

For immediate release

Microbial “signatures” in first 100 days of life may protect against asthma

HAMILTON, ON (19 December 2017)

In a new study analyzing data from babies living in rural Ecuador, CHILD Study researchers from The University of British Columbia (UBC) and the University of Calgary have confirmed their 2015 discovery that early life gut microbes play a critical role in protecting children against asthma.

The new research, published in December 2017 in the [*Journal of Allergy and Clinical Immunology*](#), reaffirms the importance of a baby’s first 100 days of life, when disruptions in the normal composition of microbes in the gut can affect how the immune system develops. These variations in immune system development can, in turn, result in altered health outcomes—such as an increased risk for asthma.

Dr. B. Brett Finlay, a microbiologist and a Peter Wall Distinguished Professor at UBC; Dr. Stuart Turvey, the Aubrey J. Tingle Professor of Pediatric Immunology at UBC; and Dr. Marie-Claire Arrieta, formerly a post-doctoral fellow in Finlay’s lab and now an assistant professor at the University of Calgary, published their original 2015 findings in [*Science Translational Medicine*](#). More than 300 families from across Canada participated in the research through AllerGen’s [*CHILD Study*](#).

The work demonstrated, for the first time in humans, the key role gut microbes play during the first three months of life in training the immune system. Specifically, the researchers found that at the age of three months, infants with low levels of four specific bacteria called FLVR (*Faecalibacterium*, *Lachnospira*, *Veillonella*, and *Rothia*) had a significantly higher risk of asthma, even if their bacteria levels normalized later.

“Our study in Ecuador allowed us to compare the gut microbes of babies living in a tropical non-industrialized country with our findings from the Canadian cohort,” says Dr. Finlay. “We were interested to find out if the microbial ‘signature’ we observed in Canadian infants at risk for asthma was also present in Ecuadorian babies.”

Although the researchers did not find the same low levels of FLVR among at-risk infants in Ecuador, they observed other potentially valuable similarities and differences. For example, the presence of certain fungi in the gut of Ecuadorian infants was found to be associated with an increased asthma risk. This was not observed in the Canadian infants.

“We also found important metabolic similarities,” adds Dr. Arrieta. “In both populations, levels of a small microbial metabolite were reduced in at-risk infants. We are interested in studying this

compound further to understand how it affects development of the immune system and its role in protecting against asthma.”

Together, the Canadian and Ecuadorian studies support the concept of a “critical window” in early life during which specific gut microbial “signatures” are associated with an increased risk of childhood wheeze (a whistling sound in the chest), and potentially asthma.

“We believe that these findings may be useful for the development of asthma prevention therapies and strategies through modification of the microbiome in early life,” says Dr. Arrieta.

About the CHILD Study and AllerGen NCE

Funded by the Canadian Institutes of Health Research (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 3,500 mothers and children from pregnancy to age five years and beyond. 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.

- 30 -

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