

Casual Friday Series

Crohn's Disease Part 2

A Biogenetix Clinical Presentation

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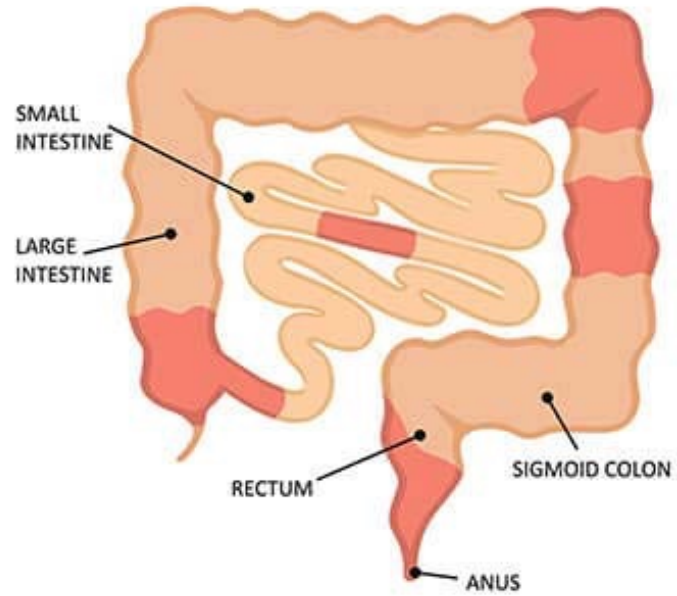
Disclaimer

- *Information in this presentation is not intended to diagnose, treat, reverse, cure, or prevent any disease. While this presentation is based on medical literature, findings, and text, The following statements have not been evaluated by the FDA.*
- *The information provided in this presentation is for your consideration only as a practicing health care provider. Ultimately you are responsible for exercising professional judgment in the care of your own patients.*



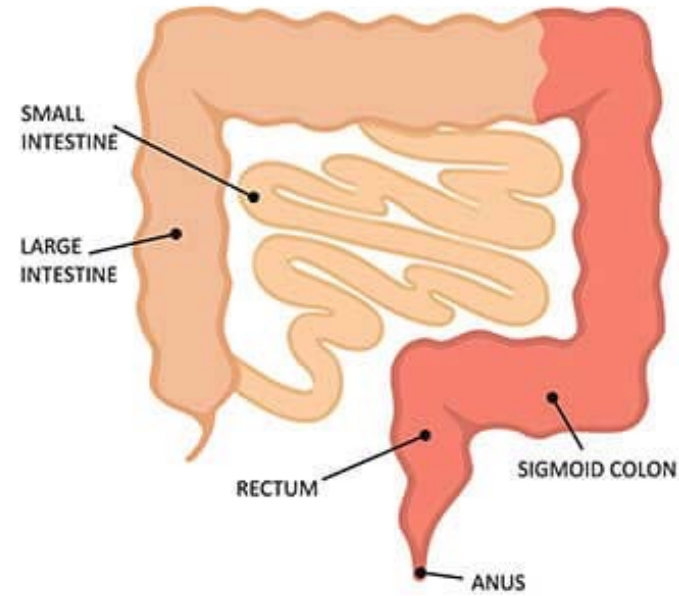
CROHN'S DISEASE

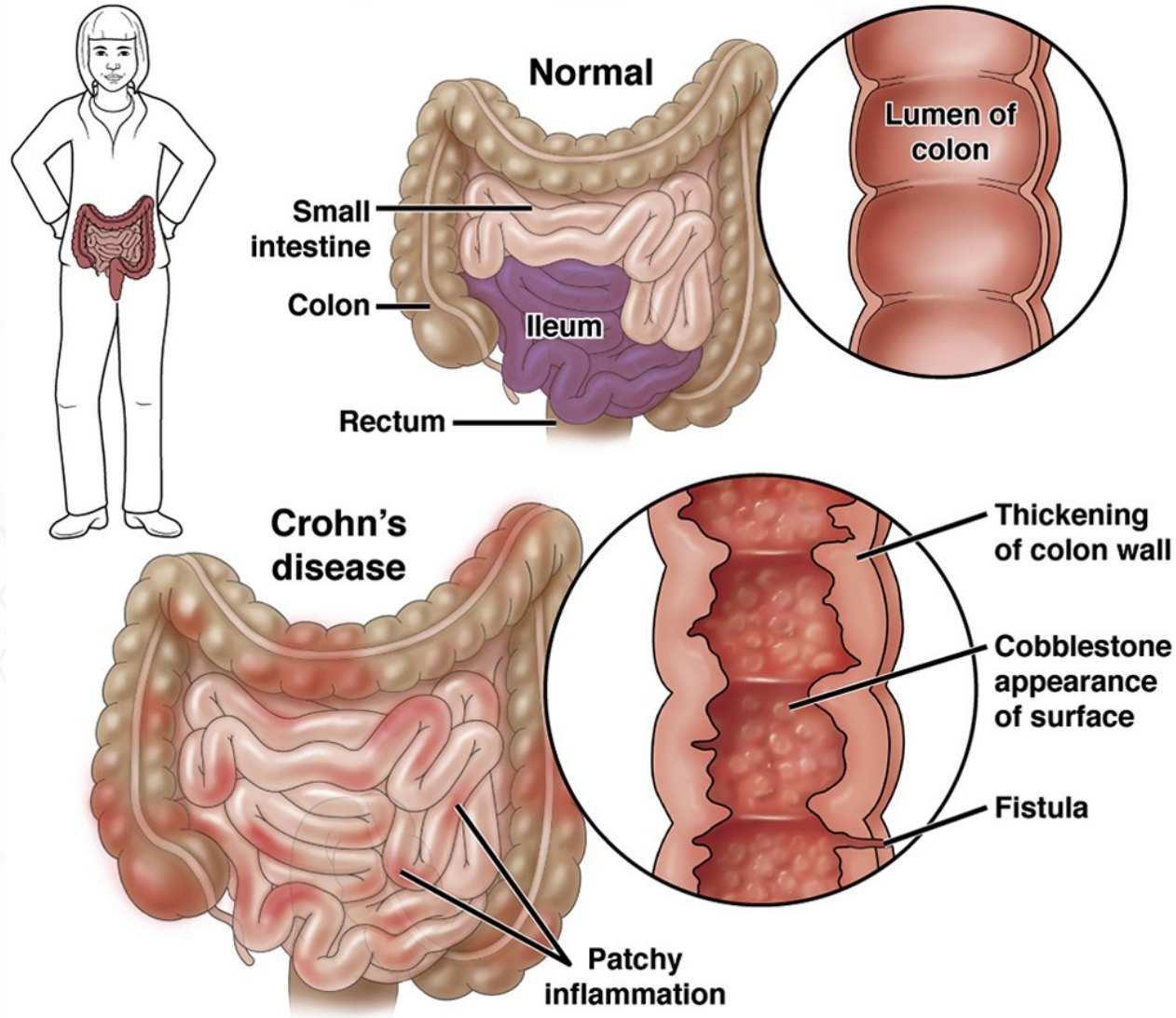
PATCHY INFLAMMATION THROUGHOUT
SMALL AND LARGE BOWEL

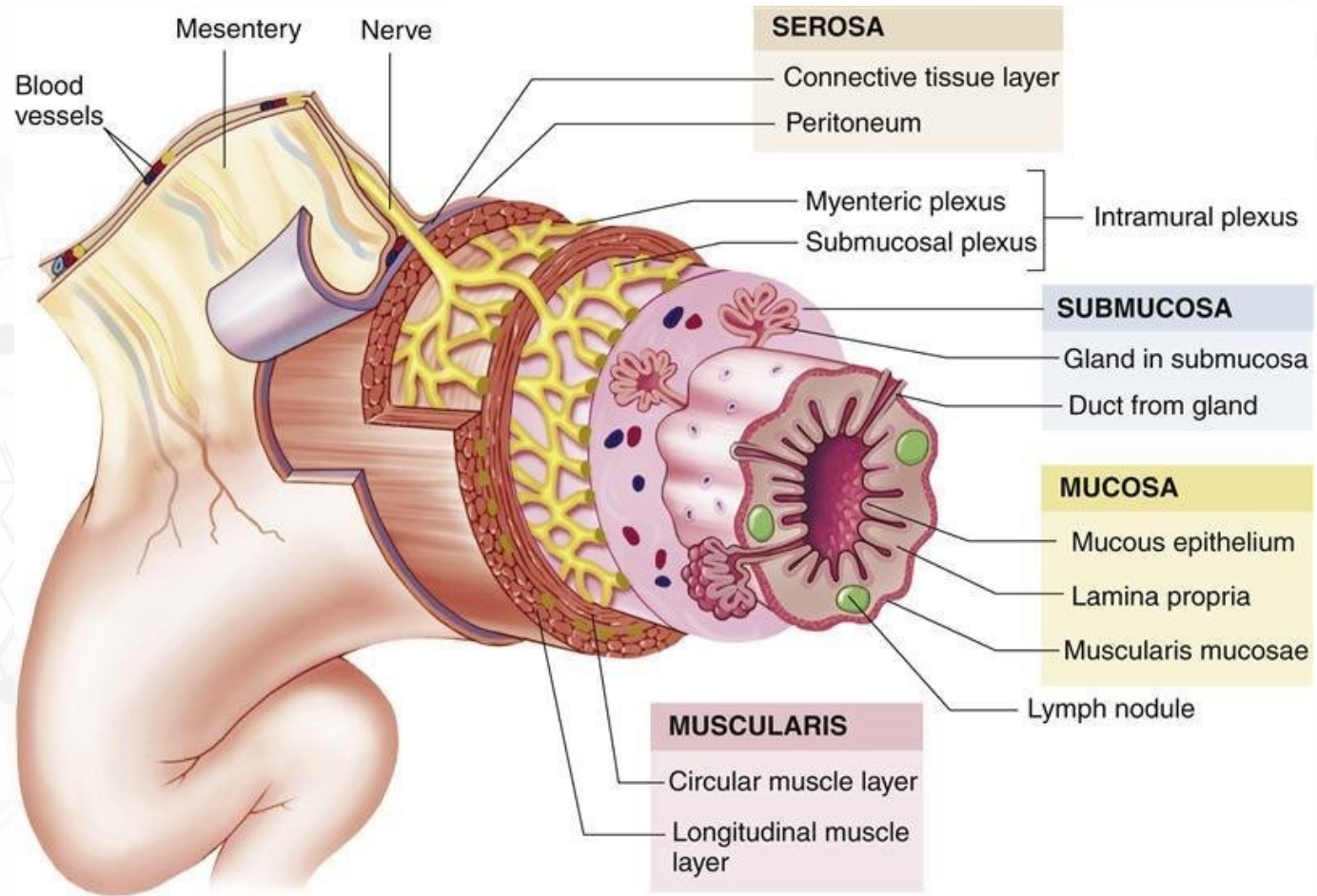


ULCERATIVE COLITIS

CONTINUOUS AND UNIFORM
INFLAMMATION IN THE LARGE BOWEL







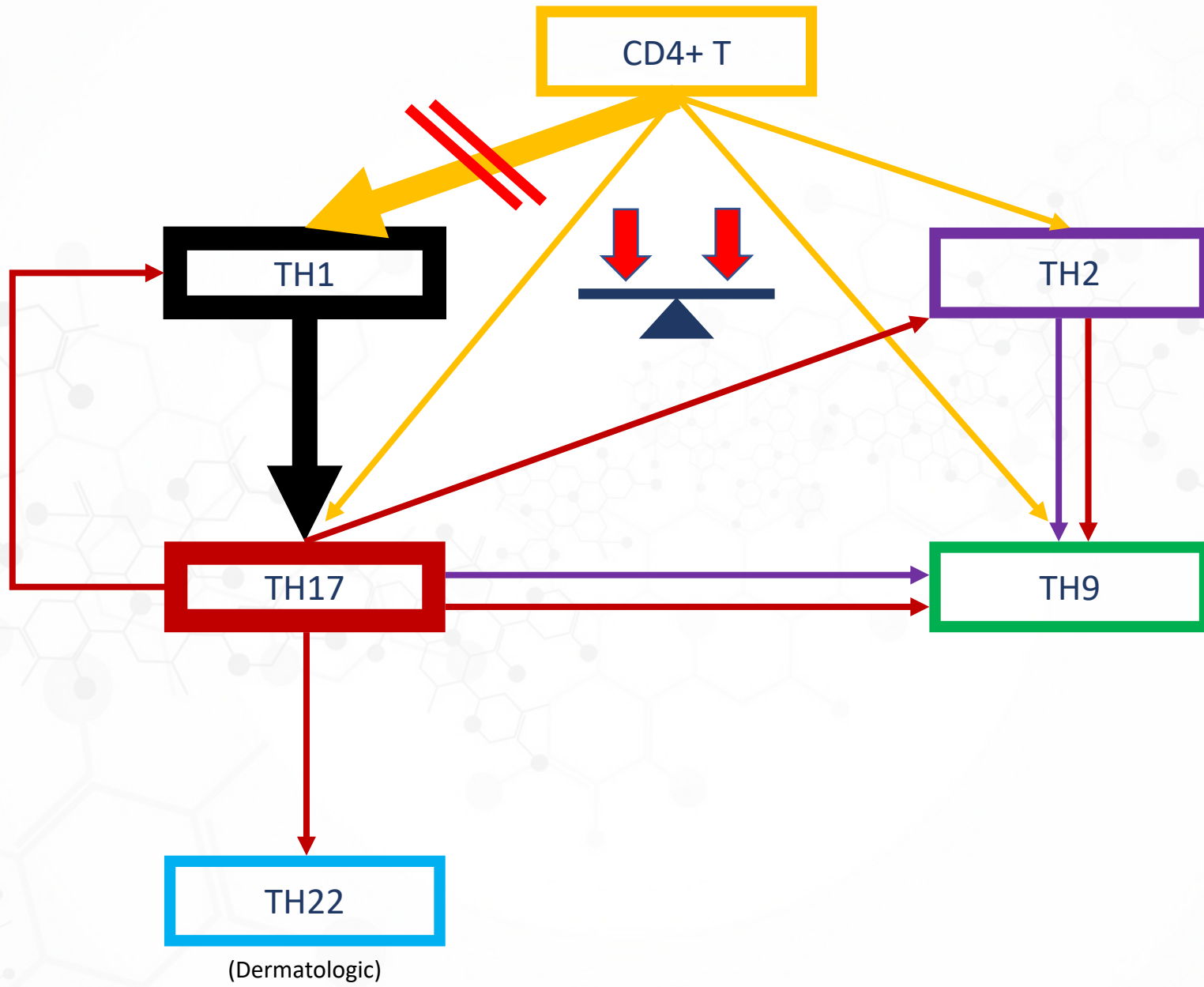


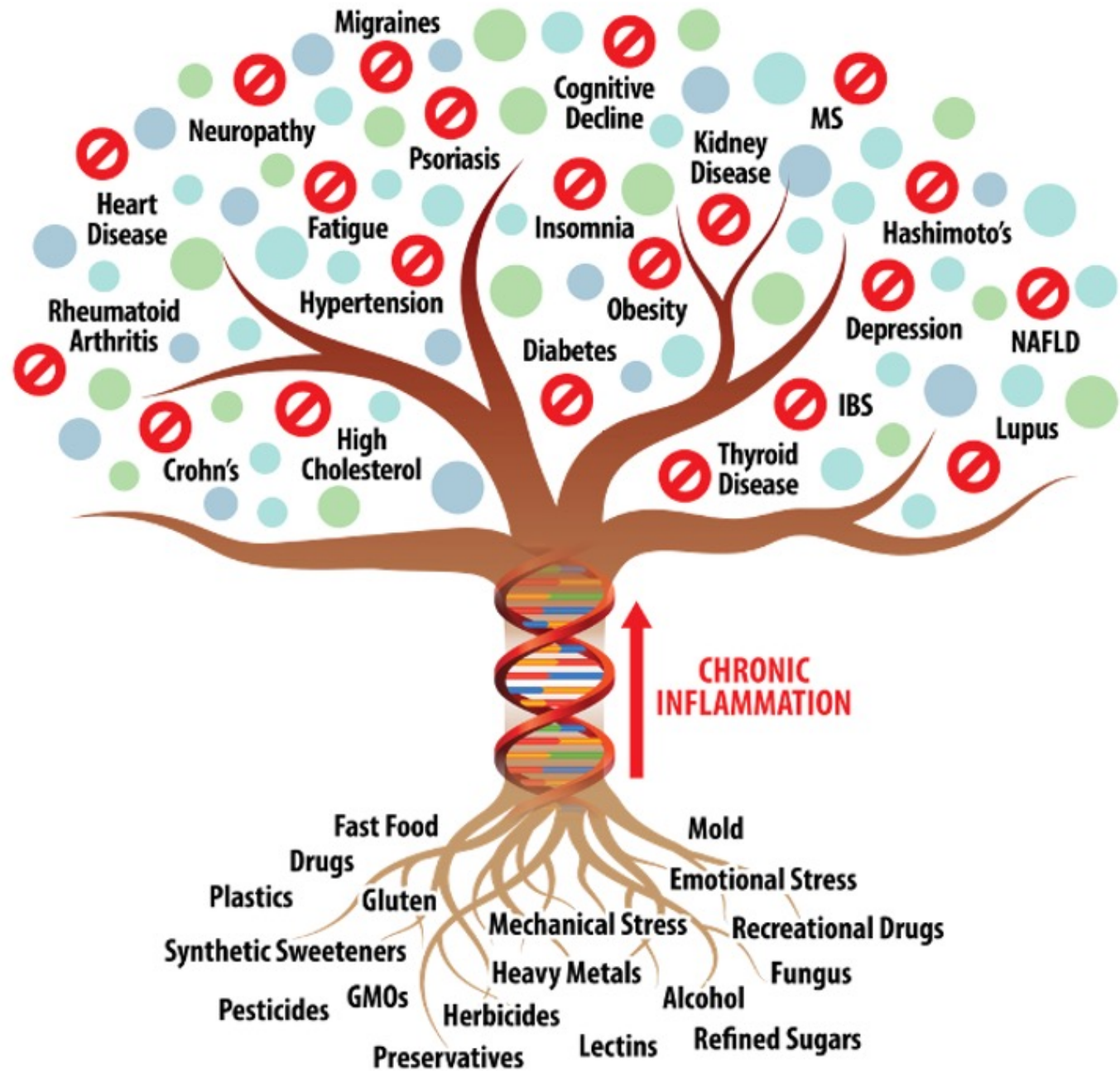
Stool tests to rule out infections include culture and sensitivities, ovum and parasites, Clostridium difficile toxins, leukocyte count. Stools for calprotectin can detect active Crohn disease and are also used for monitoring disease.[\[12\]](#)
[\[13\]](#)[\[14\]](#)[\[15\]](#)

Blood tests including complete blood count and a metabolic panel can highlight the presence of anemia (B12 or iron deficiency) or liver disease. Special serology such as normal anti-neutrophil cytoplasmic antibodies (ANCA) and raised anti-saccharomyces cerevisiae antibodies (ASCA) can distinguish Crohn disease from ulcerative colitis. C-reactive protein (CRP) or erythrocyte sedimentary rate (ESR) can reflect the severity of the inflammation.

Before initiation of any treatment, vaccination history (tetanus, diphtheria, pertussis, human papillomavirus, influenza, pneumococcal, hepatitis A, hepatitis B, measles, mumps, rubella, varicella-zoster virus) should be known, if no prior history titers of hepatitis A, hepatitis B, measles, mumps, rubella, and the varicella-zoster virus should be checked. Baseline Mantoux test with chest radiograph should also be checked before any treatment. Baseline thiopurine methyltransferase (TPMT) levels should be checked before deciding on treatment options. Low levels of TPMT may result in an increased risk of side effects, whereas very high levels may decrease the effectiveness of prescribed treatment.







Efficacy of the Autoimmune Protocol Diet for Inflammatory Bowel Disease

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Despite diet being implicated in the pathogenesis of IBD,⁴ we have limited data to guide the use of nutritional therapy as either primary or adjunctive treatment for these conditions. Conventional medical therapy for IBD focuses on suppression of the immune system by targeting a variety of pathways, yet response rates continue to remain suboptimal. Therefore, there is an important need to study dietary factors that may not only help improve response to conventional treatment but also potentially be used as primary therapy or maintenance therapy for patients with IBD. A Western diet, high in refined carbohydrates, omega-6 fatty acids, saturated fat, low in fiber, vitamins, and generally nutrient dense foods, are associated with an increased risk of IBD.⁴ Recent albeit limited data suggest that a semivegetarian diet⁵ (allowing milk and eggs, fish once per week, and other meat once every 2 weeks), specific carbohydrate diet^{6–8} (removal of all grains, most dairy products, and sweeteners except for honey), or anti-inflammatory diet⁹ (modified carbohydrate and fatty acid intake, and increased prebiotic/probiotic ingestion) can be associated with improved rates of achieving or maintaining clinical response.

The autoimmune protocol (AIP) diet is an extension of the Paleolithic diet¹⁰ and incorporates some of the dietary changes previously studied in IBD, including avoidance of gluten and refined sugar. The AIP diet focuses on an initial elimination phase of food groups including grains, legumes, nightshades, dairy, eggs, coffee, alcohol, nuts and seeds, refined/processed sugars, oils, and food additives.^{10,11} The rationale is to avoid foods, additives, or medications (e.g., nonsteroidal anti-inflammatory drugs) that can trigger intestinal inflammation, dysbiosis, and/or symptomatic food intolerance.^{10,12–14} It also emphasizes consumption and preparation of fresh, nutrient dense foods, bone broth, and fermented foods, while addressing factors that are known to associate with disability due to IBD, such as sleep and sleep hygiene, stress management, forming a support system, and physical activity.¹⁵ The elimination phase is followed by a maintenance phase, the duration of which can vary by individual, until they achieve a measurable improvement in their symptoms and overall well-being. Staged reintroduction of food groups is then initiated gradually, as patients identify unique foods or food groups that may contribute to symptoms while liberalizing their diet.^{10,11}



Efficiency of the Autoimmune Protocol Diet for Inflammatory Bowel Disease**TABLE 3.**

Effect of AIP Diet on Fecal and Serum IBD Biomarkers

Week 0 versus 6 Results	n	Week 0	Week 6	<i>P</i>
FC ($\mu\text{g/g}$), mean (SD)	8	267 (367)	157 (251)	0.45
Baseline FC $>50 \mu\text{g/g}$, mean (SD)	5	412 (406)	196 (317)	0.36
CRP (mg/L), mean (SD)	11	8.3 (11.5)	7.0 (14.5)	0.46
Albumin (g/dL), mean (SD)	11	3.9 (0.4)	3.9 (0.4)	0.82
Week 0 versus 11 Results	n	Week 0	Week 11	<i>P</i>
FC ($\mu\text{g/g}$), mean (SD)	6	471 (562)	112 (104)	0.12
Baseline FC $>50 \mu\text{g/g}$, mean (SD)	4	701 (563)	139 (113)	0.09
CRP (mg/L), mean (SD)	9	3.9 (5.2)	3.4 (5.3)	0.82
Albumin (g/dL), mean (SD)	10	4.1 (0.4)	3.9 (0.4)	0.36



51 yo female, current diagnosis and brief hx:

- Crohn's
- Menopause
- Insomnia

- Gallbladder removed
- Partial hysterectomy
- Hx of shingles (self dx "weak immune system")

- Family hx of diabetes and Alzheimer's

Supplements

List all supplements you're currently taking including vitamins, herbs, minerals.

Supplement	Dose	Frequency	Start Date	Reason
Vit A	25,000mg	daily	months	menopause
Vit D	20,000mg	daily	months	crohns
L-Glutamine	500mg	daily	months	crohns
Mucosa Calm	900mg	daily	months	crohns
Vit C	1000mg	daily	months	overall health
Zinc	75mg	daily	months	over all health
Magnesium L-Threonate	432mg	daily	months	health/memory
B-12	100mg	daily	months	crohns
DIM	200mg	daily	months	menopause
B-5	500mg	daily	months	support vit A
zyrtec		occasionally		allergies
ground flax seed	1/4 teaspoon	2 on 2 off	~1 month ago	hot flashes

Medications

List all medications you're currently taking.

Medication	Dose	Frequency	Start Date	Reason
Trazodone	100mg	nightly	~3 moths ago	sleep/anxiety
Progesterone	100mg	nightly	8/9/22	menopause



51 yo female, dx
Crohn's.

Element	Current	Previous	Impr	Optimal Range	Standard Range	Units
	Sep 08 2022	Not Available				
Glucose	80.00			72.00 - 90.00	65.00 - 99.00	mg/dL
Hemoglobin A1C	6.00	↑		5.00 - 5.50	0.00 - 5.60	%
BUN	15.00			10.00 - 16.00	7.00 - 25.00	mg/dL
Creatinine	0.95			0.80 - 1.10	0.40 - 1.35	mg/dL
BUN/Creatinine Ratio	15.78			10.00 - 16.00	6.00 - 22.00	Ratio
eGFR Non-Afr. American	73.00	↓		90.00 - 120.00	60.00 - 90.00	mL/min/1.73m2
Sodium	140.00			135.00 - 142.00	135.00 - 146.00	mEq/L
Potassium	4.30			4.00 - 4.50	3.50 - 5.30	mEq/L
Sodium/Potassium Ratio	32.55			30.00 - 35.00	30.00 - 35.00	ratio
Chloride	100.00			100.00 - 106.00	98.00 - 110.00	mEq/L
CO2	23.00	↓		25.00 - 30.00	19.00 - 30.00	mEq/L
Anion gap	21.30	↑		7.00 - 12.00	6.00 - 16.00	mEq/L
Protein, total	7.40			6.90 - 7.40	6.10 - 8.10	g/dL
Albumin	4.50			4.00 - 5.00	3.60 - 5.10	g/dL
Globulin, total	2.90	↑		2.40 - 2.80	2.00 - 3.50	g/dL
Albumin/Globulin Ratio	1.55			1.40 - 2.10	1.00 - 2.50	ratio
Calcium	10.00			9.40 - 10.10	8.60 - 10.40	mg/dL
Calcium/Albumin Ratio	2.22			0.00 - 2.60	0.00 - 2.70	ratio
Phosphorus	3.40	↓		3.50 - 4.00	2.50 - 4.50	mg/dL
Calcium/Phosphorous Ratio	2.94	↑		2.30 - 2.80	1.90 - 4.20	ratio
Magnesium	2.20			2.20 - 2.50	1.50 - 2.50	mg/dl
Alk Phos	89.00			70.00 - 100.00	35.00 - 115.00	IU/L
AST (SGOT)	19.00			10.00 - 26.00	10.00 - 35.00	IU/L
ALT (SGPT)	14.00			10.00 - 26.00	6.00 - 29.00	IU/L
LDH	224.00	↑		140.00 - 200.00	120.00 - 250.00	IU/L
Bilirubin - Total	0.30			0.10 - 0.90	0.20 - 1.20	mg/dL
GGT	15.00			10.00 - 30.00	3.00 - 70.00	IU/L
Iron - Serum	85.00			85.00 - 130.00	40.00 - 160.00	µg/dL
Ferritin	29.00	↓		40.00 - 150.00	10.00 - 232.00	ng/mL



51 yo female, dx
Crohn's.

TIBC	363.00	↑	250.00 - 350.00	250.00 - 425.00	µg/dL
Cholesterol - Total	217.00	↑	155.00 - 190.00	125.00 - 200.00	mg/dL
Triglycerides	64.00		50.00 - 100.00	0.00 - 150.00	mg/dL
LDL Cholesterol	135.00	↑	0.00 - 120.00	0.00 - 100.00	mg/dL
HDL Cholesterol	71.00	↑	55.00 - 70.00	46.00 - 100.00	mg/dL
Cholesterol/HDL Ratio	3.10	↑	0.00 - 3.00	0.00 - 5.00	Ratio
Triglyceride/HDL Ratio	0.90		0.00 - 2.00	0.00 - 3.30	ratio
TSH	0.29	▼	1.00 - 3.00	0.40 - 4.50	µU/mL
Total T3	116.00		90.00 - 168.00	76.00 - 181.00	ng/dL
Total T4	11.30		6.00 - 11.90	4.50 - 12.00	µg/dL
T3 Uptake	26.00	↓	27.00 - 35.00	22.00 - 35.00	%
Free Thyroxine Index (T7)	2.93		1.70 - 4.60	1.40 - 3.80	Index
Thyroid Peroxidase (TPO) Abs	19.00		0.00 - 34.00	0.00 - 34.00	IU/ml
Hs CRP, Female	0.90		0.00 - 0.99	0.00 - 2.90	mg/L
Homocysteine	9.30	↑	0.00 - 6.00	0.00 - 10.30	µmol/L
Fibrinogen	413.00	↑	295.00 - 369.00	175.00 - 425.00	mg/dl
Vitamin D (25-OH)	141.00	⚠	50.00 - 90.00	30.00 - 100.00	ng/ml
Total WBCs	4.00	↓	5.30 - 7.50	3.80 - 10.80	k/cumm
RBC, Female	5.16	↑	3.90 - 4.50	3.80 - 5.10	m/cumm
Hemoglobin, Female	14.20		13.50 - 14.50	11.70 - 15.50	g/dl
Hematocrit, Female	42.60		37.00 - 44.00	35.00 - 45.00	%
MCV	83.00	↓	85.00 - 92.00	80.00 - 100.00	fL
MCH	27.50		27.00 - 31.90	27.00 - 33.00	pg
MCHC	33.30		32.00 - 35.00	32.00 - 36.00	g/dL
Platelets	380.00		150.00 - 400.00	140.00 - 400.00	k/cumm
RDW	14.00	↑	11.70 - 13.00	11.00 - 15.00	%
Neutrophils	51.00		40.00 - 60.00	38.00 - 74.00	%
Lymphocytes	39.00		25.00 - 40.00	14.00 - 46.00	%
Monocytes	8.00	↑	0.00 - 7.00	0.00 - 7.00	%
Eosinophils	1.00		0.00 - 3.00	0.00 - 3.00	%
Basophils	1.00		0.00 - 1.00	0.00 - 1.00	%



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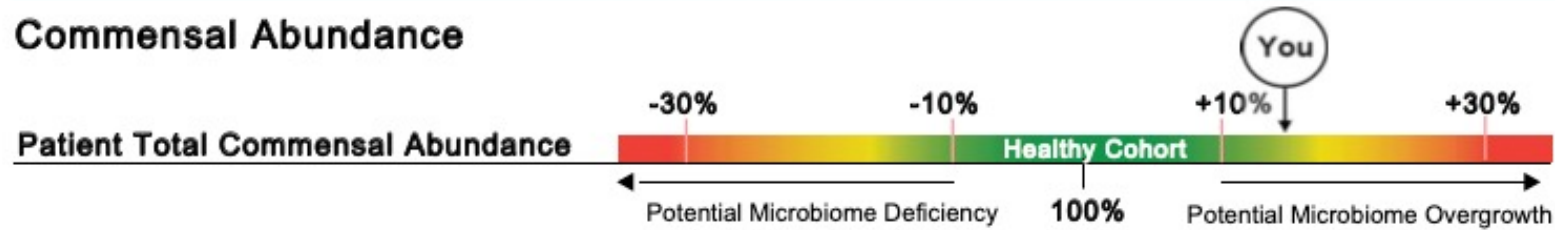
Functional Imbalance Scores				
Key <2 : Low Need for Support 2-3 : Optional Need for Support 4-6 : Moderate Need for Support 7-10 : High Need for Support				
Need for Digestive Support	Need for Inflammation Modulation	Need for Microbiome Support	Need for Prebiotic Support	Need for Antimicrobial Support
MALDIGESTION	INFLAMMATION	DYSBIOSIS	METABOLIC IMBALANCE	INFECTION
0	9	10	8	8
Biomarkers Fecal Fats ▼ Pancreatic Elastase ● Products of Protein Breakdown ●	Biomarkers Calprotectin ▲ Eosinophil Protein X ▲ Secretory IgA ● Occult Blood ●	Biomarkers PP Bacteria/Yeast ▲ Reference Variance ▲ Total Abundance ▲ IAD/Methane Score ●	Biomarkers Total SCFA's ▼ n-Butyrate Conc. ▼ SCFA (%) ● Beta-glucuronidase ●	Biomarkers PP Bacteria/Yeast ▲ Total Abundance ▲ Parasitic Infection ● Pathogenic Bacteria ●
Therapeutic Support Options <ul style="list-style-type: none"> • Digestive Enzymes • Betaine HCl • Bile Salts • Apple Cider Vinegar • Mindful Eating Habits • Digestive Bitters 	Therapeutic Support Options <ul style="list-style-type: none"> • Elimination Diet/ Food Sensitivity Testing • Mucosa Support: Slippery Elm, Althea, Aloe, DGL, etc. • Zinc Carnosine • L-Glutamine • Quercetin • Turmeric • Omega-3's • GI Referral (If Calpro is Elevated) 	Therapeutic Support Options <ul style="list-style-type: none"> • Pre-/Probiotics • Increase Dietary Fiber Intake • Consider SIBO Testing • Increase Resistant Starches • Increase Fermented Foods • Meal Timing 	Therapeutic Support Options <ul style="list-style-type: none"> • Pre-/Probiotics • Increased Dietary Fiber Intake • Increase Resistant Starches • Increase Fermented Foods • Calcium D-Glucarate (for high beta-glucuronidase) 	Therapeutic Support Options <ul style="list-style-type: none"> • Antibiotics (if warranted) • Antimicrobial Herbal Therapy • Antiparasitic Herbal Therapy (if warranted) • <i>Saccharomyces boulardii</i>



51 yo female, dx
Crohn's.

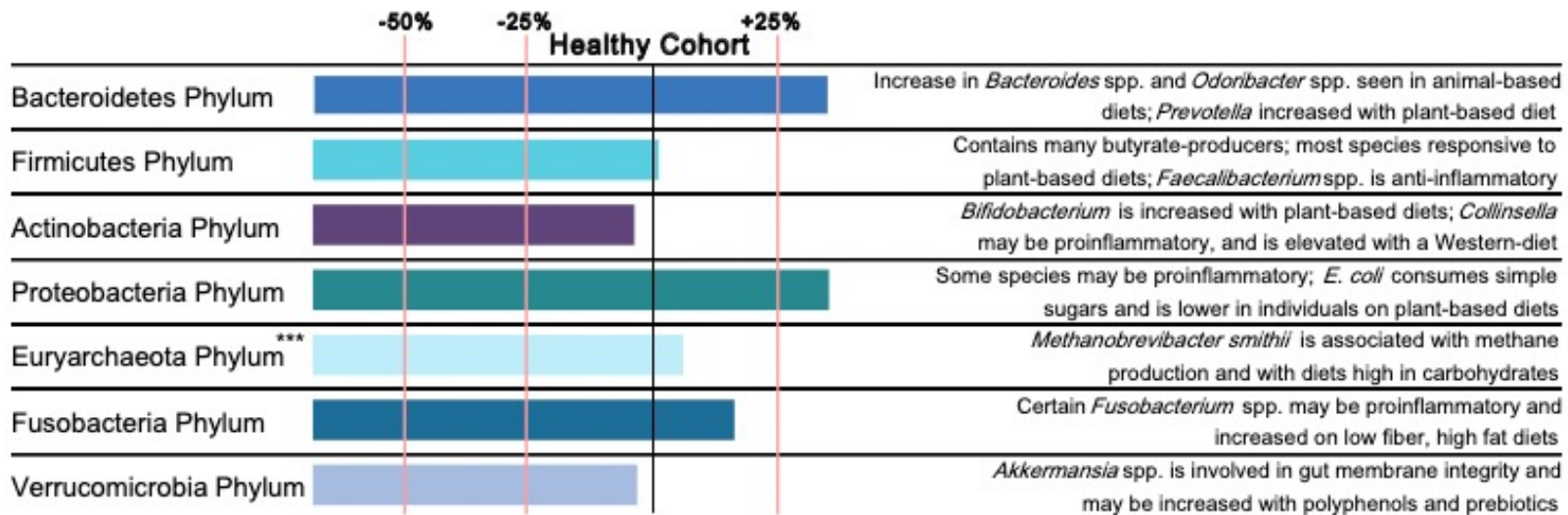
Commensal Microbiome Analysis

Commensal Abundance

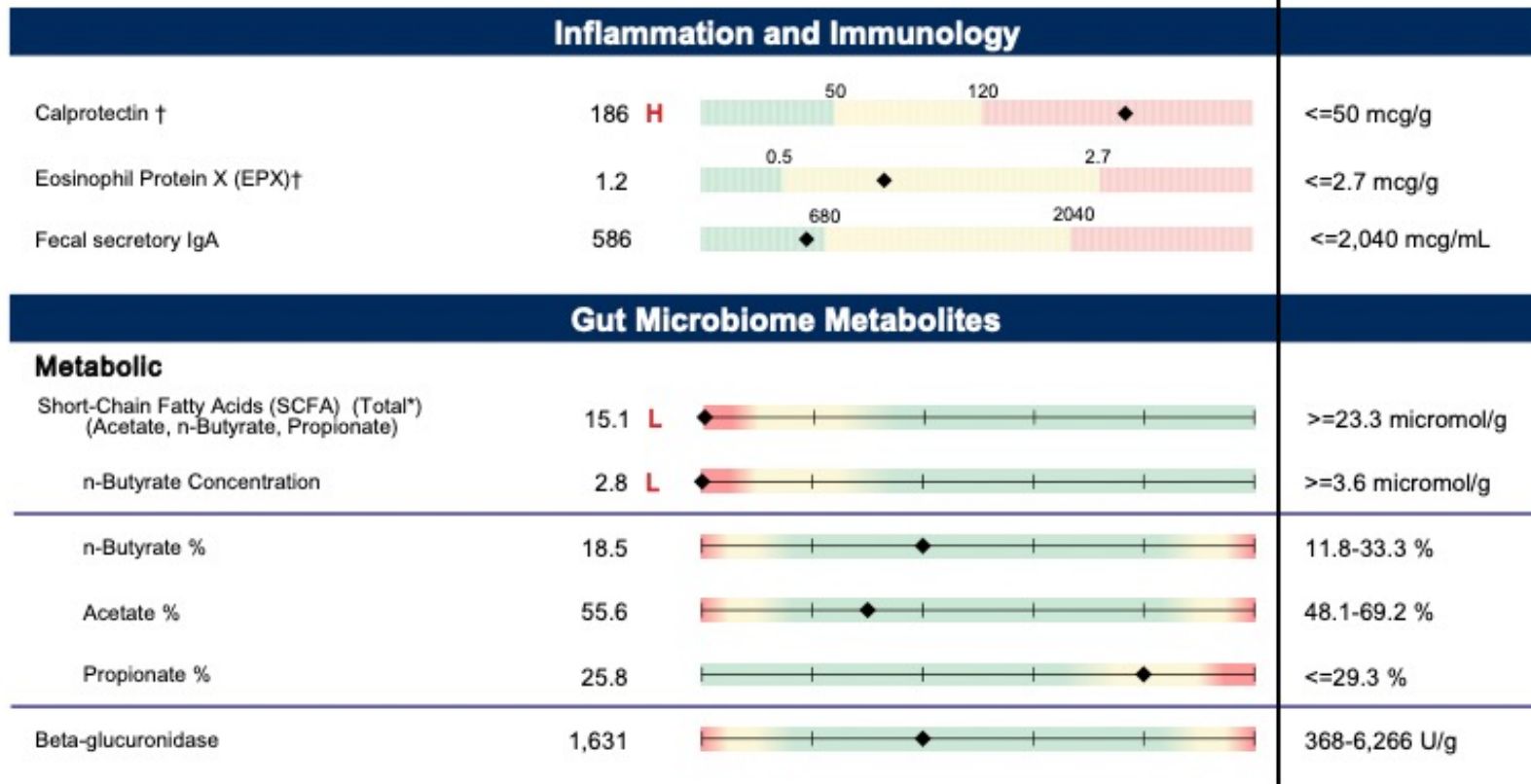


Total Commensal Balance: The total commensal abundance is a sum-total of the reported commensal bacteria compared to a healthy cohort. Low levels of commensal bacteria are often observed after antimicrobial therapy, or in diets lacking fiber and/or prebiotic-rich foods and may indicate the need for microbiome support. Conversely, higher total commensal abundance may indicate potential bacteria overgrowth or probiotic supplementation.

Relative Commensal Abundance







51 yo female, dx
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Crohn's.

Gastrointestinal Microbiome (Culture)

Human microflora is influenced by environmental factors and the competitive ecosystem of the organisms in the GI tract. Pathogenic significance should be based upon clinical symptoms.

Microbiology Legend			
NG	NP	PP	P
			
No Growth	Non-Pathogen	Potential Pathogen	Pathogen

Bacteriology (Culture)

Lactobacillus spp.

NG

Escherichia coli

4+ NP

Bifidobacterium (Anaerobic Culture)

2+ NP

Additional Bacteria

alpha haemolytic Streptococcus

4+ NP

Citrobacter species

4+ PP

Klebsiella pneumoniae

4+ PP

Enterococcus faecalis

4+ NP

Pseudomonas aeruginosa

4+ PP

Mycology (Culture)

Geotrichum species

2+ PP

Additional Bacteria

Non-Pathogen: Organisms that fall under this category are those that constitute normal, commensal flora, or have not been recognized as etiological agents of disease.

Potential Pathogen: Organisms that fall under this category are considered potential or opportunistic pathogens when present in heavy growth.

Pathogen: The organisms that fall under this category have a well-recognized mechanism of pathogenicity in clinical literature and are considered significant regardless of the quantity that appears in the culture.

