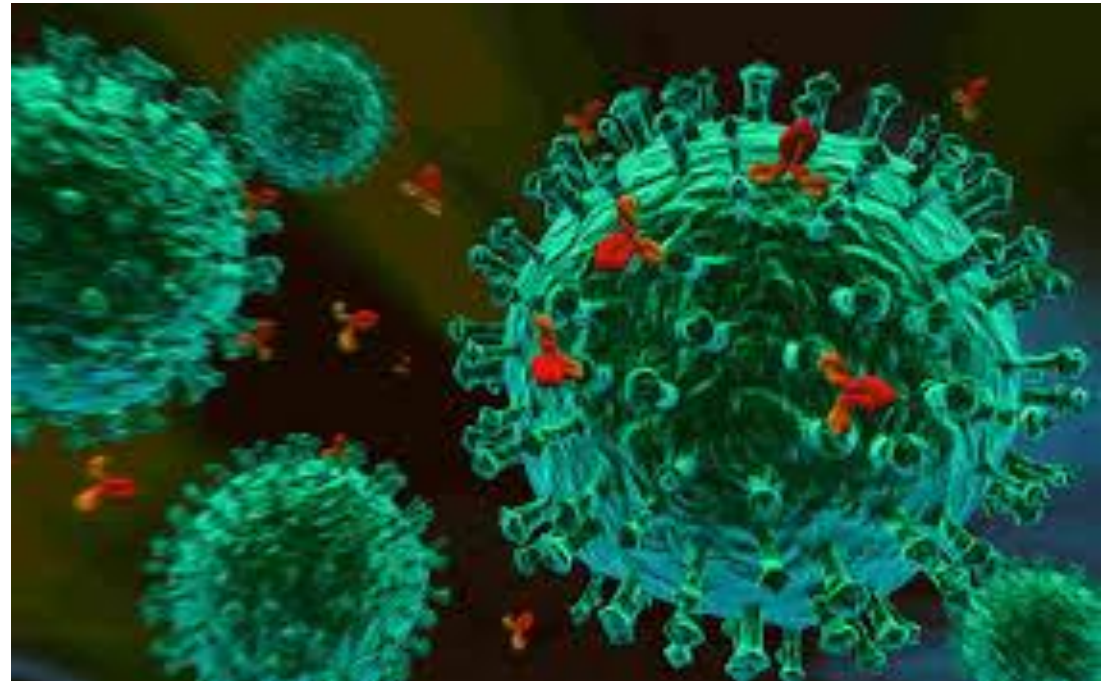


GUT BACTERIA AND IMMUNE TOLERANCE



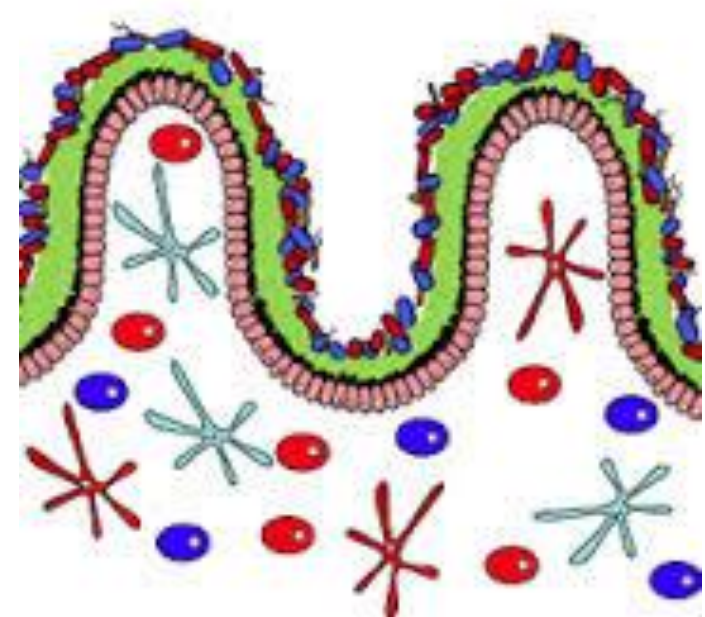
The Immune System

- It has been known that the gut bacteria has immune tolerance
- This means that the immune system does not see it as foreign
- It was assumed previously that the immune system just “ignored” the gut bacteria
- Now the perspective has changed



Immune System

- The good bacteria actively participates in maintaining the immune intestinal balance
- It does this by interacting with the intestinal epithelial tissue
- They also deliver the signals of “tolerance” to the underlying immune system
- They do this by interacting with receptor sites on intestinal wall lining that are involved with regulating inflammation



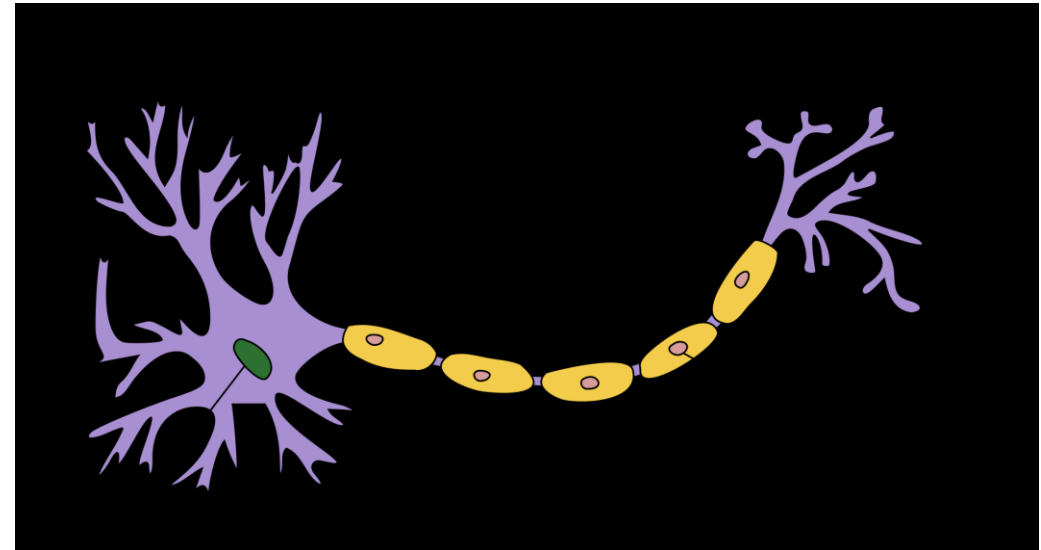
Immune Reaction

- Allergy and autoimmunity require an inflammatory response and the reactions cannot occur without it
- Gut bacteria influences the immune response
- You can look at it that the gut bacteria is telling the immune system to not react
- But this is just one aspect



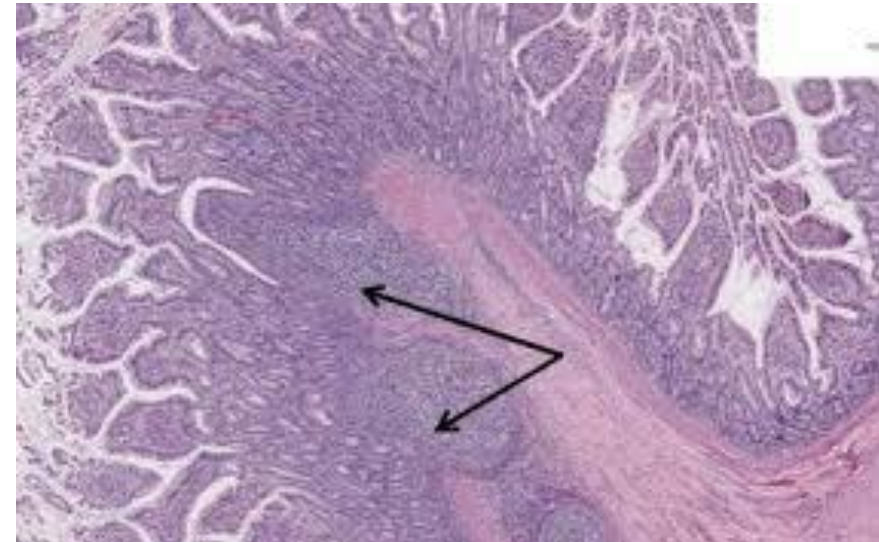
Dendrites

- Dendrite cells (involved in nerve cell communication) also communicate and have direct access to gut bacteria
- They play a key role in keeping the tight junctions between intestinal wall lining cells closed (preventing leaky gut)
- This also plays a role in preventing allergic and autoimmune reactions and inflammation
- Gut bacteria activate dendrites
- Dendrites are directly involved in activating the t-reg cells that are key to immune tolerance



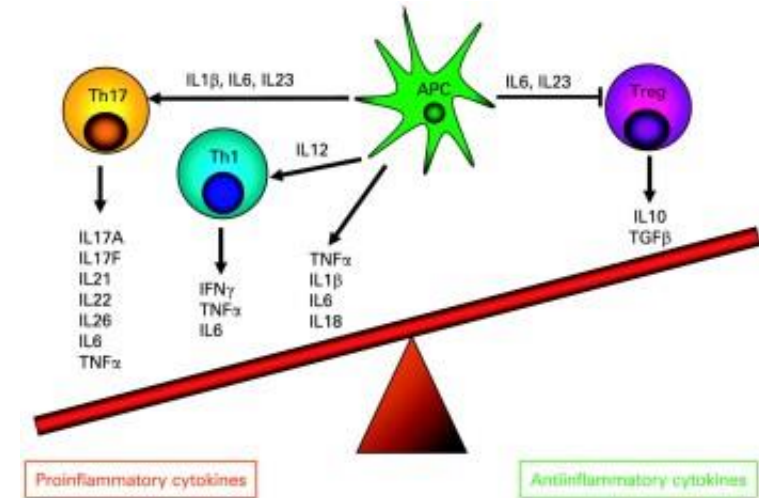
GALT

- GALT (Gut-Associated Lymphoid Tissue)
- Gut bacteria and GALT live in a reciprocal relationship
- Gut bacteria is essential for the protein and the nutrients that GALT needs
- Gut bacteria are a major source of natural antigens that stimulate the GALT and induce mucosal immune tolerance for food and other non-pathogenic substances
- T-reg cells are generated in the GALT



Probiotic Strains

- Studies have revealed that numerous benefits from specific good bacteria strains include regulating inflammation
- Lactobacillus strains have been shown to decrease inflammation and increase production of IL-10 – an anti-inflammatory cytokine connected to maintaining immune tolerance
- B. fragilis is another strain that has had a positive effect with IL-10
- Certain strains of filamentous bacteria (which are a unique type of bacteria that may be related to Clostridium) increase Th17 cells which is associated with increased autoimmunity – good bacteria can regulate this function



Strains

- Probiotics strains do not have to colonize to talk to the immune system
- There has been as assumption probiotics must attach to the intestinal wall lining and re-produce to be effective but we know now that they do not have to nor do they
- Studies show that as transient bacteria – they interact with the immune system and lower inflammation while they are there but they are gone shortly after ingestion stops (up to two weeks)
- Some evidence that dendrite cells extend into the intestines to interact with transient strains and may even carry the strains across the epithelial layer for further use in the body



Strains

- These Strains: *Bifidobacterium longum*, *Bifidobacterium infantis*, *Bifidobacterium breve*, *Lactobacillus rhamnosus* GG, *Lactobacillus acidophilus*, *Lactobacillus casei*, *Lactobacillus delbrueckii* subsp. *bulgaricus*, *Lactobacillus plantarum*, and *Streptococcus salivarius* subsp. *Thermophilus* along with those mentioned previously help regulate inflammation response and play a role in maintaining immune tolerance
- More strains are now being studied to help limit inflammation and restore tolerance



In Summary...

- Whether it is a case of allergy or autoimmunity, the goal is to restore immune tolerance
- More research is needed to do this specifically but in the meantime, there are many things to that you can recommend to a client so they can begin working on this
- It takes time to heal so the strategy needs to be livable as this will probably take years depending on the person and how severe the circumstance



Where To Start...

- A protocol is going to be a combination of
- Limiting inflammation as much as possible
- Healing the intestinal wall lining
- Building up residential bacteria numbers
- Increasing overall numbers of good bacteria through probiotics and fermented foods



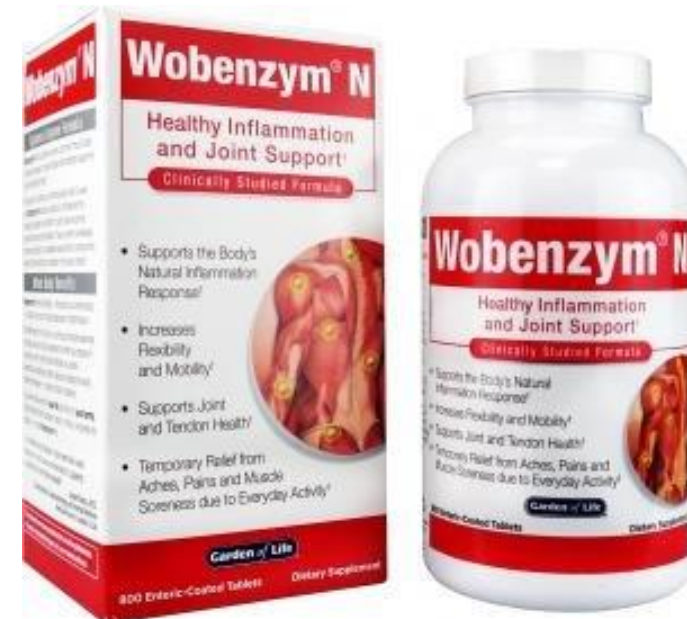
Where To Start...

- Removal of foods should be considered if they cause a lot of inflammation in the short term – they can be used as a test to see if progress is being made
- Be careful removing foods – this can make the difference with a client sticking to a protocol or falling off
- Probiotics and fermented foods are going to be used to add numbers
- We do not know how much a person can re-build their own residential numbers



Where To Start...

- Favour probiotics that have been shown to have anti-inflammatory benefits
- We will talk more about both probiotics supplements, fermented foods and strategies for re-building gut health in Module 3 and 4
- Digestive enzymes can be used to help limit food reactions
- Protease enzymes (Wobenzym) can be used for inflammation between meals



Working With Clients

- This where you need to be very individualized with each client
- We do not know the true difference in the microbiome between one client and another
- Removing known allergens is a sound strategy in the short term as gut health is worked on
- However, removing food sensitivities is where you have some discretion – a good Candidiasis protocol can remove many food sensitivities
- Seeing the effects of the probiotics and fermented foods can also help you make usable suggestion for clients



Working With Clients



- Your goal as a practitioner is to find means and methods that work with the client
- Do not get hung up on what you think they should be doing – give them options and let them choose.
- Our long term goals should always be to help them develop their natural intuition and to listen to their body
- It would be great if there was a black and white protocol that works for everyone but there isn't – mainly because of gut bacteria differences – however there is plenty we can do to help