

Persistence of the massive microbiome myth

By now, most people who follow science and health news know of the importance of the bacterial companions that live in our guts and their importance for our metabolisms and disease. It's likely we've also heard the estimate of the vast magnitude of our own microbial populations: they outnumber the cells in our body by ten to one.

[That estimate is as old and potentially false as the idea that 'humans only use 10 percent of their brains,' writes Peter Andrey Smith at the Boston Globe.](#) His research shows the idea originated from a 1972 paper by microbiologist Thomas Luckey who made his count using cells counted in a gram of human feces.

But interestingly, the old and famous figure still resides somewhere in the range of estimates calculated using more modern methods NIH researcher [Judah Rosner says](#):

Recent estimates, he pointed out, suggest the human gut contains between 30 trillion and 400 trillion microorganisms, whereas the human body has an estimated 37 trillion cells—with a considerable range that goes from 5 to 724 trillion. Based on these approximations, the human body could have nearly the same number of cells as microbes or, at the more extreme end, nonhuman cells might outnumber our own almost 100 to 1.

That is a really wide range, two orders of magnitude. And, it's likely that there would be wildly individual variation as people would have a range of cells in their bodies and a further range in their microbiome. [Other researchers Smith contacted seemed to focus on a three to one ratio](#), although as NYU's Martin Blaser pointed out, more modern studies need to be done.

But the persistence and virulence of this factoid begs the question: How do we get these ideas in the first place and why do they persist for so long? Even [other scientists have been reported using the figure](#) over the last decades. Maybe it's just the startling incongruity of the idea that we are far less 'human' than we thought. That parallels other 'false facts' like the 10 percent brain function idea or, in a harmful case, the idea that vaccines could cause disease.

At least the ten to one microbiome factoid is innocuous (and sort of correct if you use the more modern estimate range), says Smith, and it proves the right point:

Perhaps the crude estimate endures because it serves the practical purpose of astonishing those who hear it, in the same way that bogus Martian canals inspired a greater curiosity about the solar system, or the myth that all humans only access 10 percent of their brains might foster a greater appreciation for neuroscience. Rather than trumpet how great we are, in this case, the insistence is on being outnumbered, as if we're not as human as, maybe, we are. After all these years, we've been won over by the microbial perspective.

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Additional Resources:

- [How brushing your teeth affects the microbiome of the placenta and infant](#), Genetic Literacy Project
- [Developing new antibiotics from human microbiome](#), Economist
- [What can our microbiomes tell us about ourselves?](#) National Geographic