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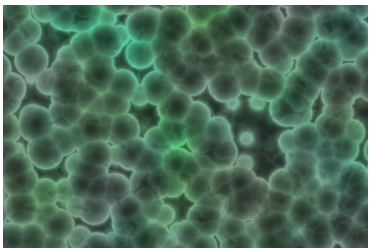
Colorectal Cancer Screening, But Aided by Bacteria

By Nicholas Staropoli — October 9, 2015



In the past I have been quite critical of the attention [1] given to the microbiome and its purported role in every aspect of human health. Advocates have claimed the microbiome consisting of the bacteria that live in us, and on us is responsible for everything from mood to cognition.

But much of this evidence confuses cause and effect, while other evidence relies on models that don't translate well to humans. However, this doesn't mean the microbiome doesn't have a place in human health, or medicine. But one place it does is in diagnostics.

At a recent conference of the American Society of Human Genetics [2], scientists presented data on how the diversity of the microbiome differs between people with colorectal cancer and people without these tumors. The researchers found that as tumor mutations piled up, the diversity of bacteria in the colon increased. Furthermore, some mutations were associated with an increase in abundance of very specific bacteria.

APC is a tumor suppressor gene that is commonly mutated (which renders it inactive) in colon cancers. These researchers found that patients with colon cancer characterized by a mutation of this gene have an increase in *Fusobacterium.* How might this help?

Restoring APC functionality has long been thought [3] to be an excellent mechanism for colon cancer treatment, however, it would only be effective in patients with the mutation. Instead of preforming an expensive genetic profile test, a cheap fecal test could identify if the patient had the mutation.

This is not the first study, though, to show the microbiome's utility in colorectal cancer. Several groups [4] are currently working on tests that use the changes in the microbiome that are associated with the early stages of colon cancer, and they've had great success. The tests probably won't replace the superior diagnostic ability of a colonoscopy, at least anytime soon. However, the tests may still serve some good.

Many people do not get screened for colon cancer because they fear having the procedure [5]. But a non-invasive feces test coupled with the other non-invasive tests, like the fecal occult blood test [6] could help identify issues, and help urge resistant patients to receive a colonoscopy. A microbiome-based test could also be useful in monitoring patients who aren't yet of age for a routine

colonoscopy.

Some researchers are trying to show that the microbiome *causes* colorectal cancer. This might not be too far fetched, but is still far off from being conclusive [7]. However, for these tests and relationships to be useful in colorectal cancer diagnostics and treatments, a causative role for the microbiome need not be established. What matters is that the changes are predictable once the tumor starts growing.
