

Researchers find fecal marker could help diagnose early signs of chronic gut conditions

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Dr. Emilie Viennois, assistant professor in the Institute for Biomedical Sciences at Georgia State University. Credit: Georgia State University

Small molecules found in fecal matter could provide clues to the early inflammation found in chronic gut conditions, such as intestinal bowel disease (IBD), and serve as new biomarkers for diagnosis, according to a study led by the Institute for Biomedical Sciences at Georgia State

University.

The researchers found that fecal miRNA, small nucleic acid sequences, could be used as a tool to assess the healthiness of gut microbiota, the microorganisms living in our [gastrointestinal tract](#), and provide early clues to intestinal inflammation in mice.

Studies have shown that some microbiotas can play a role in the development of intestinal inflammation. Since disruption of the symbiosis between the microbiota and the intestine is associated with various inflammatory diseases, such as IBD and [metabolic syndrome](#), it is essential to identify new biomarkers of microbiota healthiness. The findings, published in the journal *Theranostics*, are some of the first to show connections between fecal miRNAs and [gut microbiota](#). Earlier studies to find biomarkers for IBD or inflammation have mostly been done from tissue and blood.

"We found that miRNA from feces are indicative of inflammation level as well as microbiota function," said Dr. Emilie Viennois, first author of the study and assistant professor in the Institute for Biomedical Sciences. "It can indeed indicate if the microbiota is more prone to induce inflammation or is more protective against inflammation, and it could also determine the ability of patients to respond to therapeutics."

The researchers used germ-free mice, or animals that have no microorganisms living in their bodies, and colonized them with various microbiotas. Mice with microbiotas that were associated with the development of [intestinal inflammation](#) had distinctly altered fecal miRNA profiles compared to mice that received a "healthy" microbiota.

Next, Viennois plans to study human feces samples, which are relatively easy to obtain because clinicians routinely collect feces specimens from patients to test for gastrointestinal conditions.

"Further study will need to be done in humans, but we think that fecal miRNA can also be a way to indicate the status of the [microbiota](#) in IBD patients," Viennois said. "We know that some microbiotas are more prone to induce inflammation than others, and using miRNA as a tool to determine that would be extremely useful."

More information: Emilie Viennois et al. Host-derived fecal microRNAs can indicate gut microbiota healthiness and ability to induce inflammation, *Theranostics* (2019). [DOI: 10.7150/thno.35282](https://doi.org/10.7150/thno.35282)

Provided by Georgia State University

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