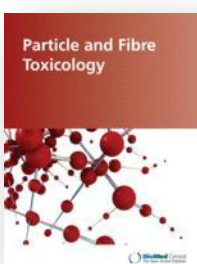


## RESEARCH HIGHLIGHTS



### Diesel exhaust affects genes of asthmatics

AllerGen researchers at The University of British Columbia (UBC) have published a new study in [Particle and Fibre Toxicology](#), adding to their growing body of work on the relationship between exposure to diesel exhaust and asthma.

Two hours of inhaling diesel exhaust fumes triggered effects at the genetic level in patients with asthma, the study found. The exhaust affected the chemical coating of certain genes involved in allergic disease—a process called methylation, which can alter a gene's function without affecting the underlying DNA.

The research was conducted by AllerGen investigators Drs Christopher Carlsten (Associate Professor of Medicine, UBC) and Michael Kobor (Associate Professor of Medical Genetics, UBC; Canada Research Chair in Social Epigenetics), as well as AllerGen trainees Drs Ruiwei Jiang (the paper's first author), Meaghan Jones and Francesco Sava.

Research in the relatively new field of epigenetics has shown that, while our genes map out the blueprint of how we develop, genes can be modified—switched on or off, dialled up or down—by environmental factors. Exposure to diesel exhaust, the study has shown, is one such factor.

“We believe that this is important because long-term epigenetic changes are inevitably the accumulated product of many short-term phenomena,” says Dr. Carlsten. “By understanding these acute dynamics, we hope to gain insight into longer-term consequences and potential preventive measures.”

The study's findings have been reported extensively by North American media—including [Global News](#), [The Globe & Mail](#), [The Vancouver Sun](#), [The Huffington Post](#), [Science Daily](#) and [Radio Canada International](#)—and internationally.



## Teens want practical, “hands-on” food allergy education

Teenagers with food allergies would like hands-on practice using epinephrine auto-injectors and to role-play scenarios about safe ways to eat out, travel and date, according to new Canadian research on teens’ learning preferences.

Allergic teens participated in focus groups at the Children’s Allergy and Asthma Education



Centre in Winnipeg, Manitoba, to help design an educational program custom-fit for teenagers. AllerGen trainee Claire Unruh, Centre staff Nancy Ross and Cathy Gillespie, and AllerGen investigator Dr. Allan Becker published the highlights in [Allergy, Asthma and Clinical Immunology](#).

A second abstract by the research team, “[Lessons learned from the development of a school age food allergy education program](#),” addressed the need for activity-based and peer-to-peer interactions for effective allergy education with school-age children and their parents.

## Review of latest food allergy research in *Journal of Asthma and Allergy*

AllerGen researchers have published a review of new and emerging options for the diagnosis and management of food allergies.

The article, “[Diagnosis and management of food allergies: new and emerging options: a systematic review](#),” reviewed 100 articles published between 2009 and 2014. Diagnostic tests such as skin prick tests, serum IgE and component testing, as well as management techniques including primary prevention, complementary medicine, allergen avoidance and immunotherapy, were evaluated.

“This review demonstrates that a collaborative approach, including a suggestive history and the use of confirmatory tests, is essential for the diagnosis of food allergy,” says AllerGen investigator Dr. Moshe Ben-Shoshan, a pediatric allergist at the Montreal Children’s Hospital.

“In addition, recent studies suggest that secondary and primary prevention of food-induced allergic reactions are possible.”

Dr. Ben-Shoshan and AllerGen trainees Dr. Andrew O’Keefe, Jennifer Mill, Christopher Mill, Alizee Dery and Dr. Sarah De Schryver are co-authors on the paper.

Journal of Asthma and Allergy



## Greater peanut avoidance found in siblings of children with peanut allergy

A new study involving several AllerGen researchers has found that more than 10% of siblings of children with peanut allergies have never been introduced to peanuts, and siblings born after the diagnosis of a peanut allergic child are more likely to have never been exposed.

The paper, "[Peanut avoidance and peanut allergy diagnosis in siblings of peanut allergic children](#)," used data from 748 families registered with the Canadian Peanut Allergy Registry.

It also found that almost 9% of siblings of peanut-allergic children were also reported as peanut allergic, though in nearly 50% of cases, the diagnosis was made despite the child's having no history of allergic reaction and without confirmatory testing.

The study, published online in *Clinical & Experimental Allergy*, was featured in Wiley's News Round-Up, a biweekly mail-out that promotes a selection of the most newsworthy research published across Wiley's journals.

The study involved the work of AllerGen researchers Drs Ann Clarke (University of Calgary), Edmond Chan (The University of British Columbia), Yuka Asai and Moshe Ben-Shoshan (McGill University); allergy specialists from McGill University and Humber River Regional Hospital; and AllerGen partners Anaphylaxis Canada and the Allergy/Asthma Information Association.

"This is the largest group of siblings assessed in the medical literature so far," says Dr. Moshe Ben-Shoshan, a pediatric allergist at the Montreal Children's Hospital.

"Our study reveals that a substantial number of siblings born after a child in the family is diagnosed with a peanut allergy are not introduced to peanut by the ages of three and five years, and may even be presumed to have peanut allergy without a history of an allergic reaction or clinical testing. These findings are especially concerning given that recent studies suggest that delayed exposure may be associated with increased risk of peanut allergy."





## Doctors can help asthma patients reduce their exposure to air pollution

Physicians can help their patients with asthma by recommending ways to reduce their exposure to air pollution, according to a new publication by AllerGen researchers Drs Michelle North, Anne Ellis and Chris Carlsten, and co-author Dr. Neil Alexis.

The paper was published in the [\*Annals of Allergy, Asthma and Immunology\*](#), the scientific publication of the American College of Allergy, Asthma and Immunology (ACAAI). It presented the case of a 38-year-old woman who rode her bicycle to work each day and began experiencing wheezing at the end of her 30-minute commute.

The woman's allergist determined that a recent change in her bicycle route brought the patient within 300 metres of major roadways for 70% of her ride. The physician mapped out an alternative cycling route, reducing the patient's exposure to air pollution, which led to an improvement in her asthma symptoms.

"This article targeted physicians with the message that it is time to better integrate existing public health knowledge of the effects of air pollution into practice, and specifically into asthma action plans," says AllerGen trainee Dr. Michelle North, a post-doctoral fellow at Queen's University and lead author on the paper.

"The case we presented showed that counselling patients on ways to reduce their air pollution exposure can have a positive effect on individual asthma patients."

## The face of chiropractic: evidence-based?

A recent publication by AllerGen investigator [Timothy Caulfield](#) (University of Alberta law professor, Canada Research Chair in Health Law and Policy) and colleagues analyzed the key messages used by the chiropractic profession in online communication with the public.

The researchers reviewed the website content of major Canadian chiropractic associations and colleges, and commercial clinics. The researchers examined the range of health conditions described as treatable by chiropractic care and identified the primary messages the profession conveys to the public.

The paper, published in [\*Focus on Alternative and Complementary Therapies\*](#), found that 37.5% of the clinics surveyed claimed that chiropractic care could be used to treat allergies. Clinics also advertised the practice's ability to treat and address other health conditions typically beyond the scope of traditional chiropractic practice, such as ADHD/attention deficit disorder (ADD) (37.5%), bedwetting (30%) and premenstrual syndrome (PMS) (32.5%).

Future research should further explore the appropriateness of these claims from an evidence-based perspective, according to the paper's authors.

FACT

Focus on Alternative and  
Complementary Therapies



## Uncovering the mystery of eosinophils in food allergy

AllerGen researchers at McMaster University have discovered that eosinophils (specialized white blood cells) in the intestine play a different role in the allergic response that causes food allergy and anaphylaxis than was previously thought.

Eosinophils are typically considered to be effector cells—activated cells that are recruited to the body's tissues once an immune response has been triggered.

However, new research has shown that intestinal eosinophils can actually initiate an allergic response, leading to the development of food allergy and anaphylaxis.

The study, "[Indigenous enteric eosinophils control DCs to initiate a primary Th2 immune response in vivo](#)," was selected as the Society of Mucosal Immunology [Featured Paper](#) for December 2014.

AllerGen investigators Drs Susan Waserman and Manel Jordana, as well as AllerGen trainee Dr. Derek Chu, were involved with the research.

"Eosinophils have long been known to inhabit the intestine, but the precise role for them there has remained a biological and medical mystery," says Dr. Chu, first author on the paper.

"In this study, we discovered an unexpected immune network connecting resident intestinal eosinophils with dendritic cells (DCs) that was crucial for the development of peanut allergy and anaphylaxis."

This finding will help researchers to better understand the origins of allergy and allergic sensitization and to explore manipulating the eosinophil-DC axis as a novel therapeutic approach for immune-mediated diseases such as food allergy.





## AWARDS



### AllerGen epigenetics researcher awarded a Canada Research Chair

AllerGen researcher [Dr. Michael Kobor](#) has been awarded a [Canada Research Chair in Social Epigenetics](#).

Dr. Kobor is an associate professor in the Department of Medical Genetics at The University of British Columbia (UBC) and an expert in epigenetics—the relationship between genes and the environment.

His research team studies the mechanisms by which environmental exposures and life experiences can “get under the skin” to regulate the activity of genes, and contribute to health and disease throughout the life course of an individual. The research focuses on the epigenetic underpinnings of respiratory diseases, fetal alcohol spectrum disorder and mental health trajectories.

Dr. Kobor also leads an AllerGen-funded project called Rapid Environmental Effects on Genes: the Lens of Epigenetics (REEGLE) that examines how environmental exposures in early life can affect the on-off setting of genes and influence the development of allergic diseases and asthma.

REEGLE aims to determine if exposure to common environmental allergens such as diesel exhaust, particulate matter and pollen affects genes through DNA methylation patterns and to test for an association between such exposures and risk of allergic disease.

In DNA methylation, a specific chemical modification called a methyl group is added to the DNA backbone. If methylation occurs in a particular region of a gene, the gene function may be altered without affecting the underlying DNA.

“Any gene can have its activity regulated, in part by DNA methylation,” says Dr. Kobor. “DNA methylation acts like a dimmer control on a light switch that allows the light to be turned on and off, or dialled up and down.”

Dr. Kobor is one of 137 new and renewed Research Chairs across the country receiving \$118 million of new funding from the Canadian Institutes of Health Research (CIHR).



## SyMBIOTA team wins publication award for paper's relevance to clinical practice



SyMBIOTA team members Dr. Anita Kozyrskyj (L) and Dr. Meghan Azad (R)

The *Canadian Medical Association Journal* (CMAJ) has selected a 2013 paper by AllerGen researchers to receive the [Bruce Squires Award](#).

The award is “awarded annually to the author(s) of the research paper published in the journal (during the previous year) that is most relevant to the practice of medicine and most likely to impact it in a positive way.”

[“Gut microbiota of healthy Canadian infants: profiles by mode of delivery and infant diet at 4](#)

[months”](#) was published in CMAJ in March 2013. The study highlighted the potential impact of early childhood exposures, such as the method of delivery in childbirth and the method of infant feeding, on lifelong health.

This research is part of a \$2.5 million research project titled [Synergy in Microbiota Research \(SyMBIOTA\)](#). SyMBIOTA uses data from AllerGen’s CHILD Study to look at the makeup of the infant microbiome and how variations in this internal ecosystem affect health and disease later in life.



## AllerGen investigators receive CSACI Achievement Awards

Two AllerGen investigators were honoured at the Awards Dinner of the 2014 Canadian Society of Allergy and Clinical Immunology (CSACI) Annual Scientific Meeting. The Scientific Meeting was held October 23-26, 2014, in Ottawa, ON.



Dr. Paul Keith (L) presents Dr. Befus with his award.

**Dr. Dean Befus** (University of Alberta; AllerGen Research Leader) received the Jerry Dolovich Award, an annual research award for contributions in allergy and clinical immunology in Canada named after the late [Dr. Jerry Dolovich](#), a highly respected researcher, clinician, and educator in the field of allergy.



**Dr. Harissios Vliagoftis** (University of Alberta; AllerGen Investigator and Board member) received the CSACI Award for Research in Immunology in recognition of his contributions to the science of immunology.

## AllerGen investigator recognized for innovative health research

AllerGen investigator Dr. John Gordon (University of Saskatchewan) has been awarded the [2014 Saskatchewan Health Research Foundation's Achievement Award](#).

The award recognizes Dr. Gordon's outstanding contribution to innovative and collaborative health research in Saskatchewan.

[Dr. Gordon](#), an expert in the field of immune regulation and airway disease, is conducting ground-breaking work in the areas of immunology, asthma and food allergies.

His recent work has established that cells that normally "switch on" immune or allergic responses can, under the right circumstances, also "switch off" an immune response.

Dr. Gordon's research team focuses on using these specialized cells to reverse asthma and peanut allergy in mice, and is studying the therapeutic effect of these cells in treating humans with allergies.



Dr. Gordon with his SHRF award

Photo credit:  
Debra Marshall for SHRF;  
used courtesy of SHRF





## KNOWLEDGE MOBILIZATION



### NCE Newsletter highlights CHILD Study

"If just 24 children can help scientists discover that Caesarean sections and formula feeding may deprive babies of the protective gut bacteria needed for lifelong health, just imagine what will be discovered by collecting a wide range of health information from some 3,500 children..."

[Read the full article](#)

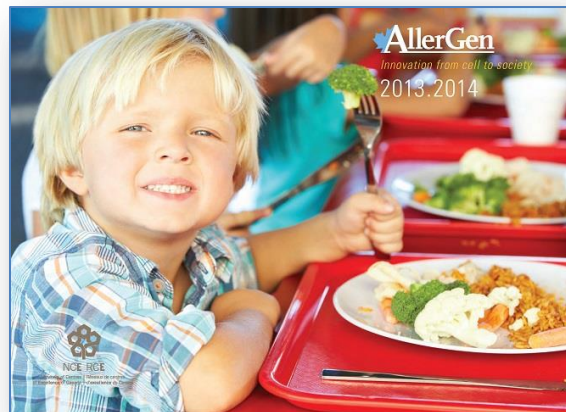
### Allergic Living highlights Canadian anaphylaxis registry



Allergic Living's [Winter 2015](#) issue features AllerGen's Cross-Canada Anaphylaxis Registry (C-CARE) — the first-ever prospective study on anaphylaxis.

Launched in 2011, C-CARE identifies anaphylaxis cases through reports from ambulance paramedics, emergency departments and allergists, and collects data on the cause, triggers and management of anaphylaxis in each case.

C-CARE is led by AllerGen investigator Dr. Moshe Ben-Shoshan, a pediatric allergist and immunologist at the Montreal Children's Hospital.



**AllerGen's 2013-14 ANNUAL REPORT is available on the AllerGen website**

Read the Annual Report:  
[English](#) | [French](#)



## TRAINEE NEWS

### AllerGen awards \$250,000 for advanced allergy research

AllerGen is pleased to announce that Dr. Marylin Desjardins (McGill University and The Montreal Children's Hospital) has been awarded the prestigious AllerGen Emerging Clinician-Scientist Research Fellowship, valued at \$250,000.

This is the third such Fellowship awarded by AllerGen, with the aim of addressing the shortage of allergy and clinical immunology expertise in Canada.

"AllerGen is pleased to support Dr. Desjardins' research training and her goal of becoming an independent clinician-scientist in the field of allergy and immunology," says AllerGen's Scientific Director and CEO, Dr. Judah Denburg.

"I am confident that Dr. Desjardins's research will benefit Canadians living with allergies, asthma and immune deficiencies."

Read the Press Release: [English](#) | [French](#)



#### AllerGen's Clinician-Scientist Fellowship Recipients

**2011:** Dr. Moshe Ben-Shoshan

**2013:** Dr. Philippe Bégin

**2014:** Dr. Marylin Desjardins

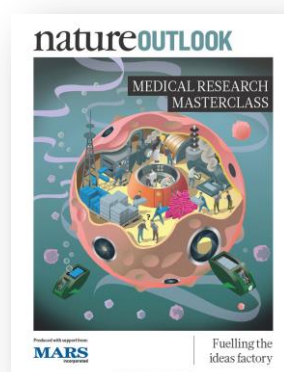
**Back (L to R):** AllerGen researchers Drs Dean Befus and Allan Becker

**Front (L to R):** Dr. Moshe Ben-Shoshan, Dr. Judah Denburg (AllerGen Scientific Director), Dr. Marylin Desjardins and Dr. Philippe Bégin



## AllerGen trainee interviews Nobel Laureate Barry Marshall in *Nature*

**D**r. Meghan Azad recently interviewed the scientist who risked his health to prove his theory about the link between stomach ulcers and the bacterium *Helicobacter pylori*.



[Read the interview](#)

## Trainee's abstract accepted for Genomics conference

**A**llerGen HQP Amrit Singh's poster abstract "Blood biomarkers of the late phase asthmatic response using RNA-Seq," was one of 30 posters accepted at [Genomics: the Power and the Promise](#) conference in Ottawa.



## AllerGen HQP video competition

This contest challenges AllerGen HQP to bring their research to life in short, original KT videos that highlight the important findings and the relevance, meaning and implications of their allergic disease research.

### Open to ...

Members of the AllerGen Students and New Professionals Network (ASNPN)

> AllerGen- or non-AllerGen-funded allergic disease research

### Create an ...

> Original video produced solely for this contest

> Three minutes or less

> English or French

Win ...

**3 prizes of \$1,000!!!**

Video submission

Deadline:

March 31, 2015

[Competition Guidelines](#)  
[Submission Form](#)





## PEOPLE & PARTNER NEWS



### Food allergy pioneer to head new research centre

Dr. [Kari Nadeau](#), one of North America's foremost experts in adult and pediatric allergy, will lead the new [Sean N. Parker Center for Allergy Research](#) to be established at Stanford University in California.

A US \$24 million grant from technology billionaire Sean Parker, for whom the new institute is named, as well as donations from Amazon chief Jeff Bezos and other philanthropic leaders, will support the development of the new interdisciplinary and interdependent allergy research center. Parker, co-founder of the Napster file-sharing service and Facebook's founding president, suffers from life-threatening food allergies and asthma.

Dr. Nadeau has pioneered research that desensitizes the immune system by gradually

exposing patients to incremental doses of a food allergen over time—a treatment called oral immunotherapy. She leads translational research and clinical studies at the Lucile Packard Children's Hospital Stanford and the Stanford University School of Medicine, and currently directs the Stanford Alliance for Food Allergy Research (SAFAR) program.

In June 2014, AllerGen NCE and Dr. Nadeau announced the launch of a joint award that will allow a young Canadian scientist (MD or PhD) with an interest in developing new and safe therapies for food allergies to work with Dr. Nadeau at Stanford University.

[Call for Applications](#) | [Application Form](#)



### University of Manitoba allergist featured in online video

Dr. Allan Becker, Professor of Allergy & Clinical Immunology at the University of Manitoba and AllerGen investigator, discusses the signs and symptoms of anaphylactic

reactions, and what to do in the case of an anaphylactic reaction, in a new [online video](#).



## A decade of commitment: Dr. Douglas Barber

**D**r. Douglas Barber, a founding member of AllerGen's Board of Directors, retired from the Board in November 2014, after 10 years of service.

He was honoured in a retirement celebration at AllerGen's 2014 Board of Director's Strategic Planning Retreat in Mississauga, ON.



Dr. Barber receives recognition for his contributions from AllerGen Scientific Director Dr. Judah Denburg at the 2014 Strategic Retreat.

"Since this Network's inception, Doug has provided AllerGen, its investigators, committee members, students, staff—and Canadians—with a decade of commitment, expertise and service towards generating social and economic benefits for our country and its people," said Dr. Judah Denburg, Scientific Director and CEO.



Dr. Barber (2nd from left) at AllerGen's 2009 Research Conference

Dr. Barber is an accomplished Canadian businessman and entrepreneur. He co-founded Linear Technology Inc. in 1973 and developed the Burlington-based company into [Gennum Corporation](#), a world leader in hearing aid microtechnology. Dr. Barber served as President and CEO of Gennum Corp. until his retirement in 2000.

Dr. Barber was honoured in 2012 with a [Queen Elizabeth II Diamond Jubilee Medal](#), which recognizes significant contributions and achievements by Canadians, and he was named to [Hamilton's Gallery of Distinction](#) in 2013, in recognition of his status as an outstanding citizen who has made an indelible mark upon the city of Hamilton through his leadership, dedication and talent.





## MEDIA

### The “science” behind celebrity fads

In his new book [\*Is Gwyneth Paltrow Wrong about Everything? When Celebrity Culture & Science Clash\*](#) (Viking, Jan. 13, 2015), health science expert Professor Timothy Caulfield examines how our obsession with celebrity culture can cloud our thinking about health, diet, beauty, and even food allergies.

Celebrity-endorsed fads drive multi-million dollar businesses—but are they effective, safe and based on good science? Caulfield talks with experts, celebrities, and even tries out the fads himself, to get at the real science behind the health and lifestyle advice of Gwyneth Paltrow and other celebrities.

[Caulfield](#) is a University of Alberta law professor and Canada Research Chair in Health Law and Policy, and the author of [\*The Cure for Everything: Untangling the Twisted Messages About Health, Fitness & Happiness\*](#) (2011). He is also an AllerGen

investigator who studies the legal and ethical dimensions of allergy and asthma research.



“For this book, I went to Hollywood to chat with Gwyneth's physician advisor Dr. Alejandro Junger,” Caulfield says.

“It was clear that Dr. Junger's cleanse—which was no fun!—was all about avoiding foods he believed caused an allergic reaction. No milk and, of course, no wheat of any kind. Celebrity culture has emerged as a big source of the rhetoric around allergies, especially in the context of vaccines and food.”

The book has attracted considerable attention from media outlets including CBC radio's [The Current](#), [Global News](#), [The Globe & Mail](#), [Metro News](#), [The Ottawa Citizen](#), [The Toronto Star](#), [Reader's Digest](#) and [McLean's](#) magazine.



## Global News asks: Why are food allergies on the rise?

In a [Global News interview](#), AllerGen researchers Dr. Paul Keith and Dr. Susan Waserman addressed the rise of food allergies in Canada and highlighted the potential causes.

Dr. Keith, an allergist and past president of the Canadian Society of Allergy and Clinical Immunology (CSACI), identified several potential factors contributing to the development of food allergies, including a clean water supply—clean water reduces the number of parasitic infections that could be protective—and pregnancy-related factors such as cesarean section and antibiotic use that can affect exposure to the helpful bacteria that can populate our gut.

Food preparation techniques, environmental pollutants, insufficient Vitamin D, and a delay in the introduction of potentially allergenic foods to children are also possibly at play, according to Dr. Waserman, an allergist and immunologist at McMaster University.

## AllerGen investigator speaks about banning foods in schools

AllerGen investigator Dr. Paul Keith recently discussed anaphylaxis and the role of banning foods in schools with *SquareOff*, a Hamilton-based daily news show.

“What you have to do is teach the child not to eat anything that may be contaminated with the food that they’re anaphylactic to,” says Dr. Keith, an associate professor at McMaster University. “The school board must look at each situation individually and do what is right for that child.”

[Listen to the interview](#)



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