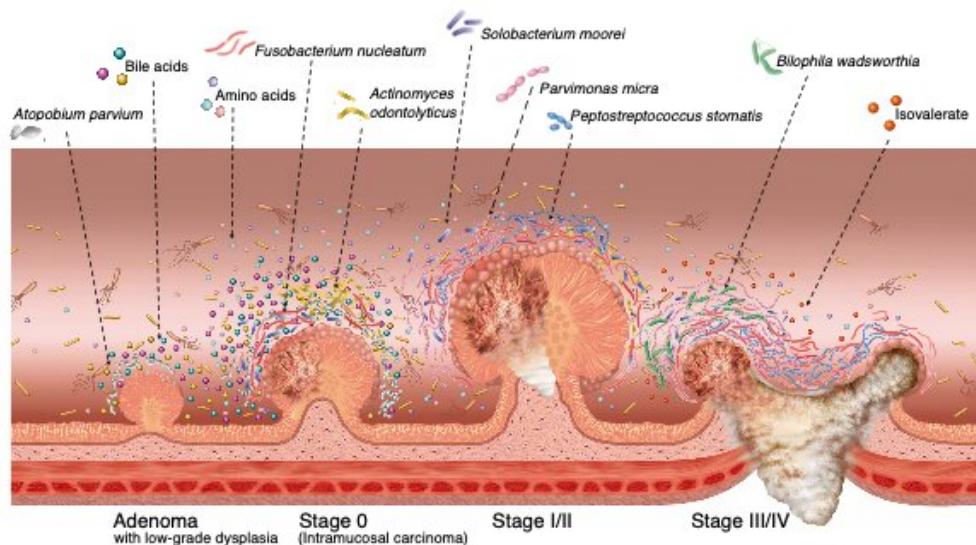


A gut feeling: Microbiome changes may mean early detection of colorectal cancer

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Microbial dynamics during multistep colorectal cancer progression. Graphic representation of major microbial and metabolomic alterations during multistep colorectal cancer progression. Credit: Osaka University

The gut has a population of organisms that live within in it, called the gut microbiome, which are linked to human health and disease. Recent studies have shown that assessing the genetic changes in fecal samples can accurately reflect the status of the gut microbiome, and may be

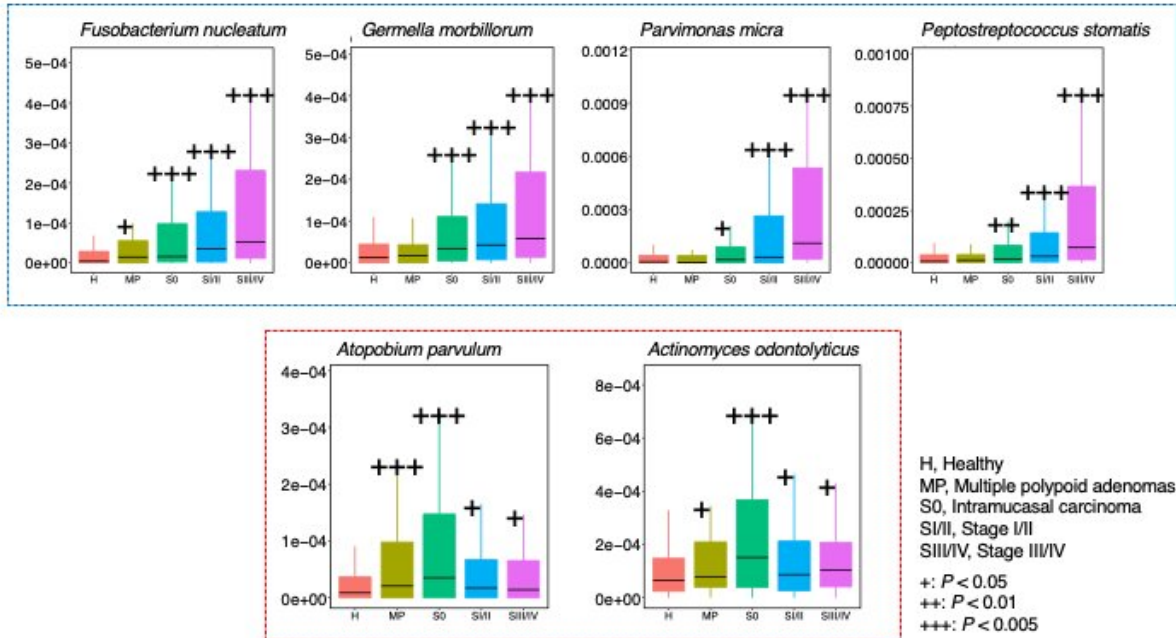
useful for the early diagnosis of diseases.

A group of researchers from Osaka University have recently reported increases in specific microbiome organisms that are linked to the malignancies associated with colorectal cancer, such as intramucosal carcinomas and polypoid adenomas. Their results, recently published in *Nature Medicine Letters*, reveal that these specific markers could help distinguish cases of colorectal cancer from healthy samples.

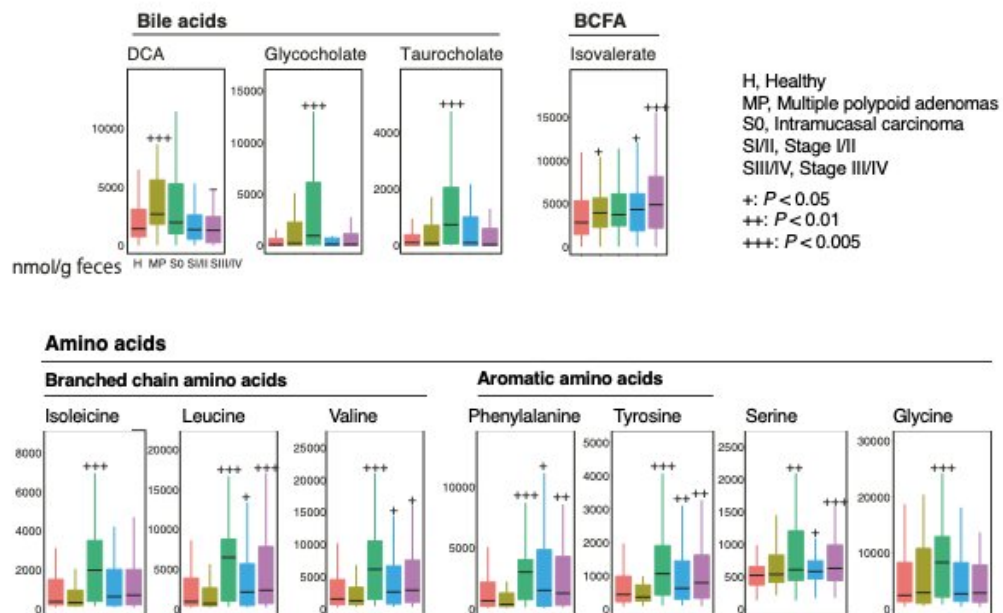
"We believe that colorectal cancer is fundamentally not only a genetic but also a microbial disease," says one of the study's corresponding authors, Shinichi Yachida. "Our results show that changes in the gut microbiome are present at the very early stages of colorectal cancer development, which could potentially provide vital diagnostic and causative clues for this disease."

Colorectal cancer, the third most prevalent cancer globally, is a relatively slow-moving disease—meaning it takes a long period of time before reaching its final, fatal stages. Therefore, early detection is crucial to ensuring effective treatment. The researchers used [fecal samples](#) from a little over 600 patients who underwent colonoscopy to assess the characteristics of their gut microbiota and how they relate to colorectal cancer.

"Our results revealed that colorectal cancer was linked to an increase in certain factors in the gut microbiome, as well as the presence of cancer-associated organisms," says the second corresponding author, Takuji Yamada. "Future studies will focus on the relationship between the [gut microbiome](#) and tumor characteristics in individual patients with colorectal cancer. This will help us understand the roles of the microbiome in the development of [colorectal cancer](#)."



Distinct stage-specific taxonomic signatures with cancer progression. Credit: Osaka University



Metabolome shift in very early stages of tumorigenesis. Credit: Osaka University

More information: Shinichi Yachida et al, Metagenomic and metabolomic analyses reveal distinct stage-specific phenotypes of the gut microbiota in colorectal cancer, *Nature Medicine* (2019). [DOI: 10.1038/s41591-019-0458-7](https://doi.org/10.1038/s41591-019-0458-7)

Provided by Osaka University

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