AllerGen

reAction

July 2019

Teen launches research career, wins awards using CHILD Cohort Study data

When 15-year-old Laura Wang opened her laptop and typed a message to Tim Takaro, a professor at Simon Fraser University (SFU), she never imagined that email would lead her to the CHILD Cohort Study, a budding research career, and an award-winning science project.

Passionate about science since middle school, the Grade 10 student from Burnaby, BC, decided to find someone who could help her learn what it takes to become a "real" researcher.

"I googled Simon Fraser University and looked through their faculty," says Wang. "Dr. Takaro's bio said he had an interest in child health and chronic diseases, so I emailed him out-of-the-blue. I never really expected him to write me back."

But Takaro did. And he invited Wang to come to the SFU campus to meet with him and graduate student Jaclyn Parks.

"I was impressed by this enterprising young student who clearly stated what she wanted to do related to my research on disease susceptibility factors in environmental health," says Takaro, a professor and the Associate Dean of Research for the Faculty of Health Sciences at Simon Fraser University.

"I wanted to meet her in person to see what was behind this."

"They were both so encouraging and generous with their time to answer my questions about how to get started in research," Wang explains.

"When Dr. Takaro told me about the CHILD Cohort Study and the incredible things the study is teaching us about child health and development, I was hooked!"

That meeting led to a 12-month collaboration in which the teen worked side-by-side with Takaro and Parks using CHILD data to study the effects of house dust on the development of childhood allergies and asthma.

Continues on page 27

Photo at top, L to R: *Jaclyn Parks, Laura Wang and Dr. Tim Takaro*

AllerGen begins a new era

On April 1, 2019, with its official NCE mandate successfully fulfilled and 14 years of groundbreaking research, innovation and training completed, AllerGen shifted gears.

AllerGen's administrative staff and remaining governance bodies continue to actively support the researchers, trainees and partners of the Network, with a focus on maximizing the impact of AllerGen research and sustaining the Network's legacies. This ongoing work is supported by a Management Funds Grant from the NCE Program.

As of April 1, 2019, Dr. Judah Denburg remains as Scientific Director, overseeing and advising those AllerGen research projects still underway.

Dr. Diana Royce, former Managing Director, became the Network's President and CEO, and AllerGen's Board of Directors is focusing its expertise on mobilizing research outputs.

While the Network's Highly Qualified Personnel (HQP) Program, which offered capacity-building and career advancement opportunities to thousands of trainees since 2007, came to a formal close, the Network continues to collaborate with Legacy Partners to support the adjudication, by AllerGen's Advanced Education and Training Opportunities Advisory Committee (AETOAC), of new funding opportunities for trainees; it continues to share information and resources with trainees; and it continues to offer administrative support to the ASNPN (AllerGen's trainee network) as its members mobilize to prolong their association.

As reported in the March 2019 issue of *reAction*, AllerGen will complete its NCE wind-down by 2021, but it aims to continue as a self-sustaining not-for-profit organization, in order to provide ongoing management support to its Legacy Projects—the CHILD Cohort Study and the Clinical Investigator Collaborative.

Emblematic of the ongoing relationship between AllerGen and its Legacy Projects, on March 6, 2019, the National Coordinating Centre (NCC) of the CHILD Cohort Study moved into AllerGen's office suite. The AllerGen Administrative Centre and the CHILD NCC are now co-located at 3120 MDCL, McMaster University, 1280 Main Street West, in Hamilton, ON.

L to R: *Aimée Dubeau, Malcolm Sears, Padmaja Subbarao and Diana Lefebvre convene in CHILD's new office space.*

RESEARCH HIGHLIGHTS

Screen time associated with behavioural problems in preschoolers

Research from the CHILD Cohort Study suggests that among preschoolers, spending two hours or more of screen time per day may be linked to clinically significant behavioural problems.

“We found that screen time had a significant impact on behaviour at five years of age,” comments Dr. Piush Mandhane (University of Alberta), who led the study.

“Current Canadian guidelines call for no more than two hours of screen time a day at that age. Our research suggests that less screen time is even better.”

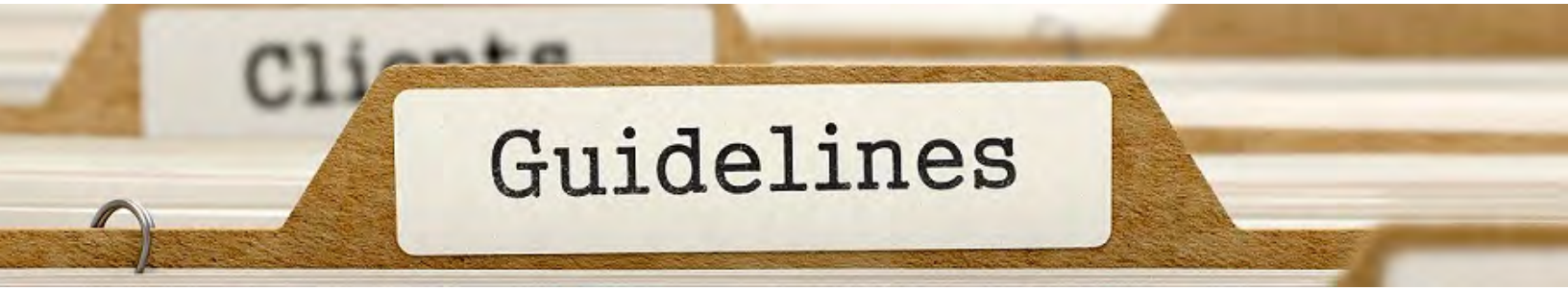
Compared with children who had less than 30 minutes per day of screen time, children who were exposed to more than two hours of screen time per day were five times more likely to exhibit behavioural problems such as inattention and over seven times more likely to meet the criteria for attention deficit hyperactivity disorder.

The study, published in the journal *PLOS One*, analyzed data from more than 2,400 families participating in the CHILD Cohort Study.

“The two big takeaways from this study are that children exposed to more screen time, at either age three or five years, showed significantly greater behavioural and attention problems at five years, and that the association between screen time and behavioural problems was greater than any other risk factor we assessed, including sleep, parenting stress, and socioeconomic factors,” comments the study’s first-author, Dr. Sukhpreet Tamana, an AllerGen trainee at the University of Alberta.

Press release & media coverage

C-CARE study:
Guidelines for managing anaphylaxis in children need an update



A study led by AllerGen researcher Dr. Moshe Ben-Shoshan suggests that treatment guidelines for managing anaphylaxis in children should be reassessed and shows that pre-hospital treatment with epinephrine has the greatest protective effect against uncontrolled allergic reactions.

The research, published in the *Journal of Allergy and Clinical Immunology: In Practice*, involved nearly 3,500 patients, making it the largest study to assess the clinical outcomes of pre-hospital treatment of anaphylaxis. Of patients examined, 80% were children aged one to 17 years. The patient data derived from AllerGen's nationwide Cross-Canada Anaphylaxis REgistry (C-CARE) project, involving nine emergency departments in five provinces.

"We found that steroids, which are part of the treatment plan for managing anaphylaxis, can have a negative effect on patient outcomes," says Dr. Ben-Shoshan.

"Our study also shows that the use of an epinephrine autoinjector in the pre-hospital setting has a significant positive impact on the clinical management of anaphylaxis—a much more significant protective effect than that achieved with antihistamines," adds first author and AllerGen trainee Sofianne Gabrielli.

According to the researchers, these results suggest that current anaphylaxis management practices should be modified, at least as applied to the pre-hospital setting, to exclude steroids and to call for the administration of antihistamines only in conjunction with epinephrine in all cases of anaphylaxis.

"This study's findings reinforce the need to equip individuals with the knowledge and confidence to assess the signs and symptoms of anaphylaxis, and to treat it swiftly with an epinephrine autoinjector when it occurs," comments Jennifer Gerdts, a study co-author and Executive Director of Food Allergy Canada.

Press release | ***Global TV* interview**

Filtered diesel exhaust worse than unfiltered for allergy-affected lungs

Diesel exhaust from which tiny particles have been filtered out may be more harmful to the lung function of people with allergies than unfiltered exhaust.

This may be due to the fact that some particle-depletion technologies, such as diesel exhaust filters, increase the amount of nitrogen dioxide (NO2) in the exhaust being filtered. NO2 has been shown to reduce lung function and may be a cause of asthma in children.

This surprising result is from a new AllerGen-supported study out of The University of British Columbia, co-authored by AllerGen trainee Denise Wooding and published in the *American Journal of Respiratory and Critical Care Medicine*.

"Particulate-filtering technologies are attractive for their potential to reduce the harmful effects of air pollution and are already endorsed by a number of environmental regulatory agencies in Canada and the US," comments the senior study author, AllerGen investigator Dr. Christopher Carlsten.

"The take-home message here is that technologies that remove particulate matter from diesel exhaust cannot simply be assumed to be beneficial to health, especially in susceptible populations."

Press releases: **AllerGen** | **American Thoracic Society** | **UBC Medicine**

MD

NEWS CONDITION CENTERS CONFERENCE COVERAGE

Types of Diesel Filtration Worsen Lung Distress for People with Allergies

MAY 13, 2019
Jared Kaltwasser

Filtered diesel exhaust may cause allergy sufferers more distress than unfiltered exhaust, according to new research.

The study suggests policymakers ought to think more carefully about an environmental measure once considered common sense.

"The take-home message is that technologies that remove particulate matter from diesel exhaust cannot be simply assumed to be beneficial to health, especially in susceptible populations," corresponding author Chris Carlsten, MD, MPH, of the University of British Columbia, said in a statement.

Chris Carlsten, MD, MPH

Traffic-related air pollution is a major driver of asthma and other lung distress in patients around the world. One way of dealing with the problem is to filter the exhaust from traffic, including particulate filtering technologies that modify the exhaust coming from diesel engines.

New blood test may let food allergy suspect off the hook

AllerGen researchers, together with collaborators at Harvard Medical School, have demonstrated that an immune cell previously thought to be involved in maintaining lifelong food allergies is likely not the culprit after all.

The research, published in the *Journal of Allergy and Clinical Immunology*, found that IgE+ memory B cells are extremely rare in the blood of food-allergic individuals, which, in turn, suggests that these cells are likely not responsible for how the immune system "remembers" food allergens.

To enable this discovery, the researchers developed a novel, cutting-edge technique for blood analysis, which entails genetic analysis at the single-cell level.

"Previous research has proposed that upon re-encountering a food allergen, IgE+ memory B cells become activated and replenish the cells that produce IgE antibodies, which ultimately triggers an allergic reaction; however, no one has been able to decipher how the IgE memory works," said lead researcher Dr. Manel Jordana (McMaster University).

"Our study has shown the extreme rarity of IgE+ memory B cells in the blood of food-allergic patients, suggesting that the presence of these cells is neither a predictor of allergy nor what maintains it."

Also on the research team were AllerGen investigator Dr. Susan Waserman, AllerGen HQP Dr. Rodrigo Jiménez-Saiz, graduate student Kelly Bruton, and medical students Yosef Ellenbogen and Paul Spill, all at McMaster University, along with Drs Wayne Shreffler and Sarita Patil at Harvard Medical School.

Press release

Allergic to peanuts? Avoidance is safest: new study

New research co-authored by researchers out of McMaster University suggests that the risks of oral immunotherapy (OIT) as a treatment for peanut allergy are greater than the risks associated with avoiding peanuts.

Dr. Derek Chu, a fellow in clinical immunology and allergy, and researchers Drs Susan Waserman and Manel Jordana collaborated with international colleagues on the study, published April 25, 2019, in *The Lancet*.

The researchers analyzed 12 studies of the desensitization treatment known as OIT, in which patients become desensitized to an allergenic food by consuming that food in very small but gradually larger amounts. The 12 studies followed more than 1,000 patients with peanut allergy for up to almost six years.

"The data clearly showed that people on peanut OIT had many more allergic reactions than those who avoided peanut," says Dr. Chu in the McMaster University media release. "And this was true of mild reactions, such as vomiting, all the way to severe reactions, like anaphylaxis."

"While OIT will be beneficial for some of our patients, the approach comes with a risk of reactions," adds Dr. Waserman, an allergist and professor of medicine at McMaster University. "Peanut-allergic individuals need choice and accurate information, which should include this study."

Dr. Chu is an AllerGen trainee and Drs Jordana and Waserman are AllerGen Network investigators. AllerGen did not fund this research.

Press release

New insights into babies' first week of development

AllerGen investigators Drs Scott Tebbutt and Tobias Kollmann, and AllerGen trainees Casey Shannon, Daniel He and Dr. Amrit Singh, are among the co-authors of a breakthrough study, published in *Nature Communications* in March 2019, that provides new insight into the molecular changes that take place in newborn infants during their first week of life.

For the study, researchers from The University of British Columbia and the London School of Hygiene and Tropical Medicine conducted detailed analyses on blood samples from two cohorts of newborn infants—one in The Gambia and the other in Papua New Guinea.

Using a unique methodology known as DIABLO, developed in Dr. Tebbutt's lab, the team was able to derive all the data needed from a very small volume of blood from each infant—less than one millilitre, or approximately 10% of the volume typically used for such studies.

Employing a "holistic suite of contemporary methods" in a systems biology approach, the researchers observed "dramatic changes along a remarkably stable developmental trajectory" in the children's genes, proteins and metabolites across the two cohorts. Because this trajectory appears to be "common and predictable," the researchers suggest it might serve as a baseline reference for future studies exploring the impact on newborn development of such factors as diet, antibiotics use, and vaccination.

The study's insights into what constitutes normal development may also greatly facilitate the diagnosing, preventing and treating of disease in early life.

Read more:

- **UBC Medicine**
- ***Yale Daily News***
- **Boston Children's Hospital**
- ***STAT News***

Following *24-Hour Movement Guidelines* helps reduce behavioural problems in preschoolers

Many children are not getting the right balance of moving, sitting, and sleeping, which can be harmful before age five, according to a new Canadian study.

Published in the *Journal of Science and Medicine in Sport*, the study examined associations between meeting the *Canadian 24-Hour Movement Guidelines for the Early Years* (ages 0-4) and behavioural and emotional problems in a large sample of three-year-old children.

Children who did not meet the guidelines were found to have more behavioural and emotional problems, including "externalizing" behavioural problems such as inattention and aggressiveness, and "internalizing" problems such as social withdrawal and depression.

For preschoolers (3–4 years), the guidelines recommend:

- no more than one hour of sedentary recreational screen time per day;
- at least three hours per day of total physical activity, with at least 60 minutes per day of moderate-to-vigorous physical activity;
- and 10–13 hours of sleep within a 24-hour period.

"Surprisingly, only 5% of three-year-old children in our study met all three recommendations," says the study's senior author Dr. Piush Mandhane, associate professor of pediatrics in the University of Alberta's Faculty of Medicine & Dentistry.

"We know how important it is for young children to have the right balance of movement and sleep, so being aware of these guidelines can help parents give their preschoolers every chance to develop into healthy, active older kids."

Dr. Mandhane says just 19.3% of three-year-old children met the physical activity recommendation, while 50.5% and 83.1% of children met the screen time and sleep recommendations, respectively.

Overall, the study found that meeting more recommendations within the *24-Hour Movement Guidelines* was associated with fewer behavioural and emotional problems at three years of age.

The research used data from 539 Edmonton families involved in the CHILD Cohort Study, a national birth cohort study collecting a wide range of health, lifestyle, genetic and environmental

Continues on next page

exposure information from nearly 3,500 children and their families from pregnancy to adolescence. Dr. Mandhane leads the Study's Edmonton site.

Dr. Valerie Carson, an associate professor in the University of Alberta's Faculty of Kinesiology, Sport and Recreation, was the study's lead author.

For the study, parents completed the Child Behavior Checklist (CBCL), a screening measure for a variety of problems such as anxiety and depression, emotional reactivity, inattention, aggressiveness, and sleep disturbances.

Parents also reported their child's total screen time per day, including watching TV and DVD's, and using computers, video consoles, smartphones and tablets.

To measure physical activity and sleep duration, children wore an Actigraph motion sensor on their wrist for 24 hours per day for a maximum of seven days.

"For specific combinations of physical activity and screen time, as well as screen time and sleep, we also found that meeting more recommendations was associated with fewer behavioural and emotional problems," says Dr. Carson.

"Overall, this study suggests that an integrated and holistic approach for health promotion is needed in early childhood."

Read the guidelines

New study quantifies the burden of asthma in US

A new study co-authored by AllerGen investigators Dr. Mohsen Sadatsafavi and Dr. Mark FitzGerald, both at The University of British Columbia (UBC), has found that the medical costs of uncontrolled asthma, combined with productivity losses due to sick days, could cost the US economy more than $963 billion over the next 20 years.

The results were published in the *American Journal of Respiratory and Critical Care Medicine* along with an interactive web app for visitors to explore the predicted burden of uncontrolled asthma, both in terms of the number of people affected and the cost.

"Up to half of the estimated 15 million Americans with asthma aren't successfully controlling their symptoms. Asthma imposes a significant burden on the economy and quality of life, but we have not previously known how much of its societal impact is due to lack of proper disease management, and therefore preventable," said Dr. Sadatsafavi in a UBC press release.

"As far as we know, this is the first estimate of that avoidable burden."

Dr. Sadatsafavi is the study's senior author and a professor of pharmaceutical sciences at UBC.

Looking at data from multiple US sources (Census Bureau, Bureau of Labor Statistics, Centers for Disease Control and Prevention, US National Health and Wellness Survey, the Global Burden of Disease study), the researchers projected the future economic and health burden of suboptimal asthma control in each of the 50 US states.

On a state-level projection of "per capita" burden of asthma to 2038, Arkansas had the highest combined (direct and indirect) per capita costs of suboptimal asthma control, while Connecticut had the lowest combined costs. In addition to the economic burden, the study found that Americans could lose more than 15 million "years of health" combined over the 20-year period.

The authors previously studied the asthma burden in Canada, where they found that uncontrolled asthma could cost the Canadian economy more than $200 billion in direct health-care costs and productivity losses combined.

The current research was funded by Genome Canada, Genome British Columbia, and the Canadian Respiratory Research Network (CRRN).

UBC press release

AWARDS & HONOURS

AllerGen's CEO & CHILD's Founding Director honoured by Canadian Thoracic Society

On April 11, 2019, at the annual Canadian Respiratory Conference held in Ottawa, ON, both Dr. **Diana Royce**, AllerGen's President and CEO, and Dr. **Malcolm Sears**, the Founding Director of the CHILD Cohort Study, were recognized by the Canadian Thoracic Society (CTS) with awards.

Dr. Royce was presented a *Canadian Thoracic Society Research Partnerships Award* in recognition of her leadership in building community partnerships to advance respiratory research and education—a part of her legacy as the Managing Director of AllerGen from 2004 to 2019.

Dr. Sears, an internationally-renowned respirologist and epidemiologist, received a CTS award for *Outstanding Contributions to Respiratory Research*. Dr. Sears led the CHILD Cohort Study from its inception in 2007 through to July 2017, when Dr. Padmaja Subbarao became Director.

Top photo: *L to R – Janet Sutherland, Executive Director of CTS; Dr. Royce; Anne Van Dam, Director of Knowledge Mobilization for CTS*

Centre photo: *.L to R – Dr. John Granton, President of CTS; Dr. Sears. Compliments of CTS.*

Bottom photo*: L to R – Dr. Piush Mandhane, Edmonton site leader of CHILD; Dr. Sears; Dr. Padmaja Subbarao, current Director of CHILD.*

CHILD Co-Director named Canada Research Chair

Dr. Stuart Turvey is among 346 accomplished scholars whose new or renewed Canada Research Chair funding was announced by the Honourable Kirsty Duncan, Minister of Science and Sport.

Dr. Turvey was awarded a Tier 1 Canada Research Chair in *Pediatric Precision Health*, on June 14, 2019.

"I am proud and excited about this award as it supports research that will empower the development of precision health-based strategies to address childhood asthma and life-threatening immune system disorders," commented Dr. Turvey on his appointment.

Canada Research Chairs are world-class scientists and scholars from diverse backgrounds who are working on new discoveries and innovations that help our environment, health, communities and economy thrive.

Dr. Turvey is a professor at The University of British Columbia, the Co-Director of the CHILD Cohort Study and the leader of its Vancouver site.

AllerGen Research Manager honoured

In recognition of her "significant contribution to fostering project management excellence in the field of research administration," AllerGen's Research Manager April O'Connell was granted the 2019 *Research Project Management Award* by the Canadian Association of Research Administrators (CARA).

The award recognized April's efficient management of AllerGen's research program wind-down in the 22 months preceding the conclusion of full NCE funding, during which time she managed the release of more than $9.1M *via* more than 160 performance-based funding installments.

April received the award at CARA's 2019 Annual Conference, which took place in Montreal in late May 2019.

Dr. Anita Kozyrskyj recognized for mentoring excellence

AllerGen investigator Dr. Anita Kozyrskyj has been recognized with a University of Alberta *FoMD Award for Excellence in Mentoring (Tier II Basic Science)*.

As part of her nomination, students past and present attested to the impact of her mentorship on their career.

"I'm honoured and am grateful for the great young scholars I've had the pleasure to work with," comments Dr. Kozyrskyj.

"I know they have benefited from AllerGen's training program."

Dr. Kozyrskyj is a professor of pediatrics at the University of Alberta and the principal investigator of the SyMBIOTA (Synergy in Microbiota) research program, a CIHR-funded Canadian Microbiome Initiative that derives its data from the CHILD Cohort Study.

Student testimonials:

"I have witnessed first-hand how ferociously Anita supports trainees, not just in their research but in their life goals."

"Anita is not only an incredible intellectual who pushes all her mentees to realize their fullest academic potential, she also respects one's personal aspirations and promotes the development of personal values..."

"With Anita's close guidance, constant reassurance, and hours of assistance, I published a first-author paper as an undergraduate. I now realize how uncommon it is for a PI to give that much time to promote an undergraduate's career development."

CHILD Manitoba co-leaders recognized

Co-leaders of the Manitoba site of the CHILD Cohort Study, AllerGen investigators Drs **Allan Becker** and **Meghan Azad**, were recognized by the University of Manitoba for outstanding accomplishments at their respective career stages.

Dr. Becker received the 2018 *Dr. John M. Bowman Memorial Winnipeg Rh Institute Foundation Award* for his outstanding research accomplishments as an established University of Manitoba faculty member.

Dr. Azad received a 2018 *Terry G. Falconer Memorial Rh Institute Foundation Emerging Researcher Award (Health Sciences)*. This award recognizes University of Manitoba faculty members in the early stages of their careers who display exceptional innovation, leadership and promise in their fields.

Both awards were presented at the Rh Awards and Reception on April 29, 2019, at the Fort Garry campus of the University of Manitoba in Winnipeg. At the same event, Dr. Becker delivered a lecture on the topic of "Clinician Scientists: Critical for the evolution of healthcare."

Read the University of Manitoba news item


UM TODAY Alumni

University of Manitoba

Latest News Network Topics The Magazine

DR. ALLAN BECKER, 2018 RECIPIENT OF THE DR. JOHN M. BOWMAN MEMORIAL WINNIPEG RH INSTITUTE FOUNDATION AWARD, FOR HIS OUTSTANDING CONTRIBUTIONS TO THE FIELD OF PEDIATRIC ALLERGY AND ASTHMA RESEARCH. // PHOTO BY DANIEL GWOZDZ

Clinician scientists: critical for the evolution of healthcare

APRIL 8, 2019 — Healthcare has entered a phase of major disruption associated with increasing focus on the internet and social media, electronic medical records, machine learning and artificial intelligence. Clinicians now have to deal with genomics and Big Data and the development of multiple new therapeutic 'biologics.' Never has there been as large a gap between 'what we know' and how medicine is practiced.

"It is increasingly critical to have clinicians directly connected with patients in order to help craft the most appropriate research questions and studies and to ensure that knowledge translated from the research effectively becomes mobilized to the best care for the individual patient and family," says Dr. Allan Becker (MD/69), the recipient of the 2018 Dr. John M. Bowman Memorial Winnipeg Rh Institute Foundation Award.

PEOPLE & PARTNERS

Data challenge probes CHILD breastmilk

This summer, in an intensive two-day competitive workshop at the University of Manitoba (U of M), Dr. Meghan Azad will present complex data from her CHILD Cohort Study breastmilk research to teams of students who will be challenged to translate the data in novel ways.

The students, from the Visual and Automated Disease Analytics (VADA) program at U of M, will leverage methods from a variety of different fields, including statistics, data science, psychology and population health, to analyze the data.

"It reminds me of American Idol – except here, the challenge is a complex data problem instead of a song," Dr. Azad commented in a UofM announcement.

"In the CHILD Cohort Study, we've measured various breastmilk components one at a time, but what I really want to do is analyze the measurements all together to get a more meaningful idea of their combined importance."

New role for Leah Graystone, former HQP Coordinator

With the formal conclusion of AllerGen's HQP Program on March 31, 2019, Leah Graystone, the program's coordinator from 2017 to 2019, moved on to an exciting new role.

Leah is now the HQP and Events Coordinator for a freshly-minted five-year NCE—the NanoMedicines Innovation Network (NMIN), headed by AllerGen's Board Chair, Dr. Pieter Cullis.

Leah was an AllerGen HQP and served on the ASNPN Executive from 2014 to 2017. She became AllerGen's HQP Coordinator in late 2017.

Leah maintained the full momentum of the HQP program, seeing it through its final grant releases, symposia and poster competitions. She also very competently led the organization of AllerGen's final Research Conference in January 2019.

Leah's AllerGen colleagues wish her well in her new position.

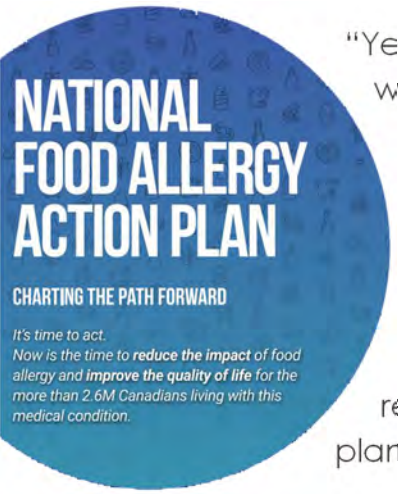
Leah Graystone (in colour) with ASNPN colleagues.

Food Allergy Canada and CSACI release a National Action Plan

On May 28, 2019, AllerGen Legacy Partners Food Allergy Canada (FAC) and the Canadian Society of Allergy and Clinical Immunology (CSACI) released a *National Food Allergy Action Plan* on Parliament Hill in Ottawa as part of these organizations' advocacy day with government.

The Plan, which builds on partnerships forged and research conducted in the AllerGen network, offers a framework intended to guide future policy actions for reducing the impact of food allergy and improving the quality of life for food-allergic Canadians.

"Canadians living with food allergy [know] the importance of individual responsibility when managing their medical condition," said Executive Director Jennifer Gerdts in a FAC press release.



"Yet we also recognize we are dependent on a societal apparatus of awareness and empathy, policies and processes to help keep us safe. This is the underlying reason for the action plan."

Advocacy in Action: Asthma Canada at Queen's Park

On May 7, 2019, AllerGen Legacy Partner Asthma Canada hosted a breakfast reception at the Ontario Legislative Assembly at Queen's Park in recognition of World Asthma Day.

The reception raised awareness among MPPs and policymakers across parties about the impact of asthma—particularly, severe asthma—on Canadians, the health system, and the economy. At the event, Asthma Canada launched its Severe Asthma Patient Charter containing six principles that define the basic standard of care and best practices for treating the disease.

Guest speakers included MPP Christine Hogarth, who sponsored the breakfast; Vanessa Foran, Asthma Canada's President & CEO; community members living with and caring for people with asthma and severe asthma; and Dr. Padmaja Subbarao, a respirologist at The Hospital for Sick Children and Director of the CHILD Cohort Study.

Dr. Subbarao spoke about the burden of severe asthma on children and families, noting that while severe asthma affects only between 2-5% of asthmatics, it accounts for the majority of hospitalizations, healthcare costs and lost days from school or work, and carries a significantly higher risk of death.

Ontario's Minister of Health and Long-Term Care, Christine Elliott, provided closing remarks.

KNOWLEDGE MOBILIZATION

Animated KT video: CHILD Cohort Study & a baby's microbiome




The newest knowledge translation video out of the CHILD Cohort Study explores the study's discoveries about the human microbiome—the universe of bacteria and other tiny organisms that live in and on our bodies.

AllerGen launched the playfully animated 4.5-minute video on May 16, 2019, on AllerGen's YouTube channel. It was viewed more than 1,750 times over the following month, largely through promotion on social media by AllerGen partner organizations and diverse stakeholders.

The video describes how the gut microbiome can be altered by many factors, including: the way a baby is born (C-section or vaginal delivery); what a baby is fed (breastmilk or formula); and whether a baby is exposed to antibiotics, furry pets or household cleaning products. It also illustrates the CHILD research finding that babies with low levels of four specific gut bacteria in their first three months of life are more likely to develop asthma.

CHILD Cohort Study stakeholders, parents, and researchers provided input to the video's development to ensure it is accessible to a lay audience.

Watch the video

Highlight clips:


5 microbiome studies

4 bacterial superheroes


Home environment


Breastfeeding

Mobile app helps those with hay fever & asthma

AllerGen investigators contributed to a new interactive app that is helping people with allergic rhinitis (hay fever) and asthma to monitor, understand and better manage their conditions.

MASK-air is a free app, available on Android and iOS, that assists patients to track their symptoms and medication use, assess the impact of symptoms on their quality of life, and create reports for their doctors.

The tool was developed by an international team of patients and allergy experts, including AllerGen investigators Drs Judah Denburg, Paul Keith, Susan Waserman, and Teresa To, and AllerGen HQP Dr. Derek Chu.

Nearly one in five Canadians are affected by allergic rhinitis—an allergic response to specific allergens such as pollen, dust mites, animal dander or saliva, and mould.

MASK-air is a user-friendly logbook that offers data tracking and analysis to help patients and their healthcare professionals pinpoint allergic triggers, predict flare-ups and develop more effective treatment plans. The app, website, and patient support materials are now available in 23 countries.

MASK-air is one of the many health tools to emerge from the Allergic Rhinitis and its Impact on Asthma (ARIA) international initiative, a global organization that collaborates with the World Health Organization (WHO) through the Global Alliance Against Chronic Respiratory Diseases (GARD).

ARIA has developed a new allergic rhinitis classification; guidelines for the diagnosis and management of allergic rhinitis and asthma; pocket guides and treatment algorithms for physicians; and is now focused on the implementation of emerging technologies for individualized and predictive medicine."

CHILD Cohort Study profiled in Wave magazine

wave WINNIPEG'S HEALTH & WELLNESS MAGAZINE

Ilsa Buchholz is one of the almost 3,500 kids participating in the CHILD Cohort Study. Ilsa shares what being a part of CHILD means to her and her parents, what tests she undergoes every few years during her clinical visit, and what motivates the family to continue participating in this pan-Canadian research project after nine years of involvement.

Ilsa Buchholz and her parents

Meeting this special family is just one reason to read "The 3,500 Club," a feature story in the March/April 2019 issue of *Wave* magazine, a publication of the Winnipeg Regional Health Authority.

The "club" in question is, of course, the CHILD Cohort Study. The story also introduces the Study's Manitoba site co-leaders, Drs Meghan Azad and Allan Becker, from whom we hear about the origins and design of the study, and about the CHILD research in which they have been involved.

Readers also learn about research results related to the microbiome and the exposome that are generating global attention and changing our understanding how to promote health across the life course.

They are also introduced to CHILD findings that are expanding insight into the early-life origins of health and disease—for example, about the health impacts of birth method and infant feeding, and the role of certain bacteria in protecting children from asthma.

"There is a lot of focus in medicine on the development of new treatments and cures, which is important, but ideally, we'd rather prevent diseases in the first place," Dr. Azad told *Wave*.

"To do that, we need to know how they get started, and that's what CHILD is allowing us to do."

Read 'The 3,500 Club'

Pass the popcorn! *Let Them Eat Dirt* movie premiere for CHILD Vancouver families

Popcorn, prizes and photo ops were on the playbill for the CHILD Cohort Study's Vancouver families as they arrived at a special Movie Night on June 11, 2019.

Organized by the Vancouver CHILD research team, the event gave local kids, parents and siblings a chance to catch an exciting new documentary film (coming soon!) called *Let Them Eat Dirt, The Hunt for our Kids' Missing Microbes* on the big screen at BC Children's Hospital Chan auditorium.

On arrival, the children received the red-carpet treatment with balloons, t-shirts, colouring postcards, jellybean guessing games and an array of authentic movie-theatre snacks.

According to nine-year-olds Sam Rose and Hazel Bartlett, the trailer clips shown before the movie were almost as good as the film itself.

"They showed a video where Sam and I explain what kids can expect during their 8-year-old clinical visit," says Hazel. "We think our video will help kids in the study understand why the researchers need our poop, pee and blood samples – it's all for science and to help other kids grow up healthy!"

A new animated video highlighting the CHILD Cohort Study's discoveries about an infant's gut microbiome was also shown. "It was really cool. I liked the characters and I found it easy to understand," adds Sam.

CHILD Cohort Study researchers Drs Brett Finlay and Stuart Turvey (study co-Director) were on hand to introduce the main attraction *Let Them Eat Dirt*, in which they star with international microbiome experts including other CHILD Cohort Study investigators Drs Marie-Claire Arrieta (University of

Families arrive to the CHILD Vancouver Movie Night.

Watching "Let Them Eat Dirt."

Calgary) and Meghan Azad (University of Manitoba).

Based on the bestselling book by Drs Finlay and Arrieta, the film explains how the millions of microbes that live on and in our bodies (the microbiome) influence childhood development; why an imbalance in the microbiome can lead to obesity, diabetes, and asthma, among other chronic conditions; and how parents can take concrete steps to positively impact their child's long-term health.

A Q & A session with Drs Turvey and Finlay following the movie was a highlight for both the families and the researchers. "I can't believe how science-savvy these kids are," remarked Dr. Finlay. "I was impressed by all the questions, particularly when a child asked me if good microbes can become bad microbes and *vice versa*!"

Let Them Eat Dirt, The Hunt for our Kids' Missing Microbes will be released across North America in 2019.

New *ResearchSKETCH* on effects of screen time

How much screen time is too much for preschoolers?

That's the question addressed by a new AllerGen *ResearchSKETCH* lay summary authored by AllerGen HQP Dr. Sukhpreet Tamana. The *SKETCH* provides an accessible summary of the April 2019 publication in *PLOS One* that she co-authored with Dr. Piush Mandhane.

The research, using data from the CHILD Cohort Study, associated two hours or more of screen time per day with clinically significant behavioural problems in preschoolers.

ResearchSKETCHES translate AllerGen-funded research into simple, clear-language summaries to disseminate these findings to a broad lay audience.


Research SKETCHES

AllerGen
Allergy, Genes and Environment Network

How much screen time is too much for preschoolers?

New Canadian study finds a link between screen time and behavioural problems.

What is this research about?

Primary Researchers

What did the researchers do?

Citation

Keywords

HQP NEWS

AllerGen trainee Ryan Huff named Vanier Scholar

AllerGen trainee Ryan Huff has been awarded a 2018-2019 Vanier Canada Graduate Scholarship, in support of his proposed research project *Air Pollution Induces Glucocorticoid Resistance in Humans*.

"As a previous varsity track & field athlete with mild asthma and severe pollen allergies, I have always had a keen interest in understanding how the environment we live in affects our lung health," explains Huff.

"My graduate research focuses on how air pollution impacts the function of inhaled corticosteroids or glucocorticoids, a commonly used class of asthma medication."

Huff is pursuing his research as a PhD student in Experimental Medicine at The University of British Columbia (UBC), under the supervision of AllerGen investigator Dr. Christopher Carlsten.

"Ryan has all the hallmarks of a star in science – curiosity, drive, teamwork, efficiency," comments Dr. Carlsten, who heads UBC's Division of Respiratory Medicine. "He's a true gem."

"AllerGen has played a crucial role supporting this research in its early stages through an AllerGen SCORE-TRAP project grant," observes Huff, "and AllerGen helped advance my career by awarding me an *Asthma Canada/AllerGen Bastable-Potts Graduate Student Research Award* during my first year of PhD studies."

"I am very thankful to AllerGen for providing opportunities that allow young researchers like myself to pursue research that will impact the respiratory health and well-being of Canadians."

Across Canada, 167 new Vanier Canada Graduate Scholarship recipients were selected for the 2018-2019 competition administered by CIHR, NSERC, and SSHRC. The fellowships, valued at $50,000 per year for three years during doctoral studies, are selected based on academic excellence, research potential, and leadership.

HQP awarded CSACI summer studentships

The Canadian Society of Allergy and Clinical Immunology (CSACI) has announced the winners of its inaugural *Summer Studentships in Allergy and Immunology Research*.

Of the six 2019 awardees, three are AllerGen trainees:

Sarah Almas (University of Alberta), who is researching "IL-9 and IL-13 Trafficking and Release from Eosinophils" under the supervision of Dr. Paige Lacy

Christianne Blais (University of Saskatchewan), who is researching "The effect of deep inhalation on mannitol responsiveness" under the supervision of Dr. Donald Cockcroft

and

Paul Spill (McMaster University), who is researching "Reprogramming of IgE-mediated allergic memory responses following blockade of IL-4/IL-13 signaling in humans" under the supervision of Drs Susan Waserman and Manel Jordana

New Emerging Researcher Awards in Allergic Asthma

A new funding opportunity aims to support Canadian allergists, clinical immunologists, MD clinician-scientists and basic scientists undertaking translational academic research in allergic asthma.

The *CIHR-ICRH/CAAIF/AstraZeneca/ AllerGen Emerging Research Award in Allergic Asthma* offers up to $200,000 over two years. **The 2019 deadline for applications is August 16, 2019.**

Application forms and more information are available online.

This award program is a collaborative effort involving the CIHR-Institute of Circulatory and Respiratory Health (CIHR-ICRH), the Canadian Allergy, Asthma and Immunology Foundation (CAAIF), AstraZeneca Canada, and AllerGen.

CIHR IRSC Institute of Circulatory and Respiratory Health / Institut de la santé circulatoire et respiratoire

Canadian Allergy, Asthma and Immunology Foundation (CAAIF) / Foundation Canadienne D'Allergie, D'asthme et D'immunologie

AstraZeneca

AllerGen Allergy, Genes and Environment Network / Le réseau des allergies, des gènes et de l'environnement

New funding opportunities from CAAIF

The Canadian Allergy, Asthma and Immunology Foundation (CAAIF) invites applications to the following new funding opportunities.

For more information, contact the CAAIF head office at: info@caaif.ca or 647-334-2763.

CAAIF Knowledge Mobilization Grant

Deadline: August 30, 2019

The 2019 *CAAIF Knowledge Mobilization Grant* will provide allied health members with $5,000 towards a knowledge mobilization activity or initiative.

Priority will be given to projects that are sustainable and transferable rather than "one-time" events.

The CAAIF Research Advisory Committee will oversee the application review process.

More information | **Application form**

Immunodeficiency Canada & CAAIF Research Grant for New Investigators

Deadline: September 13, 2019

The *Research Grant for New Investigators* is intended for residents, fellows and new investigators who are studying or practicing the sub-specialty of allergy and clinical immunology.

It will pay for research expenses up to $10,000.

Full applications will be assessed and ranked on: clinical relevance; originality of research; quality of the proposal; ability to conduct the research; and appropriateness of facilities.

More information | **Application form**

The ASNPN lives on:
Help maintain AllerGen's HQP community

The AllerGen Students and New Professionals Network (ASNPN) is a student-led network of trainees and new professionals from across the country in the field of asthma and allergic disease.

Since its founding in 2007, the ASNPN has built community and enabled professional development among thousands of trainees.

Members of the 2017–2019 ASNPN Executive Committee are committed to maintaining the momentum of this community beyond the ending of AllerGen's NCE mandate and its HQP Program.

Toward that end, they have set up an online networking space to which all former, current and aspiring ASNPN members are invited. Capabilities of the platform include instant messaging, video chatting, and information sharing.

Individuals who join this online community will be able to network with each other, access updates and announcements, and be invited to participate in future training opportunities.

Those interested in participating in, and contributing to, this online ASNPN community can contact the Executive Committee with questions, comments or suggestions at:

asnpn2019@gmail.com

Continued from page 1

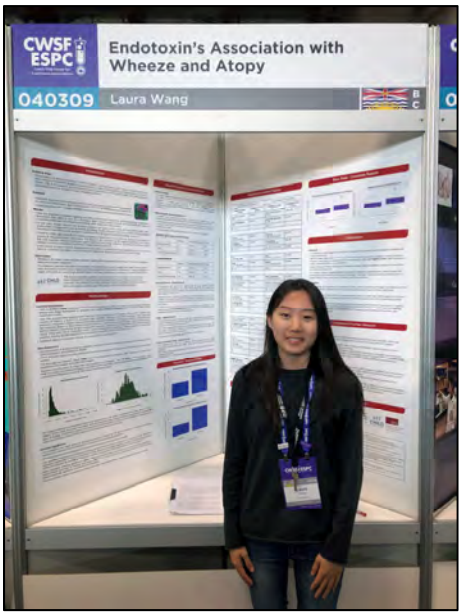
"We came up with the research question together," says Wang. "This area has been controversial because scientists aren't sure whether early-life exposure to the toxins in household dust protects a child against developing asthma and allergies or contributes to it. There is evidence on both sides of the question, so we decided to find out more through the CHILD Cohort Study."

With no formal training in research, Wang spent the summer after Grade 10 becoming familiar with RStudio, an open-access statistical software program that can be used to analyze the complex CHILD data.

Takaro and Parks then gave Wang access to dust samples collected from CHILD Study homes when the children were three months old, as well as coding and models produced by Parks. With their supervision and guidance, Wang analyzed the data and compared it to the results of the children's allergy skin-prick tests at age three, as well as wheezing data, which indicated how often a child experienced repeated episodes of a whistling sound in the chest during early childhood.

The CHILD Cohort Study has been following 3,500 Canadian children from before birth, and has a rich repository of clinical, environmental, genetic and microbiome data that can be analyzed.

"My supervisor Dr. Takaro and I study the effects of early-life exposures on the development of childhood asthma and allergic disease, so the endotoxin project seemed like the perfect complement to previous work done with environmental data from CHILD," says Parks, a Master's student and Research Associate at Simon Fraser University.



Laura exhibiting at the 2019 Canada-Wide Science Fair

"Laura is bright, enthusiastic and hard-working, and we knew that with support and training in research methods and analysis, Laura could become an excellent young researcher."

Throughout Grade 11, Wang balanced her academic and

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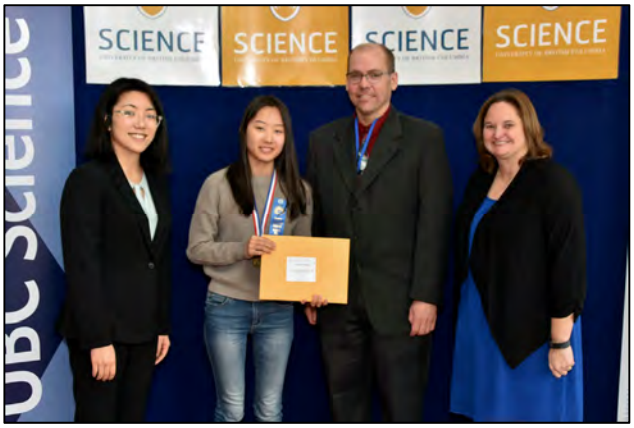
extracurricular activities with her research, which involved conducting a literature review, completing ethics training, and learning basic data analysis. She met with Takaro and Parks regularly for guidance on methodology, using and interpreting the data in RStudio, and understanding the impact and limitations of the results.

In April 2019, nearly a year after she first emailed Takaro, Wang summarized her research results into a paper titled "Endotoxin's Association with Wheeze and Atopy" and submitted it to the Greater Vancouver Regional Science Fair (GVRSF).

"I was so excited, and actually surprised, about our findings," says Wang. "We showed that dust endotoxin at three months of age is associated with a protective effect for asthma and allergies. In other words, it's good for babies to be exposed to endotoxin in house dust, which may help to train the immune system, resulting in a reduced risk of allergies and asthma by age three."

Wang's project won a Gold Medal at the competition and she received a $2,000 Entrance Scholarship to The University of British Columbia's Health and Life Sciences program.



Laura wins gold at the Greater Vancouver Regional Science Fair

"I was overwhelmed by the judges' interest in the project and particularly in the CHILD Cohort Study as the data source," notes Wang. "Their feedback was extremely positive; they said that the project demonstrated 'a complex analysis of the data' and a 'clear explanation of the discoveries.'"

Wang's top ranking at the GVRSF earned her a spot in the national Canada-Wide Science Fair (CWSF), held in Fredericton, NB, from May 11 to 17, 2019.

There, Wang showcased her work alongside 500 of Canada's top young scientists. Her project won a Bronze medal and garnered her entrance scholarships to the University of Ottawa and Western University.

She was also recognized with a Canadian Young Researcher Award and a cash prize of $1,000.

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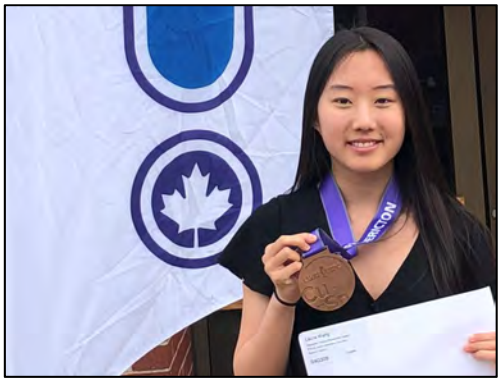

Laura with her bronze medal from the national CWSF

Wang says she had a great time at the national fair, where delegates participated in cultural tours and science workshops. They even had the opportunity to live chat with astronaut David Saint-Jacques on the International Space Station.

"The entire week was simply incredible and it's amazing to think that although I'm still in Grade 11, working with the CHILD Cohort Study has meant that I now have entrance scholarships to three top Canadian universities!"

Wang credits her research success to the steady supervision and mentorship provided by Takaro and Parks. "Their guidance and support have provided me with such a rich learning experience – I can't thank them enough."

This fall, Wang will continue her collaboration with her mentors to prepare the data for peer review, leading to an open-access publication by the *STEM Fellowship Journal*, offered as part of her CWSF award.

Publishing one's first peer-reviewed paper is an important milestone in the career of every researcher – and is especially impressive at such a young age – according to Takaro.

"Laura's goal was to publish a paper before she finished high school. When I first heard this 14 months ago, I thought that it was very unlikely. Given all that she has accomplished so far, I'm confident now that Laura will publish before she graduates."

Takaro says the collaboration has also been a rewarding experience for him and Parks: "I'm extremely proud of Jaclyn, who is an outstanding student, teacher and mentor. Working with Laura has helped consolidate Jaclyn's analytic abilities and she has become a gifted mentor that young scientists look up to."

"I am so pleased that Laura's inter-action with the CHILD Study nurtured her zest for scientific exploration," comments Dr. Padmaja Subbarao, a respirologist at Toronto's Hospital for Sick Children and the CHILD Cohort Study's Director.

"All of the CHILD researchers across the country look forward to hearing more about her future accomplishments. She truly represents the next generation of outstanding Canadian researchers."

MEDIA

AllerGen Researchers in the News

Meghan Azad
New York Times, *WAVE Magazine*

Moshe Ben-Shoshan
La Presse, *Le Devior*, *Montreal Gazette*

Michael Brauer
Global News, *Popular Science*, *The Scientist*

Chris Carlsten
Global News, *MD Magazine*, Popular Science

Timothy Caulfield
National Post, *Globe and Mail*, *Breakfast TV*, *Guardian*

Derek Chu
TIME, *MD Magazine*, *CNN*, *USA Today*, *Telegraph*, *CBC*, *Independent*, *NBC*

Sofianne Gabrielli
Global News, *CBC*

Piush Mandhane
National Post, *Globe and Mail*, *Telegraph*, *CTV*, *ABC*, *CBC*, *NEWSWEEK*, *Toronto Star*

EVENTS

2019 Sandbox Summit: Collaborating to improve youth health

AllerGen legacy partner The Sandbox Project held it's 9th annual stakeholder gathering—The Sandbox Summit—on April 11, 2019, in Toronto, ON, under the theme "Collaboration that Counts."

As in past Summits, AllerGen leveraged the opportunity to mobilize knowledge and to establish connections with the researchers, non-profits, families, youth and policymakers in attendance.

AllerGen trainee Maxwell Tran delivered a presentation on recent research findings from the CHILD Cohort Study.

Dr. Theo Moraes, Toronto site leader for CHILD, led workshop sessions on integrating Parent Advisory Councils into research and ethical research translation.

AllerGen Digital Initiatives Manager Marshall Beck participated in a "Sandbox-side Chat" about using IT to facilitate remote collaboration.

Maxwell Tran discusses the CHILD Cohort Study

CSACI Scientific Meeting October 23-27, 2019

The Canadian Society of Allergy and Clinical Immunology (CSACI) will host its 74th Scientific Meeting in Montreal from October 23-27, 2019.

As the primary Canadian gathering for the allergy community, this event offers an opportunity for specialists and researchers in the field of allergy, asthma, and clinical immunology to meet in an atmosphere conducive to medical, scientific and social networking and knowledge exchange.

More information

Program

Register

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