

Unraveling the Alphabet in Your Gut

Presenter:

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Outline

How does the gastrointestinal tract work?

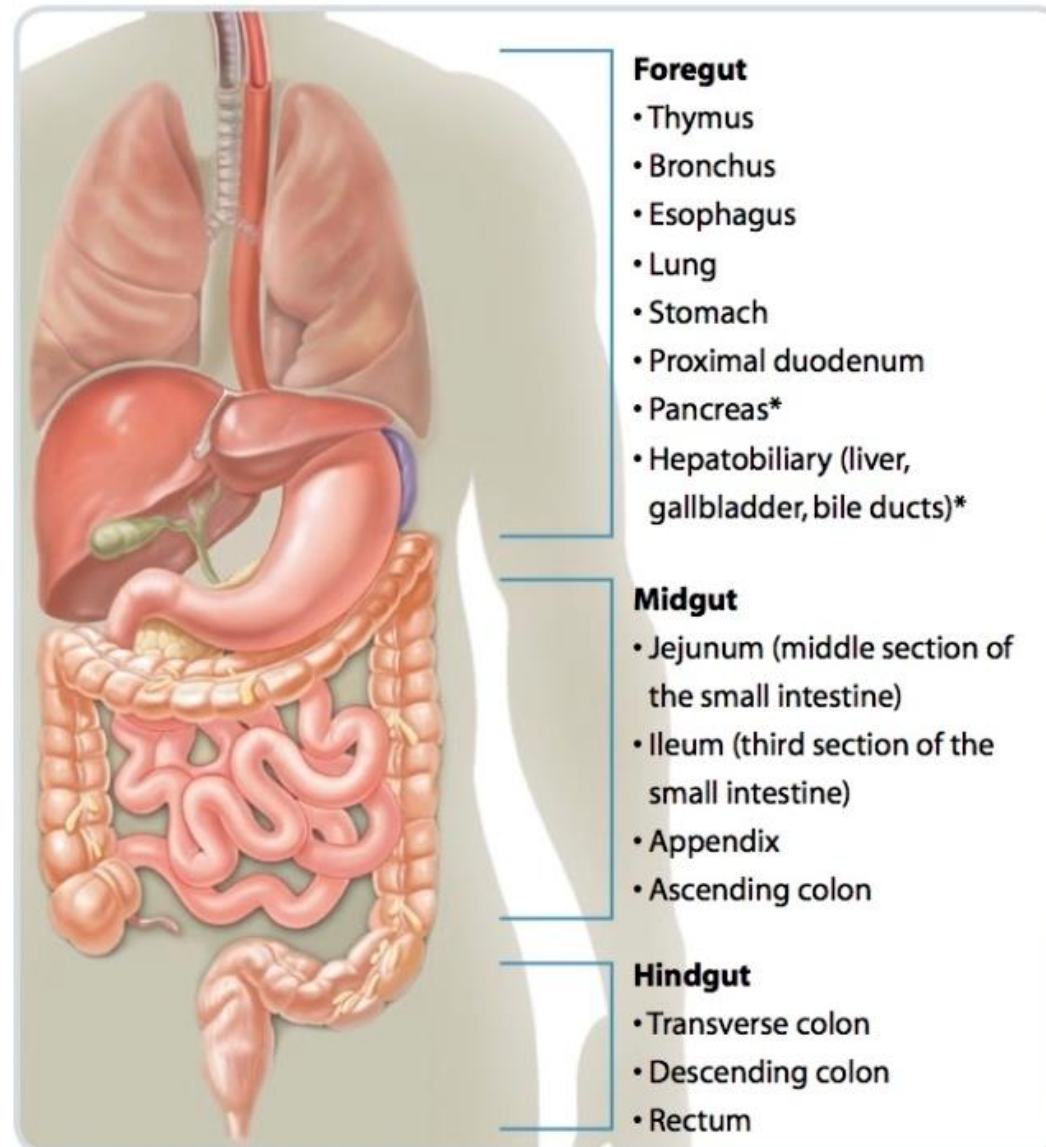
What is the microbiome?

How does the microbiome affect our gut?

▲ **How do we manage this?**

Questions?

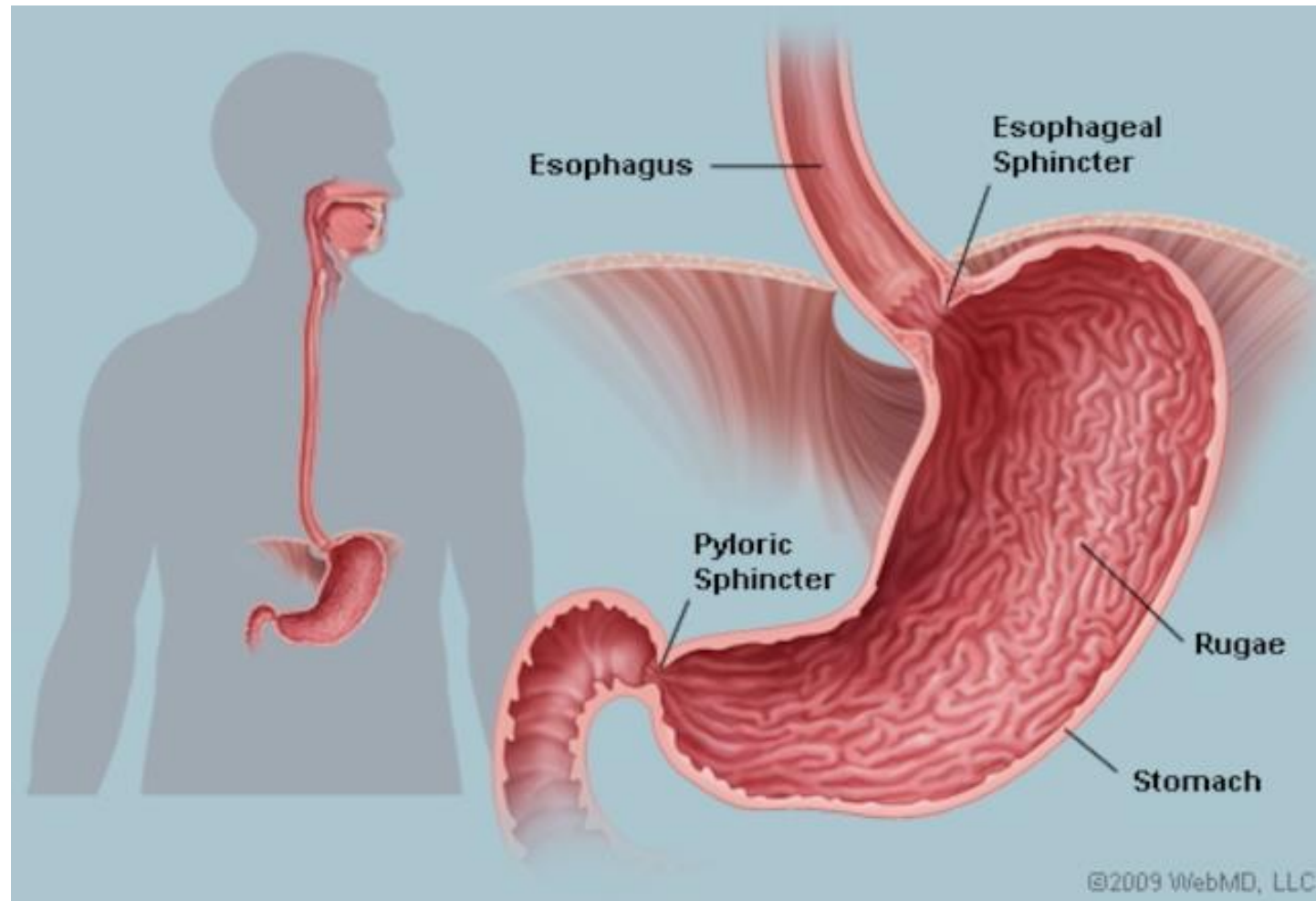
Basic Anatomy



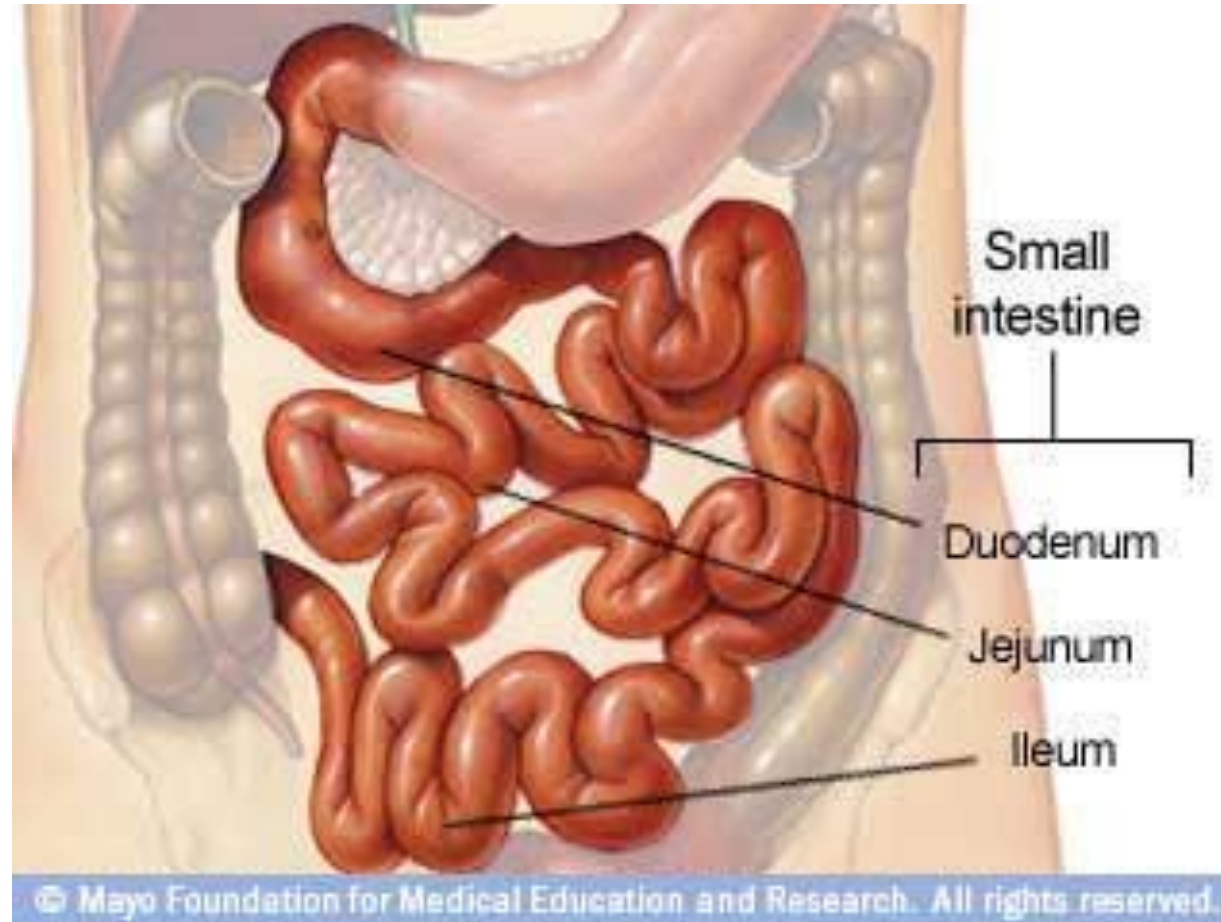
Esophagus



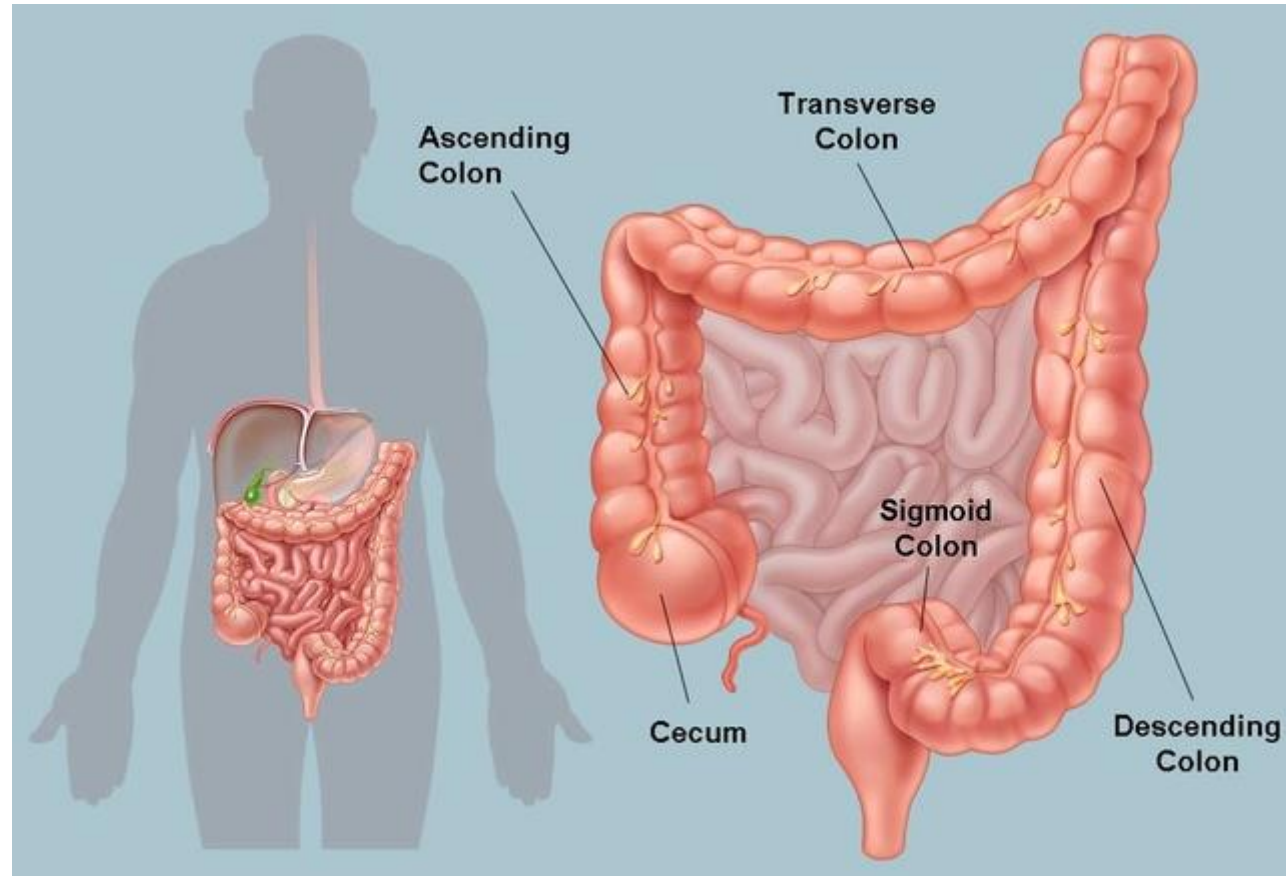
Stomach



Small Intestine

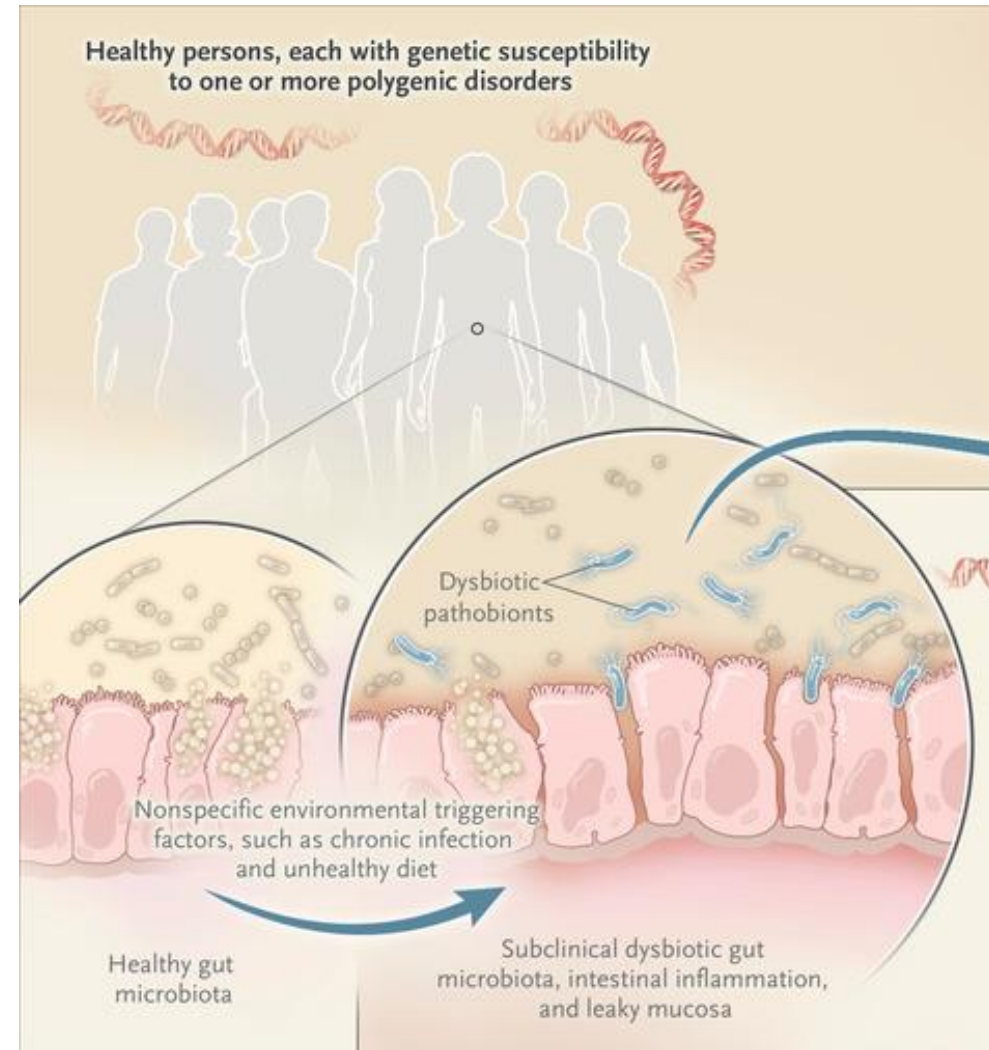


Large Intestine / Colon

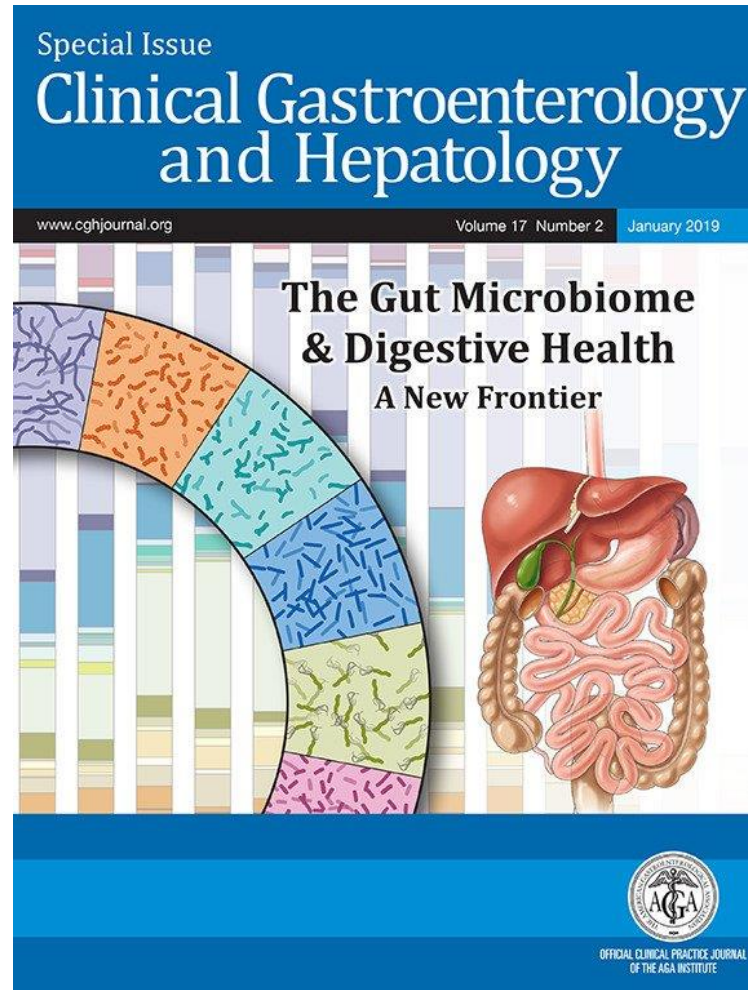


The Gut Microbiome

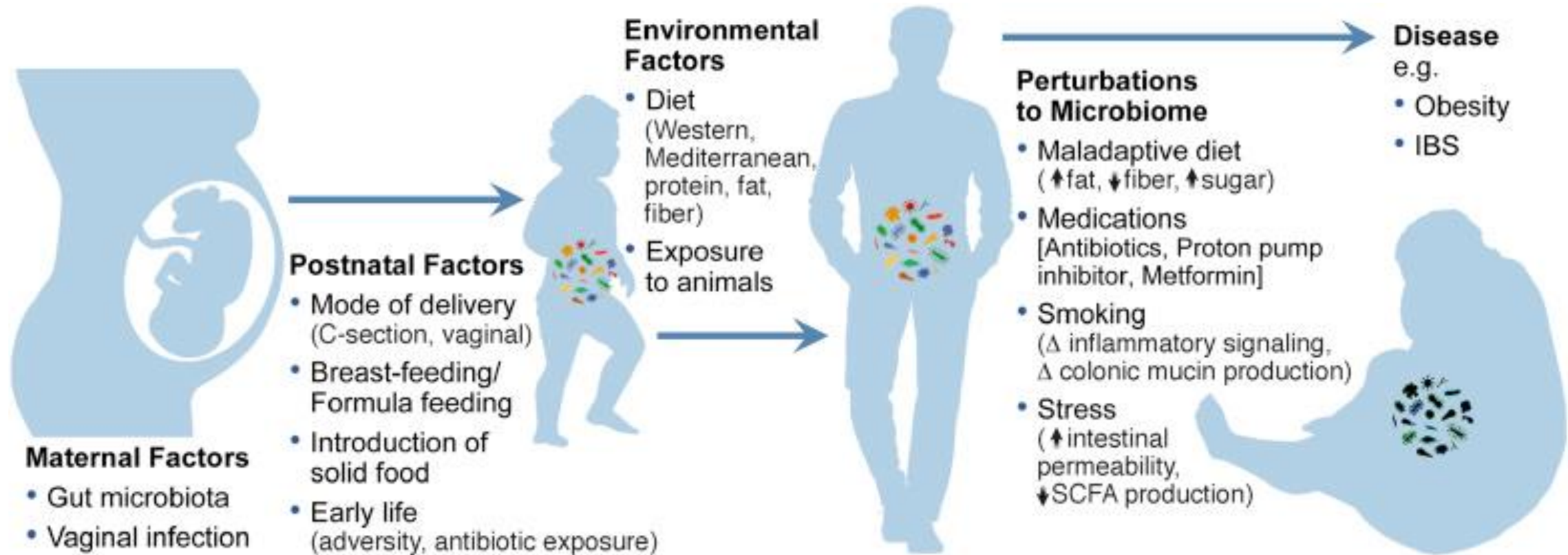
- 40 trillion microorganisms
- 1000 different bacterial species
- Complex equilibrium between the microbiome and host
- Alterations in the gut microbiome can lead to different GI conditions



“The role of the microbiome in health and human disease has emerged at the forefront of medicine in the 21st century.”

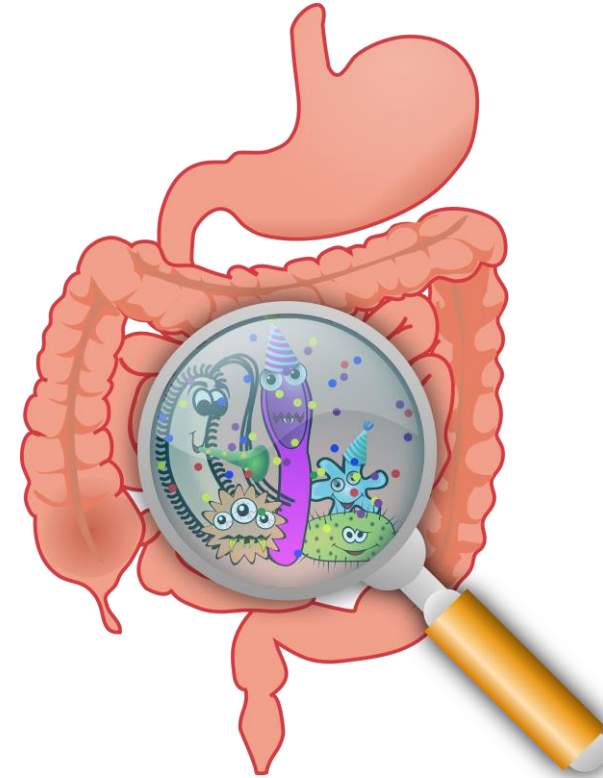


What Alters our Microbiome?



What are some GI conditions associated with an altered Microbiome?

- Irritable Bowel Syndrome
- Inflammatory Bowel Disease
- Colorectal Cancer
- Obesity



What is Irritable Bowel Syndrome or IBS?

- Abdominal discomfort associated with a change in stool form and/or frequency
- Very common. 20% of the US population! The most commonly diagnosed GI condition.
- “Brain-gut” disorder with an altered GI microbiome



Common Bowel Symptoms



Cramping



Bloating



Gassy



Burning



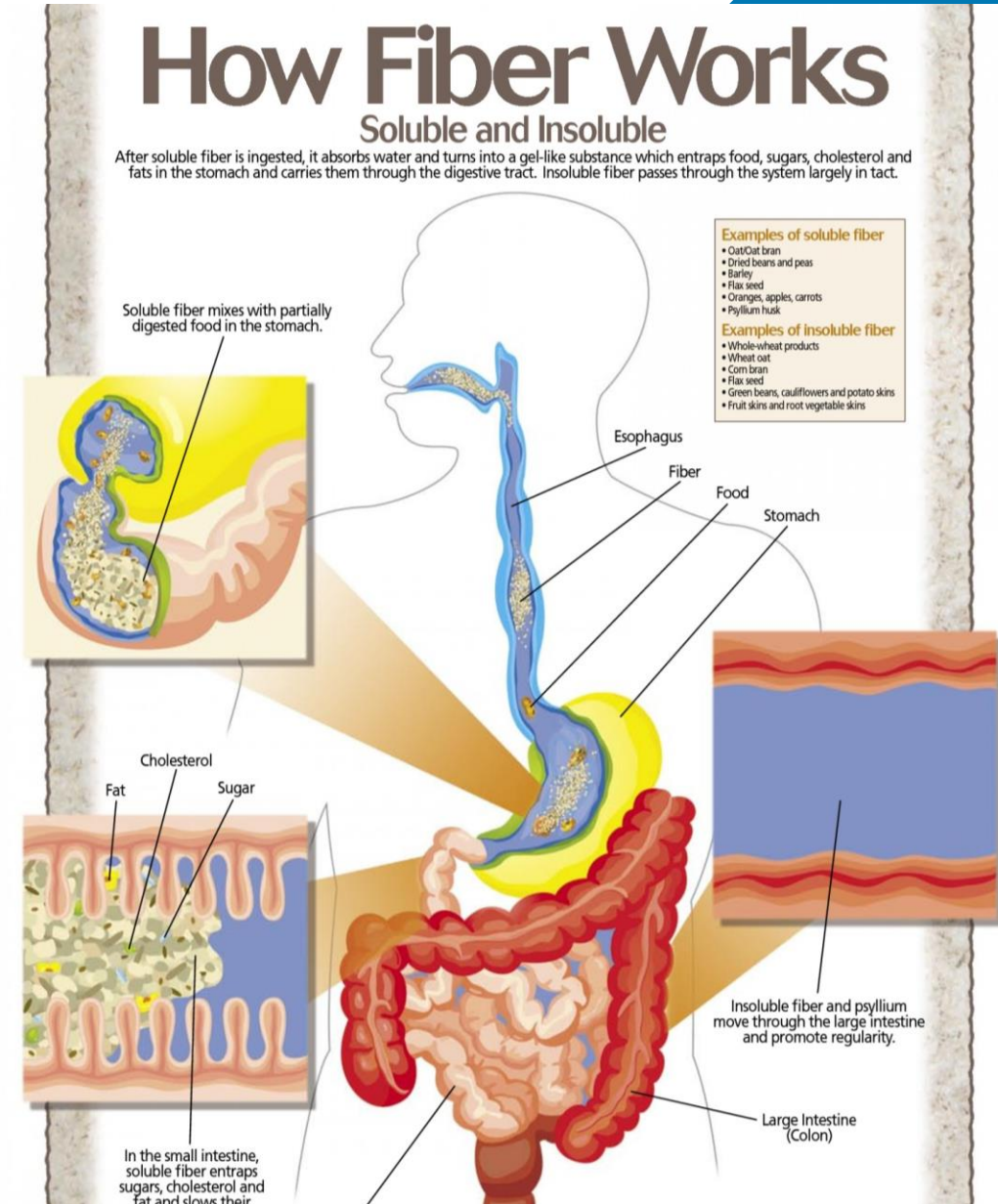
Stabbing



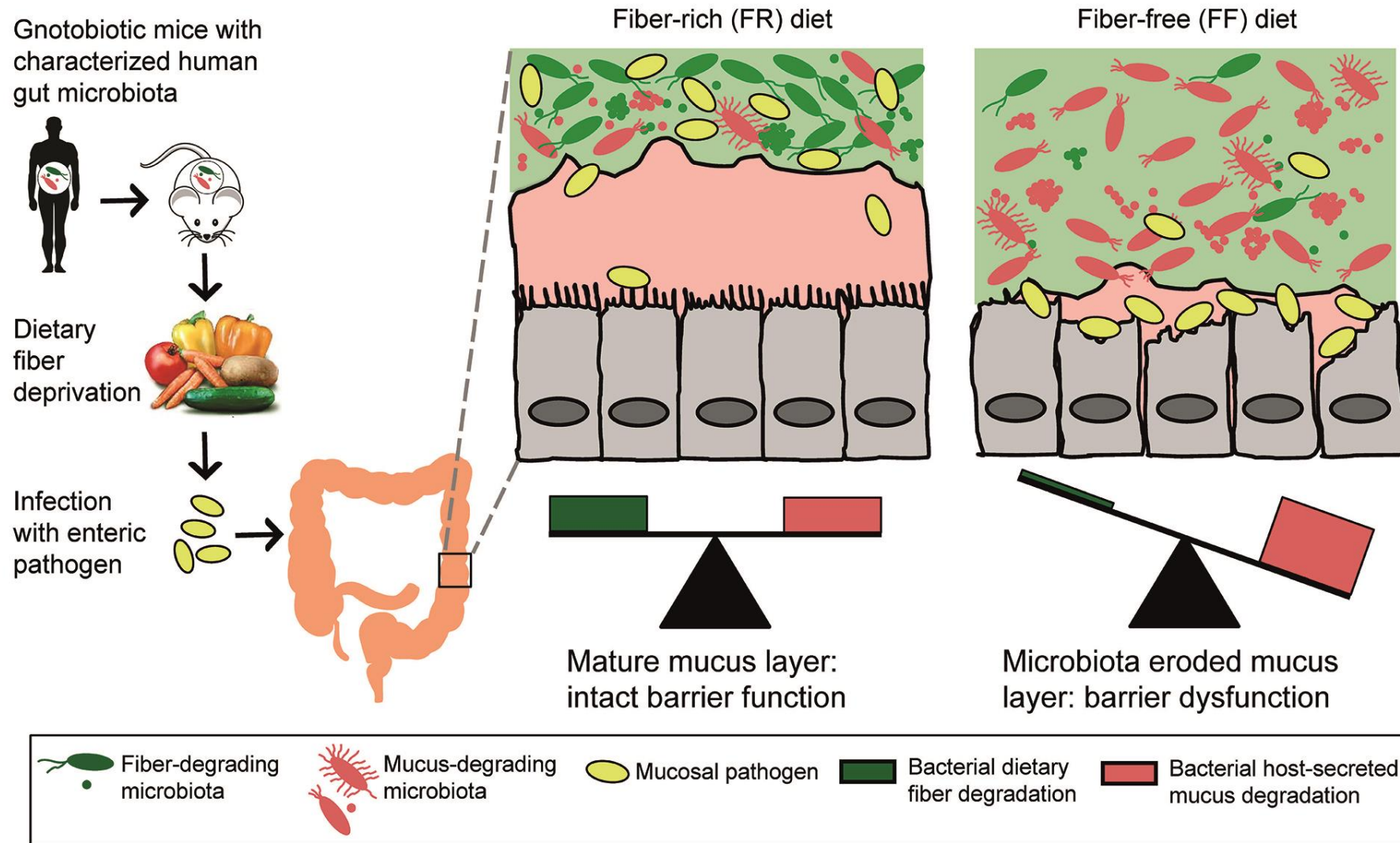
Achy

Psyllium is Effective for IBS

- Soluble fiber is effective for treating IBS.
- Data comes from 15 randomized controlled trials (kids/adults).
- Insoluble fibers are not readily processed.
- Improves the microbiome profile. Increases short chain fatty acid production. Increases mucous.



Soluble Fiber and the Microbiome



Soluble Fiber



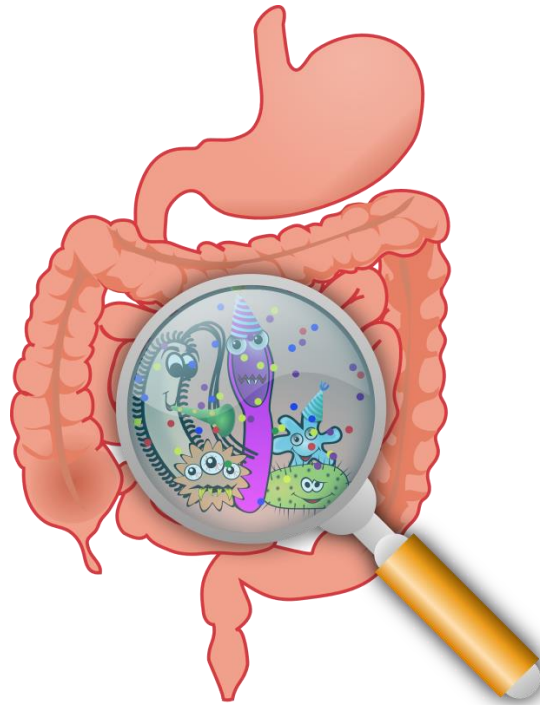
Psyllium powder is the best studied fiber.

- ▲ Found in clinical trials to provide overall relief of IBS symptoms in both adults and children
- ▲ Comes in powders or capsules
- ▲ **10-20 grams per day (divided doses)**

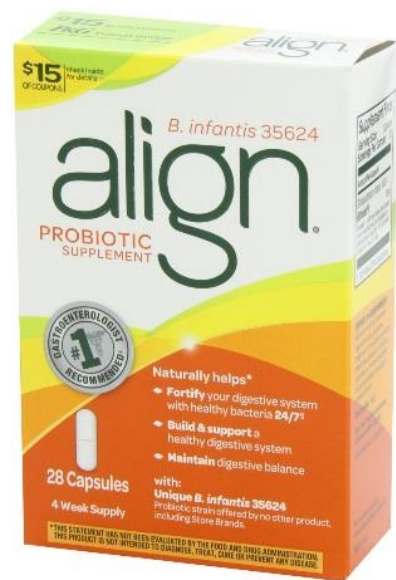


What are Probiotics?

- Live microorganisms taken to restore the gut microbiome.



Probiotics



Our View on Probiotics

- Taken as a group, probiotics improve global IBS symptoms like bloating and gas.
- However, because of study limitations, a recommendation for a particular probiotic cannot be made.
- Insufficient data on prebiotics.



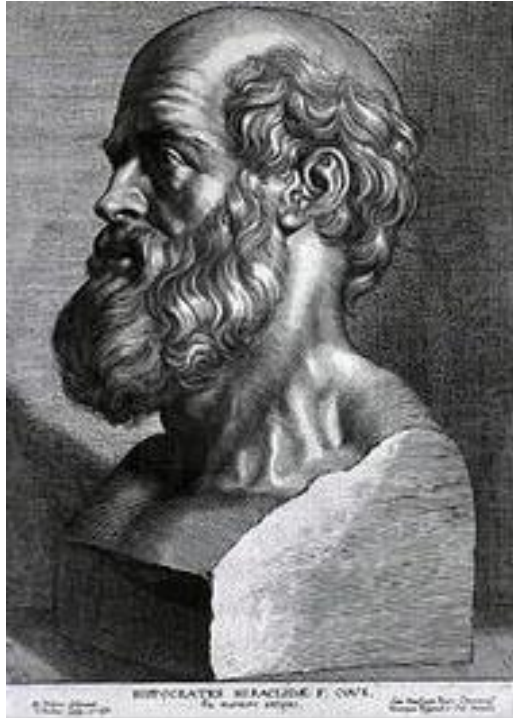
Antibiotics for IBS

Rifaximin



- Non-absorbable antibiotic that works in the intestine to modify the microbiome.
- Improves overall IBS symptoms.
- 2 week course, though it's unclear how durable the effects are.

Low FODMAP Diet and the Microbiome

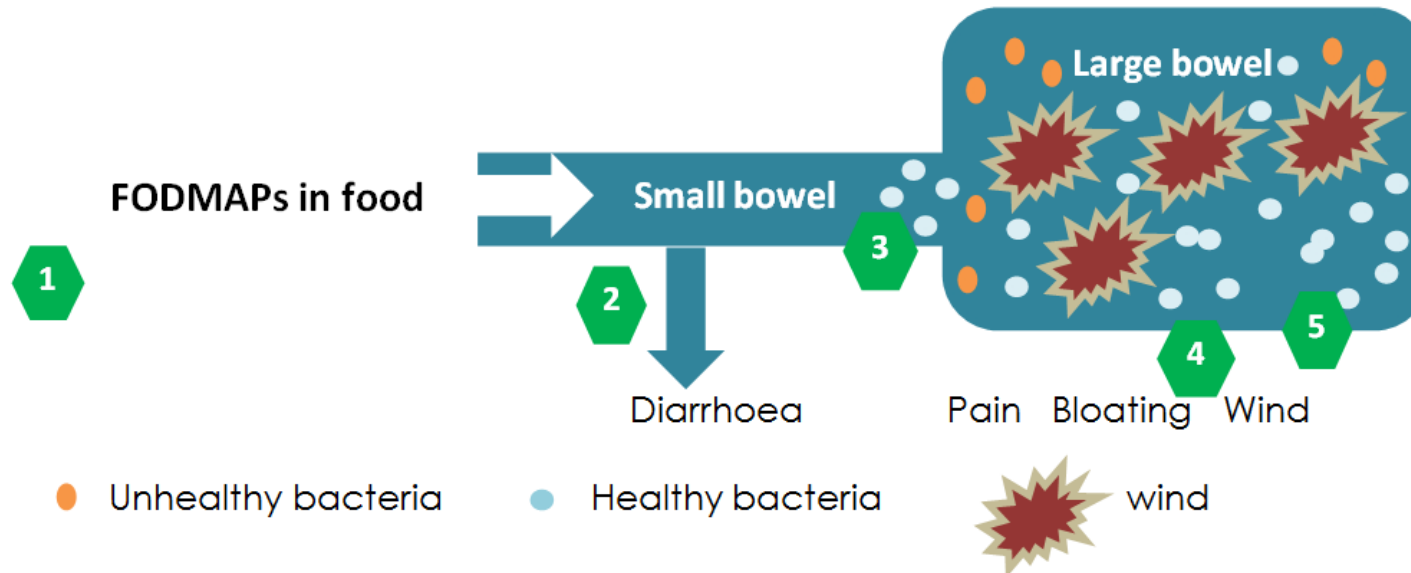
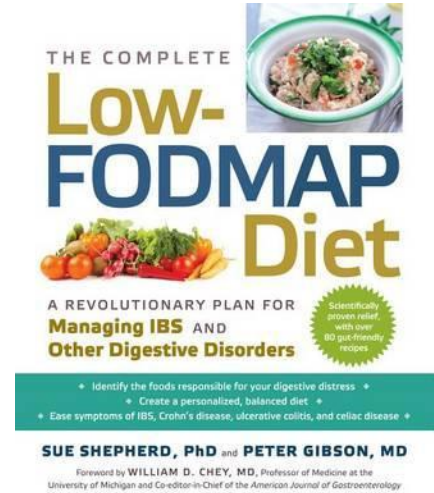


“Let food be thy medicine
and medicine be thy food”
– Hippocrates

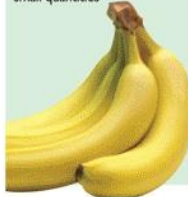


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The Low FODMAP Diet

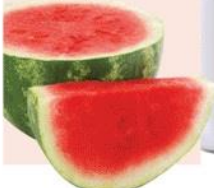



- FODMAPs (fermentable oligosaccharides, monosaccharides, disaccharides and polyols) are specific types of sugars in our diet that are poorly digested by the human intestine and as a consequence, reach the colon where the sugars are fermented.
- The Low FODMAP Diet is a diet where foods that are high in these sugars are avoided/minimized.



Foods suitable on a low-fodmap diet

fruit	vegetables	grain foods	milk products	other
fruit banana, blueberry, boysenberry, canteloupe, cranberry, durian, grape, grapefruit, honeydew melon, kiwifruit, lemon, lime, mandarin, orange, passionfruit, pawpaw, raspberry, rhubarb, rockmelon, star anise, strawberry, tangelo <small>Note: if fruit is dried, eat in small quantities</small> 	vegetables alfalfa, bamboo shoots, bean shoots, bok choy, carrot, celery, choko, choy sum, endive, ginger, green beans, lettuce, olives, parsnip, potato, pumpkin, red capsicum (bell pepper), silver beet, spinach, squash, swede, sweet potato, taro, tomato, turnip, yam, zucchini herbs basil, chili, coriander, ginger, lemongrass, marjoram, mint, oregano, parsley, rosemary, thyme	cereals gluten-free bread or cereal products bread 100% spelt bread rice oats polenta other arrowroot, millet, psyllium, quinoa, sorgum, tapioca 	milk lactose-free milk*, oat milk*, rice milk*, soy milk* <small>*check for additives</small> cheeses hard cheeses, and brie and camembert yoghurt lactose-free varieties ice-cream substitutes gelati, sorbet butter substitutes olive oil	tofu sweeteners sugar* (sucrose), glucose, artificial sweeteners not ending in '-ol' honey substitutes golden syrup*, maple syrup*, molasses, treacle <small>*small quantities</small> 

Eliminate foods containing fodmaps

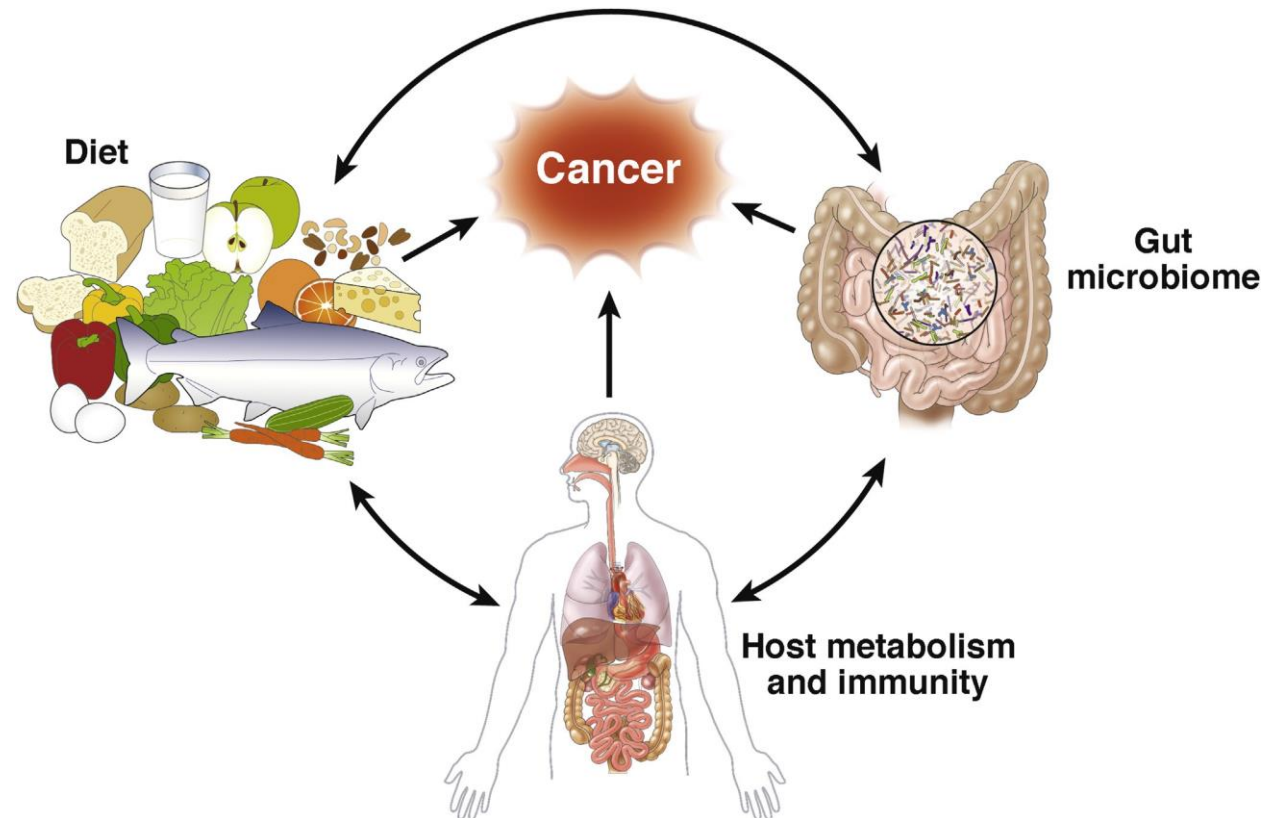
excess fructose	lactose	fructans	galactans	polyols
fruit apple, mango, nashi, pear, tinned fruit in natural juice, watermelon sweeteners fructose, high fructose corn syrup large total fructose dose concentrated fruit sources, large serves of fruit, dried fruit, fruit juice honey corn syrup, fruisana 	milk milk from cows, goats or sheep, custard, ice cream, yoghurt cheeses soft unripened cheeses eg. cottage, cream, mascarpone, ricotta 	vegetables artichoke, asparagus, beetroot, broccoli, brussels sprouts, cabbage, eggplant, fennel, garlic, leek, okra, onion (all), shallots, spring onion cereals wheat and rye, in large amounts eg. bread, crackers, cookies, couscous, pasta fruit custard apple, persimmon, watermelon miscellaneous chicory, dandelion, inulin, pistachio	legumes baked beans, chickpeas, kidney beans, lentils, soy beans 	fruit apple, apricot, avocado, blackberry, cherry, longon, lychee, nashi, nectarine, peach, pear, plum, prune, watermelon vegetables cauliflower, green capsicum (bell pepper), mushroom, sweet corn sweeteners sorbitol (420), mannitol (421), isomalt (953), maltitol (965), xylitol (967) 

What's the Evidence?

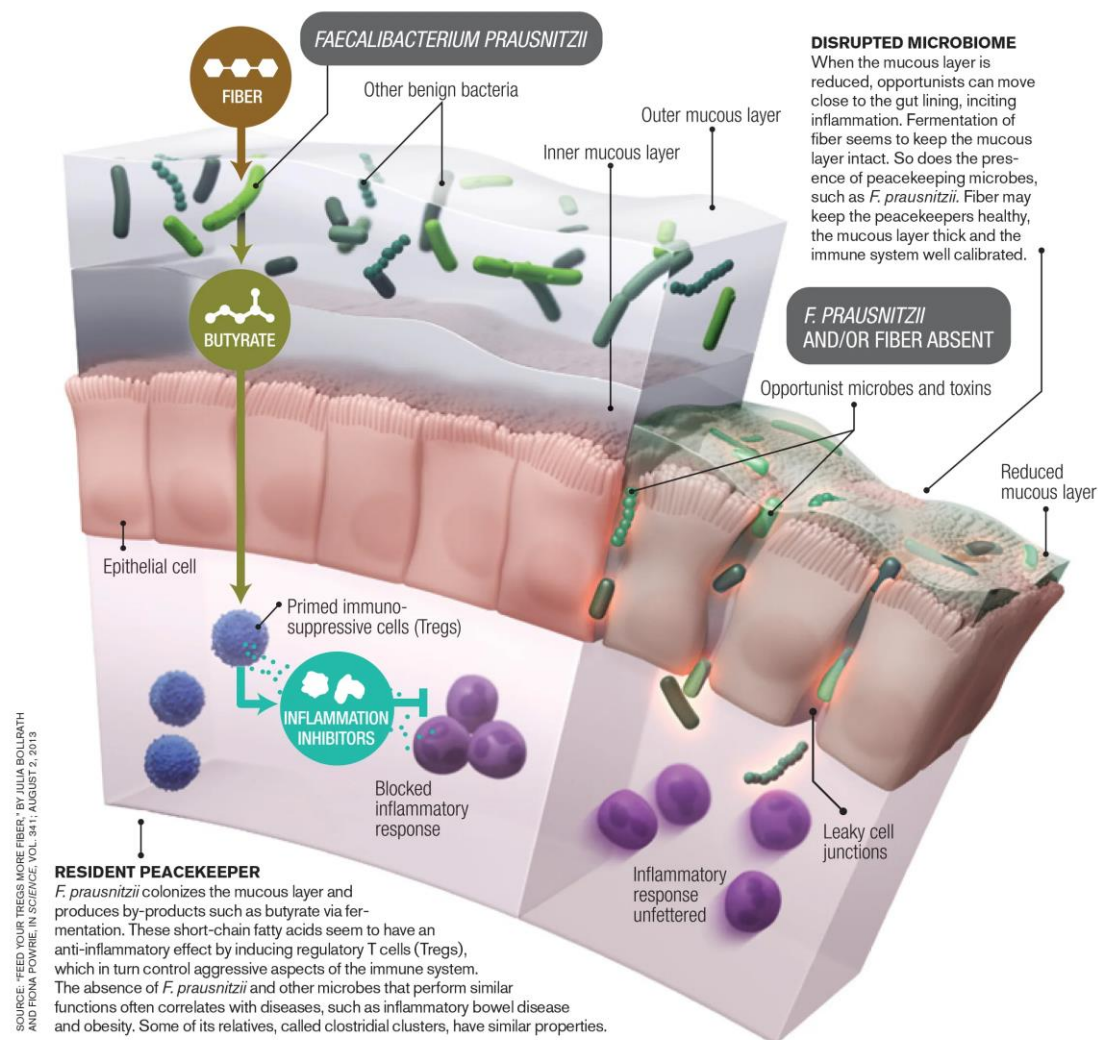
- 7 Studies show that around 50-60% of IBS patients can get symptom relief with a low FODMAP diet.
- Low FODMAP diet changes the gut microbiome.
- A 2-4 week trial is usually sufficient to gauge response.
- This is NOT a long term diet. Foods should be reintroduced.

Colon Cancer and the Microbiome

- Colon cancer is the third most common cancer in the US.
- Microbiome may play a large role in the development of cancer.



Low Soluble Fiber Diets are associated with increased colon inflammation, which can lead to development of colon cancer.



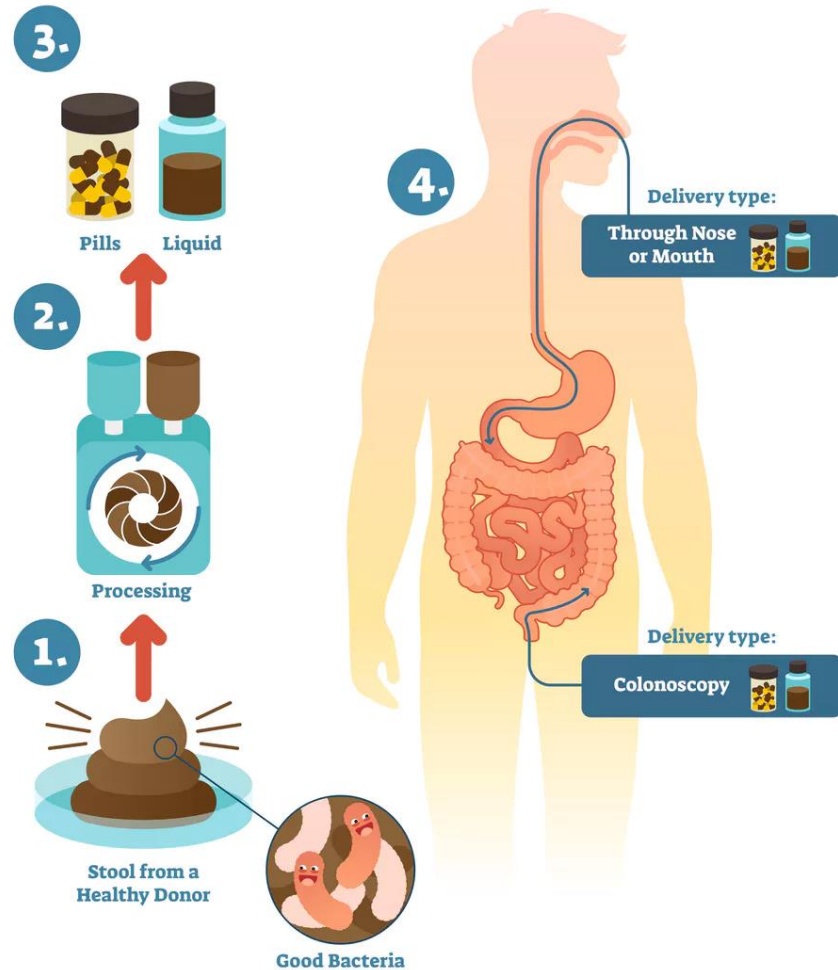
SOURCE: "FEED YOUR TREGS MORE FIBER," BY JULIA BOLLRATH AND POMA FOWRIE, IN SCIENCE, VOL. 341, AUGUST 2, 2013

Microbiota-based Strategies for Prevention

- Obesity
- Dietary fiber
- Less Fat
- Less Red Meat
- More marine omega 3 fatty acids
- >2 yogurt servings/week lowers risk of colon polyps

The Future?

FECAL TRANSPLANT THERAPY



Questions?

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