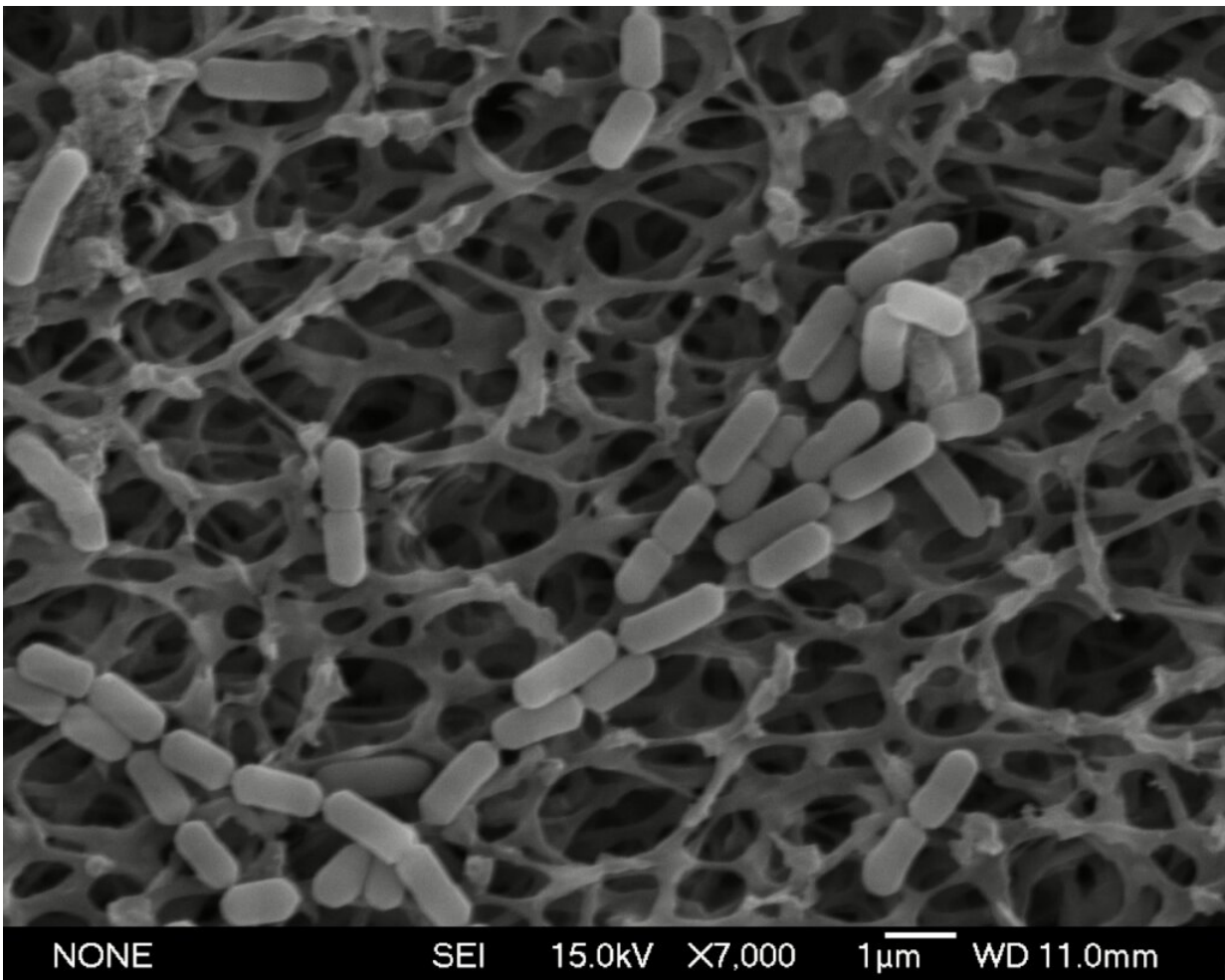


A tale of probiotics and how to help your own gut microbiome

March 29 2023



Lactobacillus casei, a bacterium that is often used to ferment cheese and yoghurt, as seen through an electron microscope. Credit: University of North Carolina at Chapel Hill School of Medicine

Bacteria have thousands of genes and functions that we, the human host, do not have. For instance, bacteria can help us digest fiber, provide support to our immune systems, and absorb important nutrients. But reaping the benefits of "good bacteria" is easier said than done.

At the moment, there are as many types of probiotics on the shelves as there are people on the planet. Having so many options at our disposal makes it difficult for the average consumer to know which ones are "the best" for our own bodies or ailments.

Andrea Azcarate-Peril, Ph.D., is trying to understand how to better prescribe probiotics based on our individual microbiomes—or the collection of genomes from all microbes that naturally live inside of us.

"Probiotics have been around for a very, very long time," said Azcarate-Peril, who is an associate professor of medicine and nutrition in the School of Medicine at UNC. "We've studied them for decades. The problem is that some people will take probiotics, and they will do these miraculous things for them. But that doesn't work for everyone."

More FDA regulations on probiotics are necessary to ensure that consumers get what they pay for—live active [bacteria](#) in their probiotics.

Azcarate-Peril says that if you want to start boosting your [microbiome](#) more effectively and reliably, rotate your probiotics and consume a variety of fermented foods such as kimchi, kombucha, kefir, yogurt, and cheeses.

"Rotate the probiotics," said Azcarate-Peril, who is also a member of the Center for Gastrointestinal Biology and Disease. "You don't need to marry to one [probiotic](#). And most importantly, eat a lot of fermented foods. If you can tolerate lactose, that's what you want. You want to have real food that has plenty of non-pathogenic bacteria."

What she says next may cause you to re-think your next trip to your nearest fast-food chain.

Let's say you're making your own burger at home. You form the beef patty, wash, and cut up a few pieces of tomato and lettuce. Even after giving it a good rinse, [fresh vegetables](#) still have a healthy number of bacteria on it—enough to re-seed your microbiome.

If you go and get the same thing from a fast-food chain, you are likely missing out on those healthy bacteria because of the food preparation process.

"From the origin of the raw materials, how the food is produced, and with added preservatives to make them last longer" said Azcarate-Peril. "This is understandably because they don't want to make someone sick with a food-borne disease." But this process also limits the intake of foods that feed a microbiome to keep it balanced.

Azcarate-Peril is also director of the UNC Microbiome Core, which provides UNC-Chapel Hill's research community with the facilities and expertise to characterize complex microbial communities and microbial interactions. The core has a number of projects going on at the moment.

Probiotics and cognitive decline

Our brains experience three stages of cognitive aging: successful aging, which involves no loss of mental function; normal [cognitive decline](#), which includes occasional forgetfulness or loss of things; and dementia or Alzheimer's disease.

There is a multi-year window in which one may be able to delay cognitive decline before normal cognitive aging and dementia set in. Azcarate-Peril and John Gunstad, Ph.D., of Kent State University,

conducted a [randomized clinical trial](#) in middle-aged and [older adults](#) to see if there was a correlation between probiotics and mild cognitive impairment.

In their study, published in *Clinical Nutrition*, they found that patients who were given *Lactobacillus rhamnosus* had a decrease in the relative abundance of the *Prevotella* and *Dehalobacterium* bacterium, which coincided with an improved cognitive score. In light of this new correlation, the researchers are trying to determine if *Prevotella* and *Dehalobacterium* are inherently "good" or "bad" for cognition. As for right now, they cannot say if the bacterium causes anything.

"If we are able to modulate the [gut microbiota](#), during that window of opportunity, maybe we can delay conditions such as dementia or Alzheimer's," said Azcarate-Peril. "But we will have to see."

Stem cells, organoids and intestinal bacterial communities

The only organ that can not be transplanted from one body to another is the intestine.

Since [fecal samples](#) are simple to collect and tests are non-invasive, many studies use them to study the gut microbiome. Fecal bacteria, on the other hand, are frequently transitory and just move through the intestines without taking hold. This may not be entirely representative of the bacteria that lives in the [small intestine](#), which represents twenty-two feet of intestinal wall that bacteria can attach to.

Azcarate-Peril is in collaboration with Scott Magness, Ph.D., an associate professor in the UNC/NCSU Joint Department of Biomedical Engineering and in the UNC Department of Cell Biology and

Physiology, to better study intestinal tissues and the microbiome with a little bit of bioengineering. Using a small piece of donated intestinal tissue, Magness is able to collect [stem cells](#) and grow organoids, while Azcarate-Peril is able to collect the microbes from the intestine.

"Now we can study what's in there and what is happening in the small intestine," said Azcarate-Peril. "It's super interesting, because now we have enough donors, and we can start making some generalizations. And this is super exciting, because there are only a few studies on the microbiome of the small intestine."

Overall, Azcarate-Peril says that if your tummy is happy, you're happy. If your tummy is not happy, you're not happy.

More information: Mashaal R. Aljumaah et al, The gut microbiome, mild cognitive impairment, and probiotics: A randomized clinical trial in middle-aged and older adults, *Clinical Nutrition* (2022). [DOI: 10.1016/j.clnu.2022.09.012](#)

Provided by University of North Carolina at Chapel Hill School of Medicine

Citation: A tale of probiotics and how to help your own gut microbiome (2023, March 29) retrieved 25 April 2024 from <https://medicalxpress.com/news/2023-03-tale-probiotics-gut-microbiome.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.