

## RESEARCH HIGHLIGHTS



Dr. Michael Brauer



Dr. Chris Carlsten

### Traffic fumes affect asthma in children genetically susceptible to the disease

AllerGen researchers at The University of British Columbia (UBC), University of Alberta and University of Manitoba, in partnership with collaborators in Sweden, Germany, and the Netherlands, have discovered that children with a specific genetic profile may be at an increased risk of developing asthma after exposure to traffic-related air pollution (TrAP).

The Traffic pollution, Asthma, Genetics (TAG) Study is the first Canadian-European consortium to examine how traffic-related air pollution and genetic profiles contribute to the development of childhood asthma.

The study is led by AllerGen investigators Dr. Michael Brauer, a professor in the School of Population and Public Health, and Dr. Chris Carlsten, Chair in Occupational and Environmental Lung Disease, both at UBC.

Study findings, published in January in [\*Environmental Health Perspectives\*](#), suggest that children with one variant of the glutathione S-transferase P1, or GSTP1 gene, have double the expected risk of developing asthma associated with traffic-related air pollution. "This supports the plausibility of a causal relationship and brings us closer to understanding the mechanism of action of traffic pollution in vulnerable people," said Dr. Brauer.

The TAG Study combined data from over 15,000 children enrolled in six (two Canadian and four European) birth cohorts. "Generous partnership with our European colleagues allowed us to gather enough children to show an effect that would likely be hidden within a smaller group; extrapolating to the global population, this has important public health implications," commented Dr. Carlsten.



## The economic burden of asthma: Being “present” but not productive

New research has highlighted that workplace productivity loss—in particular, ‘presenteeism’—is high among people with uncontrolled asthma compared to employees whose asthma is controlled, diminishing employee productivity and affecting Canadian businesses on their bottom line.

In contrast to absenteeism, when workers take sick days for being unwell, presenteeism occurs when employees turn up for work but their productivity and effectiveness are reduced because of illness or a medical condition, resulting in a job that is not done as well as it could be.

Dr. Mohsen Sadatsafavi, a health economist at The University of British Columbia (UBC), and

Dr. Mark FitzGerald, a professor in the Department of Medicine and Co-Director of the UBC Institute for Heart and Lung Health, recently published these findings in *CHEST*.

Their study found that, on average, people with uncontrolled asthma incurred \$185, or four hours, per week in lost productivity when compared to people with controlled asthma. The greatest proportion of productivity loss was shown to be attributable to presenteeism—in fact, 90% of reduced workplace productivity stemmed from on-the-job losses, while only 10% was due to actual work days missed.

Read the study [here](#).

## Commercialization of biobanks a murky issue

Biobanks are important research platforms that involve the collection and storage of human health data and biological samples, including DNA, blood, urine and tissues.

According to AllerGen Principal Investigator and health law expert Professor Tim Caulfield, biobanks may operate in murky waters, facing ethical and security questions associated with public trust, consent and ownership of samples.



In a new paper published in the *Journal of Law and the Biosciences*, Professor Caulfield and co-authors, including AllerGen Research Leaders Drs Allan Becker and Malcolm Sears, explore the challenges of commercializing biobanks for the purpose of advancing medical research and knowledge.

Read about how Canadians feel about the commercialization of biobanks [here](#).



## Redrawing the map of allergic lung inflammation

AllerGen investigator Dr. Kelly McNagny, a professor of Medical Genetics at The University of British Columbia, and AllerGen trainee Matthew Gold co-authored two new articles on the molecular mechanics of inflammatory allergic response in the lung.

The articles, published in the March 20, 2014 issue of *Immunity* and a forthcoming issue of the *Journal of Allergy and Clinical Immunology*, report on the newly discovered role of group 2 innate lymphoid cells (ILCSs) in the development of allergic lung inflammation.

In a collaborative study with Dr. Fumio Takei, Dr. McNagny's research team repeatedly exposed ILC2-deficient mice to allergens and found that they did not develop significant lung

inflammation. They found that ILC2s play a critical role as "first responders" in stimulating the differentiation of T helper (Th) cells into the Th2 subset that, in turn, "hardwires" the future development of allergic inflammation. The absence of ILC2s was shown to "severely impair" the process of allergic response.

"Our results redraw the map of type 2 immunity... As one of the early and critical 'domino tiles', ILC2s likely assert a profound effect on TH2-mediated inflammatory diseases such as asthma," the authors wrote.

Read the *Immunity* article "Group 2 Innate Lymphoid Cells Are Critical for the Initiation of Adaptive T Helper 2 Cell-Mediated Allergic Lung Inflammation" [here](#).

## Trainee Meghan Azad publishes on probiotics and childhood asthma

AllerGen trainee and Banting Postdoctoral Fellow Dr. Meghan Azad (University of Alberta) is lead author on an article reporting that there is insufficient evidence to recommend probiotic supplementation for the prevention of childhood asthma and wheeze.

Published in the December 2013 issue of *BMJ*, the article "Probiotic supplementation during pregnancy or infancy for the prevention of asthma and wheeze: systematic review and meta-analysis" investigates the relationship between the use of probiotic supplements



during pregnancy or the first year of an infant's life and the development of childhood asthma and wheeze. Finding no evidence of a protective association, the authors conclude that, based on current knowledge, "probiotics cannot be recommended for primary prevention of childhood asthma or wheeze."

Co-authors include AllerGen investigators Dr. Allan Becker (University of Manitoba) and Dr. Anita Kozyrskyj (University of Alberta).

Read the article [here](#).

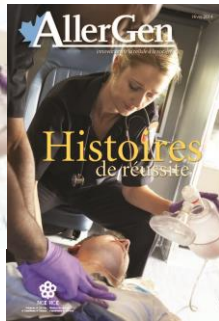


## KNOWLEDGE MOBILIZATION

### Inside *Success Stories* (Winter 2014)



[Click here to read the Winter 2014 issue](#)



[Aussi disponible en français](#)

- Developing an **asthma vaccine** for newborns
- The connections between **children's genetic profiles and their risk of developing asthma** after exposure to traffic-related air pollution
- **Allergy/asthma support** and education programs designed with and for **Aboriginal communities**
- A quest to provide **higher quality asthma care** for Canadians
- An emerging researcher's initiative to create a **national anaphylaxis registry**.

Whether it's the results of a new childhood asthma study, the launch of a unique patient education tool or the search for a cure for food allergies, *Success Stories* has it covered. *We hope you enjoy this issue!*



## CBC's *The Nature of Things* features Allergen research

Allergen-supported research and Allergen investigators Drs Susan Wasserman and Stuart Turvey were featured in a CBC TV documentary entitled "The Allergy Fix", broadcast February 27, 2014, as an episode of *The Nature of Things*.

The documentary travelled across Canada and to the US, the UK and Germany to investigate why allergies are on the rise, and to examine "some innovative, surprising medical avenues that are sparking hope" in the effort to combat the epidemic.

Among those hope-inspiring innovations were Dr. Wasserman's research on "desensitizing" peanut allergic patients and Allergen's national birth cohort initiative: The Canadian Health Infant Longitudinal Development (CHILD) Study. Allergen and its work were also highlighted in an [online supplement](#) to the episode.

The full documentary can be viewed [here](#).





# CHILD Study in the spotlight



***Allergic Living: The CHILD Study helps provide answers about family pets and childhood allergies***

Owning a dog may protect against the development of allergies. Children

exposed to dogs, starting anytime from when they are in the womb through their first year of life, are less likely to later develop allergies, according to an overview of relevant research presented in the Winter 2014 issue of [Allergic Living](#) magazine.

The article “Child’s Best Friend” highlights research conducted between 1999 and 2012 investigating the impact of pets on a child’s risk of developing allergies. An AllerGen Legacy Project, the CHILD Study—a birth cohort study following 3,330 Canadian infants from pre-birth to age five—was featured as an important study looking at the connection between allergies and early-life environmental exposures, such as pets, among other factors.

AllerGen investigator Dr. Malcolm Sears, Research Leader for the CHILD Study, and Dr. James Scott, one of the study’s co-investigators, were both interviewed by *Allergic Living*. Early data from a small subgroup of CHILD Study participants has revealed that household pets and siblings increase an infant’s exposure to environmental microbes and influence the makeup of the gut microbiota, which may have implications for the development of allergies.

To read the study “Infant gut microbiota and the hygiene hypothesis of allergic disease: impact of household pets and siblings on microbiota

composition and diversity,” co-authored by Drs Sears and Scott, click [here](#).



***Dr. Allan Becker brings the CHILD Study to Manitoba television viewers***

University of Manitoba-based AllerGen investigator Dr. Allan Becker was recently featured on “[Doctors Care](#)”—a multi-episode television series on healthcare produced by Doctors Manitoba and broadcast throughout the province. In Episode 4, on Children’s Health Research, Dr. Becker spoke about the importance of the CHILD Study and the scope of its investigation into genetic predispositions and environmental factors in the development of allergies and asthma. Dr. Becker is the Manitoba site leader of the CHILD Study.

View the [CHILD segment](#) of the program or the [full episode](#).



***“Is it something in our DNA, the environment or both?”***

AllerGen researchers at the University of Manitoba have been featured in local news coverage about the CHILD Study.

Watch the CTV News Morning Live [interview](#) with Dr. Meghan Azad and the CTV News highlight [clip](#).

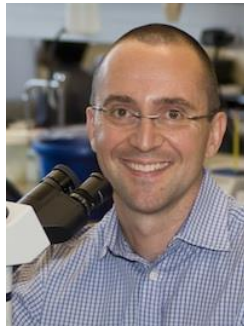


## AllerGen researchers comment on recommendation to introduce potentially allergenic foods to infants at six months

AllerGen investigators Drs Anne Ellis and Stuart Turvey recently commented on a joint position statement issued by Canadian pediatricians and allergists recommending that the introduction of potential “trigger” foods to babies at risk for food allergies not be delayed beyond six months of age.



Dr. Anne Ellis



Dr. Stuart Turvey

Dr. Ellis, Associate Professor of medicine and Chair of the Division of Allergy and Immunology at Queen’s University, was interviewed on the CBC’s [Ontario Morning](#).

“These recommendations reflect what allergists have been recommending for a couple of years now,” Dr. Ellis said. “There is clear-cut evidence from the research that the recommendations we have been following for so long—delaying the introduction of high-risk allergenic foods—truly did not do anything to prevent the development of food allergies, and possibly could be associated with the increase in allergies that we have seen over the past 10 years.”

Dr. Turvey is an associate professor of pediatric immunology at The University of

British Columbia and the Vancouver site leader for AllerGen’s Canadian Healthy Infant Longitudinal (CHILD) Study—a national birth cohort study investigating the early-life influence of genes and the environment on the development of allergies and asthma.

In an [interview](#) with *The Globe and Mail*, Dr. Turvey suggested that the spike in asthma, seasonal allergies and food allergies in recent decades is likely multifactorial, influenced by such factors as air pollution, modern housing and a variety of lifestyle changes, including reduced contact with farm animals.

The [position statement](#), issued jointly by the Canadian Pediatric Society (CPS) and the Canadian Society of Clinical Immunology (CSACI) on December 2, 2013, has also been endorsed by the Dietitians of Canada. It was co-authored by AllerGen investigator Dr. Edmond S. Chan, Clinical Associate Professor, Division of Allergy, Department of Pediatrics, UBC.





## TRAINEE ACCOMPLISHMENTS

### Talented Allergen trainee to meet Nobel Laureates

Allergen trainee and gut microbiome researcher Dr. Meghan Azad has been selected to attend a prestigious week-long meeting that unites more than 30 Nobel Prize winners with 600 of the world's brightest young scientists.

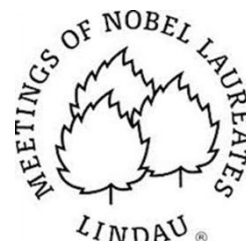
The 64th [Lindau Nobel Laureate Meeting \(Physiology or Medicine\)](#) will be held June 29 - July 4, 2014, in Landau, Germany. The annual event—the only one of its kind—provides a unique opportunity for the intercultural and intergenerational exchange of knowledge and ideas between Nobel Laureates in chemistry, physiology, medicine and physics, and talented young scientists from across the globe.

"I am so excited to be given the opportunity to 'rub shoulders' with these prestigious scientists. Can you imagine brainstorming with a Nobel Prize winner, let alone 30 of them, for an entire week? It's a once-in-a-lifetime opportunity," says Dr. Azad.

Dr. Azad's research uses samples from Allergen's Canadian Healthy Infant



Dr. Meghan Azad



Longitudinal Development ([CHILD](#)) Study to investigate the impact of antibiotics, breastfeeding and environmental factors on infant gut microbiota and the subsequent development of allergic disease.

Dr. Azad is a postdoctoral fellow at the University of Alberta under the supervision of Allergen researcher, Dr. Anita Kozyrskyj. She was named a [Banting Post-doctoral Fellow](#) in September 2013.

The 2014 Nobel Laureate Meeting meeting will focus on the topics of physiology or medicine, and allow Nobel Prize winners and young scientists to discuss topics such as global health, the challenges to medical care in developing countries and future research approaches to medicine.

### Allergen 2013 Poster Competition abstracts online

Abstracts from the Allergen Poster Competition held at the 2013 Canadian Society of Allergy and Clinical Immunology (CSACI) Scientific Meeting have been published online in an *Allergy, Asthma &*

*Clinical Immunology* (AACI) journal supplement: "[Canadian Society of Allergy and Clinical Immunology Annual Scientific Meeting 2013.](#)"



Dr. Jennifer Protudjer

## Former AllerGen trainee chosen for international research on anaphylaxis

Dr. Jennifer Protudjer, a past President of the AllerGen Students and New Professionals Network (ASNP), has been named one of three post-doctoral fellows to investigate anaphylaxis and the risk factors associated with severe allergic reactions at the Centre for Allergy Research (CfA) at the Karolinska Institute in Stockholm, Sweden.

The [Karolinska Institute](#) is an AllerGen partner and one of the world's leading medical universities. The new research initiative—funded through a donation from Karin and Sten Mörtstedt CBD Solutions AB—will study the factors that precipitate anaphylactic reactions

with the goal of improving diagnosis and developing new treatments. Dr. Protudjer's research will examine the prognosis of food allergy from childhood through adolescence. A [kick-off ceremony](#) for the project will be held on February 13, 2014.

Dr. Protudjer originally developed her relationships at the Karolinska Institute during a six-week trainee exchange made possible through AllerGen's International Partnership Initiative (IPI) funding, which aims to produce globally-engaged scientists in the fields of allergy and asthma.

## AllerGen trainee gains international research experience

With funding provided by AllerGen's International Trainee Research Visit Program, Dr. Jeremy Hirota recently spent eight weeks working with Professor Philip Hansbro at The University of Newcastle's Priority Research Centre for Asthma and Respiratory Diseases in New South Wales, Australia.

During his stay, Dr. Hirota performed *in vitro* and *in vivo* experiments to study how uric acid—an antioxidant naturally produced by the body—may contribute to airway health and disease. Ultimately, Dr. Hirota hopes to



Dr. Jeremy Hirota

determine how the lung copes with environmental insults with the goal of informing public policy to improve air quality for Canadians. Dr. Hirota is supervised by AllerGen Investigator, Dr. Chris Carlsten at The University of British Columbia.

In 2011, AllerGen and the The University of Newcastle signed a Memorandum of Understanding, which supports training and skill acquisition opportunities for trainees and young professionals in Canada and Australia.





## PEOPLE & PARTNER NEWS

### "Dean Befus Asthma Clinic" opens in El Salvador

In late 2013, a much-needed asthma clinic opened in El Salvador's National Lung Hospital. The "Clinica del Asma: Dr. Dean Befus" is named after AllerGen investigator Dr. Dean Befus, director the University of Alberta-based [Alberta Asthma Centre](#), who spearheaded the initiative to help establish the new facility.

Support from AllerGen, made possible by an NCE International Partnerships Initiative grant, was essential to the development of cooperative relationships that led to the establishment of a Memorandum of Understanding between the Alberta Asthma Centre and the country's Ministry of Health.

The project provided staff training, developed teaching and educational materials, and secured a donation from Alberta Health Services of major pulmonary function equipment.

Under the leadership of Dr. Befus and his colleague Dr. Gustavo Zayas, the Alberta Asthma Centre will continue to collaborate with partners in El Salvador towards the development of a national Asthma Management Program and accessibility to high quality, inexpensive asthma drugs across the country.

### Emerging Clinician-Scientist Dr. Philippe Bégin to speak at Allergy Update 2014

Dr. Philippe Bégin, an AllerGen trainee, will present an "Update on Food Allergy Management" at the "Allergy Update 2014" symposium on April 12, 2014, in Toronto, ON.

The symposium—the "31st Annual Special Symposium for the Practicing Physician"—is sponsored by the Allergy Asthma & Immunology Society of Ontario and the Ontario Medical Association. For registration information, contact: [onallergy@hotmail.com](mailto:onallergy@hotmail.com)

Funded by AllerGen's [Emerging Clinician-Scientist Research Fellowship Award](#), Dr. Bégin is currently a Visiting Scholar at Stanford

University. He is also a Specialist in Allergy and Clinical Immunology at the Centre Hospitalier de l'Université de Montréal. His research focuses on oral immunotherapy (OIT) for patients suffering from food allergy.

Dr. Bégin was lead author on the article "Safety and feasibility of oral immunotherapy to multiple allergens for food allergy," published in the January 2014 issue of the journal *Allergy, Asthma & Clinical Immunology*, which recently ranked as the third most viewed article on the journal's website.



## Dr. Louis-Philippe Boulet: Pulmonology and the Sochi Olympics

If you followed the 2014 Winter Olympics in Sochi on television, you might have been surprised to see a member of the AllerGen Network featured during the broadcast: Dr. Louis-Philippe Boulet, of the Institute of Cardiology and Pulmonology at Laval University.

Dr. Boulet was featured in a promotional spot sponsored by the Fédération des médecins spécialistes du Québec. The spot highlighted the contributions of medical specialists—in Dr. Boulet’s case, of pulmonologists—to the preparation of Canadian athletes (including

silver and gold medal-winning competitors, as it turned out) for this international event.

View the video with Dr. Boulet [here](#).



## The Asthma Society of Canada’s “For Life & Breath” Summit

Toward the creation of an action-oriented long-term plan engaging all concerned stakeholders, The Asthma Society of Canada (ASC) is organizing a Summit to take place April 30th and May 1st, 2014, at the Sheraton Centre Hotel in Toronto, ON.



FOR LIFE AND  
breath  
ALLERGY • ASTHMA • ENVIRONMENT

For more information and to register:  
<http://asthma.ca/forlifeandbreath/>

The event, “For Life and Breath: Respiratory Health & Environment Summit,” will gather leaders from government, industry, academia and the not-for-profit sector to discuss the status of asthma and respiratory allergies in Canada and the relationship between the environment and health, particularly air quality and lung health.

For ASC President and CEO Dr. Robert Oliphant, the Summit will be “a process for developing an action-plan ... that will have a positive impact on the over 3 million Canadians and their families who are affected by asthma, and millions more who suffer from respiratory allergies.”

AllerGen encourages its researchers, trainees and partners to attend.



## Anaphylaxis Canada hosts 7th Annual Community Conference

Anaphylaxis Canada's 7th annual community conference, "Managing food allergies: Working together for a safer future," will be held at the Delta Hotel in Markham, Ontario, on Saturday, May 10, 2014.

The full day conference is open to patients, families, educators, healthcare professionals and other members of the community interested in learning about food allergy and anaphylaxis management.

Morning workshops entitled "Partnering and Planning with your School—An Interactive Workshop for Parents" and "Teens Talk Allergies" will focus on parents and youth.

The afternoon session will be open to all members of the community and focus on effective management strategies for those living with food allergies, providing attendees with useful tools and resources as well as updates on the latest food allergy research.

For more information and/or to register, visit the [Anaphylaxis Canada website](#).

Anaphylaxis Canada

EARLY YEARS 2014  
CONFERENCE SHAPING CHILDHOOD:  
Factors that Matter



## Early Years 2014 Conference explores children's development

AllerGen investigator Dr. Michael Kobor, an Associate Professor in the Human Early Learning Partnership (HELP) School of Population and Public Health of The University of British Columbia (UBC), delivered a presentation on "Social Epigenetics—How Environments Influence Biology," at the recent [2014 Early Years Conference](#) in Vancouver.

Dr. Kobor drew upon results from various interrelated research projects to discuss how epigenetic mechanisms are emerging as attractive candidates to explain the effects of early exposure to adverse social and physical

environments. Dr. Kobor was also a panelist in the session "The Next Big Question – Why is it Important that Experience Gets Under the Skin?" which explored the importance, and potential programming and policy implications, of insights into how early life context affects gene expression and brain development.

The Early Years Conference 2014, "Shaping Childhood: Factors that Matter," took place Thursday, January 30-Sunday, February 2, 2014 in The Hyatt Regency Vancouver.

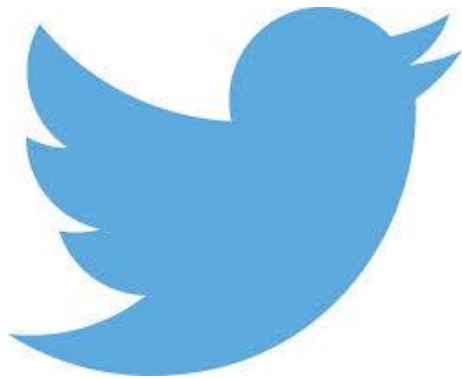


## Remembering Dr. Clyde Hertzman

Dr. Clyde Hertzman, who passed away in February 2013, was a respected expert on childhood development; his perspective on gene-environment interactions (“early in life, the environment talks to genes and the genes listen”) fundamentally informs the work of the AllerGen Network.

On the anniversary of Dr. Hertzman’s death, his University of British Columbia (UBC) colleagues posted online a two-hour video documenting the celebration of his life held in March 2013. The video can be viewed [here](#).

See also the UBC [memorial page](#) honouring Dr. Hertzman.



## It’s Time to Get Started! @AllerGen\_NCE

Highly tweeted articles are 11 times more likely to be cited than less-tweeted articles.<sup>1</sup>

**Join** @DrAnneEllis, @CaulfieldTim @fionabrinkman @KellieLeitch @MeghanAzad  
...and many others who follow AllerGen on Twitter.



**A Russell BSN RN AEC** @AllergyEducator · 2h  
Why do so many children develop #asthma & #allergies? [ow.ly/utWk0](http://ow.ly/utWk0)  
[@umanitoba](#) researchers discuss CHILD study #foodallergy



**Avis Favaro** @CTV\_AvisFavaro · 30m  
Study shows increase in food related #anaphylaxis emergencies at one Montreal hospital [bit.ly/1ctGyVH](http://bit.ly/1ctGyVH) via @DrAnneEllis #allergies

<sup>1</sup> Eysenbach, G. Can tweets predict citations? Metrics of Social Impact Based on Twitter and Correlation with Traditional Metrics of Scientific Impact. *Journal of Medical Internet Research* 2011; 13, (4).

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