



THINK GREEN



EAT GREEN

OUR GUT MICROBIOME

Should we be concerned with our gut health?

The answer is a resounding **YES**. It's important to bear in mind that our body contains *trillions* of microorganisms (microbes) and the majority live in our large intestine. These microbes (bacteria, fungi, protozoa, and viruses) are key to the functioning of every system in our body: they aid in digestion, regulate our immune system, and produce vitamin B12, to name just a few of their activities.

Interestingly, the microbiome was only widely recognized in the late 1990s.

Our gut health is a lot like the environment - **DIVERSITY is key**. Our gut biome functions best when it is full of many different types of bacteria. The path to a healthy gut biome is best managed by consuming a variety of whole foods.

Why is diversity in the gut biome important? Just as reducing the biodiversity of plant or animal species is to the detriment of our planet, we see a similar disadvantage in the reduction of the wide range of microbial species which have been part of traditional diets for thousands of years. In her book *Cultured: How Ancient Foods Can Feed Our Microbiome* (Penguin Random House, 2019), Katherine Harmon Courage explains that the globalization and industrialization of food is leading to a reduction of available food microbes. In an effort to streamline the "processing" of food, companies are restricting the variety of microbial strains used, thus eliminating essential food microbes from our nutrition landscape.

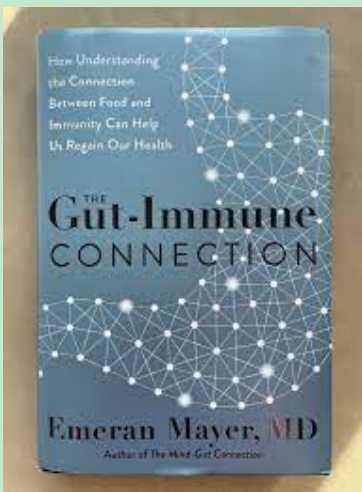
How do we develop a diverse gut biome? To



create a diverse gut biome, we need to develop diverse eating habits. This means buying whole food items (think “ingredients”) and then preparing and/or cooking them. It means eating fewer processed foods. It may mean reducing the amount of meat in your diet as some studies show that daily consumption of red meat increases the growth of unhealthy bacteria in the gut, as well as reducing healthy microbes.

A word about soil. We know that healthy food needs healthy soil. We know that microbial ecosystems living in soil and interacting with the root system of plants are key to the plant’s (and our!) health. Healthy soil teems with microorganisms.

**Soil Health Is
Human
Health**



In his book *The Gut-Immune Connection*, Emeran Mayer, MD describes a variety of lifestyle changes that have occurred in the past 75 years. These changes have all contributed to our deteriorating health, but none more than the rise in modern industrial-style agriculture.

Which came first: The Western Diet or Industrial Agriculture? Unfortunately, the evolution to monoculture methods of agriculture, supported by chemical fertilizers and pesticides, has resulted in depleted soils unable to transfer necessary nutrients to the plants that feed us. To eat a healthy diet of plants grown in healthy soils is a way of life *we must seek out*; it is no longer the “normal” American diet.

Prebiotics and Probiotics

How do we feed our microbiome? We have long known that fiber is good for us. What we may not have known is that fiber is probably the best means of supporting our “native” microbes. The human body cannot break down many types of fiber, and much of it ends up in our lower intestine. Helpful microbes there consume (and reap healthful benefits from) these fiber compounds, called **prebiotics**. Simply put, prebiotics are food for our microbes. The average American consumes only half of the 30 grams of fiber that the US government recommends, which in turn is a fraction of what a “traditional” (pre-industrial agriculture) diet included. It’s easy to see why many of our gut biomes are out of order. Remember, natural fiber comes only from plants, and foods that top the list include legumes (such as beans and peas), a variety of fruits (especially berries) and vegetables (the darker in color, the better), nuts, and seeds.

There’s another important reason for keeping those microbes happy: Our gut contains both “good” and “bad” bacteria. Keeping microbes well fed with fiber allows them to keep the bad (disease-developing) microbes in check. Feeding our gut plenty of high-fiber foods encourages microbes to grow and multiply, thus “crowding out” unhealthy bacteria.

Probiotics are live microorganisms introduced into our bodies with the intent of promoting good health, especially in our digestive system. The most common probiotic is lactobacillus, and is found in fermented foods. Foods containing lactobacillus probiotics include kefir, yogurt with live active cultures, pickled vegetables, tempeh, kombucha tea, kimchi, miso, and sauerkraut. It must be noted that not all fermented foods are probiotic. In order to be helpful, these microorganisms must be *live*. So they must make it through preparation, processing and digestion of food – and into our intestines - while remaining intact and *alive*. *Check labels for terms such as "live," "raw," or "unpasteurized."*

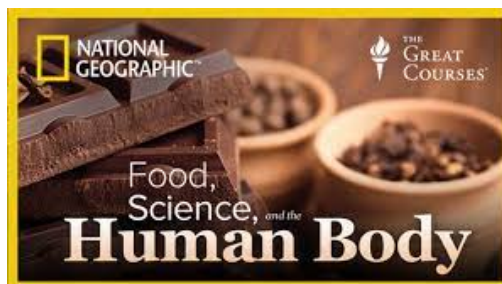
We can find yogurt brands touting “live active cultures,” but naturally fermented foods contain a far wider variety of bacteria and fungi. Microbe-driven pickling of vegetables has been around for thousands of years. Fresh-picked vegetables are crawling with fungi and bacteria from the soil; fermenting of vegetables was a way of controlling spoilage. We learned how to harness and control the rotting process, letting just enough microbial activity happen - totally changing the taste, but preserving the produce. Pickling of many types of vegetables, especially cabbage-into-sauerkraut, has been practiced by home preservers for centuries, as has kimchi-making in many Asian cultures.

Maybe fermented foods are not your thing? Then go for those high-fiber raspberries, *any* legume (beans, peas) , carrots, beets, dark green kale and spinach. A healthy and functioning gut biome needs fiber-filled, whole foods, an absence of highly processed foods, and less meat (there's no fiber in meat or dairy).

Diversity is essential for our food, our health, and our planet!



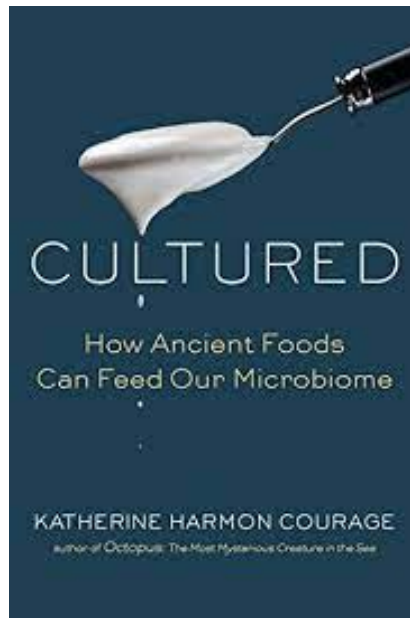
FILM RECOMMENDATION



In *The Gut Microbiome*, we learn how gut microbiota help us metabolize food and drugs, and defend us against pathogens. We learn that "we are what our microbes eat." *The Gut Microbiome* is a lecture-format episode of “Food, Science, and Human Health” series.



BOOK RECOMMENDATION



In *Cultured: How Ancient Food Can Feed Our Gut Microbiome*, science journalist Katherine Harmon Courage answers the question - what should we be feeding this all-important microbiome?

Available at Harford County Public Library

SOME GREEN THOUGHTS



"Microbiome research is revolutionizing our understanding of the human

body and the brain."

- Rob Knight, PhD, author of *Follow Your Gut* and director, Center for Microbiome Innovation, UC San Diego

"To ferment your own food is to lodge a small but eloquent protest - on behalf of the senses and the microbes - against the homogenization of flavors and food experiences now rolling like a great, undifferentiated lawn across the globe."

-Michael Pollan, author of *Cooked: A Natural History of Transformation*

"Every day we live and every meal we eat we influence the great microbial organ inside us - for better or for worse."

- Giulia Enders, author of *Gut: The Inside Story of Our Body's Most Underrated Organ*

"The taste for partial spoilage can become a passion; an embrace of the earthy side of life that expresses itself best in paradoxes."

- Harold McGee, chemistry and history of food science author

Havre de Grace Green Team, Ltd. | 408 N. Union Ave., Havre De Grace, MD 21078

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