

THE POWER OF DIVERSITY



AKA – EAT MORE
PLANTS FOR YOUR
GUT

HOW MANY PLANT FOODS DO YOU EAT?

- Typical day?
 - Oatmeal + berries + nuts + flax seeds + cinnamon
 - Salad: Dark greens + beans + all the fruits &/or veggies you like + pumpkin seeds
 - Tofu + grilled veggie salad + quinoa
 - Nice cream Cherry Garcia (bananas + cherries)
 - Total: about 30

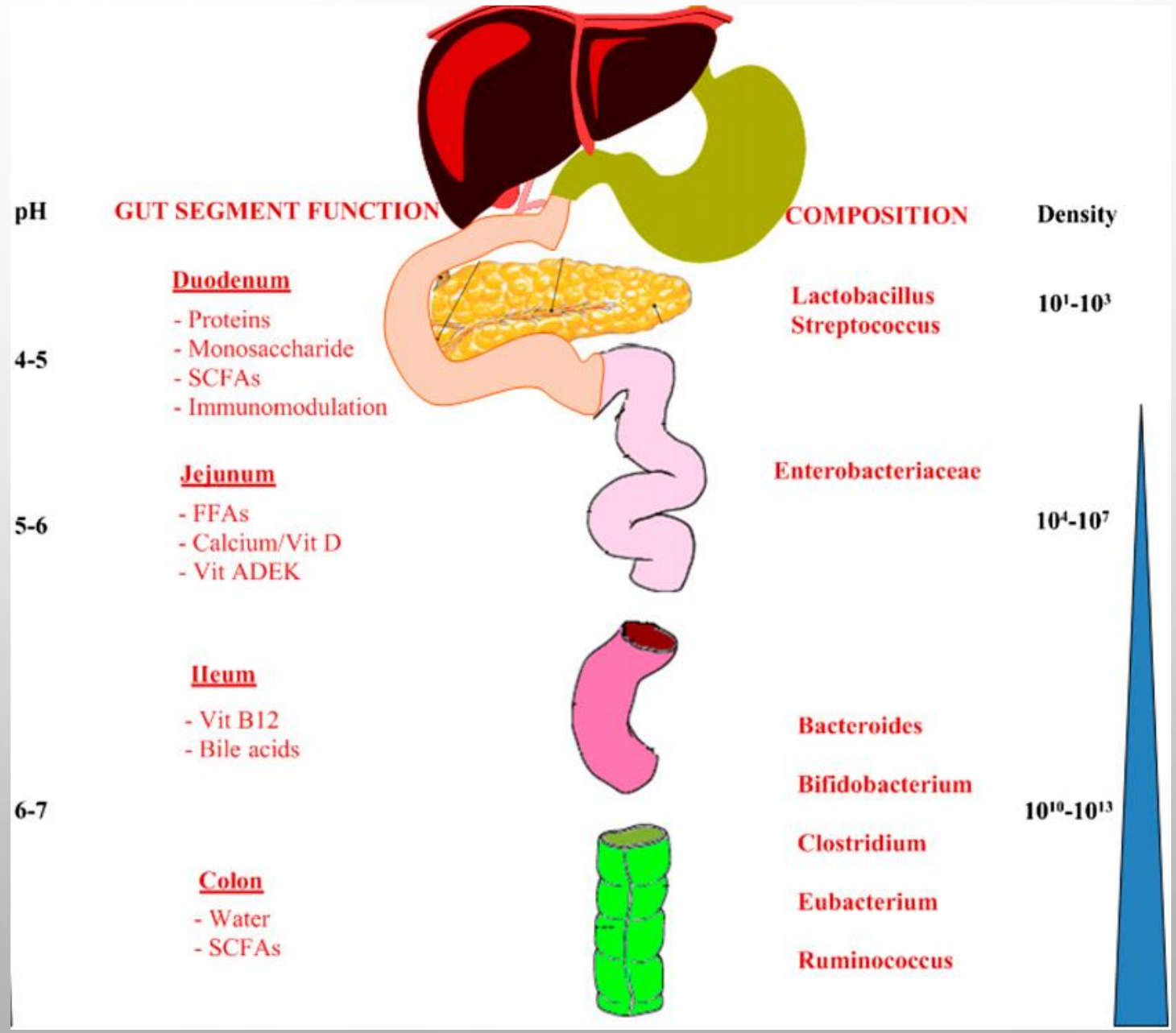
VALUE OF PLANT FOODS

- High in fiber
- Low in calories
- Lots of antioxidants
- Nutrient-dense (i.e. more nutrients than calories)
- Full of 'phytochemicals'
 - Help protect the plant (also help us)
 - Help our protect our cells and DNA
 - Fight cancer and heart disease
- Fiber in plants increase the diversity of bacteria in your gut!!



GUT MICROBIOME (GMB) FUN FACTS

- Our gut weighs about 4-6#
- More GMB microorganisms than human cells in body
 - GMB: ~40 trillion
 - Human cells: ~30 trillion
- Healthy adult humans have more than 1,000 **species** of bacteria within GMB
- Bacterial diversity varies
 - GMB determined by hereditary & environmental factors, birth method, infant feeding, antibiotic use and DIET
- Naturally changeable



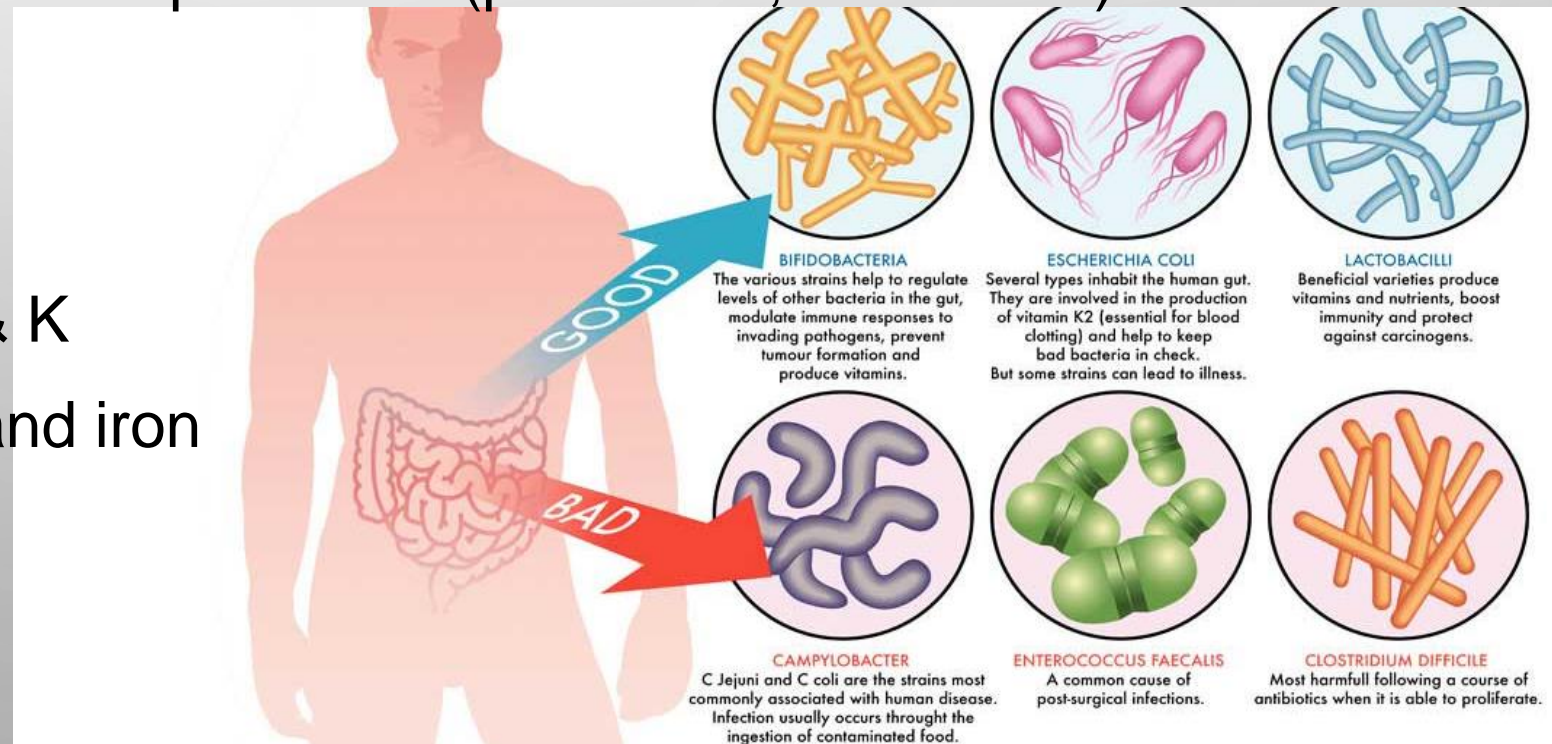
The colon is one of the most densely populated bacterial communities on earth⁹

HOW GMB AFFECTS OUR BODIES

- Break down fiber and create Short Chain Fatty Acids (SCFA)
 - SCFA are helpers for the colon lining
 - Help reduce risk of colon cancer and inflammation
- Protect against pathogens
 - “Good” microbes are a “check-and-balance” against “bad” microbes
- Educate immune system
 - Immune system learns who are the “good” microbes

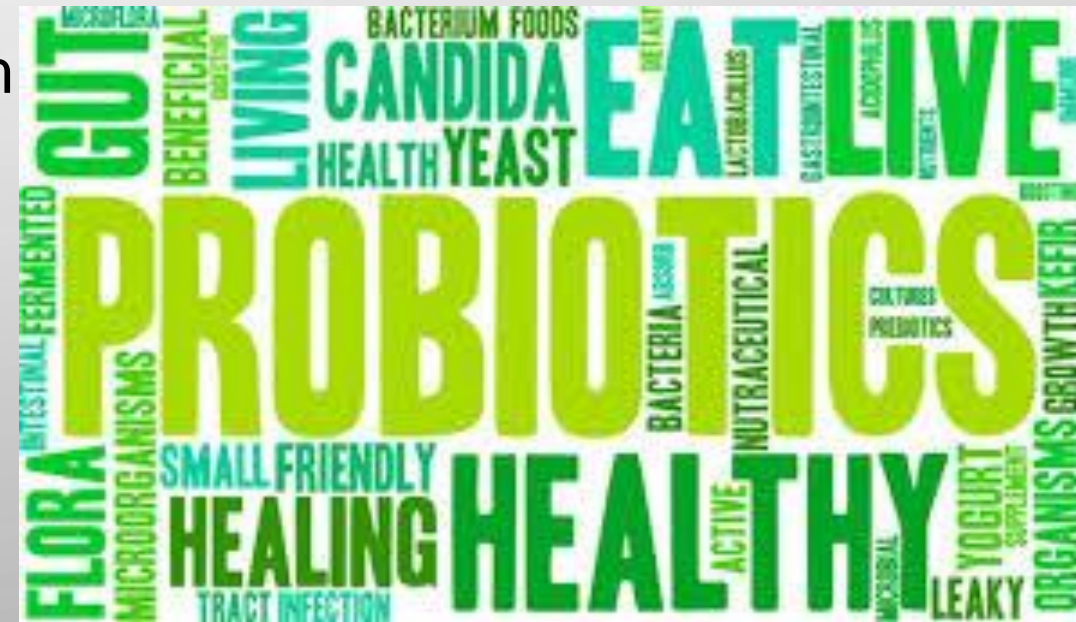
GMB – OTHER JOBS

- Helps the body rid itself of xenobiotics
 - Chemicals not naturally found in the body
 - Often from environmental pollutants (pesticides, herbicides)
- Preserves gut lining
- Plays a role in:
 - Making vitamins B & K
 - Absorbing calcium and iron



PROBIOTICS VS PREBIOTICS

- Probiotics
 - Food containing live bacteria
 - Sauerkraut, miso, soy sauce, tempeh
 - Yogurt, kefir, kombucha, etc.
- Prebiotics
 - Food that feeds the gut bacteria
 - Foods high in fiber
 - Inulin, resistant starch



POSTBIOTICS

- Prebiotics + probiotics = Postbiotics
- Microbes work on the foods we eat and transform the foods
- Health-promoting compounds (created from healthy foods) = Postbiotics
- Unhealthy foods feed unhealthy microbes = compounds that cause inflammation

WHAT IS DYSBIOSIS?

- Imbalance of bacteria and bad bacteria take over because of:
 - Lack of dietary fiber – we don't feed the good bacteria
 - Antibiotic use
 - Possibly contributes to inflammation → insulin resistance
 - Over-sanitizing
 - Children living in environs with dirt & animals have more rich diversity of microbiota and fewer allergies, auto immune diseases and asthma
- Pets in the home associated with healthier GMB

MICROBIOTA AND DIET

- High fiber diet
 - Increased GMB diversity
- High protein/fat lead to:
 - GMB lower in Bacteroidetes and higher in Firmicutes
 - Associated with higher incidence of obesity and metabolic syndrome
 - Less GMB diversity
 - Reduces creation of SCFA
- Animal foods promote growth of bad bacteria and can create toxins
 - If more bad than good bacteria:
 - damage tight junctions in colon wall = leaky gut
 - bacterial endotoxins get into blood stream =>starts a 'fire'

HOW TO MAINTAIN A HEALTHY GUT MICROBIOME

- Good diet = diverse diet
- High in fiber, plant-based foods
- Consumption of fermented foods



Broccoli, Cruciferous Vegetables

Packed with Glucosinolates
Fight Inflammation and Cancer



Bananas

Fight Inflammation
Stabilize Gut Bacteria



Beans

Release Short-Chain Fatty Acids
Boost Vitamin Absorption, Satiety



Jerusalem Artichokes

Rich in Inulin Fiber
Strong Prebiotic



Boost *Healthy* Gut Bacteria
with **Plant-Based** Foods



Enhance Immune Function Prevent Colon Cancer Fight Inflammation Boost Metabolism



Blueberries

Enhance Immune System
Destroy Harmful Bacteria



Polenta

High in Fiber
Fermentable Component



Miso Soup

Relaxes blood pressure



Tempeh

Crowds Out Unhealthy Bacteria
Boosts Nutrient Absorption



BUILD GOOD BACTERIA IN YOUR GUT

- Build meals around plants
 - Aim for >50 grams fiber/day
 - Eat plant prebiotics: leafy greens, edamame, leeks, onions, garlic, whole wheat, beans, oats, bananas, etc
 - Add fermented foods: Tempeh, kimchi, sauerkraut, miso, sourdough, soy sauce, kombucha
 - Avoid red meats, high fat dairy, fried foods
 - Limit saturated fat
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GUT MICROBIOME & OBESITY

- “Obese” GMB get more energy from the diet
 - Lean have more *Bacteroidetes* and obese have more *Firmicutes* (*may be more efficient at getting calories from foods and may contribute to more cravings*)
- Germ-free (GF) mice given fecal implants from:
 - Obese mice → GF had significant increase in total body fat
 - Normal-weight mice → GF remained normal weight
 - Also seen in humans
- Studies link “yo-yo” obesity (recurrent) with GMB
 - “Obese” GMB remains unchanged 6 months post weight lost
 - GMB “memory” contributes to post-dieting weight gain
 - Obese mice received fecal implants from normal-weight mice
 - “Erased memory” of obese GMB; mice did not regain weight when fed high-cal diet

OTHER INTERESTING RESEARCH

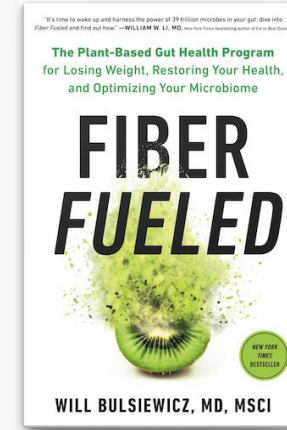
- Link between GMB and Neurological disorders
 - Parkinson's disease (PD) ⁵
 - ALS (Lou Gehrig's)
 - Autism
- Fecal microbiota transplants (FMT) used to treat:
 - *C. diff* infections, ulcerative colitis, NAFLD, IBS
- Dysbiosis & chronic GI diseases ²
 - Inflammatory bowel diseases, ulcerative colitis, Crohn's disease, diabetes

GMB & DIABETES

- Altered GMB that results in increased production of acetate linked to obesity ⁸
 - Acetate stimulates:
 - Increased insulin secretion
 - Increased ghrelin secretion
 - Ghrelin: hormone; increases hunger
 - These lead to increased food intake & insulin-resistance
 - Leads to type 2 diabetes
- High fat meals in diabetes can lead to bacterial toxins to 'leak' through intestinal wall = Leaky Gut
 - Contributes to inflammation, triglycerides, insulin resistance

FGOALS

- F = fruit & fermented
- G = Greens & Grains
- O = Omega-3 Super seeds (flax, chia, hemp)
- A = Aromatics (onions, garlic) – Chop then STOP for 10 min to activate healthy compounds)
- L = Legumes
- S = Sulforaphane & 'Shrooms &
 - Broccoli sprouts have 10-100x more sulphoraphane than broccoli
 - Cruciferous veggies: Broccoli, kale, arugula, cabbage, cauliflower, Brussels sprouts – cancer fighters





Aim for:

3+ servings whole grains/day

1-2+ servings beans/legumes
daily

3-5 servings veggies/day

2-4 serving fruit/day

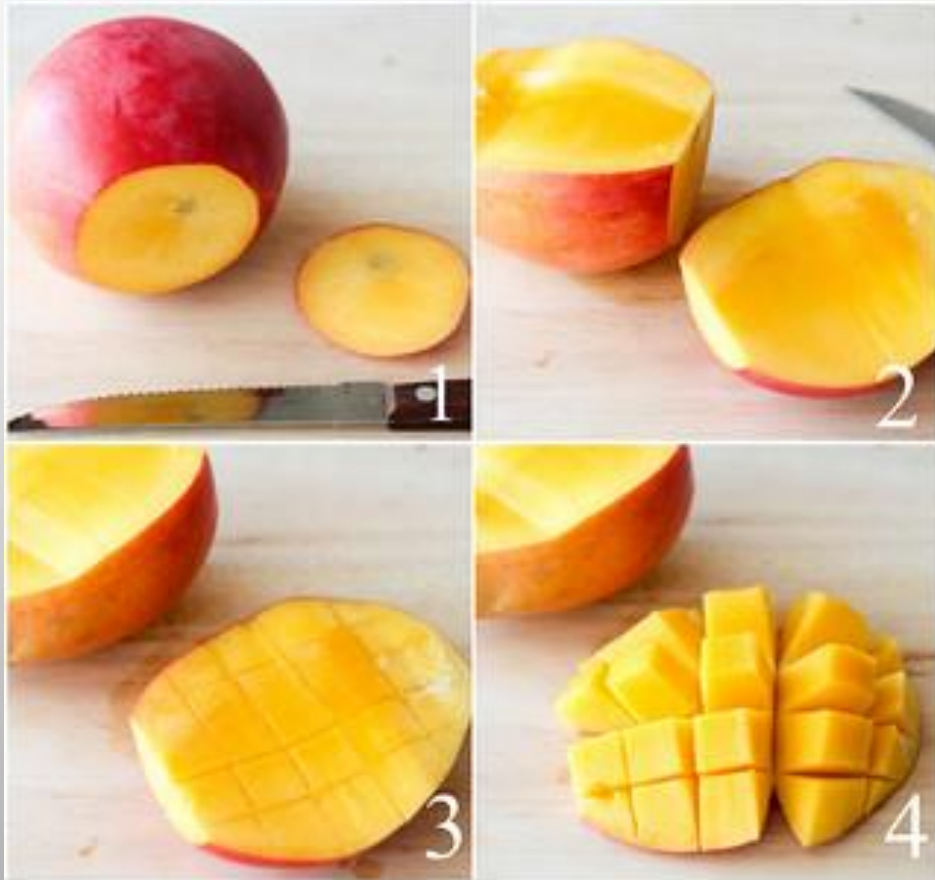
WHAT CAN YOU DO TO HAVE MORE PLANT FOODS?

- Choose a few typical days and count all the plant foods
- Then build from there
- Go to Farmers' market and find some new seasonal produce
- Only have plants on your plate: fruits/veggies/whole grains/beans/legumes
- Use herbs and spices liberally
- Add veggies to breakfast?
- Have a salad at lunch and dinner?
- Push out animal foods and fill up with plant foods
- Add fermented foods

MY DIVERSE DISHES

- Rainbow Salad
- Mangos, carrots, red cabbage, arugula, green onions, blueberries, raspberries (oops – I got blackberries), peanuts, lime
 - 9 different plant foods
- Watermelon Gazpacho
- Watermelon, cucumber, garlic, onion, lime, basil, jalapeno, pepper
 - 8 different plant foods

HOW TO CUT A MANGO (OOPS – I USED FROZEN)



BOTTOM LINE

- Healthy GMB can have positive effects on our health, immune system and even your mood
- Plant DIVERSITY is the key to healthy gut
- Feed good food (= fiber) to your gut and it will take care of you
- Eat a wide variety of plants (FGOALS)
 - Instead of one 'super food', eat a variety of multiple plants
- Choose less animal foods and fats
- Only use antibiotics when absolutely necessary
- Get a pet
- Get dirty!

The image features a central white rectangular box containing three lines of text. The background is a light gray gradient. In the four corners, there are decorative blue circuit-like lines with small circles at the end of the branches.

eat healthy
live healthy
be healthy