

For immediate release

Four gut bacteria decrease asthma risk in first 100 days of life

HAMILTON, ON (30 September 2015)

Four types of gut bacteria play a critical role in the first 100 days of life in protecting children against asthma, according to new research from The University of British Columbia (UBC) and BC Children's Hospital that involved the participation of more than 300 families from the [Canadian Healthy Infant Longitudinal Development \(CHILD\) Study](#).

The research, published today in [Science Translational Medicine](#), found that infants at high risk of developing asthma had low levels of four gut bacteria, abbreviated FLVR (*Faecalibacterium*, *Lachnospira*, *Veillonella*, and *Rothia*), in the first three months of life. It is the first study to establish a causal link between infant gut bacteria and the development of asthma.

"This research supports the hygiene hypothesis that we are making our environment too clean. It shows that gut bacteria play a role in asthma, but it is early in life when the baby's immune system is being established," says Dr. Brett Finlay, co-lead researcher and Peter Wall Distinguished Professor in the Michael Smith Laboratories, and the Departments of Biochemistry and Molecular Biology, and Microbiology & Immunology at UBC.

The researchers collected data from 319 children participating in the CHILD Study, assessing the children with allergy skin prick testing at 12 months and clinical assessments at two and three years of age. Analysis of the children's fecal samples revealed that children who were at the highest risk of asthma had lower levels of FLVR at three months. The study also found that these gut microbial changes were less apparent by one year of age, suggesting that the first few months of life are the most important for immune development.

The researchers confirmed the protective effect of FLVR in mice. They demonstrated that microbe-free mice inoculated with FLVR passed the bacteria to their offspring, thereby reducing the degree of severity of asthma in those offspring.

While most infants naturally become colonized with FLVR bacteria in early life, some do not, due to environmental factors known to alter the microbiome, including exposure to antibiotics.

"This study is exciting because it emphasizes the importance of the gut microbiome in asthma and opens the door to a whole new way to prevent childhood asthma by supplementing specific bacteria in the first 100 days of life," says co-lead researcher Dr. Stuart Turvey, pediatric immunologist at BC Children's Hospital, director of clinical research and senior clinician scientist at the Child & Family Research Institute, and Professor of Pediatrics at UBC. Dr. Turvey is also the Vancouver site leader for the CHILD Study.

This research was supported by the Canadian Institutes of Health Research (CIHR).

The CHILD Study, funded by AllerGen NCE and the Canadian Institutes of Health Research (CIHR), involves more than 3,500 infants and their families from across Canada who are being closely monitored to determine how genetic and home environment factors contribute to health outcomes, especially with regard to allergies and asthma.

About AllerGen NCE Inc.

[AllerGen NCE Inc.](http://allergen-nce.ca), the Allergy, Genes and Environment Network (est. 2004), is a national research network dedicated to improving the quality of life of people suffering from allergic and related immune diseases. Funded by Industry Canada through the federal Networks of Centres of Excellence (NCE) Program, the Network is hosted at McMaster University in Hamilton. Visit <http://allergen-nce.ca> for more information.

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