Researchers are increasingly starting to recognize gut microbiota as one of your unappreciated "organs." [1] It may be even more apt to view your body as a “super organism” composed of symbiotic microorganisms.

Either way, there’s no denying the powerful influence these microorganisms have on both your physical and mental health. This is great news, since this places you in a distinct position of power over your health and well-being. As recently reported by the Institute of Science in Society: [2]

“The rapidly progressing study of the human microbiota is revealing that humans are not individual self-contained beings, but instead hugely complex super-organisms that blur the distinction between where ‘we’ end and ‘they’ begin.

The human microbiota consists of an estimated 100 trillion cells, at least 10 times the number of human cells, and new research is revealing how this symbiotic relationship determines human health and disease.”

Recent research suggests that many people are deficient in gut bacteria, making it a very important consideration if you’re not feeling in optimal shape, physically or psychologically.

In the study [3, 4] in question, a quarter of the participants were found to have 40 percent fewer gut bacteria than the average needed for good health. Obese participants were particularly at risk.

Your Body Viewed as a Symbiotic ‘Super Organism’

The trillions of bacteria cohabiting inside you are not restricted to your intestinal tract. They also colonize your skin – both on the outside and deeper beneath the surface layers – your mouth, saliva and more.

For example, six different tribes of beneficial bacteria have been found to reside in the crook of your elbow, where they moisturize your skin by processing raw fats.

The bacteria in your gut may be considered among the most important however, due to their wide-ranging and cascading health effects. It’s well-known that altering the balance of bacteria in your digestive tract can weaken your immune system, for example. And once your immune system is compromised, your body becomes far more vulnerable to all sorts of foreign invaders, inflammation, and disease.

Even the National Institutes of Health cites research showing that “variations in the composition of microbial communities may contribute to chronic health conditions, including diabetes, asthma, obesity, and digestive disorders.”

Bacteria Influence What Happens to Nutrients and Drugs Once Inside Your Body

Gut bacteria have also been found to influence the processing and utilization of dietary nutrients,[5, 6] they help protect against food borne disease,[7] and can even have a profound impact on drug efficacy. For instance, recent research claims chemotherapy drugs actually need certain gut bacteria in order to work! As reported by Science News:[8]

“Cancer patients may carry powerful weapons against tumors in their intestines. Two independent studies indicate that intestinal bacteria assist chemotherapy drugs in fighting off tumors.
In experiments using mice, antibiotics hampered the ability of two types of anticancer treatments to combat lymphoma and skin and colon tumors[9]... A separate study[10]... shows that a chemotherapy drug called cyclophosphamide causes bacteria in the gut to move into the lymph system. Once there, the bacteria trigger production of immune cells that then kill tumor cells...."

Bacteria have also been identified as major players in the distribution of your body fat, metabolism, and the regulation of your mood and memory. Mounting research actually shows that problems in your gut can directly impact your mental health, leading to issues like anxiety and depression. They also help educate your immune cells – telling them which pathogens to fight off and which ones to leave alone.

Psychobiotics – The Future of Psychiatry

Beneficial bacteria known as probiotics may be the answer we’re looking for to address the rampant rise of mental health problems such as depression. A recent article in Popular Science [11] addressed the rise of “psychobiotics” in psychiatric science, stating:

“[P]harmacologic compounds for psychiatric treatment are numerous and up to 20 percent of all Americans are taking some type of psychotropic medication totaling some $34 billion dollars annually.

While there have been calls for a reduction in use of these chemicals, primarily due to the fact that many are ineffective, there is a constant pressure from the public to have all their problems solved by a pill.

There is a different – and less costly – course to deal with stress and other psychological problems although until recently, there has been little to no attention paid to this option. The treatment does not involve an individual chemical but rather a plethora of them which act to reduce inflammation, calm stress and bring about a more pleasant mood... They are called quite simply, Psychobiotics.

... [A] psychobiotic is ‘a live organism that, when ingested in adequate amounts, produces a health benefit in patients suffering from psychiatric illness.’ These live organisms are comprised not only of probiotics but also other bacteria known to produce psychotropic signals such as serotonin and dopamine.”

According to an article published this past June in the journal Biological Psychiatry,[12] the authors suggest that even severe and chronic mental health problems, including post-traumatic stress disorder (PTSD), might be eliminated through the use of certain probiotics.

Two strains shown to have a calming influence, in part by dampening stress hormones, are Lactobacillus helveticus and Bifidobacterium longum. Others may have similar effects, although more research is needed to identify them.

“As a class of probiotic, these bacteria are capable of producing and delivering neuroactive substances such as gamma-aminobutyric acid and serotonin, which act on the brain-gut axis. Preclinical evaluation in rodents suggests that certain psychobiotics possess antidepressant or anxiolytic activity. Effects may be mediated via the vagus nerve, spinal cord, or neuroendocrine systems," the article states.[13]

Understanding of This ‘Forgotten Organ’ Is Rapidly Mounting

The Institute of Science in Society[14] mentions two major collaborative efforts that help deepen our
understanding of the human microbiome: the International Human Microbiome Consortium, and the US National Institute of Health’s Human Microbiome Project (HMP). To this, I would add a third, called The American Gut Project. American Gut builds on other projects, including the five-year long Human Microbiome Project that is coming to conclusion at the end of this year.

The aim of the Human Microbiome Project was to “characterize microbial communities found at multiple human body sites and to look for correlations between changes in the microbiome and human health.” So far, this data gathering has resulted in 190 scientific papers, along with a repository of resources that scientists can access to explore the relationships between human gut bacteria and disease.

The American Gut Project decided to take it a step further by allowing the American public to participate. (I published an invitation to join the project in December last year. Hopefully, some of you decided to join, as I did. If you didn’t, you can still sign up to participate on the Human Food Project’s website.[15]) All the gathered information from this project will be made public. It’s an extremely ambitious project seeking to identify the parameters for the ideal gut flora, and how diet affects it.

What’s particularly exciting about the American Gut Project is the fact that it will allow us to really evaluate and compare the effects of a very diverse conglomeration of lifestyles. Scientific studies almost always focus on carefully chosen groups of people who are studied for a specific purpose, typically to confirm or debunk a hypothesis. This project, on the other hand, will crack the lid open on the effects on gut flora of a myriad of lifestyle choices, by people of all ethnicities and ages.

According to Professor Rob Knight of CU-Boulder's BioFrontiers Institute:[16]

“A key aspect of the project is to understand how diet and lifestyle, whether by choice – like athletes or vegetarians – or by necessity, including those suffering from particular autoimmune diseases or who have food allergies, affect peoples’ microbial makeup.”

**Gut Microbes Linked to Rheumatoid Arthritis**

In related news, researchers have identified specific types of gut bacteria that correlate with the development of rheumatoid arthritis – a chronic autoimmune disease that affects about one percent of the American population. At least two million Americans have definite or classical rheumatoid arthritis. Most patients with rheumatoid arthritis have a progressive disability, and the annual cost of this disease in the US is estimated to be over $1 billion. According to the National Institutes of Health[17] (NIH), which recently revealed the results of the research:

“The finding suggests a potential role for the bacteria in this autoimmune disease... The gut microbiome has been linked to arthritis in animal studies. To see if these microbes might also be associated with rheumatoid arthritis in humans, Dr. Dan Littman of NYU School of Medicine led a team of researchers that examined DNA in 114 stool samples from both healthy people and those who had rheumatoid or psoriatic arthritis.”

The researchers found that the bacterium Prevotella copri was present in the intestinal microbiome of:

- 75 percent of those with new-onset, untreated rheumatoid arthritis
- 12 percent of those with chronic, treated rheumatoid arthritis
- 38 percent of people with psoriatic arthritis
- 21 percent of healthy controls
Increased levels of *Prevotella copri* was associated with lower levels of several different microbes known to have beneficial health effects. Interestingly, further DNA sequencing revealed unique *Prevotella* genes that specifically correlated with rheumatoid arthritis.

**A Novel Approach to Treat Rheumatoid Arthritis**

This isn't the first time a microorganism has been linked to the development of rheumatoid arthritis. The late Dr. Thomas McPherson Brown – a board certified rheumatologist – wrote the book *The Road Back*, published in 1988. The book outlined a novel treatment approach for RA based on Dr. Sabin's theory that rheumatoid arthritis was caused by a mycoplasma – a type of fungus. Dr. Brown worked with Dr. Albert Sabin at the Rockefeller Institute. As explained by The Road Back Foundation:[19]

"Brown isolated a bacteria-like agent from the joint fluid of an arthritic woman and speculated that it might be the infectious trigger for her disease. The bug in question, then generically classified as an L-form, was too small to identify precisely, but with the advent of electron microscopy it was shown to be a class of cell-wall-deficient organisms which scientists named mycoplasma, for watery fungus. Mycoplasma is ubiquitous and not at all easy to get rid of, but Brown found that it usually could be controlled by long-term, low-level doses of tetracycline."

I first became aware of Dr. Brown's protocol in 1989 when I saw him discussing it on an episode of ABC's 20/20. Dr. Brown's pioneering approach represents a far safer, less toxic alternative to many conventional regimens of today. Initially, I rigidly followed Dr. Brown's work with minimal modifications to his protocol. Since then, my application of Dr. Brown's protocol has changed rather significantly. I believe I was one of the first physicians to recommend the shift from using tetracycline to using Minocin instead. Most people who use his protocol now use Minocin.

In the 1990s, I also integrated dietary modifications to the protocol, which I believe can accelerate the response rate from about two years down to several months. I cannot emphasize strongly enough the importance of this aspect of the program. Still, the length of therapy can vary widely. In severe cases, it may take up to 30 months for patients to gain sustained improvement. Remission may take three to five years.

The dietary changes are absolutely an essential component of my RA protocol. Dr. Brown's original protocol was notorious for inducing a Herxheimer, or worsening of symptoms, before improvement was noted. This could last two to six months. Implementing my nutrition plan resulted in a lessening of that reaction in most cases.

A third new addition to the protocol is low-dose Naltrexone, which I would encourage anyone with RA to try. It is inexpensive and non-toxic and I have a number of physician reports documenting incredible efficacy in getting people off of all their dangerous arthritis meds.

When I first started using his protocol for patients in the late '80s, the common retort from other physicians was that there was "no scientific proof" that this treatment worked. Well, that is certainly not true today. A review of the bibliography will provide over 200 references in the peer-reviewed medical literature that support the application of Minocin in the use of rheumatic illnesses. In my experience, of the several thousand patients that I treated with my RA protocol, nearly 80 percent of people do remarkably better with this program. However, approximately five percent continue to worsen and require conventional agents, like methotrexate, to relieve their symptoms.
How to Optimize Your Gut Flora

As you can see, consistently reseeding your gut with healthy bacteria may be crucial for the prevention of virtually all disease, from colds to autoimmune disorders, to psychiatric disturbances and even cancer. In light of this, here are my recommendations for optimizing your gut bacteria.

Fermented foods are the best route to optimal digestive health, as long as you eat the traditionally made, unpasteurized versions. Healthy choices include lassi (an Indian yoghurt drink, traditionally enjoyed before dinner), fermented, grass-fed organic milk such as kefir, various pickled fermentations of cabbage, turnips, eggplant, cucumbers, onions, squash, and carrots, and natto (fermented soy).

Some of the beneficial bacteria found in fermented foods are also excellent chelators of heavy metals and pesticides, which will also have a beneficial health effect by reducing your toxic load.

Fermented vegetables, which are one of my new passions, are an excellent way to supply beneficial bacteria back into our gut. And, unlike some other fermented foods, they tend to be palatable, if not downright delicious, to most people. As an added bonus, they can also be a great source of vitamin K2 if you ferment your own using the proper starter culture.

Most high-quality probiotic supplements will only supply you with a fraction of the beneficial bacteria found in such homemade fermented veggies, so it’s your most economical route to optimal gut health as well. We recently had samples of high-quality fermented organic vegetables made with our specific starter culture tested, and a typical serving (about two to three ounces) contained not only 10 trillion beneficial bacteria, but it also had 500 mcg of vitamin K2, which we now know is a vital co-nutrient to both vitamin D and calcium.

Probiotic supplement. Although I’m not a major proponent of taking many supplements (as I believe the majority of your nutrients need to come from food), probiotics is an exception if you don’t eat fermented foods on a regular basis.

In addition to knowing what to add to your diet and lifestyle, it’s equally important to know what to avoid, and these include:

| Antibiotics, unless absolutely necessary (and when you do, make sure to reseed your gut with fermented foods and/or a probiotic supplement) |Conventionally-raised meats and other animal products, as CAFO animals are routinely fed low-dose antibiotics, plus genetically engineered grains, which have also been implicated in the destruction of gut flora | Processed foods (as the excessive sugars, along with otherwise “dead” nutrients, feed pathogenic bacteria) |
| Chlorinated and/or fluoridated water | Antibacterial soap | Agricultural chemicals, glyphosate (Roundup) in particular |

Sources and References


http://www.i-sis.org.uk/The_Forgotten_Organ_The_Human_Microbiota.php