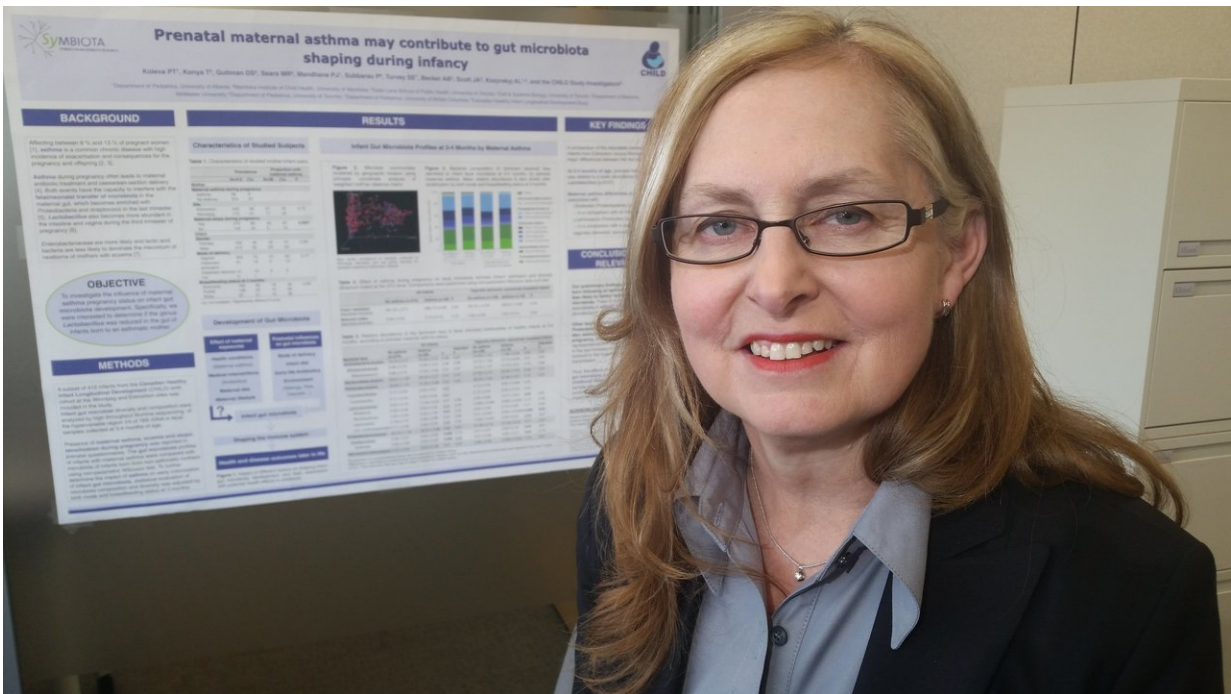


# Asthma in infant boys may eventually be preventable

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Anita Kozyrskyj, a professor of pediatrics at the University of Alberta, has published a study that shows moms passing on asthma to their babies is not just about genetics, and may even be preventable. Credit: University of Alberta

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*.

**More information:** Petya T. Koleva et al, Sex-specific impact of asthma during pregnancy on infant gut microbiota, *European Respiratory Journal* (2017). [DOI: 10.1183/13993003.00280-2017](https://doi.org/10.1183/13993003.00280-2017)

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