



GUT HEALTH FOR ULTIMATE HEALTH

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OBJECTIVES

- To review what the microbiome is
- To understand what is important to keep our gut healthy
- To gain an understanding of gut health symbiosis & dysbiosis
- To established further importance of healthy foods
- To learn how you can improve your gut with simple foods




WHAT IS THE **GUT MICROBIOME?**



WHAT IS THE **GUT MICROBIOME?**

mi·cro·bi·ome

/,mīkrō'biōm/ 

noun

the microorganisms in a particular environment (including the body or a part of the body).

"we depend on a vast army of microbes to stay alive: a microbiome that protects us against germs, breaks down food to release energy, and produces vitamins"

- the combined genetic material of the microorganisms in a particular environment.

"understanding the microbiome—human, animal, and environmental—is as important as the human genome"

WHAT IS THE **GUT MICROBIOME?**

- The bacteria that lives within us
 - 10 -100 trillion microbial cells within us, primarily in bacteria in the gut¹
 - 100 x more bacterial genes than human genes
 - Symbiotic relationship
- Large Intestine/Colon
 - Main Function: reabsorb water & salt, dispose of waste
 - ... or, so we thought!
 - So **COMPLEX** it should be considered a separate organ

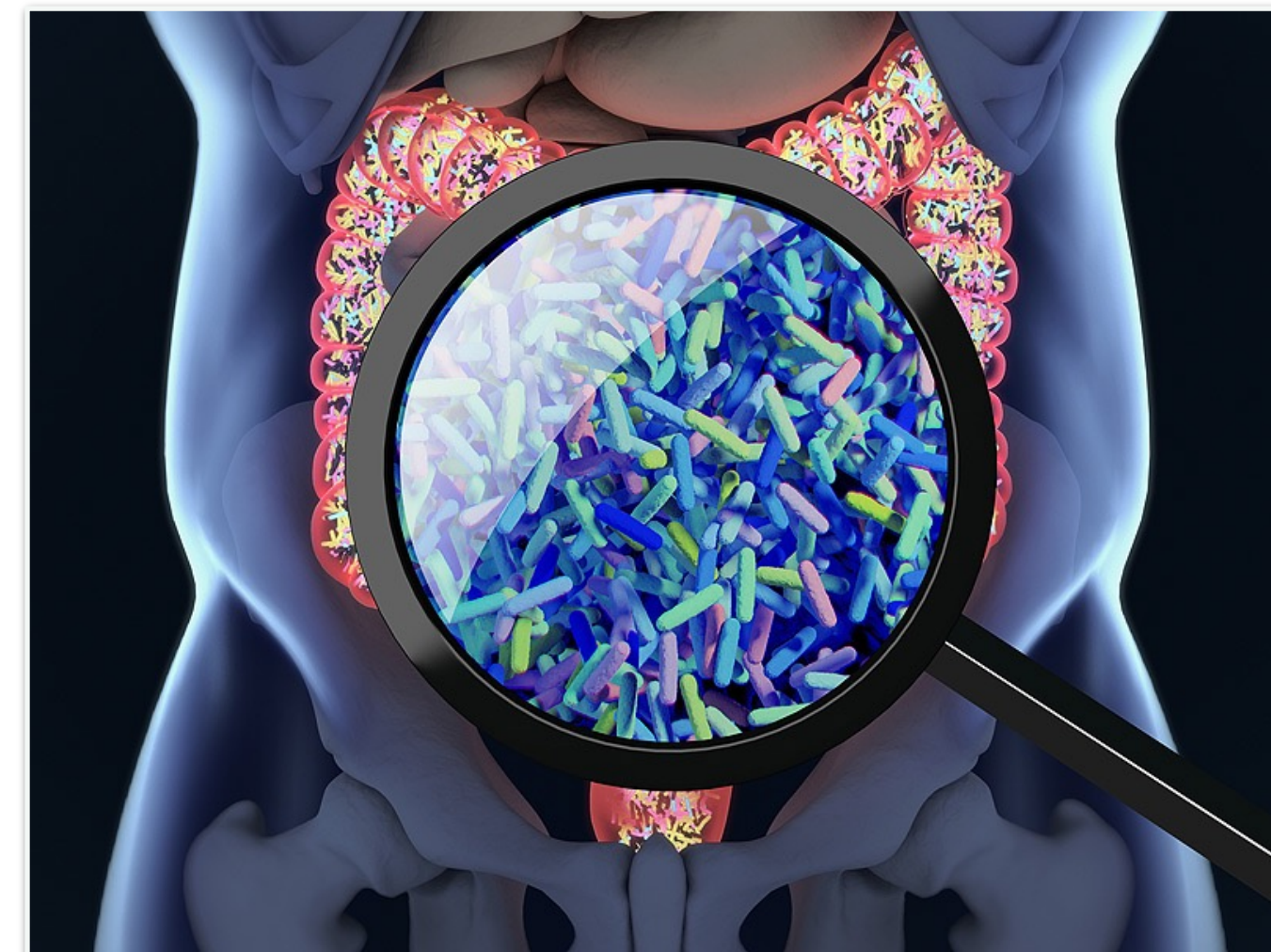


Photo from [Medscape](#)

¹ Tumbaugh PJ, Ley RE, Hamady M, Fraser-Liggett CM, Knight R, Gordon JI. The human microbiome project. Nature. 2007;449:804–810.

WHAT IS THE **GUT MICROBIOME?**

- Plays large role in development of obesity, diabetes, metabolic syndrome, heart disease, certain cancers, inflammatory bowel diseases, ... & more!

- Why?²

- 3,000 sq. ft.
- Direct interaction with our environment
- Single layer of cells

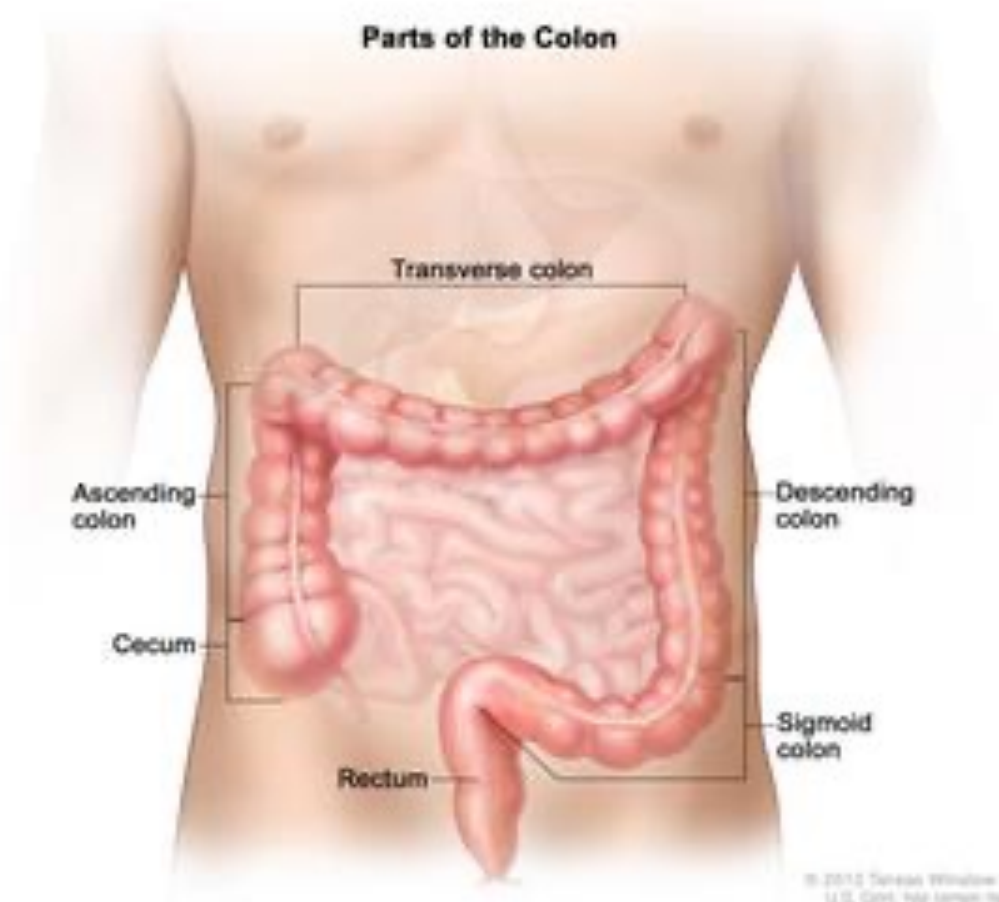
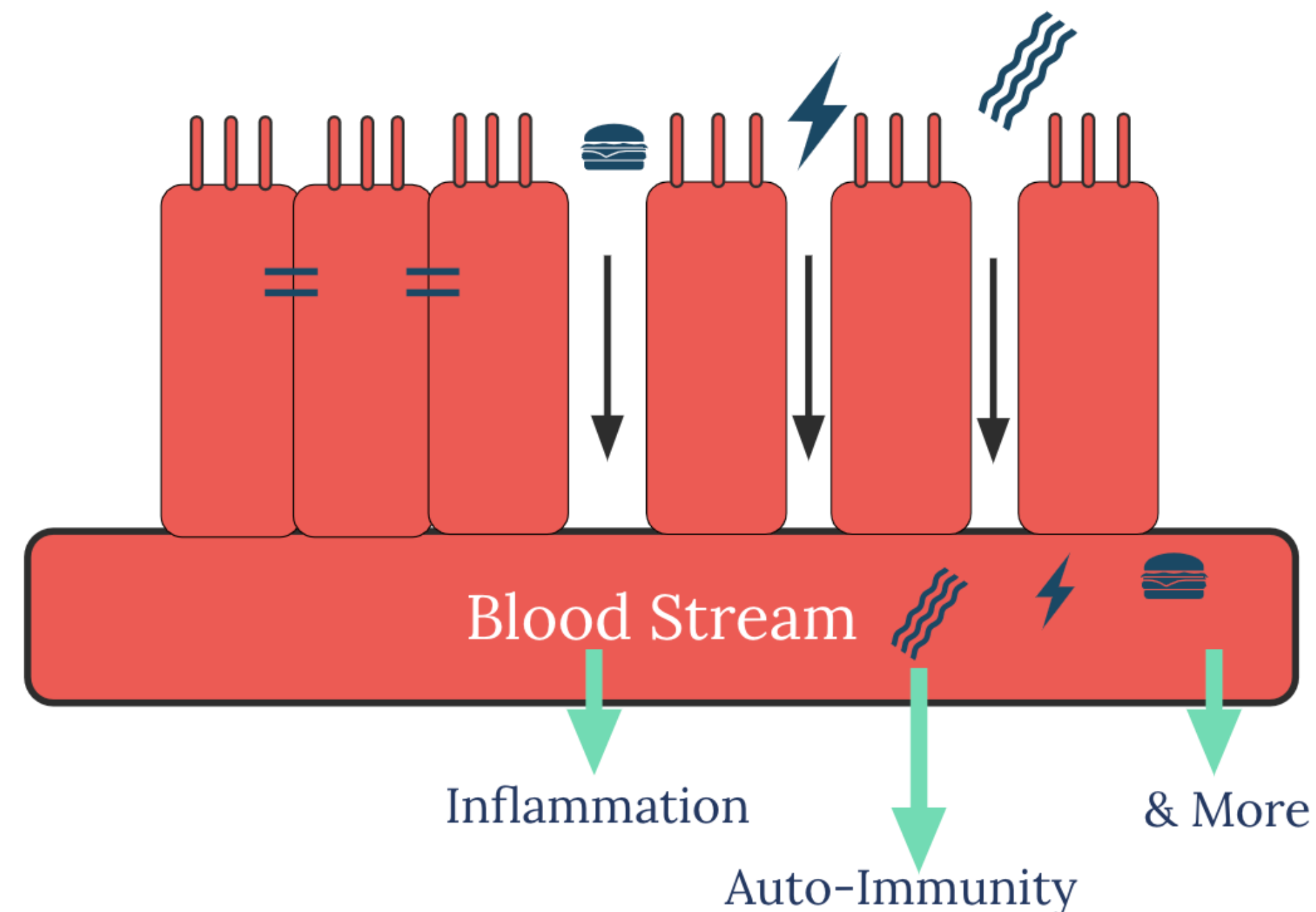


Photo from [PubMed Health](#)

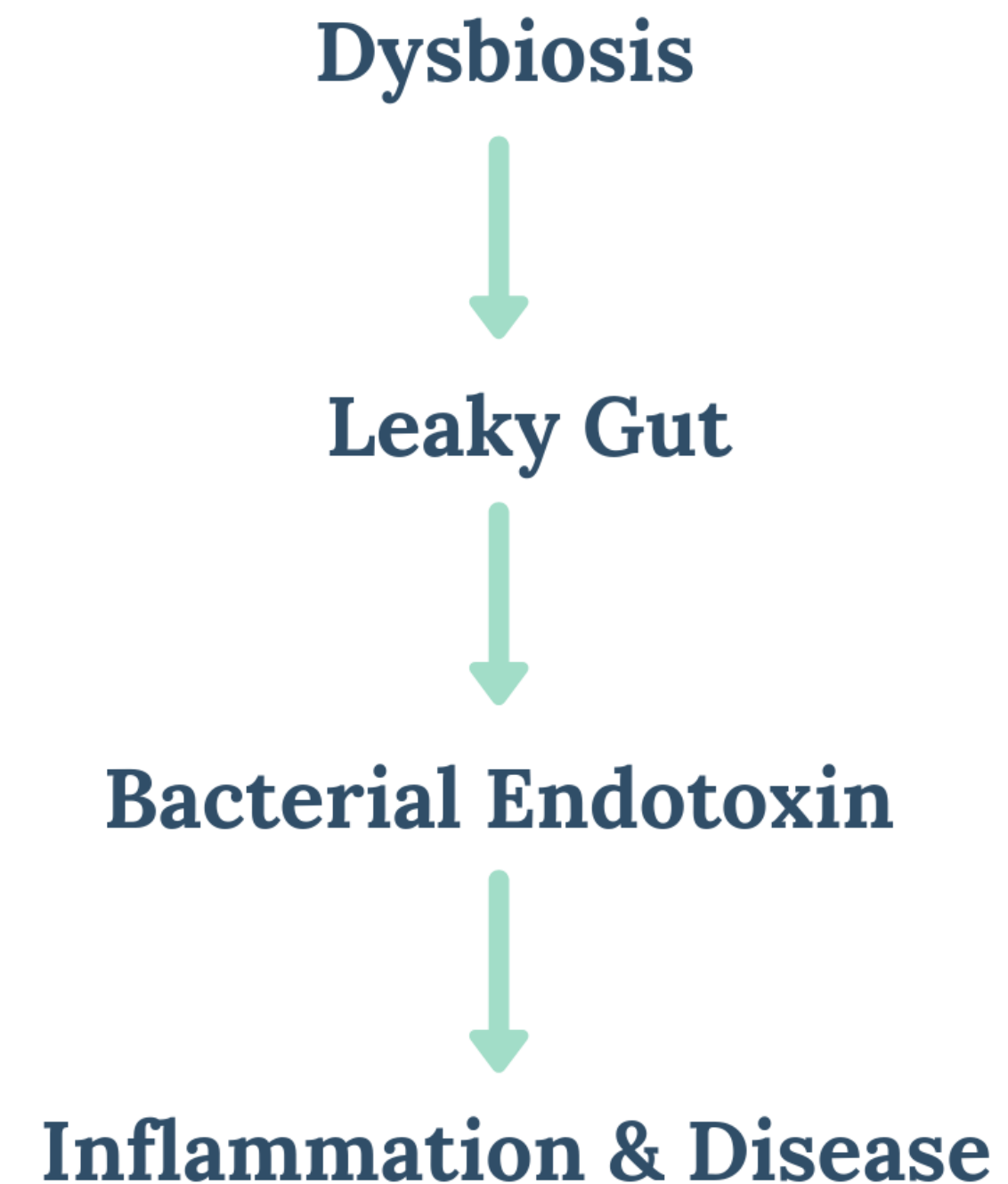
DYSBIOSIS & LEAKY GUT

- **Dysbiosis:** the loss of harmony and balance within the gut
 - Loss of diversity and resulting in a higher proportion of inflammatory microbes.
- *“Leaky Gut”:* intestinal permeability & bacterial endotoxins into the blood stream



BACTERIAL ENDOTOXIN IS RELATED TO ¹⁻⁸:

- Autoimmunity
- Obesity
- Coronary artery disease
- Congestive heart failure
- Type 2 diabetes
- Alzheimer's
- Alcoholic hepatitis
- Nonalcoholic fatty liver
- Osteoarthritis
- And so much more...



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Symptoms Associated with Dysbiosis

Intestinal	Outside the Intestines
Abdominal pain or cramping	Weight gain
Gas	Fatigue
Bloating	Brain fog
Food sensitivities	Difficulty concentrating
Food allergies	Mood imbalance
Diarrhea	Anxiety
Constipation	Acne
Mucus in stool	Joint point or muscle aches
Nausea	Weakness
Indigestion	Bad breath
Heartburn/Acid reflux	Sinus congestion
Burping	Shortness of breath/wheezing

Chart Recreated from: *Fiber Fueled*, by Dr. Will Bulsiewicz



“All disease begins in the gut.”

~ Hippocrates





WHAT IS **IMPORTANT** FOR A HEALTHY MICROBIOME?

- **FIBER!**
- Fiber is not digested by the body
 - But it is fuel for bacteria!
- Fermentation process promotes bacterial growth producing short-chain fatty acids (SCFAs)⁷
 - SCFAs important energy source for colonocytes



Photo by [Jamie Street](#) on [Unsplash](#)

⁷ [A Fechner, K Fenske, G Jahreis. Effects of legume kernel fibres and citrus fibre on putative risk factors for colorectal cancer: a randomised, double-blind, crossover human intervention trial. Nutr J. 2013 Jul 16;12:101.](#)



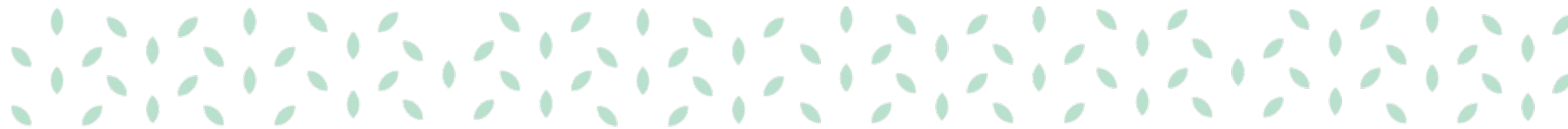
WE FEED THEM,
THEY FEED US.



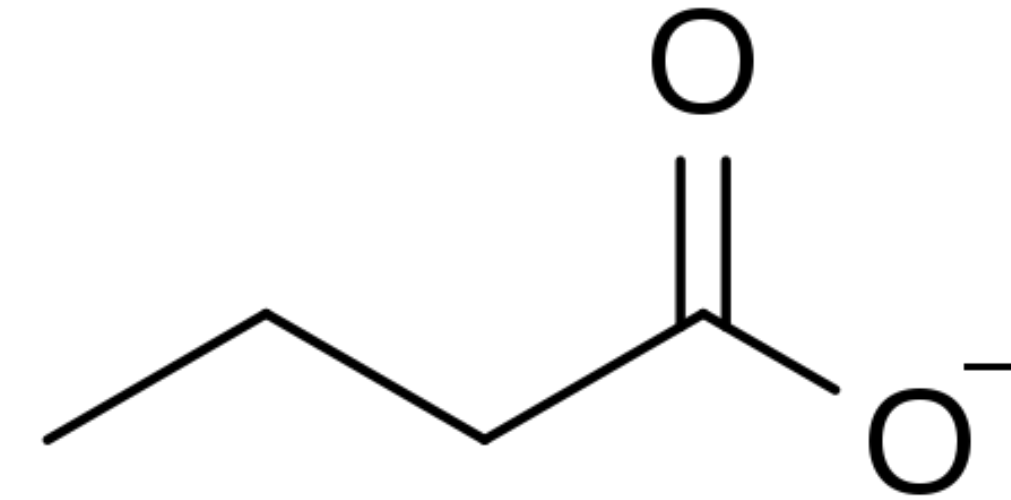
SHORT CHAIN FATTY ACIDS (SCFA)

- SCFAs = butyrate, propionate, acetate
- Why do we care?
 - **Decrease inflammation**





BUTYRATE⁸



- SCFA
- Made by good bacteria from fiber we eat
- Signals immune system to “stand down” = good thing!
- Without enough = unwanted bacteria & inflammation
- Not enough fiber \neq Butyrate
- Constantly balancing good verses bad bacteria

⁸ P V Chang, L Hao, S Offermanns, R Medzhitov. The microbial metabolite butyrate regulates intestinal macrophage function via histone deacetylase inhibition. Proc Natl Acad Sci U S A. 2014 Feb 11;111(6):2247-52.



USE IT,
OR LOSE IT.

AVERAGE AMERICAN DIET

- ↑Fat, ↑Animal Protein, ↓Fiber
- Low SCFAs
- Starving our microbes (*dysbiosis*)
- ↑susceptibility to inflammatory based diseases



Photo by [Eiliv Aeron](#) on [Unsplash](#)

*It's the plants within your diet that fuel
a healthy gut.*



HOW CAN OPTIMIZING YOUR GUT HEALTH IMPACT YOUR HEALTH?

- ① Optimize microbiome
- ② Eliminate cravings
- ③ Strengthen your immune system
- ④ Improve energy levels
- ⑤ Resolve/improve digestive issues





You can control the make-up of your microbiome.

When we take care of our microbes, they take care of us.





WHAT NEGATIVELY IMPACTS OUR MICROBIOME?



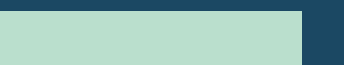
MODERN DAY DIETS

- ④ **Sugar & highly refined carbohydrates**
- ④ **Salt** ⁹
- ④ **Chemical preservative, additives, and colorants** ¹⁰
- ④ **Artificial sweeteners** ¹¹⁻¹⁶
- ④ **Unhealthy fats** - especially saturated; not omega-3s ¹⁷⁻²⁴
- ④ **Animal protein** - consistently associated with increased growth of inflammatory microbes ²⁵





WHAT CAN WE DO TO RESTORE OUR GUT?



FIBER

“Fiber is the first, and potentially the most powerful, solution to restoring your gut microbiota, and from there your overall health.”

~Dr. Will Bulsiewicz, *Fiber Fueled*

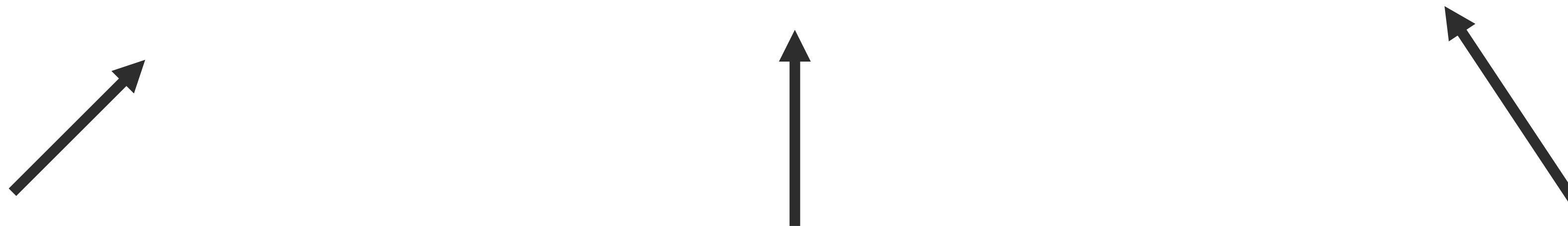
FIBER, FIBER, FIBER

- ④ We lack the ability as humans to process fiber all by ourselves - bacteria does the rest!
- ④ We have 17 enzymes, bacteria may have up to 60,000 helpful enzymes! ²⁶



- **Prebiotics:** Food for healthy gut microbes
 - Most soluble fiber & resistance starch
 - Resistance starch: oats, rice, potatoes, and legumes
- **Probiotics:** Microbes with beneficial qualities
- **Postbiotics:** Compounds produced by gut microbes (short chain fatty acids!)

Prebiotics + Probiotics = Postbiotics





SO, WHAT SHOULD WE FOCUS ON?



“The single greatest predictor of a healthy gut microbiome is the diversity of plants in one’s diet.”²⁷



IT'S ALL ABOUT PLANT DIVERSITY

- Specifically, the consumption of 30 different plants within 1 week was the greatest predictor of gut microbial diversity ²⁷





WHAT ABOUT A PROBIOTIC?



PROBIOTIC SUPPLEMENT?

- Maybe?
- They aren't a silver bullet like we wish they were
- Diet should always come first!
- They are transient, meaning it would require consistent intake



CONSIDERATIONS FOR A PROBIOTIC SUPPLEMENT:

- Quantity of bacteria: 25-50 billion
- Number of strains: the more, the better
- Guaranteed quantity at expiration
- Allergen free
- Delayed-release capsule
- Packaging





FOODS TO FOCUS ON



SNEAK THESE FOODS IN AS MUCH AS POSSIBLE

- Fruit
- Fermented Foods
- Greens
- Grains
- Omega - 3 seeds (flax, hemp, chia)
- Onions & garlic
- Legumes
- Sulforaphane (cruciferous veggies, especially broccoli sprouts)



*It's the plants within your diet that fuel
a healthy gut.*

