



Mentor goals:

- To declare what is possible and establish a commitment to that possibility
 - Address personal and professional barriers limiting the ability to serve
 - Evolution of vision/mission/ethics that drive success
 - Create immediate action steps to apply learning and growth
- Construct the round table of applied trophologists

Mentoring the mentor:

- Who are the mentors? – Practitioners
 - Who are we mentoring? – Patients and GAP
 - What’s the purpose? – Optimized life
 - How does it work? – Whatever you learn you teach someone else (anyone else)
- Who’s is included? – Self selection, you pick yourself

Mentoring the mentor:

- Each participant attends monthly teleconferences (1 hour in duration, 4th Wednesday of every 2nd month) creating a round table discussion/exploration of the dynamics and details of a nutrition-based holistic practice
- Each participant chooses how to convey the notes and information to their world and community – no information squandering

Review - Distinguish yourself

- It is more apparent why people are choosing alternative health care professionals who specialize in a functional approach
- No matter you specialty or technique you must distinguish yourself as an expert – people are just seeking to understand and they need you to do so
- Typically in the healthcare industry people are receiving shallow answers that leave them puzzled with the mystery of "Why is this happening to me?" and "What can I do about it?"
- Trends research over 10 years ago identified a number of factors essential to being successful in the nutritional field – one of those was establishing yourself as an expert

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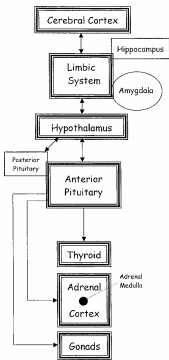
Review - Explanation as hope

- The practitioner's ability to explain health issues and therapeutic outcomes creates an inflation of understanding in the patient which feels like hope
- Today in the professional world there is so much avoidance of 'giving false hope' that often we end up offering little hope at all
- I propose another model that bolsters hope and expectation and subsequently practices accountability as to whether the therapeutic endeavors are achieved or not
- As long as the hope that has been instilled is revisited and acknowledged as being accomplished or not the betrayal of false hope can be avoided
- So as an example, if a practitioner was describing the potential for nutritional intervention through supplements and diet modification to improve the lipid profile, then s/he would need to revisit to success or failure of the experiment within a reasonable period of time
- Our community is starving for legitimate hope, as a starting place, as empowerment to begin, as an idea to act upon
- There is genius in hope

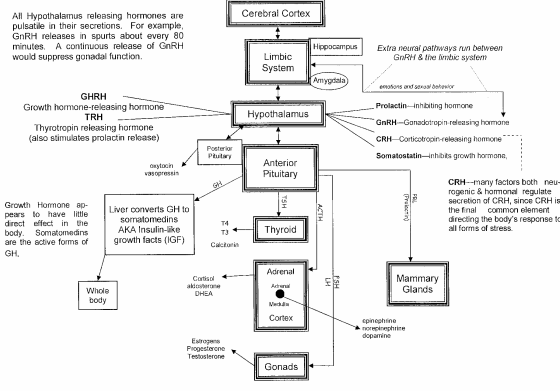
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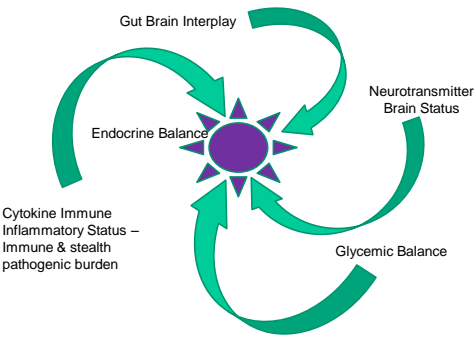
BRAIN-H-P A.XIS EXAMPLE



HORMONES OF THE HYPOTHALAMIC-PITUITARY AXIS



NeuroEndocrine Complexity



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The Stress Model

- The HPTA is at the heart of the body’s ability to respond to the environment
- Cortisol elevation is the result of Corticotrophin Releasing Hormone (CRH) arising from the parvocellular neurons of the paraventricular nucleus (PVN) - this is the ‘master’ stress hormone released in response to the perception of stress
- Stressful stimuli are generalized as:
 - Physical – pain, trauma, infection, hypotension, exercise, hypoglycemia
 - Psychological – bereavement, fear, personal loss, anger (the perception that God is not in control – something is wrong)
- CRH is released into the portal circulation of the Median Eminence and is carried by venous blood to the corticotroph cells of the anterior pituitary where it binds to the cell surface receptors stimulating the release of Adrenocorticotrophic Hormone (ACTH)
- ACTH reaches the adrenal cortex stimulating the synthesis of Cortisol (glucocorticoid) and also androgenic hormones like androstenidione and DHEA (both may convert to testosterone and DHT in peripheral tissues)

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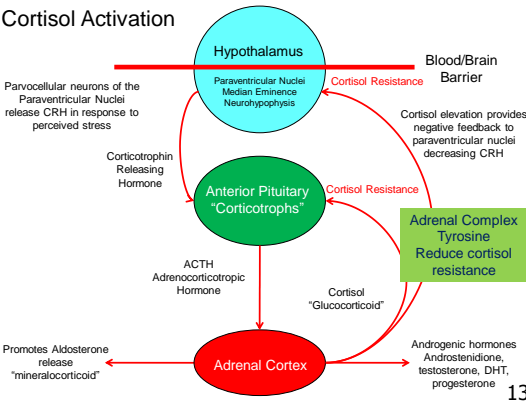
The Stress Model

- Cortisol maintains blood glucose during stressful ‘fight or flight’ challenges so that as more metabolic fuel is consumed a critical amount is maintained for brain function and to support the activated survival organs such as the heart, lungs, and skeletal muscle with renewable supply of fuel
- Cortisol also participates with Aldosterone (mineralocorticoid) in driving sodium reabsorption from the renal tubules conserving electrolytes and water within the vasculature to provide blood and perfusion pressures to vital organs
- Cortisol concentrations rise until it effects negative feedback on the CRH neurons and the pituitary corticotrophs to return blood levels to normal preventing prolonged elevations of CRH, ACTH and cortisol
- Chronic stress and maladapted responses to stress alters this mechanism and causes longterm cortisol dysregulation and even ‘cortisol resistance’

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Cortisol Activation

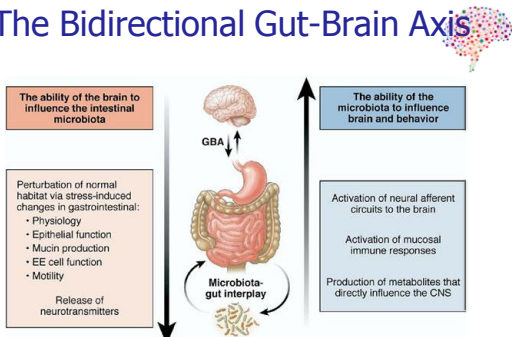


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Gut Brain Interface

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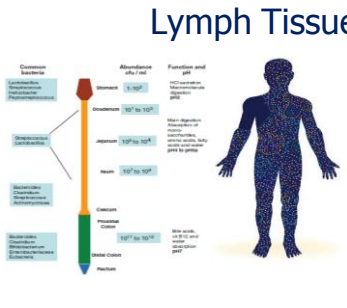
The Bidirectional Gut-Brain Axis



Grenham S, Clarke G, Cryan JF, Dinan TG. Brain-out-microbe communication in health and disease. Front Physiol. 2011;2:94. Epub 2011 Dec 7. PubMed PMID: 22162969; PubMed Central PMCID: PMC3232439

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Lymph Tissue



Location	Approximate Cell Count	Function and Notes
Bone Marrow	1×10^{12}	Site of hematopoiesis and primary lymphoid organ.
Thymus	10^8 to 10^9	Site of T-cell maturation and selection.
Spleen	10^8 to 10^9	Site of B-cell maturation and selection.
Lymph Nodes	10^8 to 10^9	Site of B-cell maturation and selection.
Gut-Associated Lymphoid Tissue (GALT)	10^{11} to 10^{12}	Site of B-cell maturation and selection.

- 70% of our immune cells reside in the GI tract.
- The development of the intestinal immune system is largely dependent upon exposure to microorganisms.
- The gut produces $\frac{1}{4}$ of the body's neurotransmitters.
- The gut has greater metabolic activity than the liver.


Forsythe P, Sudo N, Dinan T, Taylor VH, Bienenstock J. [Food and gut feelings](#). Brain Behav Immun. 2010 Jan;24(1):9-16.

Ochoa-Repáraz J, Mielcarz DW, Begum-Haque S, Kasper LH. [Gut bugs and brain: role of commensal bacteria in the control of central nervous system disease](#). Ann Neurol. 2011 Feb;69(2):240-7.

Korecka A, Arulampalam V. [The gut microbiome: scourge, sentinel or spectacle?](#) J Oral Microbiol. 2012;4.

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Microbiota Regulate HPA-Axis Development




- Commensal microbiota regulate the development of the HPA axis.
- "The series of events in the gastrointestinal tract following postnatal microbial colonization can have a long-lasting impact on the neural processing of sensory information regarding the endocrine axis."
- This concept, based on *in vivo* findings [in mice], provides evidence of a novel link between indigenous microorganisms and the nervous system and shows a new aspect of the brain-gut axis.

Sudo N, Chida Y, Aiba Y, Sonoda J, Oyama N, Yu XN, Kubo C, Koga Y. [Postnatal microbial colonization influences the hypothalamic-pituitary-adrenal system for stress response in mice](#). J Physiol. 2004 Jul 1;558(Pt 1):263-75

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Commensal Microbiota Drives Immune Homeostasis



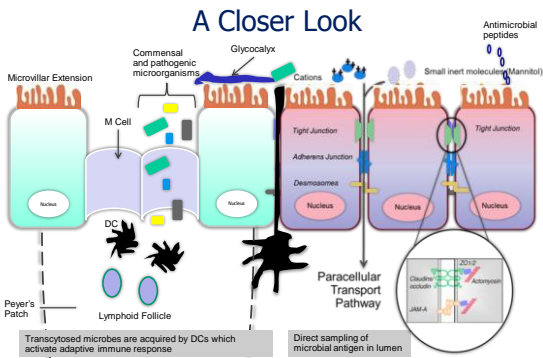
- This tissue has the dual task of selectively absorbing nutrients from the intestinal lumen, while preventing microbial entry, infection, or immune activation.
- We are so focused on the immune system responding to things, that we forget that 99.9% of the time, its job is NOT to respond to things.

"The gut handles more antigenic material in a single day than the rest of the immune system processes its entire lifetime."

Michael Ash

Handley C. Should auld acquaintance be forgot... EMBO Reports Vol 5, No 12, 2004Arrieta MC, Finlay BB. [The gut microbiome: scourge, sentinel or spectacle?](#) Front Immunol. 2012;3:33.

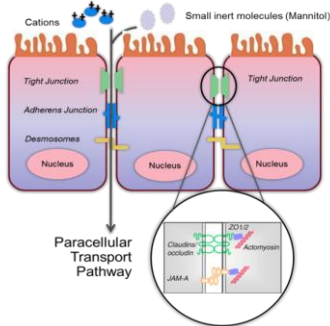
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Artis D. [Epithelial-cell recognition of commensal bacteria and maintenance of immune homeostasis in the gut](#). Nat Rev Immunol. 2008 Jun;8(6):411-20.

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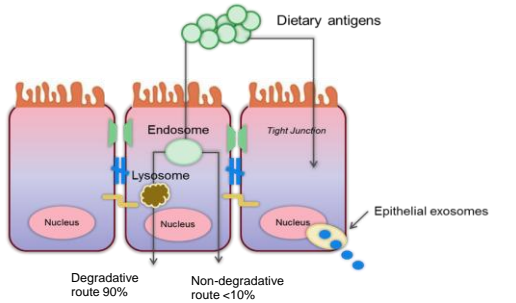
Paracellular Transport



Artis D. [Epithelial-cell recognition of commensal bacteria and maintenance of immune homeostasis in the gut](#). Nat Rev Immunol. 2008 Jun;8(6):411-20.

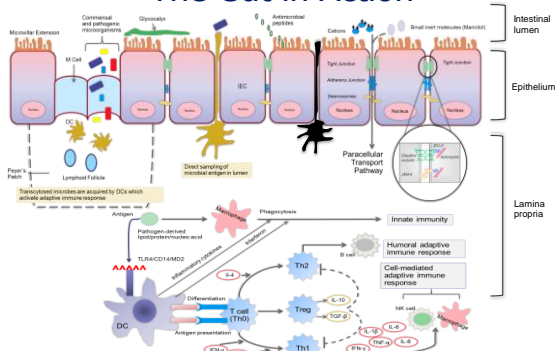
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Transcellular Pathways



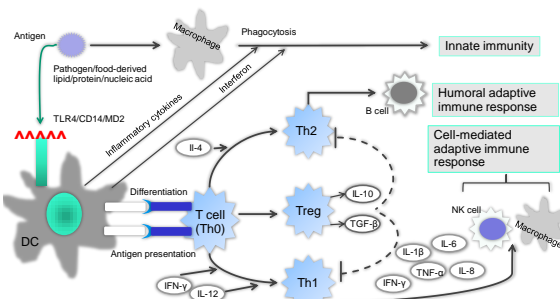
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The Gut in Action

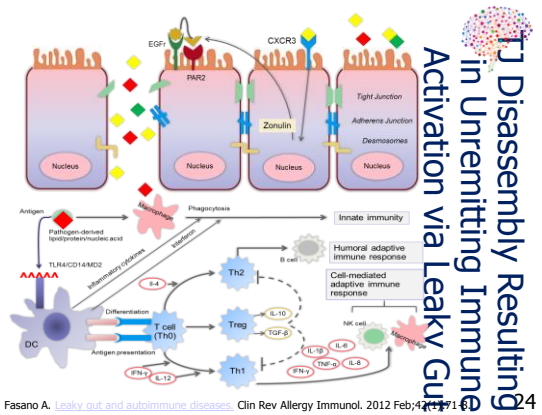


Artis D. Epithelial-cell recognition of commensal bacteria and maintenance of immune homeostasis in the gut. Nat Rev Immunol. 2008 Jun;8(6):411-20. 22

Just the Right Balance

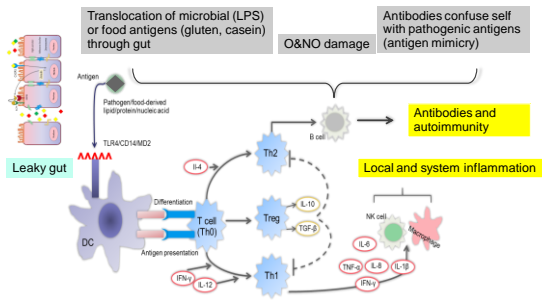


Thomas S, Przesdzin J, Metzke D, Schmitz J, Radbruch A, Baumgart DC. *Saccharomyces boulardii* for the treatment of immune-related ileitis and T cell proliferation. Clin Exp Immunol. 2009 Apr;156(1):78-87. 23



Fasano A. Leaky gut and autoimmune diseases. Clin Rev Allergy Immunol. 2012 Feb;42(1):71-6. 24

Leaky Gut's One-Two Punch



Maes M, Kubera M, Leunis JC. The gut-brain barrier in major depression: intestinal mucosal dysfunction with an increased translocation of LPS from gram negative enterobacteria (leaky gut) plays a role in the inflammatory pathophysiology of depression. Neuro Endocrinol Lett. 2008 Feb;29(1):117-24.

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Food Allergens

Determining Food Allergies

- Blood type sensitivities Eat For Your Blood Type, D'Amatto
- Most food allergies are delayed sensitivity reactions – difficult to objectively determine
- Elisa Act lymphocyte response assay Dr. Russell Jaffe
Serimmune Labs, Virginia, 800/525-7372
- Elimination is the most accurate and labor intensive - 2 week elimination then reintroduce and watch for 4 days for reactions
- *Histaminic Reactions* (rash, red eyes, serous secretions) vs. *Immune Activity* (fever, catarrhal, lymphatic congestion, aching)
- Basic 4 allergies that most complicate healing process – wheat (gluten), corn, soy, milk (casein)
– Additionally suspect chocolate, peanuts, tomatoes, beef



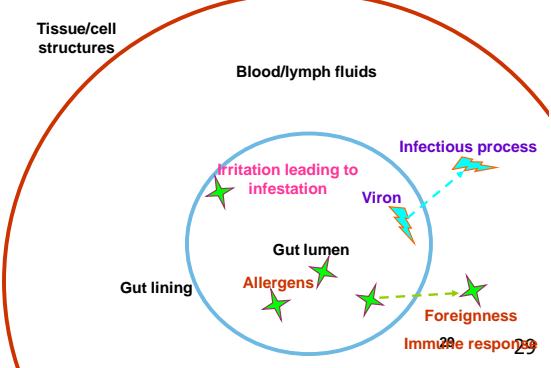
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Food Allergies – Now & Later

Immediate response within hours or next day	Delayed response onset 2-7 days later
Histaminic	Immunological – viral, bacterial, parasitic
Red, burning eyes, serous secretions (clear)	Colds & Flu – WBC mediated response
Tiredness, sleepiness	Achiness
Headaches	Catarrhal, phlegm (colored)
Mood changes, irritability	Fever
Rashes, hives	Eczema
Nausea, cramps, diarrhea	Emesis
Loss mental acuity	Elevated C-reactive protein, SED rate, AA:EA ratio

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Allergic Events schematic



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Generalization of allergen

- Milk allergy is primarily casein protein intolerance commonly seen in respiratory and atopic symptoms
- Wheat allergy is primarily a gluten protein intolerance commonly effecting GI symptoms and hyper tension & siderosis
- Corn allergy is primarily a zein protein intolerance commonly effecting neurological symptoms
- Soy allergy is more acquired and therefore can be unlearned commonly effecting acne rosacea and paranasal rashes

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Inflammation favors bone destruction

- There is a balance between anabolic and catabolic activities of bone tissue
- Inflammatory conditions result in the production of osteoclasts (cells that remove calcium from bone) ... the non-inflammatory conditions favor bone replacement by osteoblasts ... with aging the catabolic processes become exaggerated

Science (2000) vol 288, 1504-1508

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Immuno-inflammatory Influence

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Innate & Acquired Immunity

- Primary roles of the healthy immune system are:
 - Identify potentially injurious and infectious substances
 - Distinguish self antigens (non-threatening) from non-self (threatening)
 - Assess the potential level of threat posed by infectious, toxic, or non-self antigens
 - Mount a response that is appropriate to the level of threat
 - Repair any damage that ensues from adversarial encounters
- Too much response = inflammatory cascades
- Too little response = tolerance of danger
- WBC is optimal 6-8, outside optimal range may suggest acute or chronic immune burden, under 4 indicates bone marrow fatigue

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Immune System – 2 Parts

- Generally recognized that there are 2 parts of the immune system
 - Innate Immune System – Inborn initial response to eliminate microbes and infections, immediately or within hours – it is not in any locale or organ, it is in the WBC
 - » Each cell is equipped with different mechanisms that allow it to attack and eliminate pathogens from the body demonstrating immune versatility
 - » Non-specific defense against pathogens, activates the complement system of inflammatory response
 - » Identifies self vs. non-self, complement system triggers inflammation and identifies foreign substances, and activates the adaptive immune system
 - Innate Immune Cells include:
 - » Mast Cells
 - » Natural Killer Cells
 - » Phagocytes – Monocytes, Macrophages, Dendritic cells
 - » Granulocytes – Neutrophils, Eosinophils, Basophils
 - Adaptive Acquired Immune System – Learned response precisely addressing threat requiring 5-7 days for adaptive immune modulation to reach full activity and specific lymphocyte presence
 - » Results in TH1 cellular phagocytosis or TH2 humoral antibodies
 - » TH1 responds to living things bacteria, fungus, virus
 - » TH2 responds to non-living things (and parasites) including food, pollens, bad fats, heavy metals

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Common TH1 & Th2 Cytokines

- TH1
 - IL-12
 - IFN – gamma
 - TNF – alpha
 - IL-2
 - GM – CSF
- TH2
 - IL-4
 - IL-5
 - IL-10
 - IL-13
- IL-1 and IL-6 (and others) can show both TH1 and Th2 influences

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Cytokines – Immune Messages

- Immune response results in the release of cytokines meant to direct local and distant immune function
- These cytokine messenger molecules also drive HPA status and thus determine global brain status
- Cytokines subsequently cause the release of WBC inflammatory mediators to direct the inflammatory process of repair
- Therefore immune status and activity determine HPA/brain settings
- Hypervigilant or depressed immune states reflect in brain states

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Cytokines – Immune Messages

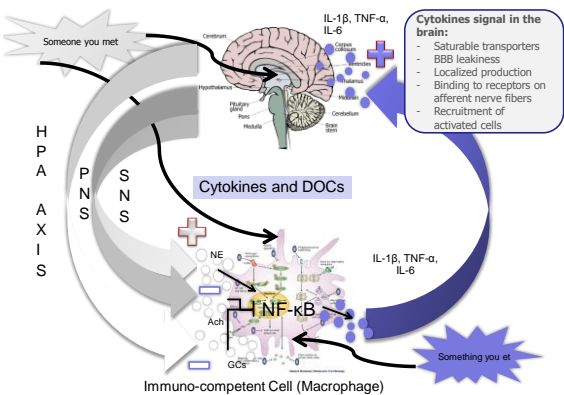
- The HPA Axis is the conductor of homeostatic symphony
- This system additionally intertwines with virtually every aspect of physiology through the production of CRH and ACTH – indeed resistive and ‘hard-to-treat’ conditions all share the described cytokine cascade disturbance
- The take away is that any chronic perturbation to one element of the system will ripple through other components of the web
- Persistent stressors without relief continuously stimulate the CRH-ACTH-cortisol axis resulting in high levels of cortisol and some neuronal disruption and death in the negative feedback loop (hippocampus and hypothalamus)
- This may lead to depression and behavioral disturbance

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Cytokines – Immune Messages

- So the immune modulation and unburdening is required to achieve HPA and endocrine balance
- The concept of immune sparing and unburdening is essential to any long term concept of HPA integrity
- The sequential immune up-regulation is the avenue to HPA strength and health
- The HPA axis will not completely balance and limbic health will not be achieved without immune and cytokine support

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Raison CL, Lowry CA, Rook GA. Arch Gen Psychiatry. 2010 Dec;67(12):1211-24.

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Immune Tolerance

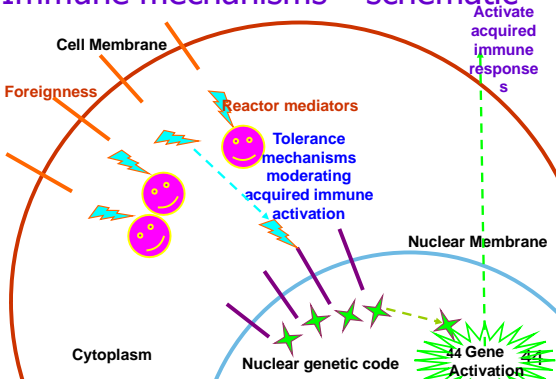
"Don't be so Reactive"

- If it weren't for tolerance we would constantly fighting a war with the foreignness everywhere
- Complex feedback system developed through reactor and moderator substances activating and suppressing immune/ inflammatory response creating an immune capacity of tolerance
- Net reactor chemistry x net moderator chemistry = immune tolerance
- Especially strategic to the autoimmune circumstance – goal is to reduce immune burdens and promote immune tolerance and thus reduce immune reactivity
- Infections, infestations, toxicities, allergens, injuries, inoculations, etc. create a burden teasing out intolerance and excessive reactions



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Immune mechanisms – schematic



Sequential Immune Up-Regulation

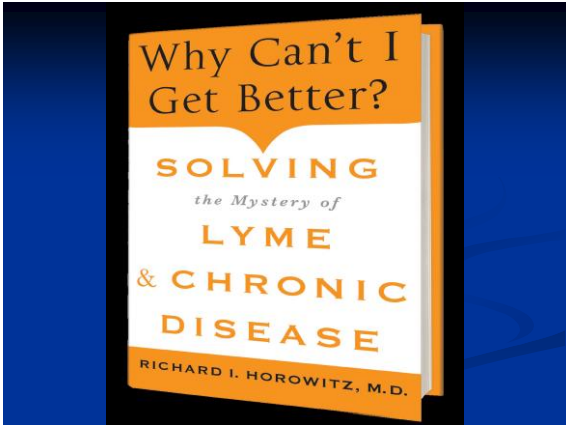
- Especially under the teeth, diverticulosis, severe infections near or in bone, body cavities like sinus, ears, pelvic, intestinal
- Sequential immune bolstering protocols for one month each at therapeutic dosage – "deep cleaning"
- Up regulate immune system gradually with graduated protocols addressing upstream events first and then downstream immune burdens (infections, infestations, toxicity)
- This reduces the requirement of reticuloendothelial tissues (lymph, spleen, bone marrow) to respond to the immune burden and this spares the immune system
- In turn this is an anti-aging strategy as it prolongs and vitalizes immunity – and liberates it to other more immediate needs



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New Product Alert – Read All About It!

- ❑ Prebiotic Inulin released September, 2009
- ❑ This product is a non-digestible soluble fiber found in many plants and in this formulation is derived from Chicory root. It is a complex CHO that can be digested by many microflora providing them with energy thus enlivening the gut flora. It also increases the absorption of calcium and magnesium from the gut. It has also been determined to increase intestinal gene expression and cell differentiation allowing for more specialized intestinal function and activity.
- ❑ Gut Flora Complex:
 - ❑ Inulin from Chicory Root 4.5 gm
 - ❑ Calcium Lactate 200 mg
 - ❑ Magnesium Lactate 400 mg

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Principles at work

- Sufficient clinical observation allows mechanisms to be revealed that will remove the idiopathic mystery of hypertension and return it to a simple physiological modulation and resultant augmentation in function, balance, tissue fortification and promotes healthy genetic expression
- This allows the symptom resolution to occur as a result of system 'mosaic' change, and then of course the downstream events occur
- The longing in the public is for this sort of detective work to find the cause and make the correction – increasingly food is seen as medicine and people are asking more and more for what foods will change their health patterns

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Sequential Intervention

- ↻ By giving hope through discussion of therapeutic rationale and then accountably determine if the therapy had efficacy it is possible to initiate activity that may assist a person to make the changes that result in healing
- ↻ Sequential intervention and accountable follow-up can show what has worked and what may still need to be employed
- ↻ Promote an understanding of intervention that creates evolutions in individual physiology and show the effect of that intervention
- ↻ Allow every condition to become a strategic consideration of possible etiology and therapeutic rationale – people are in search of experts – reveal yourself
- ↻ The comprehensive nature of nutritional therapy means there is always more physiology to optimize and support leaving an individual constantly refining as long as they wish to further improve their status
- ↻ If the practitioner is accountable s/he will be allowed to experiment with reasonable ideas



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