Innovation from cell to society

The Canadian Healthy Infant Longitudinal Development (CHILD) Study

On December 3, 2008 Dr. Malcolm Sears, director of the CHILD Study, reported that each of the four recruitment centres - Vancouver, Edmonton, Winnipeg and Toronto - has met its pilot phase recruitment target of 50 mothers. The CHILD Study is a longitudinal birth cohort study involving a team of 37 investigators from multiple disciplines spanning the Network's three programmes of research. The CHILD Study team is undertaking a groundbreaking investigation of the genetic and environmental factors that influence the development of asthma and allergies in children from conception to age five.

Next steps include completion of interviews with parents and entering data into the project's "HealthDiary" so that researchers can undertake an evaluation of the pilot study from many perspectives. This evaluation will assess not only the ease with which recruitment occurred and identify potential problems in recruitment biases, but will also assess the ease with which the questionnaires were completed, identification of issues that were unclear, assessment of the length of time required to undertake interviews with the study participants and other related factors with the aim of streamlining the recruitment process.

The team will then refine their methods and instruments, make changes to questionnaires and procedures, obtain updated ethics approval for these modifications and continue towards realizing the full recruitment target of 5,000 mothers using refined questionnaires and procedures. Full recruitment will begin in February 2009.

AllerGen's Fourth Annual Research Conference, February 15-17, Ottawa

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The conference will feature:

Engaging scientific presentations/panel discussions
Keynote addresses by internationally renowned experts
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This year's conference will bring together allergic and related immune disease researchers, trainees and international experts from a wide range of disciplines, as well as industry, government, academic and not-for-profit organizations.

The AllerGen trainee poster competition will be held on the morning of Sunday February 15, 2009 and the best submissions will be recognized at the Gala Dinner on Monday February 16, 2009. AllerGen will also honour retiring Board members at this time.

Following the opening ceremony and reception on the afternoon of Sunday February 15, 2009 there will be an opportunity to enjoy the Winterlude festivities on the Ottawa canal, so don't forget to bring your skates!

Sponsorship opportunities and meeting space are still available. For more information please contact Jessie Ielati at 905-525-9140 ext. 26502 or ielati@mcmaster.ca. To register for the conference please visit AllerGen’s website www.allergen-nce.ca.

In this issue:

• AllerGen’s funding renewal
• Annual Report 2007-2008
• Fourth Annual Conference February 2009
• Challenges of asthma diagnosis
• International collaborations
• Research on asthma triggers
• CHILD Study update

AllerGen NCE Inc.
Scientific Director and CEO
Dr. Judah A. Denburg
Managing Director and COO
Diana Royce, EdD

All newsletter enquiries and comments should be sent to:
Sr Communications Officer
Jessie Ielati
ielati@mcmaster.ca

AllerGen Administrative Centre
is located at McMaster University
1200 Main Street West
Michael G. DeGroote Centre
for Learning and Discovery
Room 3120
Hamilton ON L8N 3Z5
(905) 525-9140, ext. 26502

AllerGen is a multi-disciplinary, cross-disciplinary and cross-sector collaboration of excellence focused on allergy and related immune diseases.

AllerGen is supported by the Government of Canada through the Networks of Centres of Excellence Programme.
International Partnership Promotes Progress

A llergen has successfully attracted international researcher Dr. Petra Arck, Canada Research Chair in Neuroim- morphological and Associate Professor at the Department of Medicine at McMaster University, who is strengthening AllerGen’s Mind-Body research team and facilitating new international collaborations between AllerGen and the Alexander von Humboldt Foundation in Germany, from which Prof. Arck recently received a grant as part of the Trans Co-op programme.

The Alexander von Humboldt Foundation provides financial support to German scientists who are studying abroad. In this case Dr. Arck, along with Drs. Judith Dentburg and Malcolm Sears, received support to facilitate collaboration between German and Canadian researchers who are engaged in projects dealing with prenatal environmental factors in the context of children’s health and atopic disease. Dr. Arck came to Canada to join the AllerGen research network and continue her studies into perinatal stress and programming of allergic responses, which falls under AllerGen’s Mind-Body Interaction and Allergic Disease research thrust.

“I recommend why I joined McMaster Uni- versity,” said Arck, “was that my research profile aligned well with AllerGen’s priori- ties. The research I was doing in Germany is directly related to AllerGen’s overall goals. As a result of the Alexander von Humboldt Foundation funding, exchange of scientific excellence between Canadian and German researchers will be facilitated and new ideas can emerge.”

“There is no reason why I joined McMaster Uni- versity,” continued Arck, “will provide mutual benefit to both countries; we will be able to bring different research teams together. In turn, scientific ap- proaches can be discussed and harmo- nized, i.e., by using the same techniques and questionnaires. Databases are being generated that allow a direct comparison of results between the two countries.”

Arck hopes that her current study will identify the link between psychosocial stress challenge during pregnancy and children’s increased susceptibility towards allergic disease later in life.

“Our aim,” said Arck, “is to identify women at risk to give birth to a child prone to develop allergic diseases, as this early identification may allow primary preven- tion of allergies during pregnancy. To date, we have identified hormonal changes in pregnant mothers in response to stress during pregnancy, such as a decrease of progesterone, which is known to challenge placentation development. We expect that if we supplement pregnant mothers with progesterone, this will lead to an improved placental function and fetal development, ultimately preventing the child from prenatal challenges and allergic diseases in later life. Initially, we will address this aim in our mouse models.”

AllerGen Updates Strategic Plan 2009-2012

A s part of its recent application for continued NCE support, AllerGen recently updated its strategic plan 2009–2012. The 2009 plan is based on AllerGen’s original 2004 proposal to the NCE program and will guide AllerGen’s investments in research and development through to the end of its first of two seven year funding cycles.

AllerGen’s research is organized into three cross-cutting Programmes of research - Programme A: Gene-Environment Interactions; Programme B: Diagnostics and Therapeutics; and Programme C: Public Health, Ethics, Policy and Society.

Within these three programme areas are strategic research thrusts and new initiatives in emerging areas of priority. These thrusts, which include both mature and emerging nationally networked teams, are:

• Genetics and Gene-Environment Interactions in Allergy and Asthma
• Biomarkers, Immune Monitoring and Drug Discovery
• Food Allergy and Anaphylaxis
• Mind-Body Interactions and Allergic Disease
• Allergic Disease Management and Surveillance (including Occupational Asthma)
• The Canadian Healthy Infant Longitudinal Development (CHILD) Study

In early 2009, AllerGen will be issuing a call for proposals to strengthen the end outcomes and impacts of its research programme through networked, programmatically linked research projects, aligned with its strategic priorities.

Asthma Reality: Over and Under Diagnosed

Asthma is one of the most common respiratory diseases in Canada, yet many cases remain undiagnosed. The prevalence of asthma among Canadians is considered to be as high as 10 per cent of the population.

AllerGen Principal Investigator Dr. Louis-Philippe Boulet from Laval University was involved in a study recently profiled in the Canadian Medical Association Journal (CMAJ, 18 November 2008, Volume 179, Issue 11) that compared misdiagnosis of asthma in obese versus non-obese patients with primary care physicians’ diagnoses of asthma.

“This study,” said Boulet, “showed that about one-third of both groups did not have asthma after about eight months of follow-up and weaning off medication based on negative methacholine test results.”

The study was developed due to the inci- dence and prevalence of obesity increas- ing concurrently with the incidence and prevalence of asthma, which indicated a possible link between obesity and asthma. The underlying hypothesis was that some respiratory symptoms associated with obe- sity could be misinterpreted as asthma. “Although this study indicates that asthma is often over-diagnosed,” continued Boulet, “the possibility remains that it is also undiagnosed in a significant number of individuals. This issue, therefore, needs to be further explored. We think there are possibly just as many undiagnosed as there are misdiagnosed patients.”

Boulet also observed that, “This study points out that one of the major care gaps in asthma and pulmonary obstructive diseases globally is the insufficient use of objective measures of airway function to confirm asthma diagnosis – either spirom- etry, or other methods of assessment of pulmonary function, including bronchosprulation tests are needed to ensure accurate diagnoses.”

AllerGen Principal Investigator Dr. Glenda MacQueen is exploring behav- ioural and emotional factors to determine whether or not they influence the onset and severity of asthma.

Dr. MacQueen, Head of the Department of Psychiatry, Alberta Health Services and the University of Calgary, said the main aim of the study ‘Neuroimaging and environmen- tal suggestibility in asthma’ is to identify a portion of people with asthma who are susceptible to psychological triggers and asthma-related cues.

This study was undertaken with support from AllerGen Programme B: Diagnostics and Therapeutics as part of the Network’s investment in Mind-Body Interactions and Allergic Disease research.

“We will be comparing people,” said Mac- Queen, “with moderate asthma who rated as highly suggestible based on a Creative Imagination Scale, with those who rated as suggestion resistant.”

These patients will have their brain activity examined using functional magnetic resonance imaging (fMRI) while asthma related, emotionally negative and emo- tionally neutral words are presented to them.

MacQueen added, “It is reasonable to predict that suggestive patients exposed to asthma-associated words might have a different pattern of brain activity than those who are suggestion resistant. In a previous study, five out of eight suggestive- able subjects compared with one in nine suggestion resistant subjects had a fall in respiratory volume in response to inhaled saline and a suggestion that they would experience tightening in their airways.”

The trigger may be in the head but MacQueen said the physiological effects are real. Very few studies have examined activity in the nervous system using neu- roimaging techniques in people who have asthma.

“It is possible,” she said, “that a portion of patients with asthma are particularly sensitive to asthma-related cues and that this property of the central nervous system contributes to a decrease in asthma control in that group.”

(Continued on page 4: Links to Asthma)
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“All the participants in this study were classified as having asthma, and the lab examina- tion results confirmed this,” continued Boulet. “However, the patients did not meet the clinical criteria for asthma.”

This information led researchers to ask whether or not they influence the onset and severity of asthma.

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Child Study update

Photo courtesy of Ottawa Tourism

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