



What if the answer was in our GUT all along?

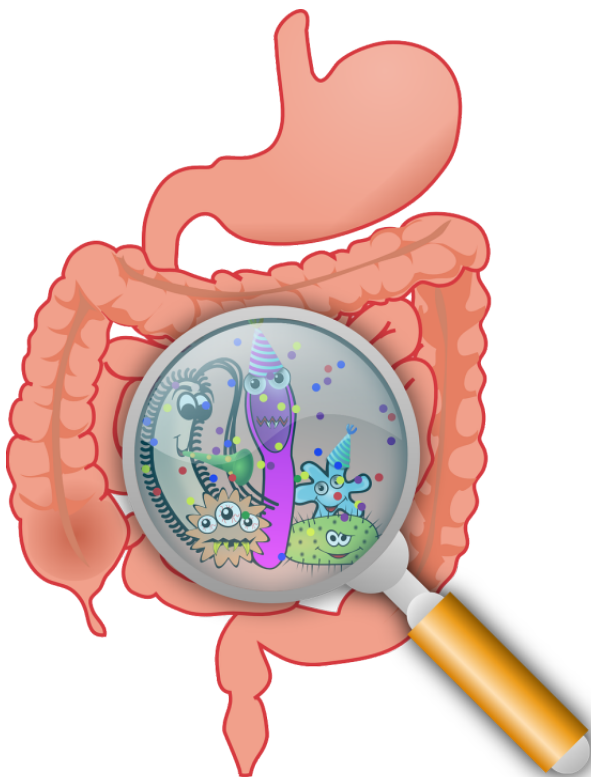
How our gut bacteria might provide some answers to our MS

Hello again and welcome!

Welcome to my new subscribers...and hello again to my exiting supporters. Thank you for signing up to receive my blog; I hope you find this week's content interesting and feel it was worth subscribing to.



Diana xx



What's all this fuss about our gut at the moment?

The suggestion that the bacteria naturally living (happily and relatively quietly) in our gut could contribute to our overall health and disease status began to emerge as a concept in around 2010. It has begun to gather serious momentum over the last few years on social media with 'Insta-celebs' posting about the benefits of eating fermented foods to 'rectify' or 'calm' gut bacteria. It is often discussed in relation to bowel conditions and food intolerances but for us there is

a more interesting suggestion on how our gut bacteria may be heavily implicated in the development of autoimmune diseases.

A quick word on terminology

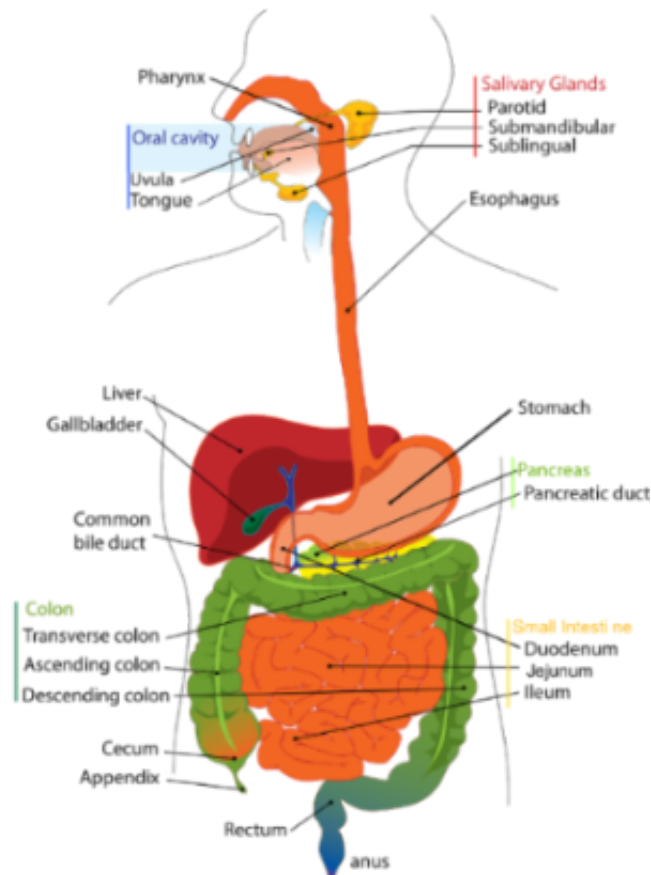
This relatively recent upsurge in interest around the gut has inevitably piqued interest in the popular press and has muddied the water somewhat in terms of what exactly is being talked about. I have seen the terms 'microbiota' and 'microbiome' used seemingly interchangeably in some popular press so in the interest of clarity:

- **Microbiota:** the collection of microbes within a specific anatomical niche (eg the lungs, genitals or gut). Over 70% of microbes (bacteria and viruses) within the body's total microbiota reside within the gut.
- **Microbiome:** all the genes derived from microbial processes occurring within the microbiota

This is not a hugely important point for the rest of this blog but having seen the terms applied rather haphazardly I felt it useful to make the initial distinction.

Where is our gut and what does it do?

Our gut - the long tube also called the digestive tract - runs from the mouth, down the gullet (oesophagus), through the stomach, small intestine, large intestine and anus. The gut is concerned with breaking down, processing, digesting and absorbing nutrients from food. Various organs are involved within this process from chewing and the action of digestive enzymes in the mouth; chemical breakdown and some absorption from the stomach; movement to the small and large intestine for further absorption and finally anything not absorbed by the body is expelled at the end of the tract (anus). This is not meant as a biology lesson but illustrates how large the gut area is and how important it is in its functioning.



The gut microbiota

The human gut plays host to trillions of bacteria and viruses which have tremendous potential to impact various facets of our health; they contribute metabolic functions, protect against pathogens and educate the immune system.

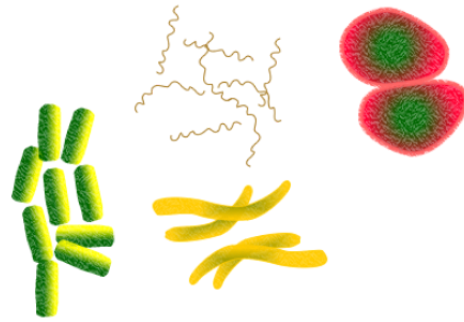
The composition of bacteria in our gut begins in utero and continues for the first 2-3 years of life. Recent studies have shown both short and longer-term effects on the composition of the microbiota in relation to:

- host genetics
- age
- external factors such as where and who we live with
- the use of pre- and pro-biotics
- exercise
- diet

The intricate composition of the gut has been described as our 'secondary genome' and is as individual as our genetic make-up. It lies in close association with the host's (our) immune system and together plays a role in exerting various nutritional, metabolic and immunomodulatory functions important to our overall health and wellbeing.

Links between gut microbiota and disease

Research into the gut microbiota to date has shown this bacteria implicated in the development of diseases including:



- type 1 diabetes
- irritable bowel syndrome (IBS)
- inflammatory bowel diseases (IBD)
- cardiovascular disease
- autoimmune diseases (including MS)

The observation that such a large collection of microbes (more than 70%) exist within our gut compared to other potential environments within the body makes it understandable that there are links to bowel conditions given its location and function; however when we begin to consider type 1 diabetes and autoimmune diseases there is clearly another mechanism at play.

What do we currently understand about the possible implication of the gut in the mechanisms of these diseases ?

The combination of different types of bacteria was shown to be imbalanced in individuals with these diseases. Some studies have shown this imbalance to be considerable in patients with MS with considerable under-representation of some bacteria and over-representation of others. The microbiota can be deeply influenced by external factors as mentioned earlier in this article, and its aim is to maintain equilibrium between the host (us) and the environment thus keeping an optimal balance of different bacteria.

Given the location and function of the gut diet has become the focus of much exploration. Dietary intake has been shown to be a key determinant in microbiome composition and diversity; this may have clinical implications here as evidence suggests composition of the microbiota in early life may be responsible for the programming of gastrointestinal , immune and neural development: key features in the diseases mentioned above.

How could this be relevant to my MS?

This may be pertinent here as when balance is maintained between the microbiome and metabolism of the host, all is well; when imbalance occurs inflammation and infection can result. As we know, in MS it is inflammation that is responsible for damage to the central nervous system; the symptoms we may present and the resulting build-up of disability.

I would love to tie this post up with a great dramatic conclusion (which might have been what you were waiting for - apologies), however this research in humans is at a relatively early stage so the conclusions aren't there yet. The hope is that in the future it can be used to develop further therapeutic interventions and understand more about the fundamental mechanisms of disease development and progression.

A cautionary word (disclaimer)

This post began as an expected exploration of how diet can influence the gut (I'm aiming to alternate between diet and exercise each week in the blog posts). However this has turned into something much bigger that I have been interested in but haven't explored until now. I have no history within this area and I'm a little concerned that it is venturing out of what I set this blog up to share: ie things I know a lot about. So to be very transparent, this is a brief overview of some of the latest research papers; it is not a comprehensive literature review of all the research and conclusions produced to date. All the papers I have used to write this are referenced below so if you are hoping to use this for anything other than your own interest please consult one of the researchers working in the area; as always, consult an expert - this time, it's not me.



As always, the last word from me...

Do let me know if you have found this post helpful. Send me an email (address below); send me a tweet (@healthylifems) or send me a message through the contact page on the website, I'd love to know what you think.

Diana

References:

Adamczyk-Sowa, M. et al., (2017) 'Does the gut microbiota influence immunity and inflammation in multiple sclerosis?', *Journal of Immunology Research*, [epub ahead of print] doi: 10.1155/2017/7904821

Donovan, S.M. (2017) 'Introduction to the special focus issue on the impact of diet on gut microbiota composition and function and future opportunities for nutritional modulation of the gut microbiome to improve human health', *Gut Microbes* 8(2): 75-81

Glenn, J.D. and Mowry E.M., (2016) 'Emerging concepts in the gut microbiome and multiple sclerosis' *Journal of Interferon and Cytokine Research* 35(6): 347-357

Jangi, S. et al., (2016) 'Alterations of the human gut microbiome in multiple sclerosis', *Nat Commun* 28(7): 1-11

Newland, P.K., Heitkemper, M. and Zhou, Y. (2016) 'The emerging role of the gut microbiome in adult patients with multiple sclerosis', *J Neurosci Nurs* 48(6): 358-364

Shailesh, S.K., Freedman, S.N and Mangalam, A.K. (2017) 'Gut microbiome in multiple sclerosis: the players involved and the roles they play', *Gut Microbes* July 11: 1-9 [epub ahead of print] doi: 10.1080/19490976.2017.1349041



Thank you for reading :)

Diana xx

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