

LIVING

We need to stop sanitizing everything and let bacteria back in our lives

By Joselin Linder

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Dr. Jack Gilbert wants to make our hospitals dirty.

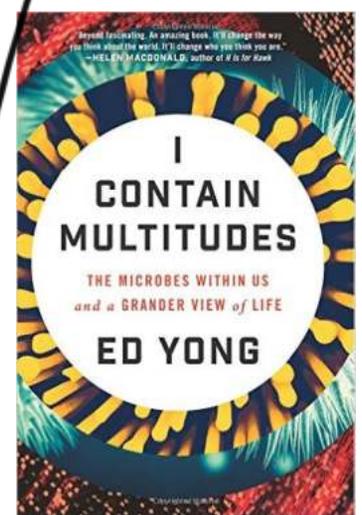
His idea runs counter to hundreds of years of scientific practice. Since a surgeon named Joseph Lister became the first to use antiseptic techniques in 1867 and save thousands of lives, modern medicine has worked tirelessly to create sterile medical environments — free of micro-organisms.

It all changed when Dr. Gilbert, associate director of the Institute for Genomic and Systems Biology at Argonne National Laboratory, began studying dolphins in 2014. He noticed that the animals were much healthier the “dirtier” the aquarium water was.

“We saw the benefit in increasing the microbial diversity of the home,” explained Gilbert. According to Dr. Gilbert, the lack of a rich microbial ecosystem, especially in our hospitals, might be causing more harm than good, leading to drug resistant strains of powerful superbugs and infection-causing viruses.

Science writer Ed Yong agrees with Dr. Gilbert, featuring him in his book, “**I Contain Multitudes**,” which tries to change our minds about bacteria. Yong points out that “there are more bacteria in your gut than there are stars in our galaxy,” and of these fewer than 100 species of bacteria compromise our health. The rest, which coexist in and among us, aren’t just harmless — they protect us and make us who we are.

Every square inch of space contains billions of microbes— even seemingly desolate landscapes of Arctic ice or Saharan sand. Before humans, microbes were the only stuff of life on Earth.



Microbes, a microorganism almost always invisible to the naked eye, have spent 90 percent more time here than we have, invisibly evolving for millions of years. Instead of evolving alongside them, we joined forces with them in what scientists call “co-development.” We cannot live without the microbes we host.

Microbes not only impact the shape of many of our organs, they replace dying and damaged cells and help our bodies absorb and store nutrients and fat. Plants, animals and humans would die without these lifelong microbial hitchhikers.

Some animals begin developing with microbes from inception. Humans first make contact with theirs in the birth canal. From that moment forward, microbes help bolster our immune systems, helping our bodies learn to live with viral diseases that enter our bloodstream.

‘There are more bacteria in your gut than there are stars in our galaxy.’

- Ed Yong, science writer, author of 'I Contain Multitudes'

On its own, human milk is filled with a unique substance that for some reason, babies can't digest without the help of the delicate microbiome they develop in their guts.

Pets in the household alter microbiomes even further, for both better and worse — although studies have shown that dogs, who come with their own set of allergy-suppressing microbes, are the most beneficial to a household's microbial health, helping to strengthen the immune systems of its children.

In some cases, microbes are simultaneous deadly and healing. C. diff, an infectious illness caused by an imbalance of otherwise healthy bacteria attacking the lining of the small and large intestines, can cause death. The condition, unless treated early, will eat through the lining of the digestive tract.

Recently, a cure with a success rate of 94 percent during its test phase was found in a very unlikely place: the toilet. The treatment? A fecal transplant, where healthy donor stool is placed inside the gastrointestinal tract of C. diff sufferers to reestablish a healthy balance of bacteria in the gut. It now comes in pill form.

A trend that has passed less muster in the scientific community is the eating of live-culture yogurts and consuming probiotics as a way to balance our own microbiomes. Studies are showing simply consuming healthy bacteria isn't the answer. The goal can't just be adding microbes, it has to be finding a way to nurture and sustain them.

One of the earliest optical microscopes made for Joseph Jackson Lister, father of Joseph Lister (L), and a microscope that may be used today.

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In 2008, a group of villagers believed to have spent 11,000 years in isolation, were spotted in a remote part of the Amazon rainforest. In 2015, scientists discovered that thousands of years of seclusion had left them with the most diverse microbiomes they had ever seen. Scientists concluded their microbial diversity was further proof that the battles waged against germs in the industrialized world had worked a little too well. Those of us living in modern cities, towns and villages had destroyed so much of the healthy microscopic life that belonged in our bodies, it had rendered our own microbiomes comparatively deficient.

This isn't to say that pioneers of microbial research like Joseph Lister were wrong to employ hygienic practices. Incalculable lives have been saved thanks to antiseptics and antibiotics treatments.

However, the overuse of antibiotics and antiseptic cleaners is impacting our ability to maintain a balance of healthy microbes in our bodies and environments. Studies continue to prove that harmful species will exploit areas with too few good bacteria to fight back. Sterility should not be our goal.

As Yong writes, “A diverse ecosystem is better than an impoverished one.”

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