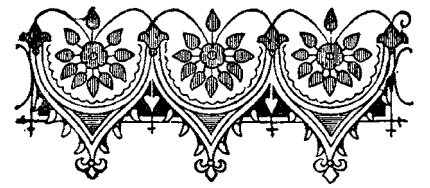


Health & Wellness



Your Intestinal Bacteria and Your Immune System —Strong Evidence for a Strong Connection

Warning: this article is all about poop – read at your own risk



Dr. Kate Thomsen and Silky

I recently had the privilege of being present at two very enlightening lectures by two very courageous pioneers in medicine. They were discussing the risks and health benefits of fecal transplants – yes, that’s right, receiving the poop of a donor to improve gastrointestinal and immune related health conditions. This is a concept that has evolved due to our new understanding that:

- Our intestinal bugs are communicating the state of the external world (our diet, lifestyle, stressors) to our immune system at a rapid rate
- Over the last 1,000 or more years, the composition of human intestinal bacteria delivering these messages has greatly decreased in quantity and diversity (seemingly to our detriment)
- The skyrocketing rate of chronic health conditions currently plaguing industrialized societies has been directly related to dysfunction in this intestinal bacterial – immune connection.

In 2007 The National Institutes of Health initiated the Human Microbiome Project (HMP) to enable the study of the microbial communities that live in and on our bodies and the roles they play in human health and disease. Appreciating that the typical healthy person is inhabited with trillions of microbes, it became apparent that we are no longer living in an era of “germ warfare” – where all germs/bacteria/microbes are considered harmful to human health. The HMP is trying to help us figure out the beneficial “balance” of microbes – especially in the intestines where the majority of the microbiome resides. We are symbiotic with this microbial community – we can’t live without each other. Some of the well-known benefits of this symbiosis include energy expenditure and nutrient production (affecting body weight),

vitamin production, and defense against pathogens.

Lifestyle factors such as C-section delivery, bottle feeding, over use of antibiotics, stress and the Standard American Diet (SAD) have challenged the quantity and diversity of our intestinal microbiome. Fiber is what the microbiome live on and a diet of highly processed food along with insufficient chewing and digestion have decreased the available fiber in our modern diet. Our ancestors ate 200 – 400 grams of undigestible fiber per day. Today, the Institute of Medicine recommends 25 – 38 grams of fiber be included in the American diet. The average American only gets ~ 15 grams of fiber per day. So naturally the microbial content of our intestines has been decreasing in quantity and quality.

How do we know this? By studying feces. Simplistically, food is digested in the stomach. The small intestine is where the extracted nutrients from food are absorbed into the blood. The large intestine pulls out water, drying the waste products and allowing a solid discharge known as feces or stool. Feces still contains about 75% water. The other 25% is composed of solid matter. 30% of the solid matter is bacteria/microbes. Another 30% is undigested fiber and digestive juices. The rest is fat, protein and inorganic matter. Even in the modern age, a lot of your poop is bacteria.

Dr. Alexander Khoruts of the University of Minnesota lectured on the history of using donor feces to re-establish the bacterial milieu in cases of severe gastrointestinal stress. He said that it was not a new idea: performed in China thousands of years ago, in medieval times in Europe, and Dr. Ben Eiseman, Chief of Surgery at the Veterans Administration, performed fecal enemas in 1958. Dr. Khoruts was interested in treating *Clostridium difficile* associated disease (C diff) which infects 500,000 people in the US and kills 30,000 yearly. It is the number 1 infection caused by the health care system – through hospitals and antibiotics, and it is increasing in incidence and becoming more aggressive and harder to treat. He reported that “fecal transplants” have had a 90% success rate in treating

recurrent C diff. After reviewing this novel treatment, The Food and Drug Administration (FDA) determined that the procedure was not a “transplant” at all since fecal microbiota are not human. In 5/2013 the FDA pronounced that “when used to cure, treat, mitigate or prevent a disease, fecal microbiota for transplantation meets the legal definition of a drug and biological product.” This meant submitting an Investigational New Drug application which will take extensive finances and years of research to complete. In 7/2013, due to it’s astounding ability to cure an often incurable and devastating infection (C diff), the FDA published an Announcement of Limited Enforcement Discretion. This policy allows doctors to use fecal microbiota transplant (FMT) to treat resistant C diff infection with proper Informed Consent of the patient. The University of Minnesota now has a Microbiota Therapeutics Program and has established rigorous donor screening and testing as well as Good Manufacturing Practices for FMT. Dr. Khoruts is also studying the effects of FMT in pre-diabetes.

Dr. Glenn Taylor is a microbiologist also involved with FMT. He is founder of the Taymount Clinic in London. Unrestricted by the FDA, the Taymount Clinic has been clinically testing the microbiome – immune connection by performing the therapy in people with some autoimmune conditions (multiple sclerosis) or other chronic conditions (Parkinson’s disease) who also have dysbiosis (altered gut microbiome). His clinic has achieved some remarkable results – specifically, he believes, because he can more completely restore the microbiome to health.


In his lecture, he explained that organisms adapt to changing environments over many generations. Humans reproduce about once every 25 years – adapting slowly over hundreds and thousands of years. Bacteria have a 20 minute life cycle and therefore have over 600,000 opportunities to adapt in 25 years. These microbiota adapt and change quickly based on what we eat, what medications we take, what stresses and toxins are present, etc. In this way they may be

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What About Probiotics? Are They Useful?

- Probiotics are freeze dried bacteria in capsules
- They can be very beneficial but are not nearly as potent as FMT
- They only provide benefit when they are regularly ingested.
- Adapted to their new environment (grown in glass), they have long ago lost their ability to engraft, having their effect only during the few days in which they are passing through the intestines on their way out.

For more information:
I have written prior articles on the importance of the bugs that live in our intestines. One is called *Your Immune System and the Bugs that Live Inside You* and is available in the archives on my website



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providing the immune system in the intestines with information about the “outside world”. The intestinal immune system then relays the information to the immune system in the blood. The blood immune cells deliver these messages to other cells to take a specific action or not. The blood immune cells return to the intestinal immune – microbiota connection to get an update on the external milieu and on it goes... It is so amazing to think that our brains and senses give us some information about how to survive in the world but our diet and lifestyle through our microbiome deliver another whole set of information to the immune system – and we had no idea that this was going on!!!!

Dr. Taylor also reported his unique method of processing harvested donor feces. Normally the bacteria are separated out, tested for communicable diseases and then allowed to grow in an artificial medium (glass or stainless) until frozen or used. After several generations living on glass the microbes adapt to glass, losing the unnecessary ability to

engraft and colonize in an intestinal environment.

Dr. Taylor’s process places the donor feces in an oxygen deprived environment (just like the intestines) and freezes them quickly to drastically slow their reproduction cycle. They may only have 1 – 2 life cycles over the 6 months needed to test and retest for communicable diseases. This does not allow the microbes to adapt to a different environment. When they are placed rectally into the recipient, they engraft, colonize and produce a stable and healthy microbiome.

Amazing!! Who knew???

Dr. Kate Thomsen’s office for holistic health care is located in Pennington, NJ. She is board certified in Family Medicine, certified in Integrative/Holistic Medicine, and an Institute for Functional Medicine Certified Practitioner. She has been practicing Functional Medicine for over 15 years. For more information visit www.drkatethomsen.com or call the office at 609-818-9700.