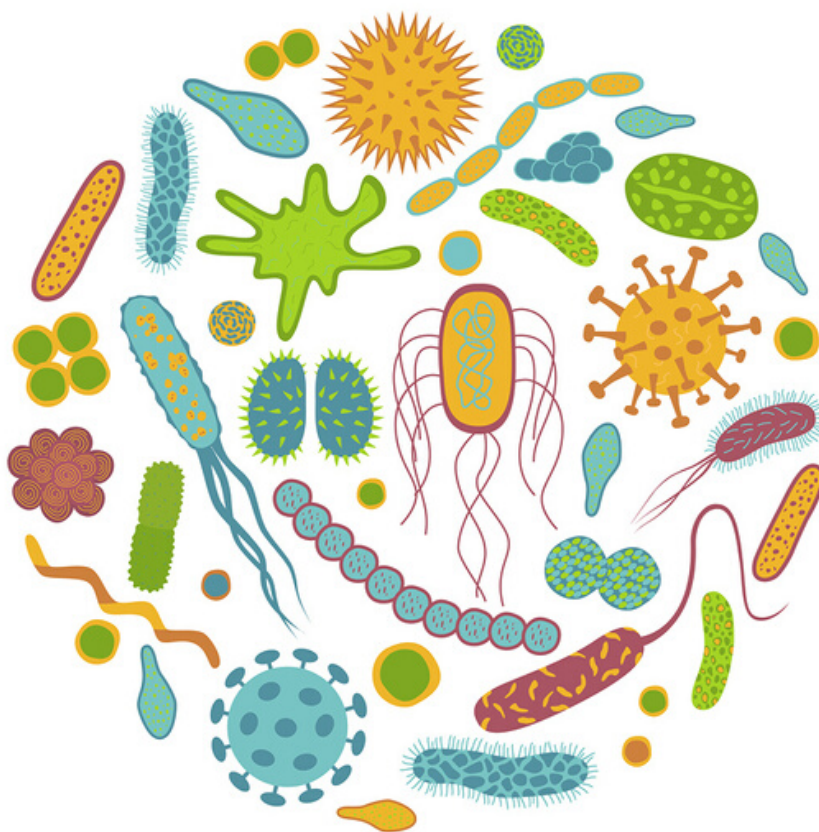




HealthMap

Gut Health Professionals

Your Gut Microbiota



Nurturing your gut community will improve your health of body text



The best way to understand your microbiota is to think of your body as an ecosystem. Ecosystems contain communities that harbour many complex relationships.

Every community has a different job in the ecosystem (your body). These communities are populated by the living (e.g. microorganisms such as bacteria) and non-living (e.g. water and chemicals) things.

The complex relationships within the microbial communities of your ecosystem gives you the essential nutrients your body needs, helps protect you from illness and disease, sustains your bodily functions such as digestion, and aids in your general health and wellbeing.

What you must remember is that these communities are fragile and can be compromised at any time causing illness and disease. Most of your microbial community is bacteria and are often referred to as 'bugs' or 'germs' indicating that they might be bad and cause harm. But not all bacteria are harmful, in fact many of them are good or highly beneficial. Why should you be interested in bacteria?

Microbiota or Microbiome?

Let's just clarify some terms that you have probably heard in the popular media. The bacterial communities within your ecosystem are called your microbiota.

Microbiota is a term used to describe the community of microorganisms that reside within specific areas of your body (e.g. your gut, mouth, vagina and skin). These communities can include bacteria, viruses, yeast, worms and even certain species of fungi. However, the most abundant microorganisms found in your microbiota are bacteria.

You might have also heard of the term microbiome. The microbiome is the collection of genes and genomes of your microbiota. A genome is the collection of all the genes in an organism. By investigating the microbiome researchers can determine which microorganisms are in our microbiota and how they might function under certain conditions.

Please remember that this area is very new and we still don't know everything about it. It's very difficult to find out how your microbiota interacts in the human body and what effects disease, food, medications, and just about everything else you can think of, have on your microbiota.



Who is in Your Gut?

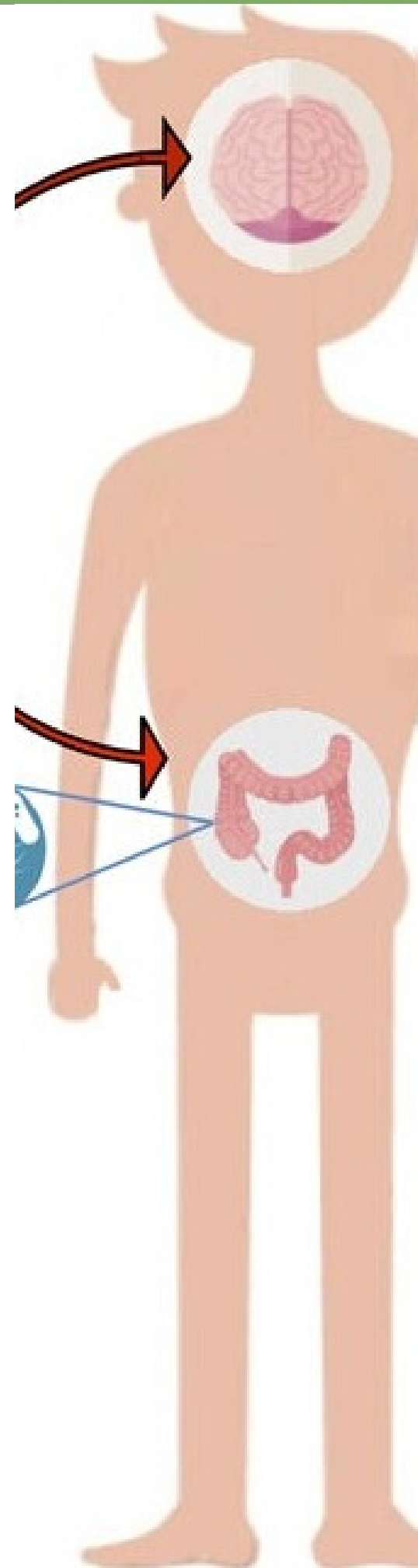
We all have trillions of microorganisms in and on our body and there are about 1000-1500 unique species. Only 150 to 170 species are the same in any given person

About 1/3 of your gut will be similar to someone else's but 2/3 is different so it can almost be called a fingerprint. Our microbiota can, in total, weigh up to 2 kg.

How do we know exactly who is in there? We use genetic sequencing to see what species are in our microbiota and that can tell us a lot about you and your gut and your health in general.

There are more than 3 million microbial genes in our gut microbiota – approx. 150 times more genes than in the human genome.

We know that our gut communicates to the rest of our body and the best way to keep this communication going is to eat prebiotics and plenty of fibre. Check out our resource on fibre to find out more.



References

- Sam, Q. H., Chang, M. W., & Chai, L. Y. A. (2017). The Fungal Mycobiome and Its Interaction with Gut Bacteria in the Host. *International Journal of Molecular Sciences*, 18(2), 330.
- Eloe-Fadrosh, E. A. & Rasko, D. A. 2013. The Human Microbiome: From Symbiosis to Pathogenesis. *Annual Review of Medicine*, 64, 145-163.
- Neville BA, d'Enfert C, Bournonville ME. (2015). *Candida albicans* commensalism in the gastrointestinal tract. *FEMS Yeast Res* 15(7):fov081.
- Sokol H, Leducq V, Aschard H, et al. (2017). Fungal microbiota dysbiosis in IBD. *Gut* 66(6):1039-1048.
- Noverr, M. C., & Huffnagle, G. B. (2004). Regulation of *Candida albicans* Morphogenesis by Fatty Acid Metabolites. *Infection and Immunity*, 72(11), 6206–6210.
- Nguyen LN, Lopes LC, Cordero RJ, Nosanchuk JD. (2011). Sodium butyrate inhibits pathogenic yeast growth and enhances the functions of macrophages. *J Antimicrob Chemother*. 66(11):2573-80.
- Feng Z, Long W, Hao B, et al. (2017). A human stool-derived *Bilophila wadsworthia* strain caused systemic inflammation in specific-pathogen-free mice. *Gut Pathogens* 9:59.
- Ijssennagger N, van der Meer R, van Mil SWC, et al. (2016). Sulfide as a Mucus Barrier-Breaker in Inflammatory Bowel Disease? *Trends Mol Med*. 22(3):190-199.
- Feng Q, Liang S, Jia H et al. (2015). Gut microbiome development along the colorectal adenoma-carcinoma sequence. *Nat Commun*. 6:6528
- David LA, Maurice CF, Carmody RN, et al. (2014). Diet rapidly and reproducibly alters the human gut microbiome. *Nature* 505(7484):559-563.
- Natividad JM, Lamas B, Pham HP, et al. (2018) *Bilophila wadsworthia* aggravates high fat diet induced metabolic dysfunctions in mice. *Nature Communications* 9:2802.
- Han, Y. W. (2015). *Fusobacterium nucleatum*: a commensal-turned pathogen. *Current Opinion in Microbiology*, 0, 141–147.
- Yu T, Guo F, Yu Y, et al. (2017). *Fusobacterium nucleatum* Promotes Chemoresistance to Colorectal Cancer by Modulating Autophagy. *Cell* 170(3):548-563.e16.
- Shang, F.-M., & Liu, H.-L. (2018). *Fusobacterium nucleatum* and colorectal cancer: A review. *World Journal of Gastrointestinal Oncology*, 10(3), 71–81.
- Swidsinski A, Dörffel Y, Loening-Baucke V, et al. (2012). Mucosal Invasion by *Fusobacteria* is a Common Feature of Acute Appendicitis in Germany, Russia, and China. *Saudi Journal of Gastroenterology: Official Journal of the Saudi Gastroenterology Association* 18(1):55-58.