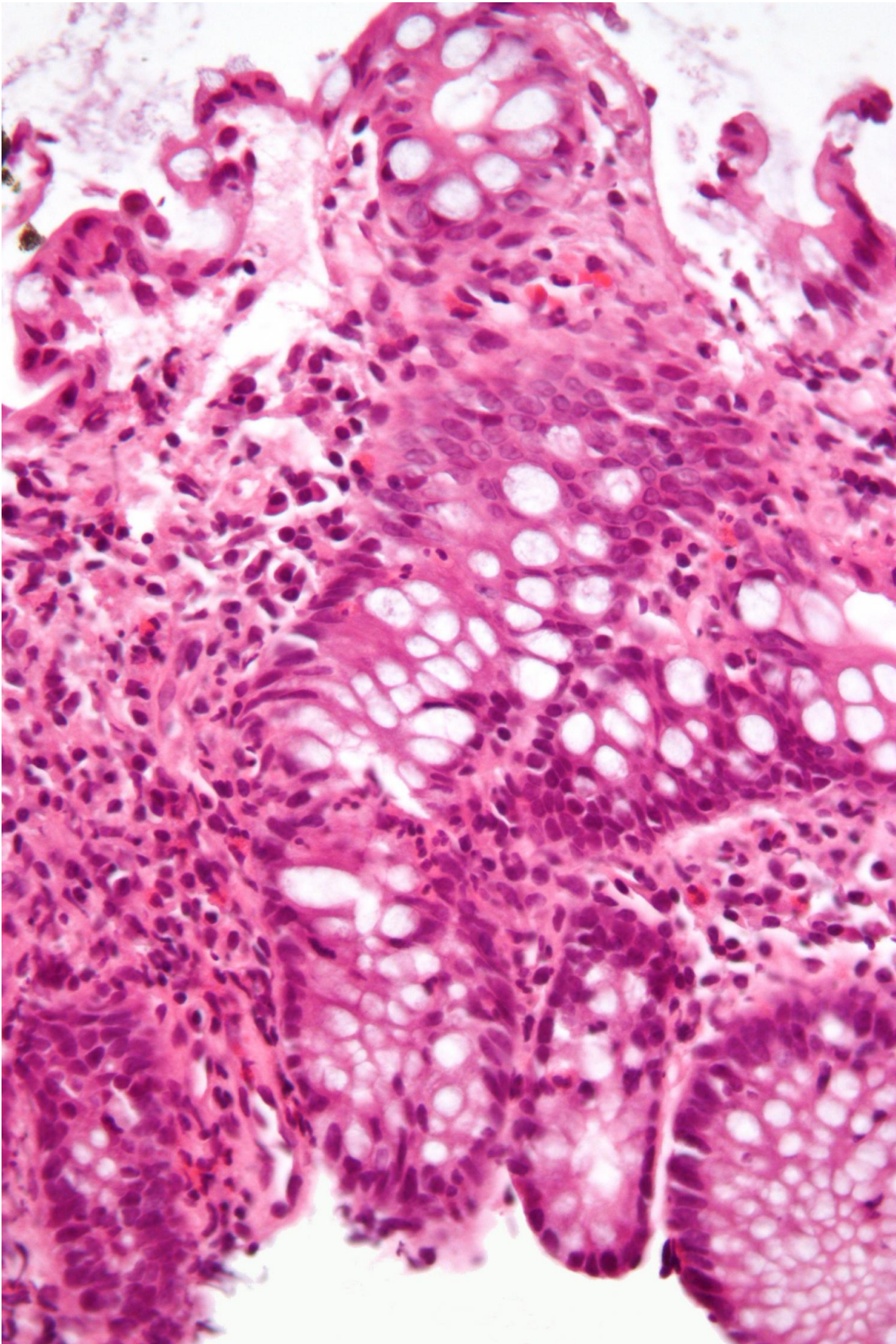


# **Specific bacterium in the gut linked to irritable bowel syndrome**

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Micrograph showing inflammation of the large bowel in a case of inflammatory bowel disease. Colonic biopsy. Credit: Wikipedia/CC BY-SA 3.0

Researchers at the University of Gothenburg have detected a connection between *Brachyspira*, a genus of bacteria in the intestines, and IBS—especially the form that causes diarrhea. Although the discovery needs confirmation in larger studies, there is hope that it might lead to new remedies for many people with irritable bowel syndrome.

The pathogenic bacterial genus, *Brachyspira*, is not usually present in human gut flora. A new study links the [bacterium](#) to IBS, particularly the form with diarrhea, and shows that the bacterium hides under the mucus layer protecting the intestinal surface from fecal bacteria.

## **Attached to intestinal cells**

To detect *Brachyspira*, analyses of fecal samples—which are routinely used for studying the gut flora—were insufficient. Instead, the scientists analyzed bacterial proteins in mucus from biopsies taken from the intestine.

"Unlike most other gut bacteria, *Brachyspira* is in direct contact with the cells and covers their surface. I was immensely surprised when we kept finding *Brachyspira* in more and more IBS patients, but not in healthy individuals," says Karolina Sjöberg Jabbar, who gained her doctorate at Sahlgrenska Academy, University of Gothenburg, and is the first author of the article.

## **Results inspire hope**

Globally, between 5 and 10 percent of the [adult population](#) have symptoms compatible with IBS (irritable bowel syndrome). The condition causes abdominal pain and diarrhea, constipation, or alternating bouts of diarrhea and constipation. People with mild forms of IBS can often live a fairly normal life, but if the symptoms are more pronounced it may involve a severe deterioration in quality of life.

"Many questions remain to be answered, but we are hopeful that we might have found a treatable cause of IBS in at least some patients," says Karolina Sjöberg Jabbar.

## **Bacterium found in 19 out of 62**

The study was based on colonic tissue samples (biopsies) from 62 patients with IBS and 31 healthy volunteers (controls). Nineteen of the 62 IBS patients (31 percent) proved to have *Brachyspira* in their gut, but the bacterium was not found in any samples from the healthy volunteers. *Brachyspira* was particularly common in IBS patients with diarrhea.

"The study suggests that the bacterium may be found in about a third of individuals with IBS. We want to see whether this can be confirmed in a larger study, and we're also going to investigate whether, and how, *Brachyspira* causes symptoms in IBS. Our findings may open up completely new opportunities for treating and perhaps even curing some IBS patients, especially those who have diarrhea," says Magnus Simrén, Professor of Gastroenterology at Sahlgrenska Academy, University of Gothenburg, and Senior Consultant at Sahlgrenska University Hospital.

## **Several possible therapies**

In a [pilot study](#) that involved treating IBS patients with *Brachyspira* with antibiotics, the researchers did not succeed in eradicating the bacterium.

"Brachyspira seemed to be taking refuge inside the intestinal goblet cells, which secrete mucus. This appears to be a previously unknown way for bacteria to survive antibiotics, which could hopefully improve our understanding of other infections that are difficult to treat," Sjöberg Jabbar says.

However, if the association between Brachyspira and IBS symptoms can be confirmed in more extensive studies, other antibiotic regimens, as well as probiotics, may become possible treatments in the future. Since the study shows that patients with the bacterium have a gut inflammation resembling an allergic reaction, allergy medications or dietary changes may be other potential treatment options. The researchers at the University of Gothenburg plan to investigate this in further studies.

"This is another good example of the importance of free, independent basic research that, in cooperation with healthcare, results in unexpected and important discoveries that may be beneficial to many patients. All made without the primary purpose of the study being to look for Brachyspira," says Professor Gunnar C Hansson, who is a world leading authority in research on the protective mucus layer in the intestines.

The study is published in the journal *Gut*.

**More information:** Jabbar KS et al, Association between Brachyspira and irritable bowel syndrome with diarrhoea, *Gut* Published Online First: 11 November 2020. [DOI: 10.1136/gutjnl-2020-321466](https://doi.org/10.1136/gutjnl-2020-321466)

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