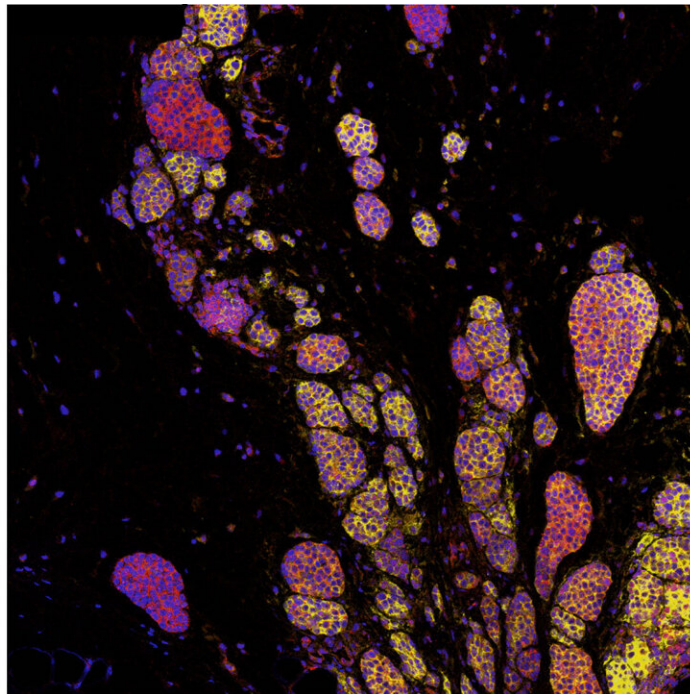


Fecal transplants show promise in improving melanoma treatment

July 7 2023, by Amanda Taccone



This image, entitled 'The Myth of Fingerprints', depicts a melanoma tumor sample of a patient who responded to FMT plus immunotherapy, imaged using CyTOF-IMC (Time-of-Flight Imaging Mass Cytometry) on the Hyperion platform. Credit: Jamie Magrill (Primary Artist), LeeAnn Ramsay, Saman Maleki, Bertrand Routy, and Ian Watson, with assistance from Yuhong Wei and the Goodman Cancer Institute SCIMAP Core. Credit: *Nature Medicine*.

In a world-first clinical trial published in the journal *Nature Medicine*, a

multi-center study from Lawson Health Research Institute, the Centre hospitalier de l'Université de Montréal (CHUM) and the Jewish General Hospital (JGH) has found fecal microbiota transplants (FMT) from healthy donors are safe and show promise in improving response to immunotherapy in patients with advanced melanoma.

Immunotherapy drugs stimulate a person's immune system to attack and destroy cancer. While they can significantly improve survival outcomes in those with melanoma, they are only effective in 40 to 50 percent of patients. Preliminary research has suggested that the [human microbiome](#)—the diverse collection of microbes in our body—may play a role in whether or not a patient responds.

"In this study, we aimed to improve melanoma patients' response to immunotherapy by improving the health of their microbiome through [fecal transplants](#)," says Dr. John Lenehan, Medical Oncologist at London Health Sciences Center's (LHSC) London Regional Cancer Program (LRCP), Associate Scientist at Lawson and Associate Professor in the Department of Oncology at Western University's Schulich School of Medicine & Dentistry.

A fecal transplant involves collecting stool from a healthy donor, screening and preparing it in a lab, and transplanting it to the patient. The goal is to transplant the donor's microbiome so that healthy bacteria will prosper in the patient's gut.

"The connection between the microbiome, the immune system and [cancer treatment](#) is a growing field in science," explains Dr. Saman Maleki, Scientist at Lawson and LHSC's LRCP, Assistant Professor in Schulich Medicine's Departments of Oncology, Pathology and Laboratory Medicine, and Medical Biophysics, and senior investigator on the study. "This study aimed to harness microbes to improve outcomes for patients with melanoma."

The phase I trial included 20 melanoma patients recruited from LHSC, CHUM and Jewish General Hospital. Patients were administered approximately 40 fecal transplant capsules orally during a single session, one week before they started immunotherapy treatment.



Dr. Saman Maleki and Dr. John Lenehan discuss the results of their recent study on fecal transplants for advanced melanoma patients. Credit: Lawson Health Research Institute

The study found that combining fecal transplants with immunotherapy is safe for patients—which is the primary objective of a phase I trial (also called 'safety trials'). The study also found 65 percent of patients who retained the donors' microbiome had a clinical response to the combination treatment. Five patients experienced adverse events sometimes associated with immunotherapy and had their treatment

discontinued.

"We have reached a plateau in treating melanoma with immunotherapy, but the microbiome has the potential to be a paradigm shift," says Dr. Bertrand Routy, Oncologist and Director of CHUM's Microbiome Center. "This study puts Canada at the forefront of microbiome research by showing we can safely improve patients' response to immunotherapy through fecal transplants."

"These exciting results add to a rapidly growing list of publications suggesting that targeting the microbiome may provide a major advance in the use of immunotherapy for our patients with cancer," adds Dr. Wilson H. Miller Jr. of the JGH and Professor in the Departments of Medicine and Oncology at McGill University.

The study is unique due to its administration of fecal transplants (from healthy donors) in capsule form to cancer patients—a technique pioneered in London by Dr. Michael Silverman, Lawson Scientist, Chair of Infectious Diseases at Schulich Medicine and Medical Director of the Infectious Disease Care Program at St. Joseph's Health Care London.

"Our group has been doing fecal transplants for 20 years, initially finding success treating *C. difficile* infections. This has enabled us to refine our methods and provide an exceptionally high rate of the donor microbes surviving in the recipient's gut with just a single dose," says Dr. Silverman. "Our data suggests at least some of the success we are seeing in melanoma patients is related to the efficacy of the capsules."

The team has already started a larger phase II trial involving centers in Ontario and Quebec. Lawson researchers are also studying the potential of fecal transplants in the treatment of other cancers, including renal cell carcinoma, pancreatic cancer and lung cancer, as well as HIV and rheumatoid arthritis.

More information: Bertrand Routy et al, Fecal microbiota transplantation plus anti-PD-1 immunotherapy in advanced melanoma: a phase I trial, *Nature Medicine* (2023). [DOI: 10.1038/s41591-023-02453-x](https://doi.org/10.1038/s41591-023-02453-x)

Provided by Lawson Health Research Institute

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