CHILD poop enables new microbiome tool

A study led by researchers from the Danish birth cohort COPSAC and using data from CHILD stool samples has resulted in the creation of a new tool for studying the microbiome.

This tool, which can be [downloaded for free](#), will make it easier for researchers to identify how the microbes living within us keep us healthy or make us sick. This, in turn, will contribute to new ways of preventing and treating disease.

The human microbiome is the collection of microbes living in and on our bodies, especially in our digestive system or gut. In recent years, researchers have come to recognize how important the microbiome is to human health.

Which microbes live within us, as well as their abundance and diversity, has an impact on the strength of our immune system and how vulnerable we are to different forms of disease.

MAKING SENSE OF COMPLEX GENETIC INFORMATION

One way of analyzing our microbiome is by looking at the genetic make-up of the microbes it contains. This is usually done through a process called metagenomic sequencing.

However, the data produced by this process can be very complex and hard to interpret. The relationships among different microbes are hard to decipher, and it is also hard to see how, in turn, these relationships influence people's health.

The new tool, called the MAGinator, is a piece of software that can help make sense of this genetic information. Overall, MAGinator translates confusing data into concrete, clear information about what is in the microbiome being studied. This, in turn, makes it easier to identify the links between specific organisms in the microbiome and whether a person becomes sick or stays healthy.

MORE ACCURATE AND PRECISE

In the paper "[MAGinator enables accurate profiling of de novo MAGs with strain-level phylogenies](#)," published in *Nature Communications* in July 2024, the researchers explain in detail how the tool works, the ways in which they tested it, and what it can do.

The researchers tested the tool on data from stool samples provided by Danish kids in the COPSAC cohort, and on data from stool samples provided by Canadian kids of about the same age in the CHILD cohort. The generosity of kids living half a world apart came together to enable this powerful new research tool.

"As part of this study, we compared MAGinator to other available tools," comments CHILD researcher **Charisse Peterson**, a co-author on the paper, "and we found that MAGinator was able to identify microbes more accurately and more precisely—including new species of microbes that other tools missed entirely."

"This tool takes us a step forward in our quest to better understand the microbiome as a window into people's health," adds CHILD Co-Director Dr. **Stuart Turvey**, also a co-author on the paper.

CHILD poop enables new microbiome tool

Makes sense of complex information about the microbes living inside of us

More accurate & precise than other available tools

The MAGinator is a new software tool that makes it easier for researchers to identify the microbes living within us (our microbiome)

Identifies new species of microbes that other tools miss entirely

Created by Danish research unit COPSAC and tested on microbiome data from CHILD poop samples

Zachariasen T et al. Nat Commun 15, 5734 (2024).

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