

PRESS RELEASE

Nov. 27, 2017

Asthma in infant boys may eventually be preventable

A groundbreaking UAlberta study shows there is an additional—and potentially treatable—reason why babies born to moms with asthma often develop the condition themselves.

(Edmonton, AB) A new University of Alberta study shows that the family risk for asthma—typically passed from moms to babies—may not be a result of genetics alone: it may also involve the microbes found in a baby's digestive tract.

AllerGen investigator and UAlberta microbiome epidemiologist Anita Kozyrskyj led a research team that found that Caucasian baby boys born to pregnant moms with asthma—who are typically at the highest risk for developing asthma in early childhood—were also one-third as likely to have a gut microbiome with specific characteristics at three to four months of age.

“We saw a significant reduction in the family of microbes called *Lactobacillus* in Caucasian baby boys born to pregnant women who had asthma, and this was especially evident if the asthmatic mother had allergies or was overweight,” said Kozyrskyj, senior author of the study and one of the world's leading researchers on the gut microbiome—the community of microorganisms or bacteria that live in the digestive tracts of humans.

These findings provide the first evidence that maternal asthma during pregnancy may be associated with changes in an infant's gut microbes, according to Kozyrskyj.

“Our discovery, with more research, could eventually lead to a preventative approach involving modifying the gut microbiome in infants to reduce the risk,” she explained.

She also cautioned, however, that it is too early for parents to be seeking probiotic treatments for their infants to address this particular concern.

Kozyrskyj and her team's research involved over 1,000 mothers and their infants participating in AllerGen's [CHILD Study](#), a national population-based birth cohort.

Kozyrskyj said that she and her team were motivated to study the gut microbiome-asthma link by the well-established fact that maternal asthma affects infant birth weight in a sex-specific manner.

“The Caucasian male fetus is more likely to have a lower birth weight in response to maternal asthma, so we knew there were already sex-based differences occurring and we decided to study them further.”

The study also found that maternal asthma had an impact on the gut bacterial profile of baby girls, but in a different way.

“Baby girls were more likely to have higher amounts of bacteria in the *Bacteroidaceae* family, which are important for maintaining the mucus barrier that protects gut cells from damage by harmful substances,” said Kozyrskyj.

“We speculate that this may protect baby girls from developing asthma in early life. On the other hand, changes to bacterial composition specific to baby girls may increase their risk for developing asthma during puberty, when the gender switch in asthma occurs.”

“Given emerging research linking the gut microbiome to asthma and allergies, we are excited that our results have uncovered a new finding that may eventually contribute to the prevention of childhood asthma.”

The study, funded by CIHR and [AllerGen](#), was published in [European Respiratory Journal](#).

About the U of A Faculty of Medicine & Dentistry

The Faculty of Medicine & Dentistry at the University of Alberta is a leader in educating and training exceptional practitioners and researchers of the highest international standards. The faculty’s mission is to advance health through excellence in teaching, research and patient care. It is home to one of the top 100 ranked medical schools in the world.

About the CHILD Study and AllerGen NCE

Funded by CIHR and the Allergy, Genes and Environment (AllerGen) Network, the [CHILD Study](#) is collecting a vast range of health, lifestyle and environmental exposure information from more than 3,500 mothers and children from pregnancy to age five. The study spans four provinces (BC, AB, MB and ON), involving over 140 multidisciplinary researchers, students and research staff. St. Joseph’s Healthcare Hamilton hosts the CHILD Study’s National Coordinating Centre. AllerGen NCE Inc. is a national research network dedicated to improving the quality of life of people suffering from allergic and related immune diseases. Funded by Innovation, Science and Economic Development Canada through the federal Networks of Centres of Excellence (NCE) Program, the Network is hosted at McMaster University in Hamilton, ON.

Media Inquiries:

Ross Neitz
University of Alberta
Tel: 780-297-8354
rneitz@ualberta.ca

Kim Wright
AllerGen NCE Inc.
Tel: 905-525-9140 ext. 26641
kimwright@allergen-nce.ca