotyping Consortium (HIP-C) Meeting

FOCIS created the HIP-C in 2009 with the initiative to standardize immunophenotyping in clinical research using flow cytometry as the platform. The group's specific goals are to standardize and validate methods of immunophenotyping, data collection and data analysis. Participating FOCIS Centers of Excellence (FCE) members, which includes CHI, met at FOCIS 2011 to discuss the present state of immunophenotyping and future steps.

Two immediate aims are to 1) build standard antibody panels and 2) develop Lyoplates. HIP-C is currently finalizing standard lyophilized cocktails of biomarkers to identify CD4/CD8 T cells, regulatory T cells, B cells and DC/Macrophages in human blood.

Each cocktail will likely comprise 8-10 biomarkers (panels are posted on FOCIS website). Antibody clones, fluorochrome conjugate and titre are being resolved. HIP-C is working with BD to develop a prototype Lyoplate for sample preparation. The plate format is vague but possibilities include an intact 96-well plate containing replicates of each cocktail to immunophenotype multiple donors per plate; strip wells with the same cocktail per strip; or strip wells that contain each cocktail to immunophenotype one donor. Considerations include Lyoplate cost, shelf life and flexibility limitations. Sample handling SOP was briefly discussed including preferable immunophenotypic analysis of cryo-PBMCs, fresh PBMCs or whole blood: a consensus was not reached. FCE members will be invited to test the

lyophilized standard panels versus liquid antibody cocktails plus Lyoplates on supplied cryo-PBMCs once available. Participating FCE labs will likely be supplied with CST values for instrument setup plus SOPs for sample handling/staining at the same time. The predicted timetable for testing was expected to begin in July 2011.

Future aims are to standardize data analysis. A central facility will be named that will confirm the validity of all standards, reagents and SOPs, plus act as a distribution center for the standards/reagents and possibly Lyoplates. Two setups were proposed for data analysis: either develop data analysis gating templates or have FCE labs send raw FCS data files to the central facility for data analysis.

International Human Microbiome Initiative

In a few short years Human Microbiome research has become one of the most exciting fields of biology. It has linked the human health to the microbial world in a way that is generating fascinating new insight into environmental influences on our health and well-being. It is also providing new therapies based upon nutrition such as probiotics. Since its inception the Canadian Microbiome Initiative (CMI) has provided new opportunities to the Canadian research community to participate in this international endeavor. The University of Western Ontario (UWO) has been part of the CMI through the Canadian Institutes of Health Research (CIHR) Institute of Infection and Immunity that had its home at UWO from 2000-2009. This year UWO is home to the

International Human Microbiome Consortium (IHMC) as B. Singh is co-chair of the IHMC for 2011-2012. UWO through CHI is part of the International Human Microbiome Standards (IHMS) project which is funded through the European Commission. IHMS seeks to coordinate the development of standard operating procedures (SOPs) and protocols to optimize all microbiome data and enables exchanges between the users and providers of the standards. Canada through CIHR has been a founding member of the IHMC that had its inaugural meeting in Heidelberg Germany in Oct. 2008. The second meeting of IHMC and scientific conference was held in Shenzhen, China in March 2010. The third meeting of IHMC and microbiome congress took place in March 2011 in Vancouver, Canada. Over 550 people from Europe, Asia,

Australia, North and South America attended the meeting. The conference was organized by the US National Institutes of Health (NIH) in collaboration with the Foundation for the National Institutes of Health (FNIH). Most of the presentation from the meeting are available at the NIH website : http://www.hmpdacc.org/outreach/conf_past.php. If you want a summary of the Vancouver meeting you can log on to the Autoimmunity Research Foundation website: <http://marshallprotocol.com/conferences/26mar2011/index.php>.

The next IHMC meeting and microbiome conference is being organized by the European microbiome consortium MetaHIT in Paris, France March 19-21, 2012. More information about the next meeting is available at: <http://www.metahit.eu/index.php?id=476>.



New Graduate Program

Masters of Public Health Program at Western

The development of an Interfaculty Program in Public Health will be led by the Schulich School of Medicine & Dentistry in partnership with other Faculties and the Richard Ivey School of Business as well as relevant Institutes and Centres at the University of Western (UWO), including the Centre for Human Immunology; Centre for Environment & Sustainability; and the Africa Institute. The first phase of this initiative, a Masters of Public Health (MPH) program will be introduced based on existing excellence in biostatistics, epidemiology, ecosystem health, population, clinical and health services research at UWO with emphasis on leadership and health policy.

The MPH program will accept its first students for September, 2013 and will be physically located on the fourth floor of the new Family Medicine Building. A short list of highly qualified candidates who applied to local, national and international advertisements for the position of Interim Director, Schulich Interfaculty Program of Public Health has been identified by members of the search committee for this position.

Well-advertised, open sessions will be held beginning in September, 2011 where plans for curriculum development and delivery in the core areas of the MPH will be discussed. These sessions will be organized and led by members of the interfaculty Steering Committee for the MPH. It was decided at the very well attended MPH Retreat

held October 30, 2010 that much of the Western MPH program should be delivered in the form of case studies.

These sessions will also discuss the preparation of relevant cases for the new program, a component of the program to be facilitated by experts from or trained by the Richard Ivey School of Business.

If interested in any aspect of the MPH program, please contact Jack Bend (jack.bend@schulich.uwo.ca) or Bertha Garcia (bertha.garcia@schulich.uwo.ca) (Interim Co-Directors, MPH).



CHI in the Community

Café Scientifique a Success!



On March 29, 2011 a panel of Lawson Health Research Institute researchers from the Centre for

Human Immunology facilitated a lively discussion about the immune system and how it effects infections, inflammation and chronic disease. The Bentley's Lounge at the Four Points Sheraton Hotel in London, Ontario provided the venue for a packed house of guests, where Drs. John McCormick, Ewa Cairns and Joaquin Madrenas fascinated the crowd with current information on how our immune systems mediate our susceptibility to chronic

diseases and infections, and why human immunology research should be a healthcare priority. The event was sponsored by the Canadian Institutes of Health Research.

“why human immunology research should be a healthcare priority.”



Upcoming Meetings

Buffalo Conference on Immunology

September 12-13, 2011
Lewiston, NY
www.smbuffalo.edu/wcmpi/immunconf.html

Transplantation Annual Scientific Conference

February 23-25, 2012
Quebec City, QC
<http://www.cst-transplant.ca/AnnualConference.cfm>

25th Annual CSI Conference

June 12-15, 2012
St. John's, NF
<http://www.csi-sci.ca/scientificmeeting/meetingwelcome12.aspx>

Annual FOCIS Meeting

June 21-24, 2012
Vancouver, BC
<http://www.focisnet.org>

Researcher Profile

The Centre is pleased to feature the research of Dr. Sung O. Kim a member of CHI.

Sung O. Kim



Defects or over-activation of innate immune receptors have shown to be involved in the pathogenesis of multiple infectious and inflammatory diseases. Among the several innate immune receptors, the family of Nod

-like receptors play a key role in defending invasion of various pathogenic bacteria, and defects in one of these receptors lead to the development of salmonellosis, shigellosis, anthrax and inflammatory bowel diseases. At the same time, over-activation of these receptors has shown to be linked to the development of various inflammatory diseases such as Blau syndrome and Cryopyrin-associated periodic syndrome. Kim's research program is aimed to unravel the molecular and signaling mechanisms of these innate immune receptors and their contributions in the development of these diseases. Many members of Nod-like receptors mediate inflammatory signaling cascades through activating the protease caspase-1. Kim's laboratory is investigating the

molecular mechanism of caspase-1-induced inflammatory cell death, known as pyroptotic cell death, using anthrax toxin in macrophages as a model system. NOD2 is one of the NOD-like receptors and defects of the receptor have shown to be associated with Crohn's disease. Unlike other Nod-like receptors, NOD2 does not induce caspase-1 activation and pyroptotic cell death but rather induces autophagy which is a cellular process required for cell survival and killing intracellular bacteria. Kim's laboratory has found a novel NOD2-interacting protein mediating autophagy process. Through understating the molecular and signaling mechanisms of Nod-like receptors, Kim's laboratory would like to develop novel therapeutic strategies in treating various infectious and inflammatory diseases.

CHI News & Activities

We acknowledge the following CHI members for their recent successes:

- **Terry Delovitch** - granted Professor Emeritus status at the spring 2011 Convocation at UWO.
- **Lakshman Gunaratnam** – Awarded the Schulich Clinician-Scientist Award for 2011, a New Investigator Award, a grant from the Krescent program (CIHR/Kidney Foundation) for 3 years at \$70K/yr and infrastructure support of \$25K.
- **Anthony Jevnikar** – Awarded the University of Western Ontario 2011 Faculty Scholar award.
- **Joaquin Madrenas** – Elected as a Fellow to the Canadian Academy of Health Sciences.
- **Miguel Valvano** – Awarded the 2011-2012 Zellers Senior Scientist Award from Cystic Fibrosis Canada.

CHI welcomes the follow new members to the Centre:

- **Steve Barr**
- **Nicholas Spence**
- **Kelly Summers**



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The CHI is an inclusive city-wide initiative to coordinate basic and clinical research, policy research and educational activities in Human and Translational Immunology at two different institutions in London, Ontario: The University of Western Ontario and Lawson Health Research Institute. CHI is the first Human and Translational Immunology centre in Canada that integrates basic research, clinical research, public health research and related policy formulation to promote and preserve a healthy immune system to deal with infections, inflammation and immune-mediated diseases.