

PLOW TO PLATE FILM SERIES: THE INVISIBLE EXTINCTION

October 15, 2024

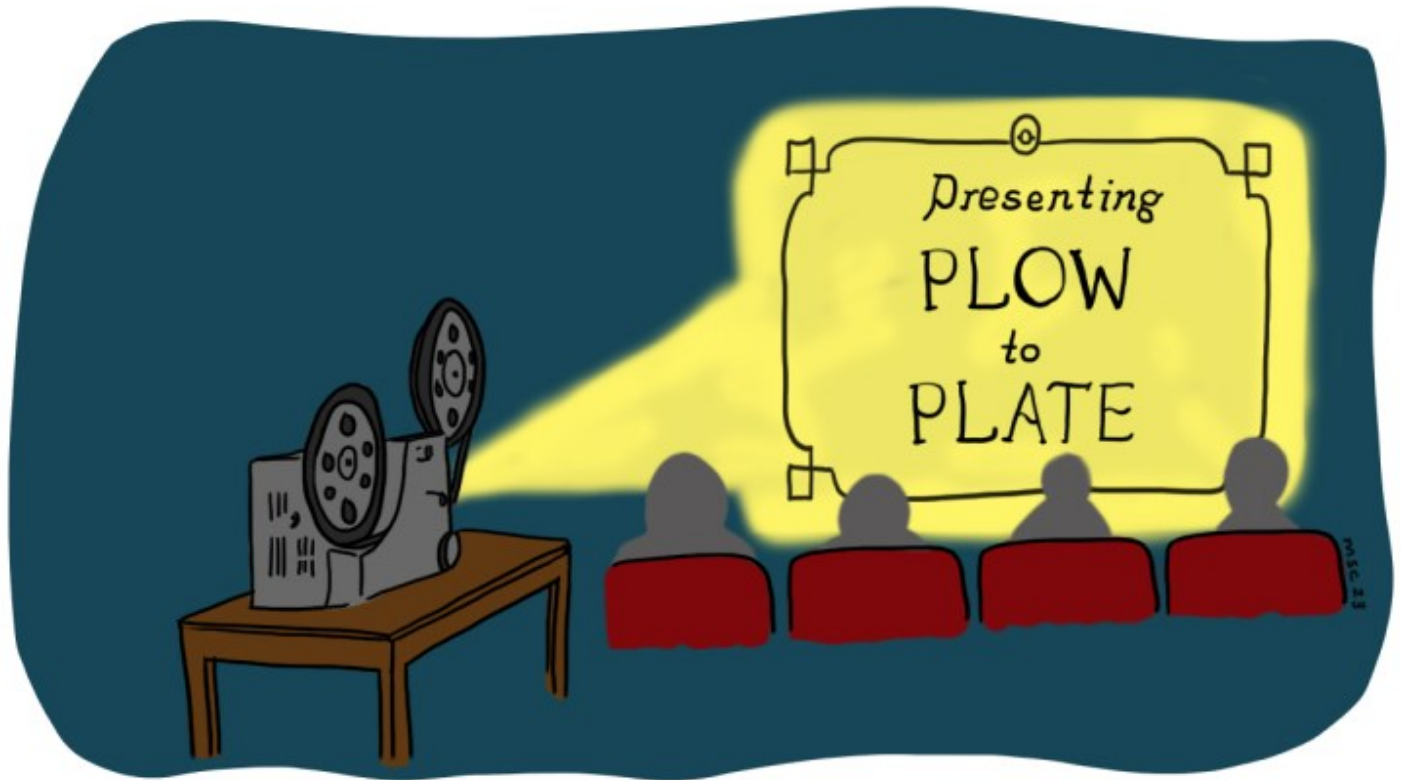


Illustration by Maggie Carson

By Adam Rabiner

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The Invisible Extinction is a documentary about the germs that live inside us, the tiny organic microbes, bacteria, viruses and fungi that constitute our microbiome. Though germs have a bad reputation due to their association with disease, a more recent “scientific revolution” has discovered that most of this stew is crucial to bodily functions such as digestion, metabolism, vitamin production, the immune system, response to pain and mood.

However, in recent years up to 50% of our internal biodiversity has disappeared. And though this change is little known and unheralded, some believe it is as dire as the ongoing climate disaster. In the 2014 book, *Missing Microbes: How the Overuse of Antibiotics Is Fueling Our Modern Plagues*, microbiologist Martin Blaser sounds the alarm by

associating the overuse of antibiotics with rising levels of obesity, asthma, diabetes, food allergies, celiac, autism and other conditions.

While there may be other reasons for the rise of these conditions than increased use of penicillin, antibiotics and other medicines—including increased hygiene, chlorinated water, processed foods, environmental chemicals, pasteurization, medical treatments such as chemotherapy and even the increased use of cesarean sections which eliminate the need for newborns to pass through the vaginal canal—diminished internal biodiversity has caught researchers' attention.

Other scientists featured in this film have built upon Blaser's hypothesis with their own research and clinical studies. Most prominently featured is Blaser's wife, Maria Gloria Dominguez-Bello. Dominguez-Bello, who was born and raised in Caracas, Venezuela, returns to the Amazon to collect stool samples from the inhabitants of jungle villages, such as Kanarakuni, whose traditional lifestyles and lack of exposure to the modern destroyers of our internal ecology has blessed them with rich biomes teeming with microbial diversity as well as extremely low incidence of chronic disease. For many years, Dominguez-Bello was single-handedly responsible for the storage and preservation of these stool samples containing trillions of microbes. However, as the scientific community came to realize the precarious situation of her priceless collection and prize its value, she received funding to permanently store her samples in a microbiota vault (more informally known as the "poop vault"), a repository for the future health of humanity, modeled on seed vaults.

Just as seed vaults preserve and protect plant biodiversity that can enhance food production as climate conditions change, the hope is that these rich stool samples may someday provide remedies to chronic diseases. In fact, stool-based medical procedures have already begun. Fecal Microbiota Transplantation (FMT), for example, is a treatment by which a healthy person's feces are injected into the colon of a sick patient suffering from the drug-resistant gut pathogen *Clostridioides difficile* (*C. diff*) in order to restore gut balance.

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An Israeli study led by a pair of researchers, Eran Segal and Eran Elinav, investigated whether fecal capsules could pinpoint the actual microbiome bacteria and combination of foods that contribute to weight loss and normalize blood sugar levels. This work seeks to develop the next generation of targeted probiotics and has led to personalized diets for diabetics and an app used by two of Israel's largest HMOs. Ground-breaking research is also taking place in China, where Dr. You Xin is treating autistic children with a combination of diet, fecal pills and FMT, to promising results. Meanwhile back in New York City, Dominguez-Bello is conducting a study to determine if swathing newborn babies delivered by caesarian sections with maternal birth canal microbes leads to healthier biomes; elsewhere in the United States, doctors are attempting to discover if fecal capsules can combat obesity.

All this research has led to improvements in how and when to use antibiotics and new microbe therapies for Alzheimer's, bacterial vaginosis, kidney stones, Parkinson's, MS, cancer and even Covid. It has also led to a resurgence in popularity of certain probiotic foods and beverages, such as naturally fermented sauerkraut, kimchi, pickles, yogurt, kombucha, cheese and dietary supplements (many whose effectiveness has not been verified).

It is safe to say that Blaser's best-selling book, resulting podcasts and films like this have put a spotlight on the lowly microbes. Hopefully, this greater understanding and appreciation for the complex worlds within our bodies has helped shed their invisibility, halt their extinction, and even restore them to their prior glories.

The Invisible Extinction was screened on October 8. [Click here](#) for more information.

To be added to our mailing list for future screening announcements, please email a re-

quest to plowtoplate@gmail.com.

Adam Rabiner lives in Ditmas Park with his wife, Dina, and child, Ana.