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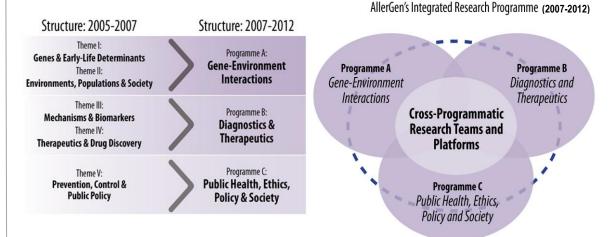
NCE Phase II Renewal Application Update (2012 to 2019)

Proposed Research Priorities for AllerGen NCE 2012-2019

In preparation of our application for a second seven years of NCE funding, AllerGen's Board, Research Management Committee (RMC), Advisory Committees and partner organizations have been working hard over the past year to document progress to date and develop a strategic plan aligned with the NCE's goal of social and economic impacts and benefits to Canadians.

We will meet on September 20, 2011, with an international panel of expert reviewers selected by the NCE to present our proposal for funding to 2019.

Following a rigorous mock review by an external panel convened by AllerGen in May 2011, AllerGen's Strategic Plan 2012-2019 evolved in a manner that takes greatest advantage of our existing partnerships, research successes and key accomplishments towards building world-class research teams and enabling platforms that leverage our national and international reach.



The evolution of AllerGen's research focus in

Phase I can be seen in the above two figures, moving from five themes in 2007 to three integrated programmes – which has been the conceptual framework around which our research program will operate to 2012. The strategic plan for Phase II of NCE funding requires further integration and a plan for concrete results by 2019. AllerGen proposes to focus its research on three Legacy Projects, interacting with three Enabling Platforms as illustrated below.



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- Legacy Projects:
 - Canadian Healthy Infant Longitudinal Development (CHILD) Study, will generate important new data on maternal and infant health in Canada and will serve as a national resource for multiple research endeavours. CHILD will enable and inform many scientific constituencies and stakeholders within and outside of AllerGen, in Canada and globally, for decades to come

Clinical Investigator

Collaborative (CIC) will expand to add a Severe Asthma CIC and an Allergic Rhinitis CIC. With new international sites in Sweden, Netherlands and the UK, the CIC will become a major asset for novel

| | AllerGen Legacy Projects | | |
|---------------------------------------|--|--|--|
| Enabling Platforms | CHILD Study | CIC | CanFAST |
| Gene X Environment Interactions | International GWAS (GABRIEL) & GWIS (TAG) Environmental exposure assessment & monitoring Epigenetics: Stress & social determinants Early determinants of health | Functional genomics Pharmaco-genomics Genetics of asthmatic response Environmental interventions Immunotherapy | Genetics of peanut allergy Pharmacogenetic targets Environmental triggers of food allergy |
| Biomarkers & Bioinformatics | Metabolomics/Proteomics Innate/Adaptive Immunity Environmental toxicants The Microbiome Markers of stress | Urine Metabolomics Innate/Adaptive Immunity: micro-arrays Sputum cytology, flow cytometry & proteomics | Oral desensitisation & tolerance markers Diagnostic algorithms Component testing & thresholds |
| Patients, Policy & Public Health | Safe foods & product standards Mother/child health care Planning & safety of the built environment Enhanced quality of life Evidence-based public health strategies Public/private partnerships | Development of new therapies Management guidelines Decreased burden of disease Enhanced quality of life Evidence-based public health strategies Public/private partnerships | Burden of disease across populations Evidence-based public health strategies and the foundation for a National food allergy strategy Enhanced quality of life Public/private partnerships |
| | Education, awareness, empowerment across a range of stakeholder groups (from patients through professionals to the public). | | |

AllerGen's Integrated Research Strategy

2012-2019 Integrated Research Strategy: Legacy Projects and enabling platforms

diagnostics and therapeutics in allergy and asthma in Canada and globally

 The Canadian Food Allergy Strategic Team (CanFAST), a highly-innovative, cross-network approach to food allergy and anaphylaxis that incorporates biomedical, clinical, population and psychosocial information in order to translate understanding of food allergy into management and public health measures. Within this new mandate, CanFAST will position Canada to develop, with key partners and stakeholder groups, a national food allergy strategy.

Three Enabling Platforms:

 Gene-Environment Interactions, involving wellestablished teams of AllerGen investigators working nationally and globally, to apply genetic and environmental research innovation and new knowledge on nature and nurture (epigenetics, maternal-child interactions, lifestyle and stress), with the twin goals of discovering novel therapies and diagnostics, as well as implementing novel public health interventions and policies across AllerGen's Legacy Projects

- Biomarkers and Bioinformatics, which brings together successful members of AllerGen's diagnostics and biomarkers research, new partners with various 'omics' capabilities, biological sampling standard operating protocols (SOPs) and animal models into an integrated, world-leading systems-biology and bioinformatics approach to development and commercialization across AllerGen's Legacy Projects
- Patients, Policy and Public Health, focusing on benefits for patients, policy and public health across Legacy Projects. This team integrates expertise in the social sciences, including psychology, sociology, medical geography, ethics, law and health economics to inform evidence-based public health policy.



Highly Qualified Personnel (HQP)

The Strategic Plan 2012 to 2019 also proposes robust capacity building programs for the Network HQPs. Briefly outlined below are continuing and new opportunities for Network trainees and investigators.

Capacity Building Workshops (\$100,000/yr)

- a) Annual Trainee Professional Development two-day trainee workshop for ASNPN members skill development opportunities include public speaking and presentation skills, career planning, recruiting and effectively utilizing mentors, strategic planning, integrated knowledge translation, media relations, ethical approaches to research involving human subjects, negotiating employment contracts and research grant writing
- b) Specialized Equipment/Lab Transfer/Research Skills Acquisition – this program supports workshops that enable the sharing and development of unique technical and laboratory skills relevant to AllerGen researchers as well as offers practical professional development and capacity building opportunities.

Poster Competition at Annual Research Conference (\$50,000/yr)

The annual HQP research poster competition and oral presentations are central features of the AllerGen annual *Innovation from cell to society* research conference. This fund supports travel to the conference and cash awards for the top posters and oral poster presentations.

Allergen Emerging Clinician-Scientist Research Fellowship (\$250,000 for two years)

The goal of supporting two Emerging Clinician Scientists per year is to enable newly trained Canadian Clinical Immunologists and Allergists to pursue allergy, asthma and/or anaphylaxis academic research training immediately following their Clinical Immunology and Allergy sub-specialty training.

Travel Awards (\$20,000/yr)

This initiative supports a portion of travel and accommodation costs to enable AllerGen investigators, trainees and ASNPN members to attend national and international conferences, symposia and workshops offered by non-Network organizations that contribute to their professional development. Awards of up to \$1,500 can be issued, subject to 1:1 matching funding provided from non-AllerGen sources. AllerGen and Fonds de la recherché en santé du Québec (FRSQ) Partnership (\$30,000/yr) AllerGen and FRSQ will jointly support up to two FRSQ-AllerGen Clinical Research Scholars – Junior 1 Career Awards per year. These awards will be given to outstanding young clinical investigators who wish to pursue their research in the fields of allergic and related immune diseases.

AllerGen and Michael Smith Foundation for Health Research (MSFHR) Partnership (\$30,000/yr)

AllerGen and MSFHR have signed an MOU to co-fund, on an equal basis, the highest ranking candidates working in allergic disease research within the MSFHR regular training grants competitions. This initiative will leverage provincial research funding in BC to support additional research trainees within the AllerGen Network.

AllerGen Undergraduate Allergy, Asthma and

Anaphylaxis Summer Studentships (\$30,000/yr) *NEW* This new program will support 10 new Undergraduate Summer Studentships per year at up to \$3,000 per award invested by AllerGen and requiring a 1:1 match of non-AllerGen funding guaranteed by the AllerGen Supervisor.

International Exchange Program (\$150,000/yr) NEW

Short-term trainee exchange programs will match AllerGen trainees with the top allergy and asthma clinician-scientists and researchers in the world for a maximum of six weeks. These exchanges will accelerate international knowledge exchange, capacity building and networking.

Industry, Healthcare and Public Sector Internships:

Primary partner Mitacs Accelerate and Step programs (\$75,000/yr) NEW

Accelerate offers national internships at graduate and postdoctoral levels in all disciplines, together with supervising professors and Canadian companies, to help ensure that the research innovations developed in Canadian universities are utilized by Canadian companies. Job shadowing opportunities will be developed with public sector and health partner organizations.

Visiting Clinician-Scientist Professorships (\$8,000/yr) *NEW*

In partnership with the CSACI, AllerGen will take a leadership role in organizing four half-day Visiting Clinical Scientist Professorships per year at medical schools across Canada to expose more medical students and internal and pediatric residents to the professional and research opportunities available to them in the field of allergy and clinical immunology.



Commercialization and Knowledge Mobilization Strategy

The identification, protection, commercialization and/or translation/mobilization of Network-supported intellectual property are fundamental to AllerGen's success. Each research investment requires a critical assessment of the "value-added" of Network support, the degree of "pull" from user sectors that support the research and a clearly identified "need" for the results.

VALUE GENERATION Business Development Partners Technology Development Partners Commercialization 7E Ontario Cent Excellence Venture Capital PREVENT rdrd Investors Sorioob Angel Investors Industry NSIP **Business** Development AllerGen Research AllerGen Strategy to Accelerate Commercialization through partnership

AllerGen relies on the expertise of its internal NSIP Advisory Committee as well as established relationships and processes to identify technologies with the most commercial potential to make these assessments. To 2019, AllerGen will engage MaRS, TEC Edmonton and Springboard Atlantic as well as other technology development, business development and commercialization partners, to help us actively mine existing research coupled with a market pull analysis. With the assistance of technology value-added service providers and the technology transfer community, AllerGen will ensure that its technologies are well positioned for industry collaboration.

In support of non-commercial, patient, policy and healthcare practice, a new Stakeholder Advisory Committee (SAC), (formerly the AllerGen Policy, Ethics, Law and Society (PELS) Advisory Committee), is proposed to provide advice to the RMC regarding knowledge translation (KT) and mobilization (KMb). KMb is an area of strength within AllerGen, and moving forward, even greater partner engagement is required to create the tight links between Network researchers and knowledge users that will facilitate rapid application of AllerGen's research results.

Partnerships – Letters of Support

AllerGen requested \$48.2 million from the NCE program over the next seven years. In addition, the Network received commitments of cash and in-kind support from partners of over \$45 million. This represents a ratio of NCE to partner support of almost 1:1. The actual cash and in-kind contribution over the next seven years is anticipated to be even higher due to the fact that concrete planning for many projects will not be complete until 2014. To date, AllerGen's ratio of NCE to non-NCE funding has averaged 1:1.1. AllerGen received a total of 107 Letters of Support from organizations across sectors including: Industry, Canadian federal government, Canadian provincial government, universities, not-forprofit and patient associations as well as international organizations and educational and research institutes.

AllerGen's 7th Annual Innovation from Cell to Society Research Conference

Fairmont Royal York Hotel, Toronto, Ontario February 5-7, 2012

Would you like to present your research findings at the next conference? Answer the Call for the Expression of Interest

Innovation from cell to society is the Network's annual opportunity to showcase its research results achieved over the past year in collaboration with research collaborators and Network knowledge and technology translation partners. It also provides an important opportunity for networking among representatives from the allergic disease research community, trainees and international experts from a wide range of disciplines, as well as industry, government, academic and not-for-profit organizations.

Watch for the *Call for Expressions of Interest*, which will be sent to all Network researchers, collaborators and partners in September 2011 inviting proposals for review by the 2012 AllerGen Conference Planning Committee.



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AllerGen Success Stories

Since fall 2010, three issues of AllerGen research *Success Stories* have been mailed to Network partners





and researchers. Copies are also available on the AllerGen website. These volumes are part of an ongoing series of publications intended to mobilize Network research results among lay audiences. AllerGen *Success Stories* aim to make the latest research results available and accessible to patients, care-givers, family and friends, as well as researchers, trainees and partners.

Thank you to contributing AllerGen investigators for sharing with us stories of their research projects and findings. These publications are an important part of AllerGen's knowledge mobilization strategy to disseminate current research to Canadians.

Should you wish to have your research results considered for future publications, please email Marta Rudyk, Manager, Communications and Knowledge Mobilization at <u>martarudyk@allergen-nce.ca</u>

Stakeholders and Partner Analyses – New tools to aid the development of Project Partnering and KT Strategies

AllerGen has invested in identifying and developing relationships based on meaningful engagement with Canadian stakeholders and partners over the past seven years. Looking ahead to 2019, AllerGen aims to build on and strengthen these key relationships. To assist in this endeavour, over the past year, the AllerGen Administrative Centre Staff has undertaken a detailed analysis of Network partners and stakeholders, resulting in two reports: *AllerGen Stakeholder Analysis of Network Research Partners* and *AllerGen Stakeholder Analysis of Network Knowledge Users* were developed for Network investigators, Committees and Administrative Centre staff to have up-to-date, accurate profiles of current and prospective Network stakeholders.

In each report, one-page profiles outline past and current relationships with AllerGen. In particular, these analyses provide information on previous and current financial commitments to AllerGen-supported research, collaborative research outputs to date, as well as future collaborative research opportunities. For each knowledge user stakeholder, AllerGen maintains an updated key contact list, a profile of each organization's vision, mission, strategic priorities and an analysis of AllerGen research of strategic relevance to each. This information can be used to target organizations for partnership and knowledge dissemination.

In 2010-11, AllerGen had direct research-based partnerships with 133 organizations (21 industry, 6 Federal, 6 Provincial, 21 hospitals/healthcare centres, 65 community organizations, associations/foundations, 14 research institutes). As well, AllerGen has 145 knowledge mobilization stakeholders that it targets within a "hub and spoke" model, for dissemination of research results. The hub and spoke model exponentially increases the reach of AllerGen's research results and the information can be further tailored to meet the knowledge needs of each organization.

These reports are intended to be "living" documents, validated by each stakeholder organization and updated annually. Some summaries are still in the process of being validated by individual stakeholders. These analyses are available upon request from Marta Rudyk, Manager, Communications and Knowledge Mobilization at martarudyk@allergen-nce.ca

Upcoming Events

<u>Allergy/Asthma Information Association</u> – September 28, 2011 - Annual General Meeting via Teleconference at 8 p.m. EDT <u>Canadian Society of Internal Medicine Annual Scientific Meeting</u> - October 12-15, 2011- Halifax, NS <u>CSACI Annual Scientific Meeting 2011</u> – October 20-23, 2011 – Quebec City, QC <u>Canadian Network for Respiratory Care</u> – November 10-12, 2011 – Gatineau, QC <u>AllerGen's 7th Annual Research Conference</u> – February 5-7, 2012 – Toronto, ON <u>American Academy of Allergy Asthma and Immunology</u> – March 2-6, 2012 – Orlando, FL <u>Canadian Respiratory Conference</u> – April 26-28, 2012 – Vancouver, BC



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Inaugural AllerGen Emerging Clinician-Scientist Research Fellowship Winner Announced

On April 11, 2011 AllerGen announced the winner of its inaugural Emerging Clinician-Scientist Research Fellowship at the Meakins-Christie Laboratories, McGill University in Montreal, Quebec. This \$250,000 fellowship was awarded to Dr. Moshe Ben-Shoshan and is an innovative solution to the shortage of allergy and clinical immunology researchers and specialists in Canada.

Dr. Ben-Shoshan completed his pediatric residency at Sourasky medical center in Tel-Aviv, Israel and subsequently completed his fellowship in Pediatric Allergy/Clinical Immunology at Montreal Children's Hospital in 2009. Over the past year, he worked as a research fellow under the mentorship of Dr. Ann Clarke, Professor, Department of Medicine, McGill University. His primary research interest is in the epidemiology of food allergy. He

Call for 2011-2012 Applications Now Open! Emerging Clinician-Scientist Research Fellowship Competition

The goal of the AllerGen Emerging Clinician-Scientist Research Fellowship is to enable Canadian Allergists and Clinical Immunologists to pursue allergy, asthma and/or anaphylaxis academic research training immediately following sub-specialty training in order to:

- Increase the number of medical students pursuing an Allergy and Clinical Immunology sub-specialty and undertaking related basic and/or clinical research while serving Canadians suffering from asthma, allergies and related immune diseases
- Increase research capacity in the field of Allergy and Clinical Immunology, and
- Foster and enhance academic innovation arising from basic and clinical research.

The AllerGen Emerging Clinician-Scientist Research Fellowship 2011-2012 provides a stipend of up to is currently a physician in the Department of Allergy and Immunology at Montreal Children's Hospital and is involved in several AllerGen research initiatives on food allergy and anaphylaxis.



\$250,000 for a maximum of two years for clinicians who have completed Clinical Immunology and Allergy subspecialty training within the past 18 months at a Canadian academic health sciences centre. Preference will be given to applicants whose host institution can confirm that the applicant has been identified for a junior faculty position following successful completion of the Fellowship and/or continued provincial research funding support.

Eligible academic foci include basic and/or clinical research related to allergy, asthma and/or anaphylaxis. **Submission Deadline: October 14, 2011**

Visit our home page at <u>www.allergen-nce.ca</u> to view the full document titled *Request for Applications*. Fill out your application today or encourage your colleagues and recent graduates to compete for this unique award.

AllerGen's Strategic Initiatives – Call for Proposals

Each year, AllerGen allocates funds to support strategic initiatives – opportunities that arise in-year and for which rapid responses are required.

This year, the fund for strategic research initiatives has been fully utilized. However, the following funds remain available for strategic initiatives related to knowledge translation and transfer initiatives, IP and proof-of-principle projects and commercialization-related activities:

- 1. Strengthen IP Position & Proof of Principle (Available Budget \$200,000)
- 2. Knowledge Translation & Transfer (Available Budget \$132,100)

3. Commercialization (Available Budget \$200,000)

Please see the <u>Research section</u> of the AllerGen web-site for the application forms or contact Jose Mangles, Manager, Research and Partnerships at josemangles@allergen-nce.ca.

In addition, you are required to consult with your Programme Leaders in advance of submitting an application to any of the strategic initiatives funding programs.



AllerGen Partnerships Update

AllerGen relies on partnerships and collaborations with a variety of stakeholders in order to enhance the value and maximize the social and economic benefits of Network-supported research to Canadians. Over the past year, AllerGen has collaborated and partnered with numerous companies and organizations that contributed a total of \$10,186,598 in cash and in-kind.

One area of research and collaboration that allowed AllerGen to work with many new stakeholders and partners is allergy and asthma education and knowledge dissemination/mobilization in Aboriginal communities. Initial exploratory research demonstrated that there was a strong unmet need for information on prevention and management of chronic respiratory disease in Aboriginal communities as asthma and related allergies are the most common chronic conditions affecting First Nations youth. Little is known about affected youth and it has been documented that there is low awareness and knowledge on the social determinants of health and their impact on respiratory health among First Nations, Métis, and Inuit community members.

AllerGen principal investigators, A. Becker, D. Befus, H. Castleden, A. Clarke, S. Elliott, K. Hayglass, M. King, M. Stewart and T. To, are currently involved in 12 projects that are being undertaken in partnership with organizations including the Asthma Society of Canada with support from the National Lung Health Framework, Anaphylaxis Canada and many Aboriginal communities. These projects are aimed at improving education and awareness of asthma and associated allergies. In addition, six publications have risen from these projects.

Between 2008 and 2011, partner organizations have invested over \$1.3 million in cash and more than \$150,000 in in-kind contributions to support research projects on respiratory health, asthma and food allergies in First Nations, Inuit and Métis communities. AllerGen has contributed more than \$1.4 million (in cash) and \$126,000 (in-kind) to support these research efforts.

Findings and considerations contributing to the Aboriginal communities' respiratory health model include:

- Implementation of health promotion and awareness initiatives to empower communities to create their own unique prevention strategies
- Implementation of asthma management educational activities for children
- Development of new health care delivery models for Aboriginal community members living with chronic diseases
- Addressing links between asthma, obesity and related allergies through school-based programming
- Aboriginal community members value interactivity and visual materials when learning about prevention of chronic disease
- Importance of innovative knowledge exchange opportunities among inter-disciplinary groups of researcher partners in the areas of asthma and related allergies
- Identification of implications for improved clinical practice, programs and public health policies
- Development of culturally appropriate resources for asthma and allergies education
- Engagement of community members in projects, which translates into increased community capacity and engagement. For example, community champions and leaders have been recruited and trained to deliver respiratory health education.

Some of the communities currently engaged in AllerGensponsored projects are: Conne River, Newfoundland and Labrador, Saddle Lake, AB, Listuguj, QC, Wendake, QC, Postville, NL and Prince George, BC.

Since April 2010, new partners involved in Aboriginal projects are listed below:

Assembly of Alberta ChiefsFisher River Tribal CouncilPotlotek First NationAssembly of Manitoba ChiefsGoodfish Lake First Nation Health
CentreSaddle Lake First Nation Health
CentreDakota Tipi Health CentreMermbertou First NationWagmatcook First NationDakota Tipi Tribal CouncilMi'kmaq First NationsWaycobah First Nation

*New partners involved in Aboriginal projects are bolded (this list does not include ongoing partnerships)



AllerGen: Transforming allergy and asthma research

In 2010, AllerGen NCE Inc. secured the services of *Science-Metrix*, a consulting firm specializing in bibliometric analysis, to provide an assessment of the impact of AllerGen-supported research outputs between 2006 and 2010.

Among its key findings, the *Science-Metrix* bibliometric analysis suggested that the Network structure has fundamentally changed the manner in which allergy and asthma research is undertaken in Canada.

Science-Metrix reported that amongst AllerGen investigators, publications arising from AllerGensupported research projects were approximately two times more networked with other AllerGen investigators (at three AllerGen investigators per publication) compared to non-AllerGen-supported research projects (at 1.5 AllerGen investigators per publication).

Results also illustrated that being involved in AllerGen increased the likelihood that Network investigators would

continue to work and publish projects in a networked, collaborative manner, even when AllerGen was not funding the project.

This analysis further revealed that:

- AllerGen-sponsored research is published in journals with greater impact and levels of citation compared to non-AllerGen research in the fields of allergy and asthma (using the same group of investigators for both metrics); and that
- AllerGen-sponsored research is published in more journals of higher impact, with greater levels of citation compared to Canadian and global research output in the fields of allergy and asthma generally.

These findings support AllerGen's goals of developing a specialized network of allergy and asthma experts that contribute to reductions in the impact of allergic and related immune diseases nationally and globally.

AllerGen Research Articles published in refereed publications since April 2011

*AllerGen investigators and trainees are in bold

Stewart M, Letourneau N, Masuda JR, Anderson S, McGhan SL

"I want to meet other kids like me": support needs of children with asthma and allergies April-11 *Comprehensive Pediatric Nursing*

Carlsten C, Dybuncio A, Becker AB, Chan-Yeung M, Brauer M

Traffic-related air pollution (TRAP) and incident asthma in a high-risk birth cohort April-11 Occupational and Environmental Medicine

Maltby S, Freeman S, **Gold M**, Baker JHE, Zybtnuik L, Minchinton AI, **Gold M**R, Roskelley CD, **McNagny KM** Opposing roles for CD34 in tumor growth alter early stage vascular and late stage immune cell infiltration April-11 *PLoS ONE*

Rousseau M-C, Boulay M-E, Goronfolah L, Denburg J, Keith P, Boulet L-P

Comparative responses to nasal allergen challenge in allergic rhinitic subjects with or without asthma April-11 Allergy, Asthma and Clinical Immunology

Stewart M, Masuda JR, Letourneau N, Anderson S, Cicutto L, McGhan SL, Watt S

Online support intervention for adolescents with asthma and allergies: Ingredients and insights April-11 *Journal of Asthma and Allergy Educators - Online*

Carlsten C, Dybuncio A, Becker AB, Chan-Yeung M, Brauer M

GSTP1 polymorphism modifies risk for incident asthma associated with nitrogen dioxide in a high-risk birth cohort April-11 Occupational and Environmental Medicine

Arrandale VH, Brauer M, Brook JR, Brunekreef B, Gold DR, London SJ, Miller JD, Ozkaynak H, Ries NM, Sears MR, Silverman FS, Takaro TK

Exposure assessment in cohort studies of childhood asthma May-11 *Environmental Health Perspectives*



Hackett TL, Singhera GK, Shaheen F, Hayden P, Jackson GR, Hegele RG, Van Eedem S, Dorscheid DR, Knight DA, Bai T

Intrinsic phenotypic differences of asthmatic epithelium and its inflammatory responses to RSV and air pollution June-11 American Journal of Respiratory Cell and Molecular Biology - Online

Blanchet MR, **Bennett JL**, **Gold M**, Levantini E, Tenen DG, Girard M, Cormier Y, **McNagny KM** CD34 is required for dendritic cell trafficking and pathology in lung inflammatory disease June-11 *American Journal of Respiratory and Critical Care Medicine - Online*

Arias K, Chu DK, Flader K, Botelho F, Walker T, Arias N, Humbles AA, Coyle AJ, Oettgen HC, Chang HD, Van Rooijen N, Waserman S, Jordana M

Distinct immune effector pathways contribute to the full expression of peanut induced anaphylactic reactions in mice June-11 Journal of Allergy and Clinical Immunology

Allen RW, **Amram O**, Wheeler AJ, **Brauer M** The transferability of NO and NO2 land use regression models between cities and pollutants 2011 *Atmospheric Environment*

Ilarraza R, Wu Y, Ebeling C, **Davoine F**, **Adamko DJ** Immunomodulatory potential of CVT-E002, a proprietary north american ginseng extract, in vitro 2011 *The Journal of the Federation of American Societies for Experimental Biology*

Kozyrskyj AL, Zeng Y, MacNeil BJ, Colman I, **Hayglass KT**, Sellers EAC, **Becker AB** Maternal distress in early life predicts the waist-hip ratio in school children 2011 *Journal of Developmental Origins of Health and Disease*



AllerGen mourns the passing of a Canadian Asthma Pioneer

In June, the asthma community lost an international leader and pioneer in asthma research and care - Dr. Frederick Hargreave, a professor emeritus of McMaster University. During his career at McMaster University, Dr. Hargreave's studies in asthma changed the way the disease is diagnosed. He developed innovative tests to measure airway responsiveness and airway inflammation and make decisions on clinical treatments. He developed the methacholine challenge test to more precisely diagnose asthma, which has become a standard test used around the world. Dr. Hargreave's long-time colleague and former student, Dr. Paul O'Byrne, said his former supervisor also developed a new method of collecting secretions in airways about 15 years ago, adding that the non-invasive process, known as sputum induction, is widely used to determine what kind of inflammation a patient has. Hargreave was also one of the founders of the clinic which has become the Firestone Institute for Respiratory Health at McMaster and St. Joseph's Healthcare Hamilton. Many AllerGen investigators trained with Dr.

Hargreave. His efforts to improve the lives of those living with asthma continue on through the successes of many investigators and their own trainees within the AllerGen Network.

AllerGen NCE Inc.

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