
AllerGen
Innovation from cell to society
2010.2011
Networks of Centres of Excellence

AllerGen NCE Inc. is hosted at McMaster University, Hamilton, Ontario, Canada.

AllerGen NCE Inc. is supported by the Government of Canada through the Networks of Centres of Excellence (NCE) program.

Networks of Centres of Excellence is a joint program of the Natural Sciences and Engineering Research Council of Canada, the Social Sciences and Humanities Research Council of Canada, the Canadian Institutes of Health Research and Industry Canada.

Launched in 1989 to deliver the original Networks of Centres of Excellence, today the NCE Secretariat runs four national initiatives: Networks of Centres of Excellence (NCE); Centres of Excellence for Commercialization and Research (CECRs); Business-Led Networks of Centres of Excellence (BL-NCEs); and the Industrial Research and Development Internship program (IRDI).

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Aussi disponible en français

AllerGen NCE Inc. was established in response to the fact that one in three Canadians is living with allergic disease. In addition, there is a dearth of research on the causes of and cures for allergy, asthma and related immune diseases. Since its inception in 2004, AllerGen has been fostering a national network comprising leading Canadian allergy, asthma and immune disease experts who are working in trans-disciplinary teams, with national and international collaborators, and stakeholder and research partner organizations from across sectors. These teams are addressing gaps in knowledge and seizing new opportunities in diagnostics, therapeutics, health care, public health, ethics, policy and patient education. They are also training the next generation of researchers, innovators and clinician-scientists, while collaboratively working to reduce the morbidity, mortality and socio-economic impacts of allergy, asthma, anaphylaxis and related immune diseases.

Corporate Profile

AllerGen-funded research aims to accelerate the development of new diagnostic tests, better medications, accessible patient education tools and more effective public policies. AllerGen's investments in education and training are expanding public education, improving allergy, asthma and anaphylaxis management, and increasing the number of medical professionals researching and practicing in these areas.

AllerGen NCE Inc. (AllerGen), the Allergy, Genes and Environment Network, is a national research network funded by Industry Canada through the Networks of Centres of Excellence (NCE) Program. AllerGen supports excellence in research and fosters social innovation and knowledge translation that will enable Canadians to better prevent, treat and manage allergy, asthma, anaphylaxis and related immune diseases.

Through the creation of a national network of allergy and immune disease experts, AllerGen brings together 170 Network investigators and collaborators, 426 students and young professionals, research associates and technicians, which represents 340 full-time equivalent network research staff. In addition, AllerGen worked closely with over 109 partners across different sectors, including academic, industry and government, on 27 research projects and 16 strategic initiatives.

AllerGen's Vision

To create an enduring network of allergy and immune disease experts whose discovery and development efforts contribute to reductions in the impact of allergic and related immune diseases nationally and globally.

AllerGen's Mission

To catalyze and support discovery, development, networking, capacity building, commercialization and knowledge translation that contribute to reducing the morbidity, mortality and socio-economic burden of allergic and related immune diseases.

Message from the Board Chair and Scientific Director

One in three Canadians will experience asthma over his/her lifetime; and the economic burden of allergic disease is in excess of $15 billion per year. AllerGen is poised to ensure that the most promising research, capacity building and knowledge exchange initiatives under its guidance realize their full potential to improve the lives of Canadians living with allergic diseases and decrease the burden that these diseases impose on Canadian productivity and economic growth.

Allergic and related immune diseases are of increasing concern to Canadians, their healthcare providers and society at large. Today, over 50% of Canadian families are directly or indirectly affected by food allergy. In Ontario alone, the economic burden of asthma is estimated at $1.8 billion; without innovative new prevention strategies and improved disease management, it is projected to reach more than $96 billion in 30 years. The financial implications of allergies and asthma are of increasing concern to individual Canadians and public policy makers. Over the past six years, AllerGen's research and knowledge mobilization partnerships are offering Canadians hope for the discovery and development of better ways to prevent, manage and treat allergies, asthma, anaphylaxis and related immune diseases.

It is with great pleasure that we present this Annual Report for the fiscal year April 1, 2010 to March 31, 2011. Over the past 12 months many strategic research projects launched in 2009 were still in progress. Due to tremendous strides made by AllerGen research teams, this report showcases several research achievements and offers updates on projects within AllerGen's major research programmes: Gene-Environment

Interactions; Diagnostics and Therapeutics; and Public Health, Ethics, Policy and Society.

Over the past year, AllerGen continued to accelerate innovation and research output by leveraging its nationally networked structure. Researchers from across Canada, organized in multi- and trans-disciplinary teams, are working with both national and international collaborators and research partner organizations from across sectors. Through increased collaborations, these teams are filling knowledge gaps and seizing new opportunities for innovation in diagnostics, therapeutics, health care, public health, ethics, policy, and patient and public education.

One example of a collaborative project that spans disciplines and sectors is the *Canadian Healthy Infant Longitudinal Development* (CHILD) *Study*. This national, population-based, longitudinal birth cohort study is focused on understanding the development of allergy and asthma. To date, the CHILD Study has recruited almost 2,000 demographically, environmentally, culturally and ethnically diverse families (mothers, fathers and their babies) from across Canada. Samples provided by study subjects include biological samples and various environmental exposures. Other data collected include lung physiology, infant viral and allergic illnesses, and effects of lifestyle, culture and psycho-social factors. This enormous repository of data will be invaluable to researchers across disciplines and to stakeholders both nationally and globally, providing research opportunities and population health information for decades to come.

Another major achievement is AllerGen's *Clinical Investigator Collaborative* (CIC). This unique group consists of clinical investigators who are global leaders in conducting Phase II clinical trials to test new therapies for allergic asthma. Through its collaborations and partnerships with global biopharmaceutical companies, the CIC has made Canada the "go to" country for the study of new asthma-related therapeutic compounds. Over the past year, the CIC has undertaken additional clinical studies in collaboration with Altair Therapeutics, Asmacure, AstraZeneca and Genentech/Roche, bringing the total number of trials undertaken to date to 16. Since 2005, the CIC has generated over $15 million in industry partnerships, leveraging AllerGen's investment to industry investment at a ratio of 1:7. Additionally, the CIC team has begun expansion to two international sites – one at the Karolinska Institutet in Stockholm, Sweden and the second at Eramus University Medical Centre Rotterdam, Netherlands.

The third area in which major progress has been made over the past year has been in food allergy and anaphylaxis research and knowledge mobilization. Allergen's *Canadian Group for Food Allergy Research* (CanGoFAR) team consists of basic biologists, clinical allergists/immunologists, epidemiologists and social scientists. This team has made great strides in investigating the prevalence, underlying mechanisms, clinical diagnosis and treatment of food allergy and anaphylaxis. The CanGoFAR team has been preparing for the launch of the next phase of AllerGen's food allergy research program, the *Canadian Food Allergy Strategic Team* (CanFAST). This national team of Canadian researchers and corporate partners will focus on delivering a bench-to-bedside-to-community food allergy research program.

Throughout the year, AllerGen has continued to build on its successful international relationships and collaborations made possible by the NCE International Partnership Initiative (IPI) program. In 2010, AllerGen, under the auspices of the *Going Global Germany* program supported by the Department of Foreign Affairs and International Trade (DFAIT), planned and delivered a successful German - Canadian collaborative workshop at the Charité - Universitätsmedizin, Campus Virchow Klinikum Berlin, Germany. This workshop established the foundation for the development of a joint Memorandum of Understanding (MOU) for trainee exchanges between AllerGen and two German

institutions: The Allergie Centrum at Charité - Universitätsmedizin Berlin and the Munich Allergy Research Center (MARC) (which is jointly overseen by the Helmholtz Zentrum München and Technische Universität München), and the results will be presented at an invitational DFAIT workshop in Ottawa in September 2011, commemorating 40 years of Canada-Germany science and technology (S&T) co-operation.

This year's accomplishments are a testament to the maturity and positive energy with which AllerGen investigators, trainees and partners have embraced the challenges and goals set in 2004. For this, we thank our entire Network of researchers, national and global collaborators, stakeholder organizations, research partners and healthcare providers. We would also like to thank AllerGen's Board of Directors, Research Management Committee and our many advisory committee members for their ongoing contributions of time and expertise, which ensure the success of AllerGen and enable its many achievements.

In addition, at this time, AllerGen pays tribute to the contributions of three individuals lost to the allergic diseases research community over the past year:

Respected allergist, Dr. Milton Gold, who passed away in December, 2010, served patient communities in the Toronto area for many years, and was a medical advisor for Anaphylaxis Canada. Dr. Gold was a principal author of the 1995 consensus statement and its 2005 update – *Anaphylaxis in Schools and Other Child Care Settings* – a landmark document that influenced the implementation of school anaphylaxis management policies and practices.

Dr. James Day, Professor Emeritus in the Division of Allergy & Immunology, Department of Medicine at Queen's University, who passed away in January, 2011, was a ground-breaking clinical researcher and innovator in the field of allergic disease, and a mentor to many AllerGen researchers and trainees. Dr. Day is best known for co-creating a controlled allergen challenge model of allergic rhinitis that remains the "gold standard" in the field. His laboratory and research program is being continued under the leadership of former AllerGen trainee and now Principal Investigator, Dr. Anne Ellis, Assistant Professor of Medicine and Microbiology and Immunology, Queens University.

A Canadian asthma pioneer, Dr. Frederick Hargreave, Professor Emeritus of McMaster University, passed away in June 2011. His development of the methacholine challenge changed the way asthma is diagnosed. The methacholine challenge has become a standard test used around the world. Dr. Hargreave was also a mentor to many AllerGen researchers and trainees, and was one of the founders of the clinic that became the Firestone Institute for Respiratory Health at McMaster University and St. Joseph's Healthcare Hamilton.

Mr. Graham W.S. Scott, C.M., Q.C
Chair,
AllerGen Board of Directors
AllerGen NCE Inc.

Dr. Judah Denburg, MD, FRCP(C)
Scientific Director and CEO
AllerGen NCE Inc.

AllerGen's CanGoFAR team and their research into food labelling, in partnership with Health Canada, contributed key evidence that factored into the federal Minister of Health's decision to announce changes to Canadian *Food and Drug Regulations*.

2010-2011 Highlights

Allergists are in scarce supply across Canada. In some areas of the country, patients wait for up to a year to see a specialist. Other areas have no allergists at all. Given the surge in prevalence of allergic and immune-related diseases over the past 10-20 years, especially among children, the need for Clinical Immunology and Allergy Specialists is at an all-time high.

AllerGen Research Informs Changes to Federal Food Labelling Regulations

AllerGen's CanGoFAR team and their food labelling research, in partnership with Health Canada, contributed key evidence that factored into the federal Minister of Health's decision to announce changes to Canadian *Food and Drug Regulations*. These new regulations, announced February 14, 2011, will come into effect August 4, 2012, and will require food manufacturers and importers to clearly indicate certain food allergens, gluten sources, and added sulphites on most pre-packaged food product labels.

The contributing AllerGen funded project *Surveying Canadians to Access the prevalence of common food Allergies and Attitudes towards food LAbelling and Risk* (SCAAALAR) was led by Drs Ann Clarke, an Allergist at McGill University, and Susan Elliott, a Medical Geographer at the University of Waterloo (formerly of McMaster University), who met through AllerGen and have since become a "dynamic duo" in Canadian food allergy research.

Study data was obtained through telephone surveys with almost 10,000 adult Canadians. Findings confirmed that due to a combination of risk perception, anxiety over diagnosis, anxiety over treatment at home and in school, family history, and undeveloped food safety and labelling policies, food allergy affects up to 50% of Canadian households – 20% are affected directly and another 30% indirectly because they must consider food allergies when preparing or serving food.

AllerGen takes its Experts and their Research to the Public

In May 2010, with funding from the Canadian Institutes of Health Research (CIHR), AllerGen hosted its first *Café Scientifique* titled *The Allergy and Asthma Epidemic – Can we Prevent or Cure it?* at the Royal Botanical Gardens in Burlington, Ontario. This event created a unique opportunity to bring together four of Canada's leading allergy and asthma clinical research experts with 65 attendees hailing from Burlington, Hamilton and surrounding areas to share their expertise in allergy, asthma and anaphylaxis with the public. This event was enabled through AllerGen's collaboration with key stakeholder organizations including Anaphylaxis Canada, the Asthma Society

of Canada, Hamilton Family Health Team, the Regional Municipality of Halton, the Childhood Asthma Foundation and Niagara Anaphylactic Support and Knowledge (NASK).

Building upon the success of this event, AllerGen hosted a second *Café Scientifique* in Vancouver, in February 2011, immediately following its annual research conference. This *Café Scientifique* was titled *Don't Worry… Breathe Happy! – Can Controlling Stress and our Environment Reduce Allergies and Asthma?* This opportunity, held at an informal venue in downtown Vancouver, attracted 35 participants. Stakeholders, including Allergic Living Magazine, Anaphylaxis Canada, Asthma Society of Canada, BC Lung, Canadian Thoracic Society, The Canadian Lung Association, National Asthma Patient Alliance (NAPA), Vancouver Coastal Health and Vancouver General Hospital, participated and assisted AllerGen in promoting this event to patients and the public.

Inaugural AllerGen Emerging Clinician-Scientist Fellowship Awarded

Allergists are in scarce supply across Canada. In some areas of the country, patients wait for up to a year to see a specialist. Other areas have no allergists at all. Given the surge in prevalence of allergic and immune-related diseases over the past 10-20 years, especially among children, the need for Clinical Immunology and Allergy Specialists is at an all-time high.

To put the current shortage in perspective, one need only look at the 1975 CMA study, which recommended that there be one allergist per every 100,000 Canadians in order to adequately meet societal needs. In Canada, according to the 2010 census, there are 153 clinical immunology and allergy specialists. Given our current population, this represents just one allergist/clinical immunologist per 224,000 Canadians, which is less than half the recommended number of specialists relative to societal need.

In 2009, AllerGen, together with CSACI and other stakeholders, hosted a *Future of the Speciality*

workshop to generate innovative approaches to combat the shortage of allergists and allergy researchers. Out of this exercise arose the development of a new clinical research fellowship award aimed at attracting and retaining Clinician-Scientists in the field of Clinical Immunology and Allergy.

The goal of the *AllerGen Emerging Clinician-Scientist Research Fellowship* is to enable Canadian Clinical Immunologists and Allergists to pursue allergy, asthma and/or anaphylaxis academic research training immediately following their sub-specialty training. The Fellowship aims to increase the number of medical students pursuing the Clinical Immunology and Allergy sub-specialty while working on related basic and clinical research and practicing as an allergist; to increase research capacity in this field; and, to foster and enhance academic innovation arising from basic and clinical research.

In 2010, AllerGen launched an *Emerging Clinician-Scientist Research Fellowship* award. Following rigorous peer-review, on April 11, 2011, at the Meakins-Christie Laboratories, McGill University in Montreal, Quebec, AllerGen announced Dr. Moshe Ben-Shoshan (McGill University and the Montreal Children's Hospital in Quebec), as the inaugural winner of its *Emerging Clinician-Scientist Research Fellowship*. This fellowship is valued at $250,000 over a two year period.

Dr. Ben-Shoshan, a physician in the Department of Allergy and Immunology at Montreal Children's Hospital, is involved in several research initiatives on food allergy and anaphylaxis. He completed his pediatric residency in Israel and subsequently his fellowship in Pediatric Clinical Immunology and Allergy at Montreal Children's Hospital in 2009. Over the past year, he worked as a research fellow under the mentorship of AllerGen Investigator, Dr. Ann Clarke, Professor, Department of Medicine, McGill University Health Centre and completed his MSc in epidemiology at McGill University. His primary research interests are the epidemiology of food allergy and anaphylaxis.

Left to right: Drs Ann Clarke, Bruce Mazer, Moshe Ben-Shoshan, (All McGill University Health Centre), Dr. Judah Denburg, AllerGen, Dr. Robert Brouillette, Interim Chair of the Department of Pediatrics, Faculty of Medicine, McGill University Health Centre, Dr. Diana Royce, AllerGen

Through strong, continuing partnerships, AllerGen has leveraged its research investments, generating an additional $9.6 million in cash and in-kind support from partner organizations – a ratio of 1:2.7.

AllerGen's Integrated Research Program

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In line with AllerGen's strategic priorities and building on partnerships established in previous years, AllerGen has supported a broad spectrum of research aimed at accelerating innovation to improve the quality of life of those affected by allergy, asthma, anaphylaxis and related immune diseases. During fiscal year 2010/2011, AllerGen invested over $3.27 million in research on diseases in three priority areas.

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- Gene-Environment Interactions;
- Diagnostics and Therapeutics; and
- Public Health, Ethics, Policy and Society.

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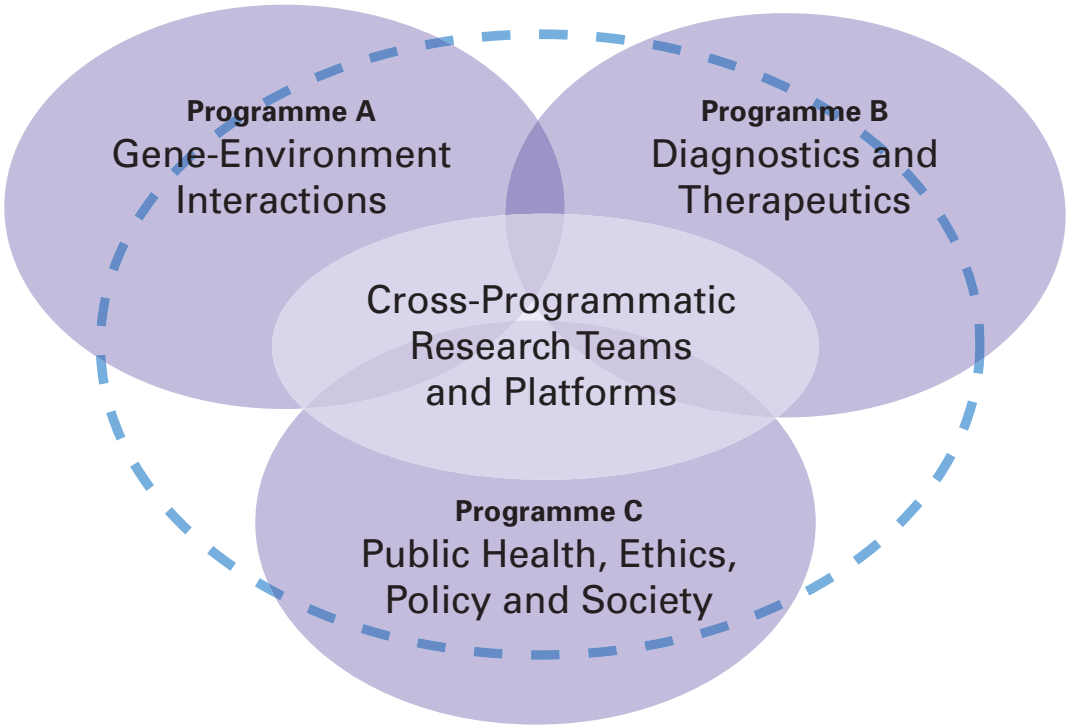



Jeffrey Brook, PhD


Andrew Sandford, PhD


Dean Befus, PhD


Paul O'Byrne, MD


Ann Clarke, MD


Susan Elliott, PhD

AllerGen's integrated research program is led by internationally recognized Canadian researchers with expertise across a wide range of disciplines.

Programme A: Gene-Environment Interactions

Research Leaders:

Jeffrey Brook, PhD, Environment Canada, University of Toronto
Andrew Sandford, PhD, University of British Columbia

Strategic Focus:

Genetics, environmental exposures and gene environment interactions in allergy and asthma

AllerGen's Gene-Environment Interactions research program aims to capitalize on the wealth of data concerning early life phenotypes by pooling data across existing cohorts, focusing on genetic polymorphisms in genes related to early life allergic processes. In addition, AllerGen's Gene-Environment Interactions research team aims to determine the 'prime-candidate' environmental events and exposures during infancy and early childhood involved in the development and perpetuation of a predisposition to allergic disease, as well as to investigate the interaction of airborne pollutants and allergens, study the role of infection in allergy/asthma and study prevalence and expression of allergy/asthma in specific Canadian populations.

Programme B: Diagnostics and Therapeutics

Research Leaders:

Dean Befus, PhD, University of Alberta
Paul O'Byrne, MB, FRCP(I), FRCP(C), FRCP(E), FRCP(Glasg), McMaster University

Strategic Focus:

Biomarkers, immune monitoring and drug development/discovery

AllerGen's Diagnostics and Therapeutics research program aims to identify indicators of asthma and allergic disease, develop effective monitoring methods and to test and develop new therapeutics to treat allergy, asthma and immune-related diseases. AllerGen's Diagnostics and Therapeutics research team also aims to move biomarkers and immune monitoring science out of the laboratory and apply them to the development of new therapies and drug targets in a clinical setting.

Programme C: Public Health, Ethics, Policy and Society

Research Leaders:

Ann Clarke, MD, MSc, FRCP(C), McGill University
Susan Elliott, PhD, University of Waterloo (formerly McMaster University)

Strategic Focus:

Allergic disease management, education, policy and patients

AllerGen's Public Health, Ethics, Policy and Society research program aims to assess current legal


Malcolm Sears, MB


PJ Subbarao, MD


Jean Marshall, PhD


Diane Lougheed, MD

frameworks, policies and education systems, as well as prevalence and perception issues, fill knowledge gaps and enable evidence-based policy and practice to improve disease management and public health. This research team also aims to further the investigation of psychosocial impacts and the health economics of allergic diseases, including food allergy, allergic rhinitis, asthma and anaphylaxis to inform policy and practice.

In addition to supporting the three primary research thrusts outlined above, AllerGen supports an additional four cross-programmatic, multidisciplinary research platforms:

Cross-Programmatic Research Teams and Platforms

The Canadian Healthy Infant Longitudinal Development (CHILD) Study

Research Leaders:

Malcolm Sears, MB, ChB, FRACP, FAAAAI, McMaster University

PJ Subbarao, MD, MSc, FRCP(C), University of Toronto

Food Allergy and Anaphylaxis

Research Leader:

Jean Marshall, PhD, Dalhousie University

Mind-Body Interactions and Allergic Disease

Research Leader:

Dean Befus, PhD, University of Alberta

Occupational and Work-related Allergy and Asthma

Research Leader:

Diane Lougheed, MD, MSc, FRCP(C), Queen's University

Facts and Statistics

Network Research Partners Across Sectors:		**109**
Highly Qualified Personnel (HQP) in Network:		**426**
HQP working on Network research	276	
Other participating students & new professionals	150	
Principal Investigators and Co-Investigators:		**170**
Full-time Equivalent Network Research Staff:		**340**
Research Programme Projects:		**27**
Gene-Environment Interactions	10	
Diagnostics and Therapeutics	11	
Public Health, Ethics, Policy and Safety	6	
Strategic Initiatives:		**16**
Knowledge Mobilization	4	
Research	11	
Intellectual Property and Commercialization	1	
Canadian Academic Research Institutions:		**20**
International Academic Research Partners:		**8**
Canadian Hospitals/Health Centres/Research Institutes:		**26**
Total Network Publications:		**1,019**
Publications	759	
Scientific Posters	260	
Global Reach:		**225**
Canadian provinces	7	
International collaborating countries	10	
Partner and Stakeholder Organizations	208	

2010 . 2011

The *Canadian Healthy Infant Longitudinal Development* (CHILD) *Study* is a national, population-based, longitudinal birth cohort focused on understanding the development of allergy and asthma.

Research Highlights

Gene-Environment Interactions

The major focus of AllerGen's Gene-Environment Interactions program over the past year has been mother and child health. The following projects highlight key findings arising from published AllerGen research.

The CHILD Study

Site leaders for the CHILD Study are:
National Coordinating Centre:
Dr. Malcolm Sears, McMaster University, Hamilton

Vancouver:	Dr. Stuart Turvey, University of British Columbia
Edmonton:	Dr. Piush Mandhane, University of Alberta
Winnipeg:	Dr. Allan Becker, University of Manitoba
Toronto:	Dr. Padmaja Subbarao, The Hospital for Sick Children

The *Canadian Healthy Infant Longitudinal Development* (CHILD) *Study* is a national, population-based, longitudinal birth cohort focused on understanding the development of allergy and asthma. Under the leadership of Dr. Malcolm Sears, McMaster University, CHILD has created a unique Canadian multi-disciplinary team of over 40 academic investigators from across Canada. This team is actively partnering with Health Canada, Environment Canada and the Canada Mortgage and Housing Corporation (CMHC) on an analysis of study results. To March 2011, 2,000 expectant mothers have been recruited to participate in the study from across four provinces.

The population of mothers recruited so far is ethnically, culturally and environmentally diverse. More than 25% of parents are non-Caucasian. This diversity suggests that CHILD Study findings will lead to globally relevant results. In addition, CHILD Study participants' housing characteristics and environmental exposures vary significantly across the four participating provinces. Study results will yield new information on home construction, dampness, moulds, dust in bedrooms and pets. This information is relevant to construction policies and building codes.

One of the significant preliminary findings is that among children skin-tested at one year of age, almost 15% enrolled in the CHILD Study show one or more positive allergy skin tests, with 10.8% of these showing a response to a food allergen, and 5.8% showing peanut sensitization. These data are the first-ever prospective findings of allergy prevalence in Canadian infants, and longitudinal follow-up will be extremely important.

The CHILD Study is contributing to Canada's position as a world leader in asthma and allergy research and will continue to generate results with applicability to stakeholders across sectors as well as to people living with allergies and asthma worldwide for years to come.

Predisposing factors in the development of childhood asthma

AllerGen has focused on maternal-child health and prevention of allergies and asthma research from inception. An AllerGen-funded project titled *Steroid Therapy*, led by Dr. Cameron Mustard, University of Toronto, recently published results of a study on factors in the gestational period that could potentially pre-dispose individuals to asthma later in childhood. Corticosteroid therapy, administered during labour and delivery to accelerate fetal lung maturation in pre-term infants, had not been fully examined as a potential risk factor for the development of asthma in humans. This ten year cohort study included almost 80,000 infants. Findings revealed that exposure to corticosteroid therapy during pregnancy was associated with a small but significant elevated risk of childhood asthma. Further research into the etiology of childhood asthma is warranted. These studies are being undertaken by the CHILD Study team.

Cost-effective environmental exposure modelling

Drs Michael Brauer, University of British Columbia, and Ryan Allen, Simon Fraser University, recently completed a project within AllerGen's Gene-Environment Interactions programme, titled *Environment assessment of land use regression models for NO_2 exposure*. Their team looked at Land Use Regression (LUR) models commonly used for exposure assessments when studying traffic-related pollution and determined whether or not those models could be used repeatedly in different cities that have similar study characteristics. The team concluded that any study will achieve better results and assessments by developing unique LUR models native to the city where the study will be performed and based on the specific pollutants in question. However, if one is looking for a cost effective way to improve over-road proximity metrics for assessing exposure to traffic-related air pollution, these models offer users that option. This study and its findings are informing future studies on environmental exposures in order to maximize results while minimizing costs.

Diagnostics and Therapeutics

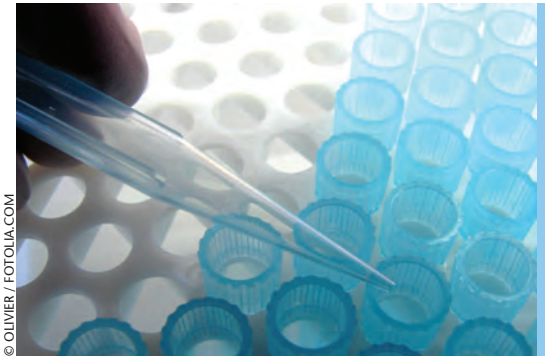
AllerGen's Clinical Investigator Collaborative

The AllerGen CIC is a unique clinical trials consortium established to fast-track early-stage potential asthma drug candidates, study the pathobiology of asthma and discover new drugs in this area.

The AllerGen CIC has three main research objectives:

i. To use selective pharmacological tools to understand the pathobiology of allergen-induced airway responses and airway inflammation.
ii. To study the activity of potential new therapies for asthma.
iii. To provide blood and tissue samples from well-phenotyped mild allergic asthmatic subjects to other investigators within the AllerGen network, to help better understand the mechanisms of allergic asthma.

Over the past year, the CIC has established a new study site in Sweden to create new capacity building and professional development opportunities for AllerGen Highly Qualified Personnel (HQP). The CIC team completed studies in 2010-11 with



Each year, AllerGen supports time-sensitive, strategic initiatives that enable Network investigators to rapidly respond to new opportunities that arise in relation to existing projects. In 2010-11, AllerGen invested $712,550 in 16 Strategic Initiatives across three priority areas.

Altair Therapeutics, Asmacure, AstraZeneca and Genentech/Roche. Three additional studies will be initiated in 2012. By 'predicting" which drugs will not work effectively, the CIC studies can save pharmaceutical companies money and resources.

New Asthma diagnostics for children and babies

Dr. Darryl Adamko, University of Alberta, is leading a metabolomics study that aims to diagnose asthma by identifying the metabolic profiles of children with asthma, which differ significantly from the metabolic profiles of healthy children. Since asthma can be difficult to diagnose, especially in children, this research is seeking to develop non-invasive diagnostic approaches, such as urine testing, as an effective way to diagnose asthma in children. This technique should also be able to differentiate between a child having an asthma exacerbation and a child with stable or controlled asthma.

To date, spectral identification and quantification of 70 identifiable metabolites have been performed, which has enabled Dr. Adamko to map out a specific asthma fingerprint within the urine based Nuclear Magnetic Resonance (NMR) asthma profile. These fingerprints provide a baseline for future comparison over the child's life. Results to date enabled Dr. Adamko to conclude that urine NMR profiles can provide a correct asthma diagnosis with 94% accuracy. This research has the potential to offer significant benefits for the very young population of asthmatic children – not only lessening their discomfort relative to other diagnostic tests, but also allowing doctors to more precisely arrive at an accurate diagnosis and begin asthma treatment sooner.

New neuro-regulated, peptide-based therapeutics

AllerGen research focusing on neuroimmune interactions, led by Dr. Dean Befus, University of Alberta, has focused on the role of salivary glands and endocrine factors in a variety of immune and inflammatory reactions. Specifically, Dr. Befus has been studying the potential of salivary gland-derived peptides as therapeutically useful anti-inflammatory agents. Dr. Befus found conclusive results that salivary gland-derived peptides have the potential to reduce inflammation and is working with a Canadian biotechnology company to develop

a therapeutic drug based on a peptide agent arising from his research.

New allergy stem cell biomarkers at birth

Over the last few years, a number of studies have reported on the "protective" effect of farming environments in the development of asthma and allergic sensitization in children. This is most likely due to exposure to microbial products, especially in early life. An AllerGen research team based at McMaster University, led by Dr. Judah Denburg, has continued to study the characteristics of cord blood stem cells, which appear to identify infants at risk for allergies. Toll-like receptors (TLR) are key innate immune receptors that recognize microbial products and they are also found on cord blood stem cells.

Denburg's team has confirmed that the number and function of TLR on infant cord blood stem cells is different in infants at risk for allergy, defined as infants born to allergic mothers, compared with infants born to not-allergic mothers, in a collaborative study of a birth cohort from Western Australia. These observations are now being confirmed and extended in the CHILD Study, co-funded by AllerGen and CIHR. These investigations are aimed at using cord blood stem cell molecular profiles to develop a commercializable, diagnostic "bio-marker" which will aid in predicting infants at risk for allergy, and also point out therapeutic strategies that will utilize rational, controlled microbial exposure in early life to help at-risk children to counterbalance, or build immunity against, the development of allergies in early life. Thus, this research may identify a 'window of opportunity' to prevent the risk of allergy and asthma in early life and potentially lead to new diagnostic and predictive tools.

Public Health, Ethics, Policy and Society

This research program focuses on research leading to outcomes in public health, education, policy, ethics and patient care. Projects focus on studies of food allergy, the media, the economic burden of asthma and the development of online education tools.

Food allergy prevalence

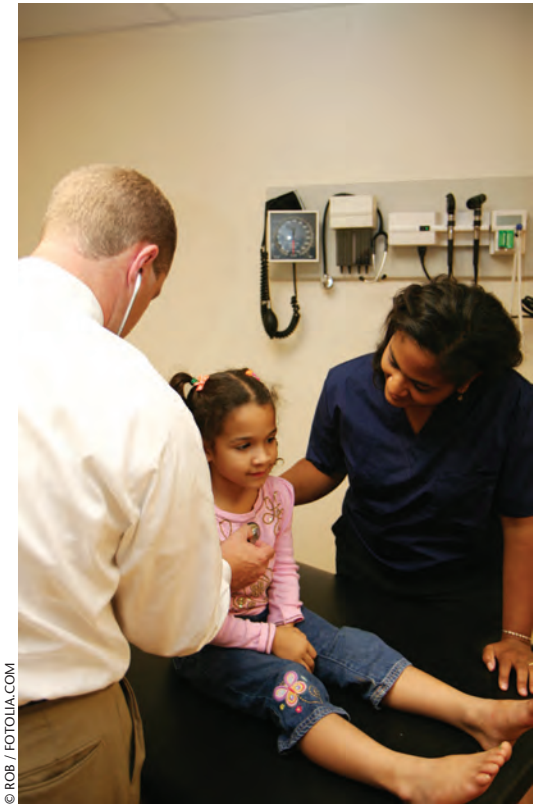
Over the past year, AllerGen's food allergy research team, CanGoFAR, has developed new research partnerships with organizations such as Anaphylaxis Canada and has secured research investment from the Canadian food industry.

In addition, the *Surveying Canadians to Assess the Prevalence of Common Food Allergies and Attitudes towards Food LAbelling and Risk* (SCAAALAR) study, which was designed to estimate the prevalence of food allergies to peanut, tree nut, fish, shellfish and sesame in Canada, has been extended to gather additional data about food allergies among new Canadians, those of lower social economic status, and Aboriginals – groups that were under-represented in the original study. As a result, the team has launched the *Surveying Prevalence of Food Allergies in All Canadian Environments* (SPAACE) project, also jointly funded by AllerGen and Health Canada to extend the SCAAALAR survey to include vulnerable populations. Over the past year, the SPAACE team has surveyed more than 3,000 vulnerable households (approximately 9,000 individuals). Data collection and analysis continues and this research will provide a first-ever perspective on food allergy prevalence across Canada.

The role of the media and ethics review in the production and dissemination of evidence and health policy research

Professor Timothy Caulfield's AllerGen research on how evidence used for various policy and legal interventions is presented in policy documentation, legislative initiatives, and in popular press, has led to numerous publications over the past year. Using a wide range of methodologies, this inter-disciplinary team explored the challenges associated with the use and production of evidence in allergy and asthma policy. In the research ethics arm of the study, this team studied the impacts of ethics, legal and policy instruments on the conduct of research, particularly multi-site and long-term studies.

Three separate publications have resulted from this study. Professor Caulfield's team found that media coverage of health research scientific meetings and the way this coverage is communicated is influenced largely by individual journalists. They revealed that journalists view science communication as finding information relevant to their publication's readership. In general, journalists are not overly interested in reporting basic scientific findings. Additionally, Professor Caulfield's research revealed that the different ways of communicating available to journalists in today's multimedia world have resulted in the final product either being skewed or omitting important key facts about health research. Disconnects can occur either during the interview or the editing process. Nonetheless, the team found that newspaper coverage of health research scientific meetings overall is fairly accurate and is still the primary source by which the public accesses health research *knowledge nuggets*. This large scale study also examined the way media represents allergy and asthma issues. With respect to the accuracy and quality of evidence represented in the media, researchers expressed strong to moderate concerns about the way allergy and asthma were represented in the media with respect to both accuracy and evidence. Since the public gets most of its scientific and health information from traditional media sources, the media plays a critical role in shaping not only public perceptions of health issues, but also influences public opinion, understanding, policy and future funding in related areas of research. The third area of focus in this study was variation in ethical reviews of multi-site research initiatives such as multi-location longitudinal cohort



studies. While acknowledging the importance and value of ethics review, many multi-site studies have identified variations in research ethics board reviews as barriers to research that create unnecessary delays, may compromise results across sites, and lead to inefficiency and higher overall costs.

Financial barriers to asthma management in children

One of AllerGen's principal investigators, Dr. Wendy Ungar, The Hospital for Sick Children in Toronto and University of Toronto, knows first hand that the economic burden of disease is very difficult to measure and quantify. However, her team is examining the relationships between managing asthma in children, socioeconomic status and medical insurance relative to health outcomes. Dr. Ungar's AllerGen-supported study, titled *Financial Barriers to Medication Use in Children with Asthma: Effect on Health Outcomes*, found that asthma attacks and their severity were higher amongst younger children, boys, children with previous emergency room visits and children from low-income families. In recent years, many drug plans have changed from full coverage to cost-sharing and Dr. Ungar's research revealed that among families with drug plans, even small increases in cost-sharing can result in a significant reduction in the use of essential asthma medication for children. For every 1% increase in household income devoted to a child's asthma medication, there was a 14% increase in severe asthma exacerbation resulting in an emergency visit or hospital admission. Inhaled corticosteroids are the best medications for controlling asthma. However, they are also the most expensive and as out-of-pocket costs increase, their use decreases. While drug plans aim to save money by shifting costs to families, children may experience worse outcomes and this may result in increases in overall healthcare costs.

Leveraging online resources to enable health-care professionals to better support children with allergies and asthma and their families

AllerGen has made significant investments in both research and development of online support and education tools for health professionals as well as for children, teens and their families affected by asthma and allergies. Two studies led by Dr. Miriam Stewart, University of Alberta, titled *Building Continuity of Support for Allergic Children with Asthma and their Families* and *The Development, Implementation and Evaluation of Strategies to Promote Well-Being of Children and Youth with Allergies and/or Asthma* have led to results over the past year that have informed asthma education and support strategies in Canada. Dr. Stewart's team examined whether health professionals' learning needs could be met through online learning strategies, to ensure that they

effectively educate children and their parents about their allergies and asthma. Health professionals strongly agreed that children living with allergies and asthma need professional support in order to reduce the effects of these diseases on their daily lives. The study confirmed that healthcare professionals would greatly benefit from online education, as they have limited time, funds and options for asthma and allergy related professional development. From their perspective, online learning represented a timely and cost-effective tool for professional development. This study will inform and guide future educational programs and practices in hospital and community settings. In two other studies, innovative online support and education programs were designed and tested for children and youth with asthma and allergies as well as for their parents. These studies revealed high satisfaction and important health impacts of these accessible online interventions. Currently, the team is testing unique support interventions for Aboriginal children and families using Telehealth and other accessible strategies.

Strategic Initiatives

Each year, AllerGen supports time-sensitive, strategic initiatives that enable Network investigators to rapidly respond to new opportunities that arise in relation to existing projects. In 2010-11, AllerGen invested $712,550 in 16 Strategic Initiatives across three priority areas:

Strategic Initiatives – Research

Allergic Rhinitis Clinical Investigator Collaborative (AR-CIC) - $50,000
Louis-Philippe Boulet, Professor, Université Laval
Anne Ellis, Assistant Professor, Queen's University
Helen Neighbour, Assistant Professor, McMaster University
Harissios Vliagoftis, Associate Professor, University of Alberta

An Integrative Multidimensional Genomic and Epigenomic Approach for the Study of Short-term Diesel Exhaust on Asthmatics - $50,000
Chris Carlsten, Assistant Professor,
University of British Columbia

CIC Quality Assurance Plans (2 initiatives) - $36,000
Paul O'Byrne, Professor, McMaster University

CIC Quality Assurance Plan Statistical Analyses - $39,650
Paul O'Byrne, Professor, McMaster University

Clustering approaches to unravel complex asthma phenotypes - $28,500
Denise Daley, Assistant Professor,
University of British Columbia

Cross-Canada Anaphylaxis REgistry (C-CARE) - $50,000
Ann Clarke, Professor, McGill University

Functional genomic and proteomic changes in response to nasal allergen challenge and following peptide immunotherapy treatment of the same: A partnership with the Allergic-Rhinitis Clinical Investigator Collaborative (AR-CIC) and industry $50,000
Anne Ellis, Assistant Professor, Queens University
Helen Neighbour, Assistant Professor, McMaster University
Scott Tebbutt, Assistant Professor, University of British Columbia

Role of fibrocytes as biomarkers of airway remodelling in asthma - $50,000
Jamila Chakir, Professor, Université Laval

Shared Decision in Asthma Management: A Strategy to Improve Asthma Control - $50,000
Louis-Philippe Boulet, Professor, Université Laval

Tolerance indication and threshold studies to peanut allergen - $35,000
John Gordon, Professor, University of Saskatchewan
Jean Marshall, Professor, Dalhousie University

Strategic Initiatives – Knowledge Mobilization

Extending the Reach: From Practice to Evidence - $30,800
Susan Elliott, Dean and Professor, University of Waterloo

Getting Asthma on the School Agenda: A KT Strategy - $50,000
Dean Befus, Professor, University of Alberta

Health and India-Canada Workshop for Development of Mobile e-Health Technologies - $15,000
Allan Becker, Professor, University of Manitoba

Shared Decision in Asthma Management: A Strategy to Improve Asthma Control - $50,000
Louis-Philippe Boulet, Professor, Université Laval

Strategic Initiatives – Intellectual Property and Commercialization

Commercialization of a Metabolomic-Based Diagnostic for Asthma - $59,600
Darryl Adamko, Associate Professor, University of Alberta

Innovation from cell to society[6] – AllerGen's Annual Research Conference

In February 2011, AllerGen held its sixth annual *Innovation from cell to society*[6] research conference in Vancouver, British Columbia. This event was AllerGen's largest conference to date, with over 225 attendees, including national and international speakers, partner organizations, AllerGen investigators, researchers, trainees and new professionals, stakeholder organizations, sponsors and members of the general public.

Jean-Claude Gavrel, Executive Vice-President, Networks of Centres of Excellence

One of AllerGen's strategies to accelerate the dissemination of research results and knowledge exchange is its annual research conference, which provides an exclusive opportunity for AllerGen investigators, collaborators, trainees and new professionals to network with one another and share research outcomes with key policy-makers, patient advocacy group representatives and healthcare providers and representatives from industry, government, and clinical, academic and not-for-profit sectors.

In February 2011, AllerGen held its sixth annual *Innovation from cell to society*[6] research conference in Vancouver, British Columbia. This event was AllerGen's largest conference to date, with over 225 attendees, including national and international speakers, partner organizations, AllerGen investigators, researchers, trainees and new professionals, stakeholder organizations, sponsors and members of the general public.

AllerGen's research teams presented their research results, many in collaboration with research partner organizations. Presentations included AllerGen-supported research results related to air pollution and genetics, genetic testing, novel tools for environmental exposure assessment, asthma and allergy support and education for Aboriginal communities, allergic rhinitis clinical trial outcomes, strategies to optimize asthma control in children, work-related asthma, and metabolomic profiling of asthma.

Highlights of AllerGen's sixth annual research conference include the trainee poster competition.

This year, 68 posters were displayed, representing a 33% increase in the number of posters presented compared to the previous year (51). Over 60 AllerGen research trainees competed for awards in three programme categories.

This year AllerGen added a new capacity building opportunity for trainees, having them present a one-minute *elevator pitch* about their research. This oral *lightning* round session allowed trainees to develop their presentation skills and showcase Network research results to all conference delegates.

Other highlights of this year's event were keynote presentations by Dr. Wesley Burks, Duke University, who spoke about his development of new treatment options for food allergies and anaphylaxis and the mechanisms responsible for adverse reactions to foods; Dr. Geoffrey Maksym, Dalhousie University, who discussed capacity building for commercialization in Canada and ways to bridge inter-disciplinary gaps; and Dr. Marc Rothenberg, University of Cincinnati, who shared his bench-to-bedside-to-community approaches to treating eosinophilic disorders of the gastrointestinal tract. Dr. Rothenberg is actively involved in managing a research program focused on understanding the molecular mechanisms of allergic disorders.

Conference Sponsors

Sponsorships were received from the following organizations:

Gold Sponsors

GlaxoSmithKline Inc.
King Pharma Canada
Novartis Pharmaceutical Canada Inc.

Silver Sponsors

McMaster University
Merck Canada Ltd.

Bronze Sponsors

Institute for Heart + Lung Health
Child & Family Research Institute
AllerGen Board Chair, Mr. Graham Scott
Sun Butter – Red River Commodities

In-kind contributions were made by the following organizations:

Allergic Living Magazine
Anaphylaxis Canada
BC Lung Association
Canadian Allergy Asthma and Immunology Foundation
Canadian Society of Allergy and Clinical Immunology
James Hogg iCAPTURE Centre
LifeScience BC
Michael Smith Foundation for Health Research
National Asthma Patient Alliance
The Asthma Society of Canada
The Canadian Lung Association
The Canadian Thoracic Society

AllerGen's research portfolio involves an average of 110 research partners per year. In 2010-11, AllerGen involved 181 organizations in Network activities including research, knowledge mobilization, commercialization and capacity building.

Network Partners, Collaborators and Knowledge Users

Since 2005, AllerGen has involved 350 organizations in the Network from across sectors and in a wide range of capacities. These partnerships include academic institutions, federal and provincial agencies, the private sector and international collaborators. AllerGen has also established a research and knowledge mobilization community in allergic disease that did not exist prior to the formation of the Network.

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In preparation for the development of its next strategic plan, AllerGen commissioned *Science Metrix* to undertake an analysis of all Network investigator publications. This analysis revealed that AllerGen-supported research is more networked compared to non-AllerGen-supported research, confirming greater collaboration amongst AllerGen-supported research compared to non-AllerGen-supported research (using the same group of investigators for both metrics). The same is true when compared to both Canadian and global allergy and asthma research publications.

Involvement with AllerGen was shown to have increased the potential for researchers to publish in networked teams in more impactful journals, with greater levels of citation as well as to continue to work and publish projects in a networked fashion, even when AllerGen was not the research funder. The strength and diversity of AllerGen research teams also contributed to the Network's success in procuring partnership funding from non-NCE sources.

AllerGen's research portfolio involves an average of 110 research partners per year. In 2010-11, AllerGen involved 181 organizations in Network activities including research, knowledge mobilization, commercialization and capacity building. The average AllerGen-funded project involves approximately three partners per project, including international partners. AllerGen also undertakes annual regional stakeholder consultation meetings with its research and knowledge mobilization partners and stakeholders to ensure that strategic priorities and collaborative opportunities are shared, and that stakeholder needs are well understood.

Academic Institutions: 28
(20 Canadian, 8 International)

Dalhousie University
Groningen University
Karolinska Institute
Laurentian University,
Northern Ontario School of Medicine
McGill University
McMaster University
Medical University Charité
Queen's University
Simon Fraser University
Université de Montréal
Université du Québec á Chicoutimi
Université Laval
University of Alberta
University of Bristol
University of British Columbia
University of Calgary
University of California-Berkeley
University of Guelph
University of Manchester
- School of Translational Medicine
Respiratory Research Group
University of Manitoba
University of New Brunswick
University of Ottawa
University of Saskatchewan
University of Toronto
University of Waterloo
University of Western Australia
University of Western Ontario
Utrecht University

Hospitals and Healthcare Centres: 25

BC Children's Hospital
Centre de recherche du CHUM
- Hôpital Saint-Luc
Dakota Tipi Health Centre, MB
Grey Nuns Hospital
Hamilton Health Sciences
Hôpital Sainte-Justine
IWK Health Centre
Kingston General Hospital
Manitoba Institute for Child Health
McGill University Health Centre
Misericordia Hospital
Mount Sinai Hospital
Royal Alexandra Hospital
Royal University Hospital
St. Boniface General Hospital
St. Joseph's Hospital
St. Michael's Hospital
St. Paul's Hospital
Stollery Children's Hospital
Sturgeon Community Hospital
The Hospital for Sick Children
University of Alberta Hospital
Vancouver General Hospital
Winnipeg Health Sciences Centre
Women's Health Concerns Clinic

Industry: 21

AIM Therapeutics
Allergic Living Magazine
Altair Therapeutics
Asmacure
AstraZeneca
Bothwell Accurate and Golden Thread
Charitable Foundations
Chenomx
Fisher Scientific Company
Genentech
Gennum Corp.
GlaxoSmithKline Inc.
Imulan BioTherapeutics, LLC
King Pharma
Leap Learning Technologies
Lumira Capital
MedImmune Inc.
Merck Canada Inc.
Novartis Pharma Canada Inc.
Pharmaxis (formerly Topigen Pharmaceuticals)
Sun Butter - Red River Commodities
TEC Edmonton

Federal Agencies: 5

Environment Canada

Health Canada
Health Canada Food Directorate

National Research Council of Canada
- Biotechnology Research Institute

Public Health Agency of Canada

Provincial Agencies: 6

Alberta Health Services

Government of Manitoba
(Healthy Child Manitoba)

La Commission de la santé et
de la sécurité du travail du Québec

Ministry of Health and Long-Term Care

Ontario Ministry of Labour

Workplace Safety and Insurance Board

Research Institutes and Networks: 14

Interest Group on Occupational Allergy (IGOA)
of European Academy of Allergy and
Clinical Immunology, Switzerland

Chan-Yeung Center for Occupational
and Environmental Respiratory Disease
(C2OERD) - The Lung Centre, University
of British Columbia, Vancouver, BC

Child and Family Research Institute, Vancouver, BC

Firestone Institute for Health Research (FIRH),
Hamilton, ON

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Gage Occupational and Environmental
Health Unit, University of Toronto, ON

Genome BC Proteomics Centre at
University of Victoria, BC

Institut de recherche Robert-Sauvé en santé
et en sécurité du travail du Québec,
Montréal, QC

Helmholtz Zentrum München, Germany

Munich Allergy Research Center (MARC)

Robarts Institute, London, ON

St. John's Research Institute, Banglaore, India

The Hospital for Sick Children Research
Institute, ON

The Institute for Clinical Evaluative Sciences, ON

The UBC Centre for Health and Environment
Research, BC

Associations, Foundations, Community Groups and Other Bodies: 82

Aboriginal Communities
- Dakota Tipi Health Centre
- Dakota Tipi Tribal Council
- Eskasoni First Nation
- Fisher River Tribal Council
- Goodfish Lake First Nation Health Centre
- Mermbertou First Nation
- Mi'kmaq First Nations
- Pakan Elementary Junior High School
- Potlotek First Nation
- River East Transcona School
- Saddle Lake First Nation Health Centre
- Wagmatcook First Nation
- Waycobah First Nation

Alberta Asthma Centre

Alberta Centre for Child, Family and Community Research

Alberta Lung Association

Allergy and Asthma Information Association

American Thoracic Society

Anaphylaxis Canada

Assembly of Alberta Chiefs

Assembly of Manitoba Chiefs

L'Association québécoise des allergies alimentaires (AQAA)

Asthma Society of Canada

BioDiscovery Toronto

British Columbia Lung Association

Burroughs Wellcome Fund

Cable 14

Canadian Allergy, Asthma and Immunology Foundation

Canadian Child Health Clinician Scientist Program

Canadian Cystic Fibrosis Foundation

Canadian Foundation for Innovation

Canadian Lung Association

Canadian Medical Protective Association

Canadian Mortgage and Housing Corporation

Canadian Society of Allergy and Clinical Immunology

Canadian Thoracic Society

Cape Breton District Health Authority

Centre de recherche de l'institut universitaire de cardiologie et de pneumologie de Québec

Centre for Research Expertise in Occupational Disease

CHCH News

Childhood Asthma Foundation

COPD and Asthma Network of Alberta

Delton School

Dreamspeakers on Tour

Eva Lillian Cope Scholarship

Fonds de la recherche en santé du Québec (FRSQ)

GA^{2}LEN

GABRIEL Project, Imperial College London

Giovanni & Concetta Guglietti Family Foundation

Hamilton Community Foundation

Hamilton Family Health Team

iCapture Centre

Institute universitaire de cardiologie et de pneumologie de Québec

International Health Economics Association

International Union Against Tuberculosis and Lung Disease

Leaders of Opportunity Fund

LifeSciences BC

Louis Riel School, Winnipeg, MB

Lung Association of Nova Scotia

Manitoba Institute for Child Health

Michael Smith Foundation for Health Research

Multiple Sclerosis Society of Canada

National Collaborating Centre for Environmental Health

National Institute of Arthritis and Musculoskeletal and Skin Diseases

National Sanitarium Association

Network Environments for Aboriginal Health Research (NEAHR)
- Alberta Aboriginal Capacity and Developmental Research Environments (ACADRE-NEAHR) Network Centre
- Manitoba ACADRE-NEAHR Network
- Nova Scotia ACADRE-NEAHR Network

Niagara Anaphylactic Support and Knowledge (NASK)

Nurse Practitioner's Association of Ontario

Ontario College of Family Physicians

Ontario Lung Association
(Ontario Respiratory Care Society)
OntarioMD
Regional Municipality of Halton
St. James-Assiniboia School Division, MB
The Brain and Behaviour Research Foundation
The Institute for Heart + Lung Health
The Respiratory GREAT Network
Vanier Scholarship
Women's Health Concerns Clinic
World Health Organization - Global Alliance
Against Chronic Respiratory Disease

Stakeholder Engagement Meetings

From December 7, 2010 to March 29, 2011, AllerGen held six regional stakeholder and partner meetings. These meetings were held in Ottawa, Montreal, Vancouver, Edmonton, Toronto and Burlington (Ontario). Meetings were attended by 60 representatives from 40 partner organizations, affiliations and groups.

These meetings helped AllerGen better understand partners' strategic priorities and needs, enabled AllerGen to communicate to partners and stakeholders its research, commercialization and knowl - edge mobilization priorities and helped all parties identify shared strategic priorities and opportunities for future collaboration that best addressed partners' and stakeholders' needs and gaps.

This process significantly contributed to the development of AllerGen's strategic plan for the second cycle of NCE funding 2012 to 2019, enhanced communications between AllerGen and its stakeholder and partner organizations, and fostered new mutually beneficial initiatives.

Stakeholder Analysis Reports

AllerGen has invested in identifying and developing relationships based on meaningful engagement with Canadian stakeholders and partners over the past seven years. To assist in continuing and nurturing these relationships, over the past year AllerGen developed two reports: *AllerGen Stakeholder Analysis of Network Research Partners* and *AllerGen Stakeholder Analysis of Network Knowledge Users*. These reports are available to Network investigators, Committees and Administrative Centre staff. They provide up-to-date, accurate profiles of current and prospective Network stakeholders and partner organizations. These reports are intended to be "living" documents, validated by each stakeholder organization and updated annually.

In 2010-11, AllerGen had direct, research-based partnerships with a wide range of research and knowledge mobilization stakeholders that can be targeted utilizing a hub and spoke model for dissemination of research results. The hub and spoke model exponentially increases AllerGen's reach and facilitates the tailoring of research results to best meet the knowledge needs of each organization.

International Partnerships

One of AllerGen's goals is to continue fostering national and international partnerships. Over the past two years, AllerGen has built on the momentum of the successful relationships and collaborations it developed through the NCE International Partnerships Initiative (IPI) program.

Going Global Germany

In October 2010, a delegation of AllerGen researchers, business advisors and executives travelled to Berlin, Germany, supported by a Government of Canada, Department of Foreign Affairs and International Trade (DFAIT) Going Global Program grant. Over 20 partnerships were developed that continue to flourish including guest professorships, reagent and trainee exchanges, conference

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delegations and institutional partnership agreements.

The four day meeting began with a facilitated research workshop, followed by multiple German university site visits focusing on collaborative research project planning. Day-four culminated with a joint Germany-AllerGen/Canada meeting at the Canadian Embassy in Berlin with German research funding organizations and Canadian Embassy and Foreign Affairs Officers, and AllerGen representatives with their German research collaborators. AllerGen researchers and their German colleagues presented a comprehensive research program and trainee exchange plan.

There was significant enthusiasm for and buy-in among German research partners regarding the benefits of the Canadian Networks of Centres of Excellence *network way of working*. Of shared interest were opportunities to accelerate innovation, networking, research and development (R&D) and capacity building in allergic disease and environmental research.

AllerGen anticipates future collaborations with German universities and research centres in the following areas: Genome-wide association studies, birth cohorts and biological materials, environmental exposures (stress, pollutants, microbiota), animal models for validation of targets and determination of mechanisms, therapeutic strategies, clinical practice, public policy and trainee exchanges.

Development of International MOUs (Australia, Germany and Sweden)

AllerGen is committed to creating new capacity building opportunities through international trainee exchanges to enrich the training and professional

development opportunities available for AllerGen students and researchers.

Effective Canadian and global networking has led to the development of new capacity building initiatives with three leading international research centres and universities for allergy and asthma research and development.

Building on the strength of the Network's successful collaboration with the Karolinska Institute in Sweden, AllerGen has initiated talks with The University of Newcastle, Australia, as well as with MARC and Charité in Germany. MOUs related to trainee exchanges are scheduled to be signed with these organizations in summer – fall 2011.

Canadian Trainees Internationally

International capacity building opportunities are normally out of reach for many research trainees. However, AllerGen trainees are not only exposed to visiting international professorships and speakers but also are given the opportunity to work and learn abroad.

In May 2010, AllerGen investigator, Dr. Anita Kozyrskyj, and Karolinska Institute investigator, Catarina Almqvist Malmros, and their trainees took part in HQP exchanges. Outcomes from AllerGen investigator and trainee visits to the Karolinska Institute and Norwegian University of Science and Technology (NUST) included exchange of research methods and literature as well as comparison of infant microbiota samples that can significantly influence future clinical practice and healthcare and ultimately benefit Canadians.

Also in 2010, Jennifer Protudjer, PhD candidate, University of Manitoba, supervised by Dr. Allan Becker, University of Manitoba, returned to the Karolinska Institute to further develop research collaborations and network, as well as to finalize a manuscript titled *Associations between Overweight, Asthma and Puberty in Swedish Twins* and disseminate her findings at the International Congress on Obesity in Stockholm, Sweden.

AllerGen's *Traffic pollution, Asthma, Genetics* (TAG) project is a collaborative initiative involving Post-doctoral Fellow and AllerGen HQP, Elaina MacIntyre, and PhD candidate and AllerGen HQP, Elaine Fuertes, both supervised by Dr. Michael Brauer, University of British Columbia. Dr. MacIntyre secured a visiting scientist position at the German Research Center for Environmental Health in Munich, where she conducted parts of her post-doctoral research at the Helmholtz German Research Center with Dr. Joachim Heinrich. Ms Fuertes is also working in collaboration with Dr. Heinrich and has initiated a new collaboration with the *International Study of Asthma and Allergies in Children* (ISAAC), working closely with ISAAC investigators at St George`s Hospital Medical School (University of London).

Following discussions in early 2011, between AllerGen and The University of Newcastle's *Priority Research Centre for Asthma and Respiratory Disease*, a draft MOU has been developed to facilitate student exchanges between the two organizations. As a result, Steven Maltby, PhD, an AllerGen Students and New Professionals (ASNPN) member and AllerGen trainee supervised by Dr. Kelly McNagny, University of British Columbia, has been offered a Post-doctoral Fellowship to work in the *Priority Research Centre for Asthma and Respiratory Disease* beginning in late 2011.

Effective KTEE strategies are critical to successful dissemination of Network research results and ensuring that the social and economic value of AllerGen's national and international networking is realized.

Knowledge and Technology Exchange and Exploitation (KTEE)

AllerGen is committed to KTEE and continually finds meaningful and unique channels to commercialize, engage, inform and share knowledge with Network partners and stakeholders including not-for-profit allergy, asthma, anaphylaxis and related immune diseases organizations, clinicians and healthcare professionals, asthma educators, the general public and policy makers and other decision-makers.

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AllerGen *Success Stories*

In 2010, AllerGen launched a new quarterly publication called *Success Stories*. The goal of this publication is to make AllerGen's leading edge allergic disease research results readily accessible to the public in lay terms, and to offer those living with allergic disease and their families and friends, practical information about how the latest allergy and asthma research conducted in Canada can be applied to their benefit.

Over the past year, the first issue of AllerGen's *Success Stories* was mailed to 456 Network participants, research partners and knowledge users. All volumes are available in soft copy on the AllerGen website and are accessible to the public in hard copy by request. The inaugural issue featured:

- How products found within many Canadian homes impact the development of childhood asthma
- Parallels found between allergic reactions in horses and humans
- Global best-practices for Phase II clinical trials for new asthma drugs
- Development of diagnostic tests to identify peanut allergy, and
- The impact of maternal stress on the development of asthma in young children.

AllerGen intends to annually publish four volumes of *Success Stories*, each featuring five lay reports about research projects completed by AllerGen researchers, trainees and partner organizations.

AllerGen Publications 2010-11		
Refereed Contributions		**54**
Articles in refereed publications	49	
Other Refereed Publications	5	
Specialized Publications		**87**
All Publications		**141**

Between April 2010 to March 2011 AllerGen researchers produced 141 new publications (refereed, non-refereed and specialized). Of that number, 54 were refereed publications, published in leading academic journals.

Over the life of the Network, AllerGen researchers have produced 1,019 publications, of which 260 were scientific posters.

AllerGen in the Media

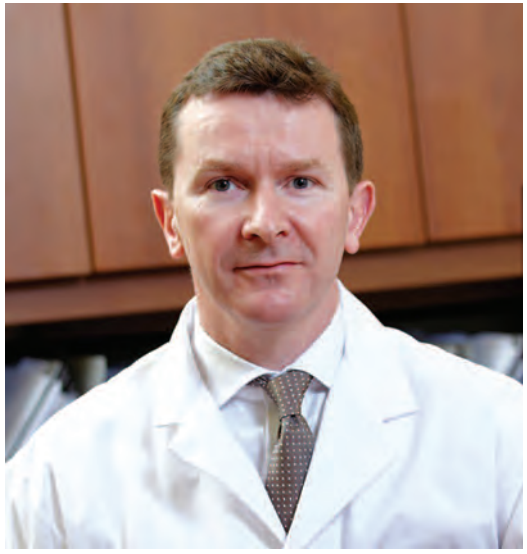
AllerGen's communication strategy targets diverse national, international, internal and external audiences. In 2010-11, AllerGen experienced a steady increase in visits to its website, with a peak of 1,815 monthly visitors. In addition, AllerGen researchers were featured in the media on 62 occasions.

Commercialization

The identification, protection, commercialization and/or translation and mobilization of Network-supported intellectual property are fundamental to AllerGen's success. Each research investment that AllerGen makes is undertaken following 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.

Below are examples of AllerGen-supported commercialization initiatives:

Adiga Life Sciences: AllerGen was involved in the establishment of Adiga Life Sciences, which is a joint venture between McMaster University and Circassia Ltd., a clinical-stage biopharmaceutical company located in the UK, to commercialize intellectual property. The company's current research development pipeline is based on the work of AllerGen investigator Dr. Mark Larché, who is a global leader in the field of allergy and immunology and a Canada Research Chair recruited to McMaster University. This includes ongoing work to identify the key T cell epitopes involved in certain allergies, which is guiding the design of "tolerance-generating" vaccines. CIC investigators are also working, with Dr. Larché's guidance, on developing vaccine immunotherapy, and were previously awarded a University-Industry CIHR grant for this research with partner GlaxoSmithKline (GSK). Adiga has undertaken nine Discovery/ Phase II clinical trials, representing approximately $13 million in economic impact to the Canadian clinical trials sector. This has also created one full-time job at Adiga and indirectly supported 40 highly skilled employees in clinical trials. Adiga and AllerGen are now collaborating towards a joint proposal for two clinical trials that will be used to validate procedures and assays that will form part of a new AllerGen Allergic Rhinitis - Clinical Investigator Collaborative.



Dr. Mark Larché, McMaster University

Respirlyte Inc.: Asthma can be difficult to diagnose, especially in children. Dr. Darryl Adamko, University of Alberta, was not satisfied with the available asthma tests, particularly because of their unsuitability for young children. He was convinced that he could develop a urine test that was easy to analyze and would produce better results. This endeavour was greatly encouraged by The Hospital for Sick Children in Toronto, which funded the initial research using animal models, and by AllerGen NCE, which funded the human study. Using technology known as nuclear magnetic resonance (NMR) spectroscopy, Dr. Adamko believes that he has identified asthma's chemical fingerprint. AllerGen is collaborating with TEC Edmonton to further develop Dr. Adamko's diagnostic technology. To date, this AllerGen-supported research has resulted in the development of Respirlyte – a wholly Canadian-owned start-up company.

AIM Therapeutics: Dr. Dean Befus, University of Alberta, has identified a novel salivary gland peptide with anti-inflammatory activity that, with major investments by AllerGen and AIM Therapeutics Inc., a Canadian biotechnology company, has moved to Phase I clinical studies in humans,

AIM Therapeutics Inc. is focusing on translation of Dr. Befus' experimental results into human asthma treatments.

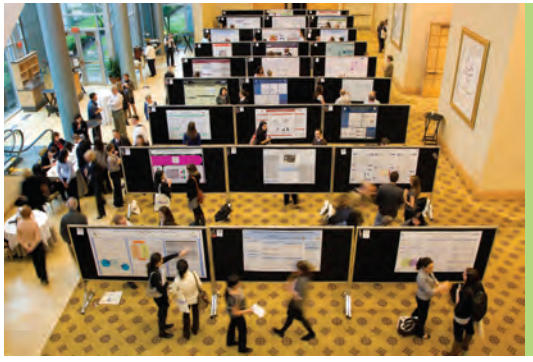
Dr. Befus's research team, in partnership with AIM and AllerGen, are uncovering how the mechanisms involved in this mind-body pathway work and how the drugs act to control inflammatory reactions. The results of this study are expected to lead to rapid advances in the treatment of human allergic and other inflammatory diseases.

CD34: Recent research findings of AllerGen investigator, Dr. Kelly McNagny, University of British Columbia, suggest that antibodies targeting CD34 would be an effective novel therapeutic approach for a variety of inflammatory disorders, including asthma.

This project investigated the roles of a number of blood cell types and their receptors in regulating lung inflammation during allergy and asthma. This study identified that CD34, expressed by mast cells, eosinophils and dendritic cells, is required for allergic inflammation. This study initially identified CD34 as a potential therapeutic agent for future studies.

Since 2005, 138 trainees have graduated from their respective programs and are employed in one of four sectors: University (46%), Industry (33%), Government (11%), Hospital (7%).

Tomorrow's Leaders: AllerGen's Highly Qualified Personnel (HQP)



Over the last year, AllerGen issued its inaugural *AllerGen Emerging Clinician-Scientist Research Fellowship*, 17 *Canadian Allergy and Immune Diseases Advanced Training Initiative* (CAIDATI) awards and 24 travel awards, which enabled AllerGen trainees to attend national and international meetings and conferences.

AllerGen's Highly Qualified Personnel initiatives offer world-class programs and unique opportunities for Network trainees, young professionals, research associates and technicians. Highlights from the past year include:

AllerGen Emerging Clinician-Scientist Research Fellowship

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

- Strengthen the academic capacity of Canadian Clinical Immunology and Allergy sub-specialists
- Increase Canadian capacity for translational Clinical Immunology and Allergy research, and
- Facilitate enhanced patient care through excellence in basic and clinical allergy and related immune disease research.

Eligible candidates are Canadian citizens or permanent residents who are clinicians that have completed Clinical Immunology and Allergy sub-specialty training at a Canadian academic health sciences centre within the past 18 months. Preference is 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 provincial follow-on research funding.

The inaugural winner of this fellowship was Dr. Moshe Ben-Shoshan, McGill University and Montreal Children's Hospital, Québec. For additional details, see the *2010-2011 Highlights* section of this report.

AllerGen's Canadian Allergy and Immune Diseases Advanced Training Initiative (CAIDATI) Awards

Over the past year, 17 outstanding students from seven academic institutions across Canada were selected to receive AllerGen's Canadian Allergic and Immune Diseases Advanced Training Initiative (CAIDATI) awards. AllerGen issued $186,125 in student support for research with potential to reduce the morbidity, mortality and socio-economic burden of allergic and related immune diseases. This funding was matched 1:1 by partner organizations from across Canada. The students awarded AllerGen matching funding attended the following universities:

- Dalhousie University.....$27,300
- McGill University $27,300
- McMaster University.....$29,275
- University of British Columbia $72,450
- University of Calgary.....$8,925
- University of Guelph $18,375
- University of Manitoba $2,500

AllerGen 2010 CAIDATI Winners

(Note that, in addition, these AllerGen awards are matched 1:1 by a partner organization, which doubled the total value of each award)

Dalhousie University

Allergic Disease and Allergy Medications in the Regulation of Breast Cancer
Trainee: S. Oldford $18,375
Supervisor: J. Marshall

The Role of Human Mast Cells in Respiratory Syncytial Virus (RSV) Disease
Trainee: A. Al-Afif $8,925
Supervisor: J. Marshall

McGill University

Filaggrin and Epidermal Differentiation Complex Gene Mutations in Peanut Allergy
Trainee: Y. Asai $18,375
Supervisor: A. Clarke

T cell mediated mechanisms of airway smooth muscle proliferation
Trainee: S. Al-Heialy $8,925
Supervisor: J. Martin

McMaster University

Evaluation of a Nicotine Receptor Agonist, ASM024, on the function of leukocytes in allergic, mild asthmatic subjects before and after allergen inhalation challenge
Trainee: L. White
Supervisor: Gail Gauvreau

Evaluation of Peroxisome Proliferator-Activated Receptor-g Effects on Eosinophil Function in Atopic Asthma
Trainee: S. Smith $8,925
Supervisor: G. Gauvreau

Fetal Origins of Allergic Diseases: Role of Prenatal Stress in Skewing the Immune System of the Developing Fetus towards an Allergic Phenotype
Trainee: C. Jago.....$8,925
Supervisor: P. Arck

The Effects of Epithelial-Derived Thymic Stromal Lymphopoietin on Cord Blood CD34+ Cell Eosinophil/Basophil Lineage Commitment
Trainee: C. Hui.....$8,925
Supervisor: J. Denburg

University of British Columbia

CD34 as a Novel Therapeutic Target for Asthma
Trainee: M. Gold.....$8,925
Supervisor: K. McNagny

Identification of function single nucleotide polymorphisms in asthma genes: TSLP and IL1RL1
Trainee: L. Akhabir.....$8,925
Supervisor: A. Sandford

IL-13 signalling, airway epithelial wound repair and remodelling
Trainee: J. Yang $8,925
Supervisor: D. Dorscheid

Molecular signatures in peripheral blood that distinguish the isolated early response from the dual response to allergen challenge
Trainee: S. Kam $8,925
Supervisor: S. Tebbutt

Susceptibility to severe human respiratory syncytial virus infections during early childhood: the role of the innate immune system
Trainee: N. Marr $18,375
Supervisor: S. Turvey

The role of the airway epithelium NLRP3 inflammasome in asthma pathogenesis
Trainee: J. Hirota $18,375
Supervisor: D Knight

University of Calgary

Modulation of Rhinovirus-Induced Matrix - Metalloproteinase-9
Trainee: C. Tacon $8,925
Supervisor: R. Leigh and D. Proud

University of Guelph

Storage Protein Variants of Soy as Hypoallergenic Candidates in Humans
Trainee: P. Babu.....$18,375
Supervisor: B. Wilkie

University of Manitoba

Long-term respiratory outcomes of preterm birth and low birth weight in the CAPPS cohort
Trainee: S. Macpherson
Supervisor: Allan Becker

AllerGen and Michael Smith Foundation for Health Research (MSFHR) Trainee Awards

In December 2010, AllerGen and MSFHR signed a MOU agreeing to jointly fund applicants who qualify for MSFHR's Trainee Award Competitions. AllerGen and MSFHR will co-fund an award of up to $30,000 annually, for the highest ranking candidates working in AllerGen's area of research. This program leverages provincial research funding in BC to support additional research trainees within the AllerGen Network. BC investigators form a major research cluster within the Network and many of AllerGen's genetics, environment, microbiome and biomarkers research team members are located there. AllerGen plans to support three to five new research trainees for up to three years each through this partnership.

AllerGen Trainees Take Top Honours at the 2010 Canadian Society for Allergy and Clinical Immunology (CSACI) Annual Scientific Meeting

Salma Bahreinian, a Master's student from the University of Alberta, won first place in the Best Poster Awards – Asthma and Allergic Rhinitis category – at the CSACI 2010 Annual Scientific Meeting in Victoria, BC, in 2010, for her poster titled *Co-morbidity with Depression and Overweight in Children with Asthma.*

Doug Houlbrook, a student from the University of Manitoba, won second place in the Best Poster Presentation at the CSACI 2010 Annual Scientific Meeting for his poster titled *Association of Maternal FEF 25-75% during a Methacholine Challenge and Children's Diagnosis of Asthma.*

During this annual event, AllerGen and CSACI co-sponsored a *Young Allergy Professionals Networking Reception* hosted by AllerGen investigator, Dr. Anne Ellis, Assistant Professor at

AllerGen Travel Awards

AllerGen supported, through matching funding, the attendance of 21 trainees at 11 national and international events including:

AAAAI 2011 Annual Conference
(March 18-22, 2011) in San Francisco
McGill University – Lianne Soller
McMaster University – Adrian Baatjes, Delia Heroux, Claudia Hui, Pia-Lauren Reece and Sophia Xu

Advanced Multi-Colour Flow Cytometry Course
(June 7-10, 2010) in Vancouver, BC
McMaster University – Delia Heroux

American Thoracic Society International Conference
(May 14-19, 2010) in New Orleans, LA
University of British Columbia – Gurpreet Singhera
University of Toronto – Meghan Brown

Anaphylaxis Spring Conference
(May 8, 2010) in Toronto, ON
McMaster University – Bonnie Chow
University of British Columbia – Charis-Patricia Segeritz
University of Manitoba – Tracy Pitt

Canadian Microbiome Initiative Workshop and International Human Microbiome Congress
(March 8-11, 2011) in Vancouver
University of Toronto – Tedd Konya and Brenda Koster

Canadian Pediatric Society Annual Conference
(June 22-26, 2010) in Vancouver, BC
McMaster University – Kristin Stawiarski and Sophia Xu

Canadian Respiratory Conference
(April 29 - May 1, 2010) in Halifax, NS
Laval University – Annick Des Cormiers, Joanne Milot and Philippe Prince

Canadian Society for Allergy and Clinical Immunology (CSACI) Annual Conference
(Nov 3-6, 2010) in Victoria, BC
McMaster University – Nicole Fernandes
University of Manitoba – Jennifer Protudjer

CIHR Young Investigator Forum
(May 5-7, 2010) in Vancouver, BC
McMaster University – Ilan Asher

European Respiratory Society Congress
(September 18-22, 2010) in Barcelona, Spain
University of Toronto - Michelle North

International Congress on Obesity
(July 12-14, 2010) in Stockholm, Sweden
University of Manitoba – Jennifer Protudjer

Queen's University. The reception provided a unique networking opportunity for allergists in training, prominent practitioners and AllerGen researchers. It also offered AllerGen an opportunity to promote its many training opportunities to future Canadian Clinical Immunology and Allergy sub-specialists.

AllerGen Annual Conference – Student Poster Competition

The AllerGen student poster competition takes place each year in conjunction with the annual *Innovation from cell to society* research conference. The 2011 competition took place at the Westin Bayshore Hotel in Vancouver, BC. In addition to an oral presentation of their poster to the judges, this year AllerGen expanded the role of trainees and invited them to showcase their research to the assembled delegates during "lightning" round sessions where they made a one-minute "elevator-pitch" style presentation focusing on the *What?, So what?*, and *Now what?* of their research results. This exercise proved both challenging and rewarding, and afforded conference delegates a broad overview of each student's research findings from the past year.

In 2010-11, there were a record number of 68 trainee posters displayed at the conference, representing a 33% increase over the number displayed in the previous year. Of the 68 posters on display this year, 61 trainees competed for AllerGen poster awards.

AllerGen Poster Award Winners 2011

Gene-Environment Interactions

Winner: Luisa Giles supervised by Dr. Chris Carlsten, University of British Columbia, presented *The Effects of Pre-Exposure to Diesel Exhaust on a 20km Cycling Time Trial Performance and Cardiovascular and Pulmonary Parameters in Endurance-Trained Males*

Runner Up: Huan Shu supervised Dr. Tim Takaro, Simon Fraser University, presented *Potential Sources of Phthalate Exposure in the Vancouver CHILD Study at Three Months of Age*

Diagnostics and Therapeutics

Winner: Mathew Tunis supervised by Dr. Jean Marshall, Dalhousie University, presented *Mast Cells Are Not Required for the Induction of Oral Tolerance in Mice*

Runner Up: Charis-Patricia Segeritz supervised by Dr. Tobias Kollmann, University of British Columbia, presented *The Immune-Prophylactic Vaccine Lm Ø (trpSactA)/pSPO-PShlyOVA Protects Neonates from Asthma*

Public Health, Ethics, Policy and Society

Winner: Natalia Mykhaylova supervised by Dr. Greg Evans, University of Toronto, presented *Design and Testing of a Portable, High Time Resolution System for Monitoring Air Pollutant Mixtures Associated with Allergy Onset and Development*

Runner Up: Elinor Simons supervised by Dr. Teresa To and Dr. Sharon D. Dell, University of Toronto, presented *How Does the Timing of Home Environmental Tobacco Smoke Exposure During Childhood Affect the Age of Asthma Development?*

ASNPN Networking Event at the Conference

Each year, the AllerGen Students and New Professionals Network (ASNPN) hosts a networking reception during the annual conference. This year's ASNPN event was hosted at the Vancouver Aquarium, and was attended by over 125 conference delegates. This event provided a unique opportunity for trainees to network with Canada's leading researchers and Network partner organization representatives.

AllerGen Trainee Symposium

In 2010, the ASNPN held its fifth Annual Trainee Symposium at the Chestnut Conference Centre at the University of Toronto. From June 6 to 8, 2010, 48 trainees participated in this ASNPN-organized event.

The symposium featured talks by experts in several fields of interest to researchers-in-training including knowledge translation, research ethics, engaging the media, research funding, oral presentation skills, and careers outside academe. Symposium participants learned about ASNPN President, Jennifer Protudjer's experience at the Karolinska Institute as part of the AllerGen – Karolinska Exchange Program and were themselves encouraged to get involved in exchange programs to gain global experience.

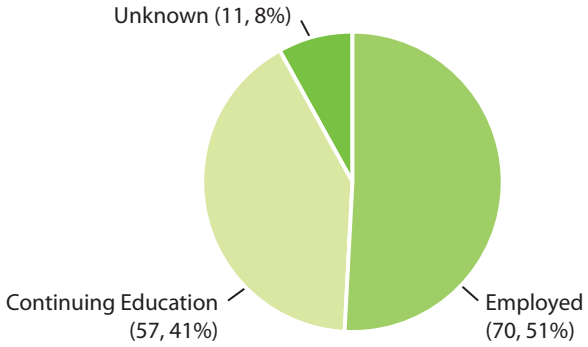
Participants also had an opportunity to attend a *Clinical Workshop for Non-Clinicians* that was held at The Hospital for Sick Children on June 9th, 2010. In addition, 20 AllerGen trainees visited the Gage Occupational and Environmental Health Unit at the University of Toronto where they toured the air pollution exposure facility and participated in two demonstrations – methacholine challenge testing and skin-prick testing.

Network Graduates and Employment

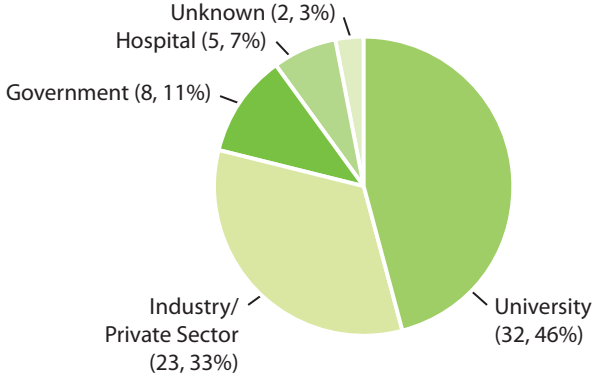
During 2010-2011, twenty-three of AllerGen's graduates obtained academic faculty positions. Of these, 69% obtained Assistant Professor-level positions at Canadian universities.

Since 2005, 138 trainees have graduated from their respective programs and are employed in one of four sectors: University (46%), Industry (33%), Government (11%), Hospital (7%). The employment status of three per cent of trainees is unknown.

AllerGen HQP Graduates 2005-2011 (n=138)



AllerGen HQP Employment by Sector 2005-2011 (n=70)



Individual accomplishments of AllerGen graduates over the past year include:

In July 2010, **Derek Haaland**, MD became Assistant Clinical Professor, Department Medicine, Department Rheumatology/Clinical Immunology and Allergy at McMaster University. Prior to his employment, he was supervised by AllerGen researcher Dr. Lisa Cicutto, University of Toronto.

Annie LeBlanc, PhD, is now the Assistant-Professor in Health Service Research, College of Medicine, Knowledge and Evaluation Research Unit, Division of Heath Care Policy Research, Department of Health Service Research, Mayo Clinic, Rochester, MN. While involved with AllerGen, Annie was supervised by Dr. Louis-Philippe Boulet at Laval University and took part in the development of protocols for the development of a rhinitis control assessment tool and an asthma management tool as part of the CIC team.

Upon graduation, **Jim Wickware**, BSc, accepted the position of Associate Chair of Biological Sciences Technology at the Northern Alberta Institute of Technology and now has a full-time instructional role there. He was an AllerGen trainee under the supervision of Dean Befus, PhD, at the University of Alberta.

AllerGen Students and New Professionals

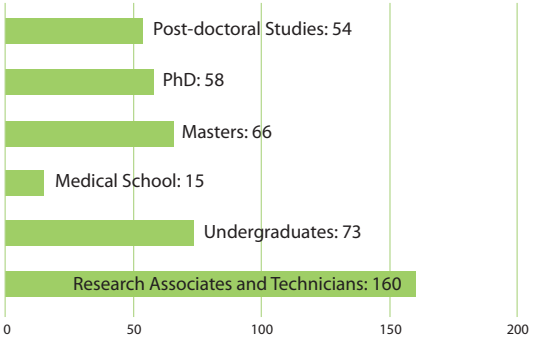
AllerGen's Students and New Professionals Network is comprised of students *(undergraduate to post-doctoral fellow)*, research associates, technicians and new professionals beginning their careers in allergy and asthma research. Trainees working on an AllerGen funded project and AllerGen award recipients automatically become AllerGen HQP and part of the ASNPN Network. Individuals not directly working on an AllerGen project may apply to become an ASNPN member and access the associated benefits. Currently there are 426 ASNPN members – 276 active HQP involved in network research plus 150 new professionals and students not directly involved in AllerGen projects but participating in networking and professional development opportunities.

AllerGen
Students and New Professionals Network
Réseau des étudiants et des jeunes professionnels

A Snapshot of AllerGen HQP 2010/2011

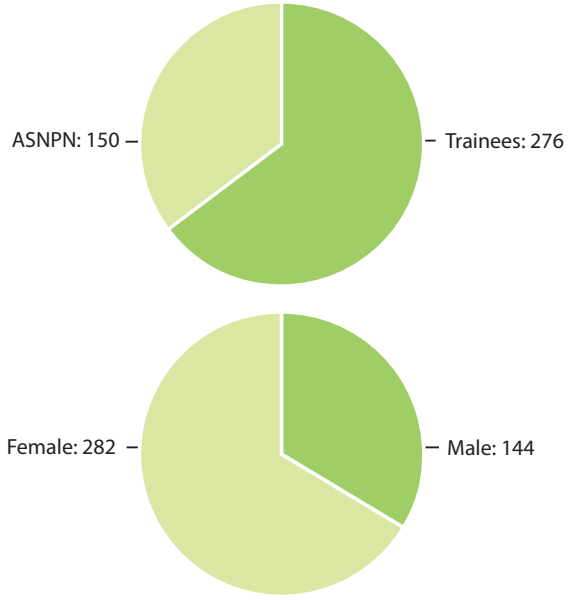
Trainees, New Professionals, Research Associates and Technicians by Province		
Ontario	166	39%
British Columbia	95	22%
Quebec	68	16%
Alberta	48	11%
Manitoba	33	8%
Nova Scotia	12	3%
Outside Canada	3	1%
Saskatchewan	1	0%

Level of Study

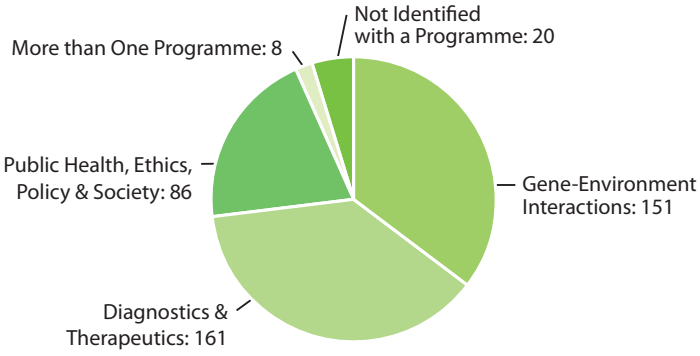


Trainees, New Professionals, Research Associates and Technicians by University		
University of British Columbia	93	22%
McMaster University	91	21%
University of Alberta	46	11%
University of Toronto	46	11%
University of Manitoba	34	8%
McGill University	30	7%
Queen's University	26	6%
Université Laval	17	4%
Université de Montreal	15	4%
Dalhousie University	12	3%
Université du Quebéc à Chicoutimi	4	1%
Simon Fraser University	3	0.75%
Outside Canada	3	0.75%
University of Calgary	2	0.50%
University of Guelph	1	0.25%
University of Saskatchewan	1	0.25%
University of Victoria	1	0.25%
University of Western Ontario	1	0.25%

Trainees, New Professionals, Research Associates and Technicians: 426



Trainees by Programme



Food allergy affects up to 50% of Canadian house holds – 20% are affected directly and another 30% indirectly because they must consider food allergies when preparing or serving food.

Financial Overview

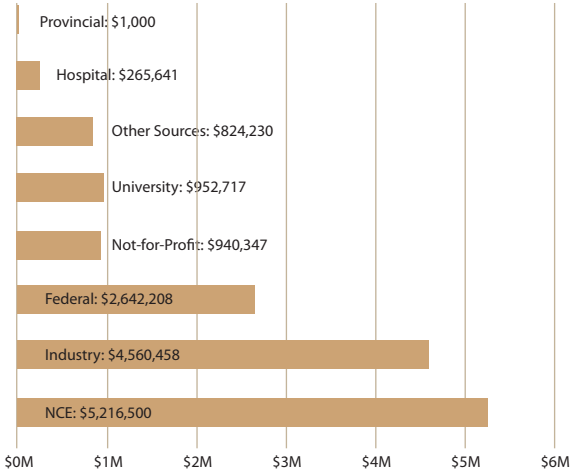
AllerGen NCE Inc. Financial Summary 2010- 2011

	2010-2011 (Year 6)	Percentage
Revenues (Cash and In-Kind)		
NCE Award	5,216,500	34%
IPI Award	-	0%
IDRC Award - St. John's Institute	-	0%
Health Canada Funding (CMP 1 and CMP 2)	1,489,599	10%
Non-NCE Funds to Administrative Centre*	118,075	1%
Non-NCE Funds To Research*	8,578,927	56%
	15,403,101	**100%**
Expenditures (Cash)		
Research Programs	4,629,009	65%
Networking	638,628	9%
Strategic Initiatives and Training	290,040	4%
Communications	14,664	0%
Administration	1,508,509	21%
	7,080,850	**100%**
Committed Amounts for Future research	5,461,316	

Revenue Sources (Cash and In-Kind) 2010/11	Cash	In-Kind	Total	Percentage
NCE	5,216,500	-	5,216,500	34%
Industry	4,397,333	163,125	4,560,458	30%
University	167,500	785,217	952,717	6%
Other Sources	382,741	441,489	824,230	5%
Hospital	22,950	242,691	265,641	2%
Federal	1,379,156	1,263,052	2,642,208	17%
Not-for-Profit	700,027	240,320	940,347	6%
Provincial	-	1,000	1,000	0%
Total	**12,266,207**	**3,136,894**	**15,403,101**	**100%**

* Includes cash and in-kind contributions

Non-NCE Revenue Sources



Inhaled corticosteroids are the best medications for controlling asthma. However, they are also the most expensive and as out-of-pocket costs increase, their use decreases. While drug plans aim to save money by shifting costs to families, children may experience worse outcomes and this may result in increases in overall healthcare costs.

Network Participants 2010-2011

Researchers and Collaborators (n=170)

Name	Affiliation
Shawna McGhan	Alberta Asthma Centre/University of Alberta
Mary Lewis Allen	Allergy/Asthma Information Association
Matthew Nisbet	American University
Laurie Harada	Anaphylaxis Canada
Diane Dubord	Association Québecoise des Allergies Alimentaires
Christine Hampson	Asthma Society of Canada
Arturas Petronis	Centre for Additional and Mental Health
Tom Pfeifer	Centre for Drug Research & Development
Maike Pincus	Charité Berlin
Ulrich Wahn	Charité Berlin
Guylaine Rioux	Commission de la sante et de la securite de travail
Heather Castleden	Dalhousie University
Jean Marshall	Dalhousie University
Wade Watson	Dalhousie University
Allan Kaplan	Family Physician Airways Group of Canada
Lisa Howard	GlaxoSmithKline
Kathi Carroll	Hamilton Family Health Team
Dale Anderson	Hamilton Niagara Haldimand Branch
Sheila Dubois	Health Canada
Samuel Godefroy	Health Canada
John Salminen	Health Canada
Sheryl Tittlemier	Health Canada
Hari Vijay	Health Canada
Joachim Heinrich	Helmholtz Munchen
Colin McKerlie	Hospital for Sick Children
Theo Moraes	Hospital for Sick Children
Susan Richardson	Hospital for Sick Children
Eric Meslin	Indiana University
Marie Larue	Institut de Recherche-Robert Sauve en santé et en securité de travail
Janet Hux	Institute for Clinical Evaluative Sciences
Glen Johnson	Intelliware Development Inc.
Sven-Erik Dahlèn	Karolinska Institutet
Barbro Dahlèn	Karolinska Institutet
Goran Pershagen	Karolinska Institutet
Jennifer Olajos-Clow	Kingston General Hospital
Louis-Philippe Boulet	McGill University
Ann Clarke	McGill University
Qutayba Hamid	McGill University
Lawrence Joseph	McGill University
Bruce Mazer	McGill University
Danuta Radzioch	McGill University
Gail Gauvreau	McMaster University
Mark Larche	McMaster University
Andrea Marrin	McMaster University
Helen Neighbour	McMaster University
Paul O'Byrne	McMaster University
Malcolm Sears	McMaster University
Petra Arck	McMaster University
Stephanie Atkinson	McMaster University
John Bienenstock	McMaster University
Judah Denburg	McMaster University
Paul Forsythe	McMaster University
Andreas Freitag	McMaster University
Sarah Garside	McMaster University
Ted Haines	McMaster University
Mark Inman	McMaster University

Name	Affiliation
Manel Jordana	McMaster University
Anthony Levinson	McMaster University
Kathy McCoy	McMaster University
Ann McKibbon	McMaster University
Koon Teo	McMaster University
Susan Waserman	McMaster University
Michel Djandji	Merck Frosst
Scott H. Sicherer	Mount Sinai School of Medicine
Juan Rivera	National Institute of Arthritis and Musculoskeletal and Skin Diseases
Andrew Storer	National Research Council of Canada
Jan Kasperski	Ontario College of Family Physicians
Brian Forster	Ontario MD
Maurice Bitran	Ontario Ministry of Economic Development and Trade
Nancy Garvey	Ontario Ministry of Health and Long-term Care
Diane Lougheed	Queen's University
Anne Ellis	Queen's University
Roger Deeley	Queen's University
John McCans	Queen's University
Jodan Ratz	Queen's University
Gianna Moscato	Scientific Institute of Pavia
George Agnes	Simon Fraser University
Ryan Allen	Simon Fraser University
Itamar Tamari	Stonegate Community Health Centre
Catherine Laprise	Universite de Québec a Chicoutimi
Jamila Chakir	Universite Laval
Johanne Cote	Universite Laval
Michel Laviolette	Universite Laval
Bruce Ritchie	University of Alberta
Darryl Adamko	University of Alberta
Harissios Vliagoftis	University of Alberta
Dean Befus	University of Alberta
Mohit Bhutani	University of Alberta
Lisa Cameron	University of Alberta
Timothy Caulfield	University of Alberta
Brian H. Rowe	University of Alberta
Malcolm King	University of Alberta
Anita Kozyrskyj	University of Alberta
Paige Lacy	University of Alberta
Piush Mandhane	University of Alberta
Irvin Mayers	University of Alberta
Devidas Menon	University of Alberta
Philip P. Halloran	University of Alberta
Bronwyn Shoush	University of Alberta
Miriam Stewart	University of Alberta
Brian Sykes	University of Alberta
Dilini Vethanayagam	University of Alberta
John Henderson	University of Bristol
Chris Carlsten	University of British Columbia
Denise Daley	University of British Columbia
Del Dorscheid	University of British Columbia
Joshua Eades	University of British Columbia
Michael Kobor	University of British Columbia
Tobias Kollmann	University of British Columbia
Kelly McNagny	University of British Columbia
Timothy Murphy	University of British Columbia
Scott Tebbutt	University of British Columbia
Michael Brauer	University of British Columbia

Name	Affiliation
Moira Chan-Yeung	University of British Columbia
Mark Fitzgerald	University of British Columbia
Larry Lynd	University of British Columbia
Michael MacDonald	University of British Columbia
Carlo Marra	University of British Columbia
Peter Pare	University of British Columbia
Andrew Sandford	University of British Columbia
Tim Takaro	University of British Columbia
Patrick Tang	University of British Columbia
Stuart Turvey	University of British Columbia
Robert Cowie	University of Calgary
Stephen Field	University of Calgary
Richard Leigh	University of Calgary
Ronald Mathison	University of Calgary
Marjan Kerkhof	University of Groningen
Gerard Koppelman	University of Groningen
Adnan Custovic	University of Manchester
Allan Becker	University of Manitoba
Kent Hay Glass	University of Manitoba
Jeff Masuda	University of Manitoba
Gustaaf Sevenhuysen	University of Manitoba
Redwan Moqbel	University of Manitoba
Lucie Blais	University of Montreal
Guy Delespesse	University of Montreal
Bartha Knoppers	University of Montreal
Catherine Lemiere	University of Montreal
Jean-Luc Malo	University of Montreal
Nicole Letourneau	University of New Brunswick
Neil Taylor	University of North Carolina
Sharon Berthelet	University of Ottawa
Eric Crighton	University of Ottawa
Jane Kaye	University of Oxford
Donald Cockroft	University of Saskatchewan
John Gordon	University of Saskatchewan
Margaret Otlowski	University of Tasmania, Australia
Teresa To	University of Toronto
Jeff Brook	University of Toronto
Lisa Cicutto	University of Toronto
Sharon Dell	University of Toronto
Richard Hegele	University of Toronto
Linn Holness	University of Toronto
Kathi J. Wilson	University of Toronto
Irena Kudla	University of Toronto
Gary Liss	University of Toronto
James Scott	University of Toronto
Frances Silverman	University of Toronto
Padmaja Subbarao	University of Toronto
Susan Tarlo	University of Toronto
Wendy Ungar	University of Toronto
Ross Upshur	University of Toronto
Peter Vadas	University of Toronto
Christoph Borchers	University of Victoria
Susan Elliott	University of Waterloo
Susan Prescott	University of Western Australia
Charles Wong	University of Winnipeg
Bert Brunekreef	Utrecht University
Marjorie Mercer	Workplace Safety and Insurance Board

Researchers and Collaborators by University and other Canadian and International Organizations

	#	%
Dalhousie University	3	2%
McGill University	6	4%
McMaster University	21	12%
Queen's University	5	3%
Simon Fraser University	2	1%
Université de Québec à Chicoutimi	1	1%
Université Laval	3	2%
University of Alberta	19	11%
University of British Columbia	20	12%
University of Calgary	4	2%
University of Manitoba	5	3%
University of Montreal	5	3%
University of New Brunswick	1	1%
University of Ottawa	2	1%
University of Saskatchewan	2	1%
University of Toronto	16	9%
University of Victoria	1	1%
University of Waterloo	1	1%
University of Winnipeg	1	1%
Other Canadian Organizations and Institutions	31	18%
International Collaborators	21	12%
Subtotal	**170**	**100%**

AllerGen's Canadian Network Member Research Institutions (2010-2011) (n=20)

Brandon University
Dalhousie University
Laurentian University, Northern Ontario School of Medicine
McGill University
McMaster University
Queen's University
Simon Fraser
Université Laval
University of Alberta
University of British Columbia
University of Calgary
University of Manitoba
University of Montreal
University of New Brunswick
University of Ottawa
Université du Québec à Chicoutimi
University of Saskatchewan
University of Toronto
University of Victoria
University of Waterloo

Canadian Hospitals/ Research Institutions (n=26)

BC Children's Hospital
Centre de recherche du CHUM – Hôpital Saint-Luc
Dakota Tipi Health Centre
Grey Nuns Hospital
Hamilton Health Sciences
Hôpital Sainte-Justine
IWK Health Centre
Kingston General Hospital
Manitoba Institute for Child Health
McGill University Health Centre
Misericordia Hospital
Mount Sinai Hospital
Royal Alexandra Hospital
Royal University Hospital
St. Boniface General Hospital
St. Joseph's Hospital
St. Michael's Hospital
St. Paul's Hospital
Sturgeon Community Hospital
The Hospital For Sick Children
The Hospital For Sick Children Research Institute
University of Alberta Hospital
Vancouver General Hospital
Winnipeg Health Sciences Centre
Women's Health Concerns Clinic
St. Boniface General Hospital

2010-2011 Highly Qualified Personnel

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Loubna Akhabir
Umme Akhtar
Ayham Al Afif
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Amal Al-Garawi
Zoulfia Allakhverdi
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Sheka Aloyouni
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Nelly Amenyogbe
Reshma Amin
Ofer Amram
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Anna Aquino
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Narcy Arizmendi
Victoria Arrandale
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Meghan Azad
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