



# BETHANY MEDICAL

*Your Health is Our Concern*

## IMPROVING GUT HEALTH

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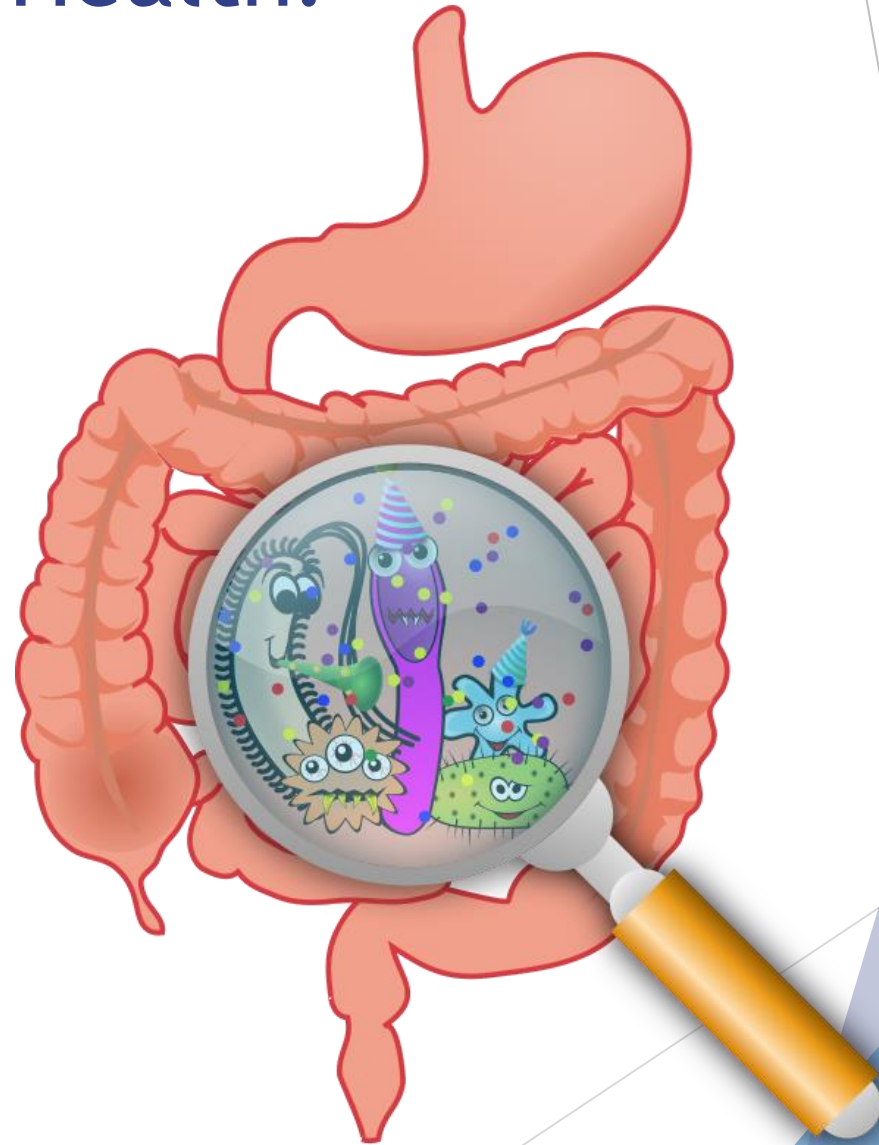
# Improving Gut Health

- ▶ What is gut health
- ▶ What does it affect
- ▶ How can it be improved
  - The science, data, and myths



# What is Gut Health?

- ▶ The gut is home to trillions of microorganisms - including bacteria, viruses and fungi
- ▶ Collectively known as the gut microbiome

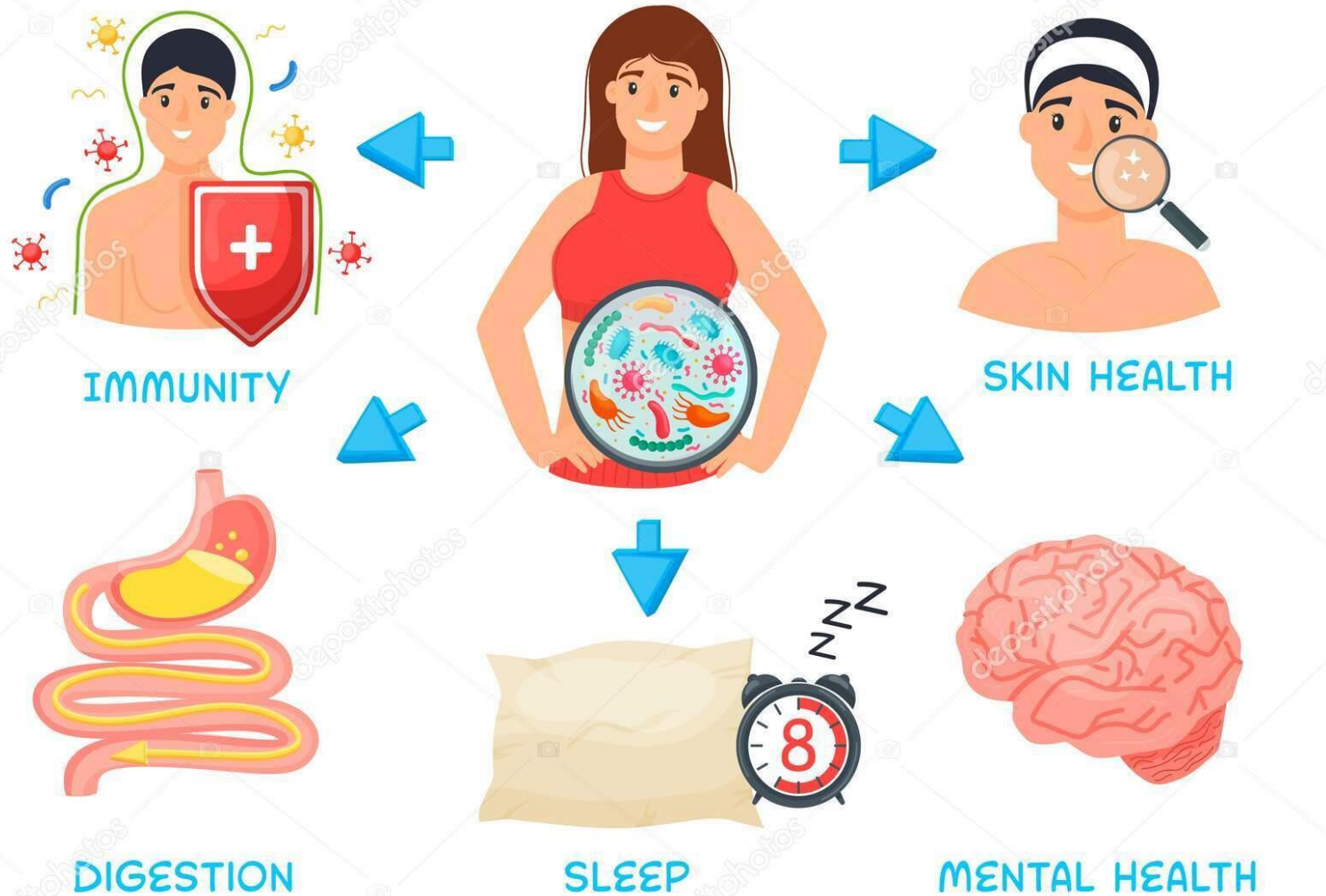




# What is Gut Health?

- ▶ Gut is responsible for:
  - breaking down food
  - absorbing nutrients
  - eliminating waste from the body
- ▶ Gut Health is:  
**The well-being of the digestive system**

# WHY GUT HEALTH MATTERS

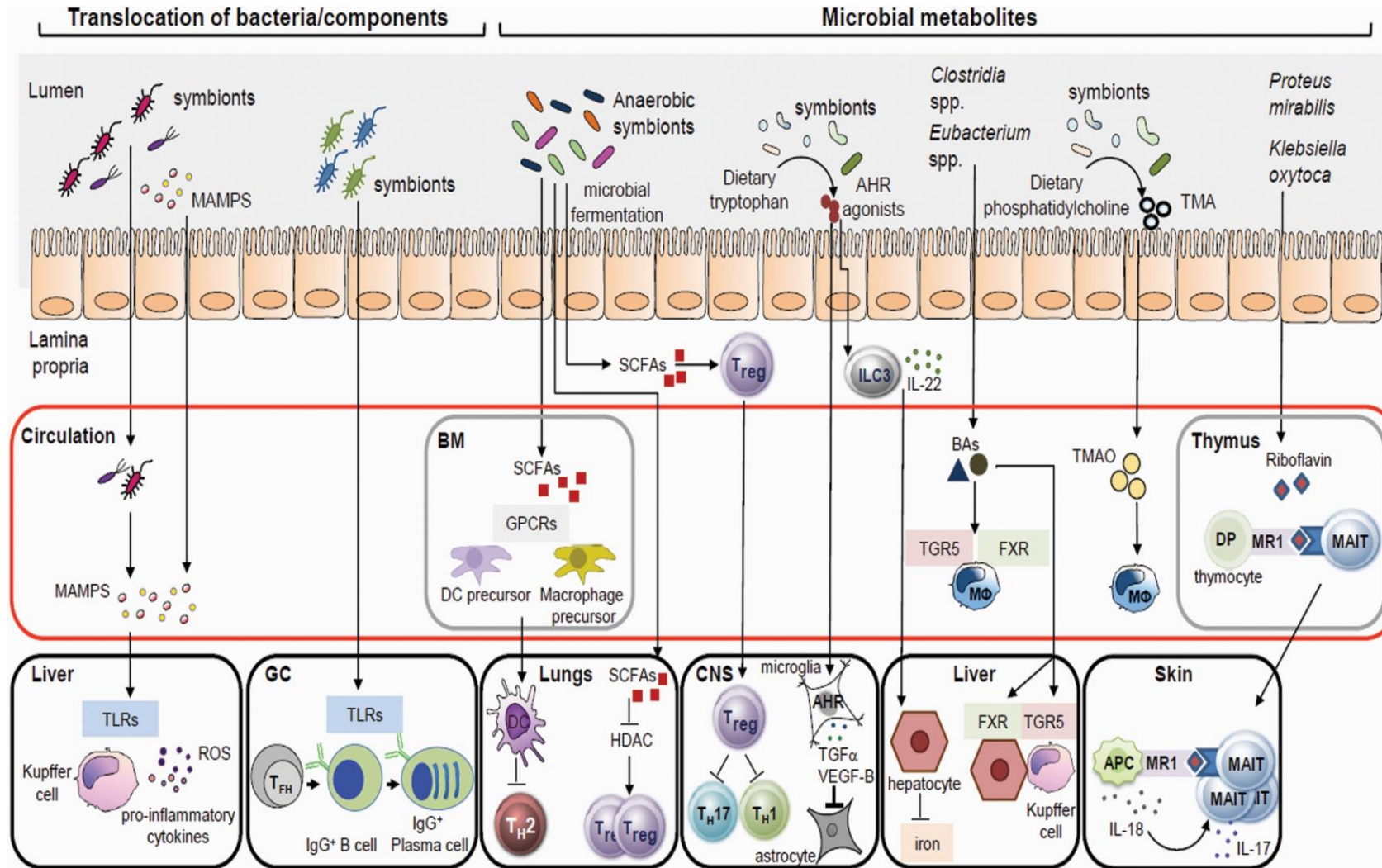




# Gut Health and Immunity

- ▶ 70-80% of immune cells that fight off infection are present in the gut
- ▶ Bacteria in our guts can elicit immune responses:
  - Locally in the GI tract
  - Remotely in other organs



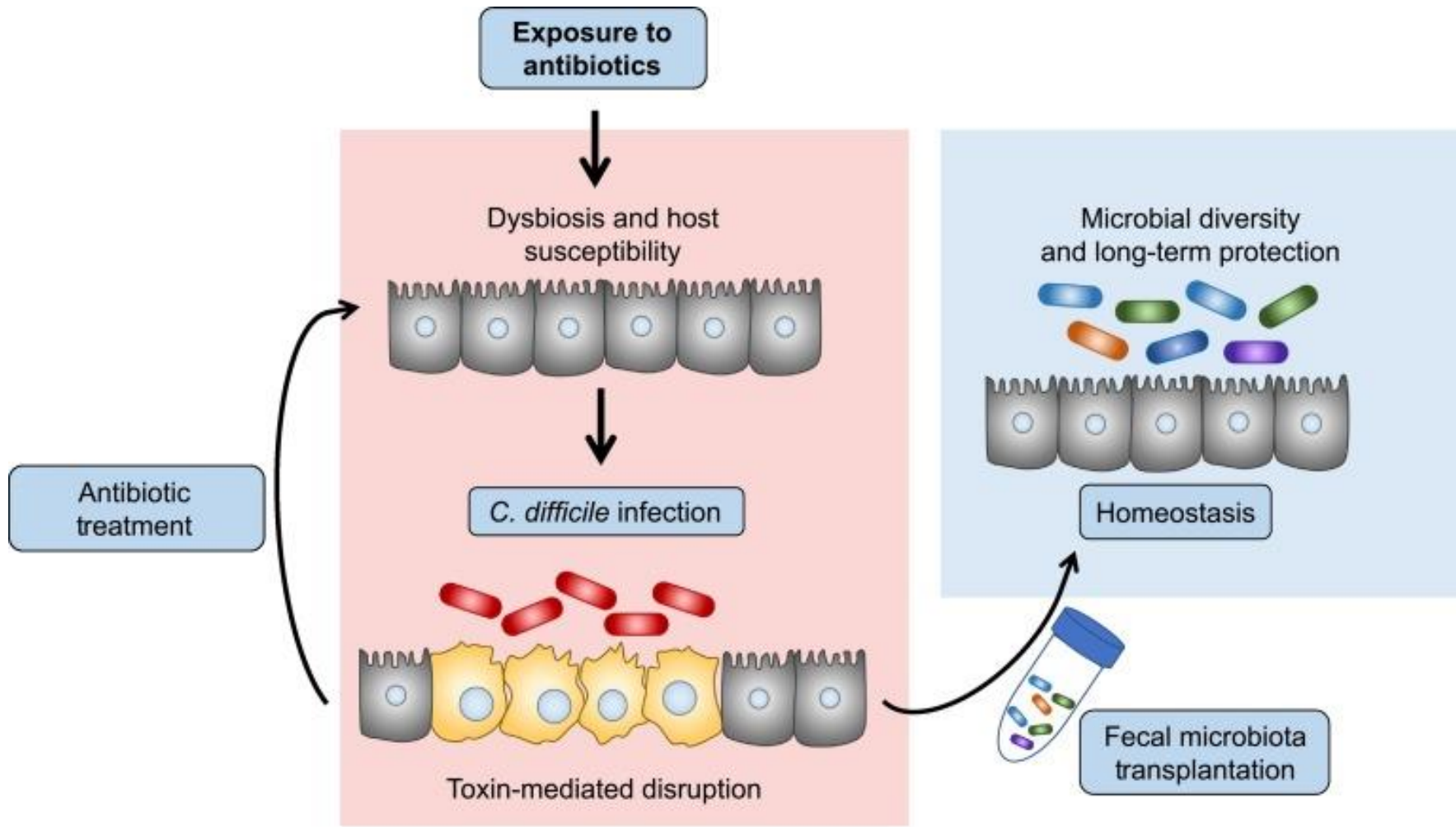




## Gut Health and Immunity: C. diff

- ▶ C. difficile colonizes the large intestine of humans
- ▶ A healthy microbiota inhibits infection by restricting the ability of C. difficile to expand in the colon
- ▶ The use of antibiotics alters the microbial flora of the gut, rendering it susceptible to infection by C. difficile
- ▶ Fecal microbiota transplant is a treatment





Trends in Molecular Medicine



# Gut Health and Skin Health

- ▶ Imbalance (dysbiosis) in the skin and/or gut microbiome is associated with an altered immune response, promoting the development of skin diseases:
  - Eczema
  - Acne vulgaris
  - Psoriasis
  - Rosacea



# Gut Health and Sleep

- ▶ Brain-gut-axis
- ▶ Microbiome diversity positively correlates with increased sleep efficiency and total sleep time
- ▶ Study found children with a high concentration of bifidobacterium bacteria had more time asleep during the night

(1)Smith RP et al. Gut microbiome diversity is associated with sleep physiology in humans. PLoS One. 2019 Oct 7;14(10):e0222394

(2)Yanan Wang et al, Sleep and the gut microbiota in preschool-aged children, *Sleep*, Volume 45, Issue 6, June 2022, zsac020



# Gut Health and Mental Health

- ▶ Serotonin is a chemical messenger involved in controlling mood
- ▶ Low levels contribute to depression
- ▶ Majority of serotonin is found in the gut
- ▶ Studies have shown that alterations in gut microbiome can impact serotonin levels:
  - Depression
  - Anxiety
  - CNS disorders like Alzheimer's and Parkinson's



# Gut Health and Mental Health

- ▶ Combination of antidepressants (AD) and probiotics is more effective to treat drug-resistant depression than AD alone

*Gao J et al. Probiotics for the treatment of depression and its comorbidities: A systemic review. Front Cell Infect Microbiol. 2023 Apr 17;13:1167116.*



# Gut Health and Digestion

- ▶ Inflammatory Bowel Disease
  - Crohn's disease and Ulcerative Colitis
  - Digestive disorders causing symptoms of diarrhea, bloody stool, abdominal pain, joint pain
- ▶ Arise from convergence of:
  - genetic risk
  - environmental factors
  - gut microbiota changes

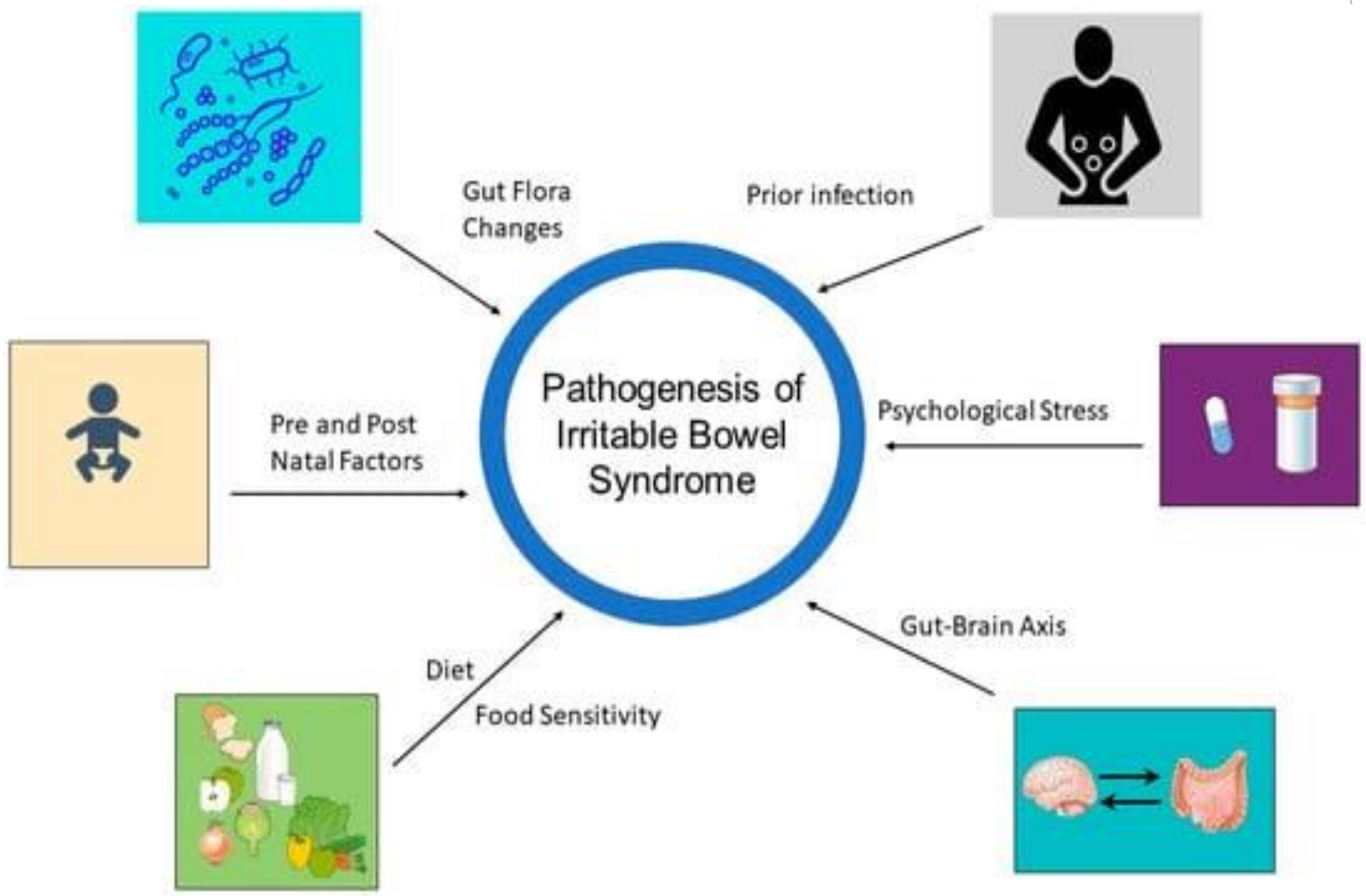


# Gut Health and Digestion

## ► Irritable Bowel Syndrome

- Hypersensitivity of the nerves found in the wall of the gastrointestinal tract
- Symptoms of abdominal pain associated with diarrhea or constipation
- Numerous factors involved in the pathogenesis but thought to occur after alteration in gut microbiome from prior GI infection







# Gut Health and Digestion

## Small intestinal Bacterial Overgrowth (SIBO)

- ▶ Symptoms of bloating and diarrhea
- ▶ Alteration of the gut microbiome from:
  - Diseases that lead to decreased movement of the bowel
  - Diabetes and scleroderma
  - Surgery of the small bowel/colon
  - Prolonged use or multiple rounds of antibiotics



# Gut Health and Hormones

- ▶ The gut microbiome has been correlated with various diseases accompanying menopause
  - Obesity affects 65% of postmenopausal women
  - Relationship between the gut microbiota and estrogen is speculated to mediate this weight gain



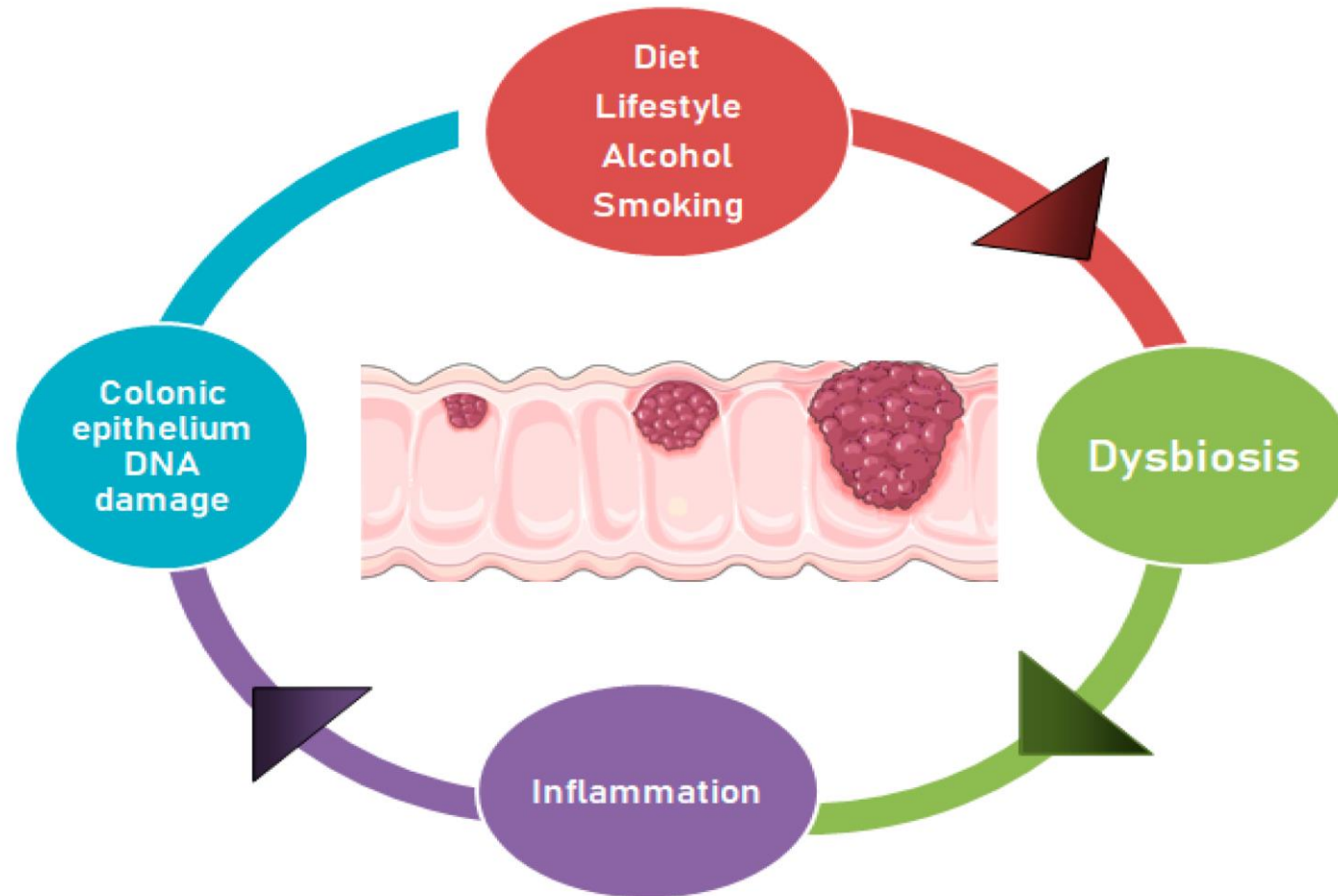
# Gut Health and Colon Cancer

- ▶ Colorectal cancer is the 3rd most diagnosed cancer worldwide
- ▶ **2<sup>nd</sup> most common in women**
- ▶ 2<sup>nd</sup> leading cause of cancer death worldwide
- ▶ colorectal carcinogenesis is a heterogeneous process influenced by:
  - diet
  - microbial and environmental exposures
  - host immunity
- ▶ alterations within gut microbiome may impact the development and progression of cancer

O'keefe S.J.D. Diet, microorganisms and their metabolites, and colon cancer. *Nat. Rev. Gastroenterol. Hepatol.* 2016;13:691-706.  
doi: 10.1038/nrgastro.2016.165

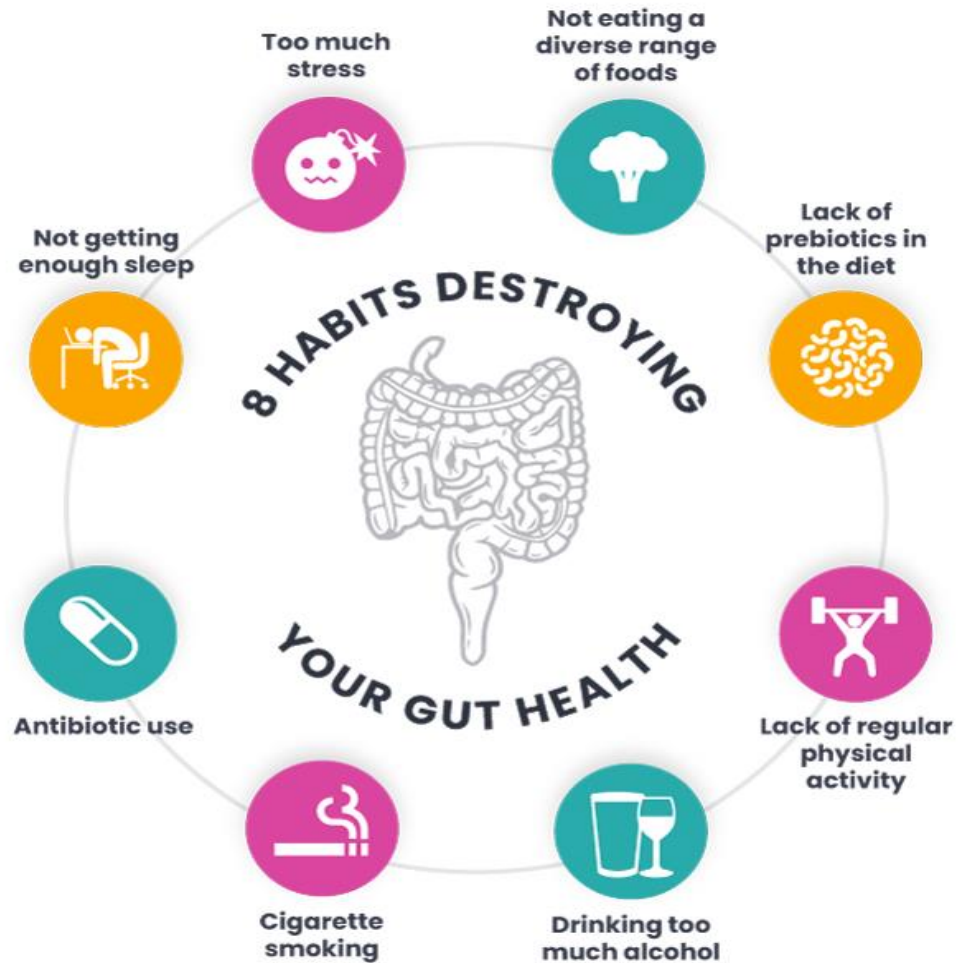


# Gut Health and Colon Cancer





# How do we improve gut health?





# How do we Improve Gut Health

- ▶ Listen to your gut
- ▶ New symptoms or a change in symptoms from your normal
  - Reflux
  - Diarrhea or constipation
  - Abdominal pain
  - Bloody stool/black stool
  - Bowel accidents/leakage
  - Trouble Swallowing
  - Unintentional weight loss

Dr. Google can't do a colonoscopy





# How do we Improve Gut Health

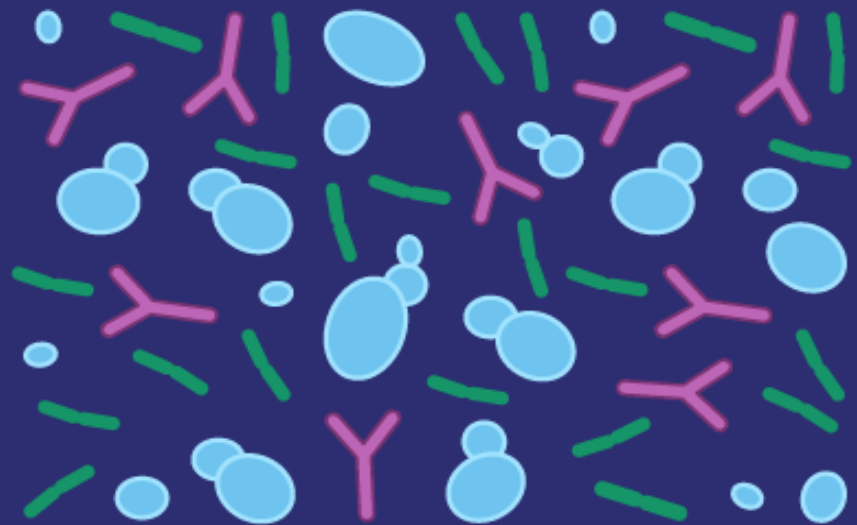
- ▶ Get age appropriate screenings:
  - Colon cancer screening



# How to Improve Gut Health

## probiotics

live microbes  
that can provide health  
benefits when taken in  
sufficient amounts



## prebiotics

food for the microbes  
that provide  
health benefits





# How to Improve Gut Health: Probiotics

- ▶ Community for probiotics: multibillion-dollar industry worldwide.<sup>4</sup>
- ▶ Estimated that 3.9 million American adults used some form of probiotics or prebiotics

4. Sniffen J.C. McFarland L.V. Evans C.T. et al. **Choosing an appropriate probiotic product for your patient: An evidence-based practical guide.** *PLoS One*. 2018; **13**e0209205

5. Caselli M. Cassol F. Calo G. et al. **Actual concept of "probiotics": is it more functional to science or business?.** *World J Gastroenterol*. 2013; **19**: 1527-1540



# How to Improve Gut Health: Probiotics

- ▶ Probiotics are not considered drugs in the US/Europe:
  - Regulatory status is not the same as a medication
- ▶ Industry is unregulated:
  - Marketing of product geared directly at consumers (IG, Tik Tok, Facebook)
  - No direct and consistent proof of effectiveness.<sup>5</sup>



# How to Improve Gut Health: Probiotics

- ▶ Widespread use of probiotics with confusing evidence for clinical efficacy
- ▶ Systematic review of the all the clinical data in 2020
- ▶ AGA Clinical Practice Guidelines on the Role of Probiotics in the Management of Gastrointestinal Disorders



# How to Improve Gut Health: Probiotics

What the review found...

“Evidence to support use of probiotics to treat *digestive diseases* is greatly lacking, identifying only *three* clinical scenarios where current data suggests that probiotics may benefit patients”



# How to Improve Gut Health

1. Prevention of *Clostridioides difficile* (*C. difficile*) infection in adults and children taking antibiotics
2. Prevention of necrotizing enterocolitis in preterm, low birthweight infants,
3. Management of pouchitis, a complication of inflammatory bowel disease.



# How to Improve Gut Health

- ▶ Insufficient evidence to recommend probiotics for:
  - Crohn's disease
  - Ulcerative colitis
  - Irritable bowel syndrome (IBS)
  - Acute *C. difficile* infection.
  - Acute infectious gastroenteritis in children



# How to Improve Gut Health

- ▶ Gastroenterologists should suggest the use of probiotics to their patients *only* if there is clear benefit and should recognize that the effects of probiotics are not species-specific, but strain- and combination-specific.



# How to Improve Gut Health: Probiotics

What's the verdict?

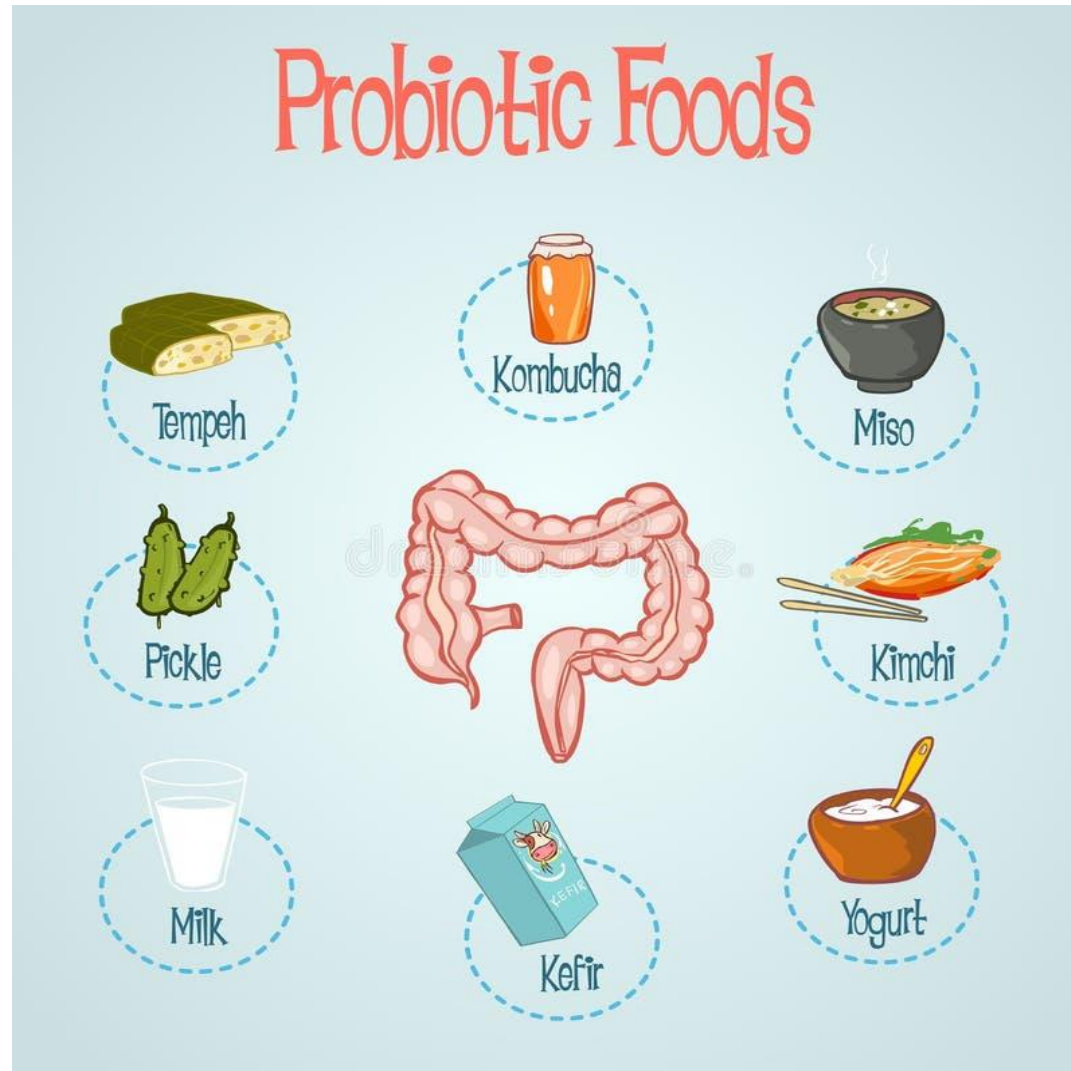
- ▶ There *is* a role for probiotics but we still need more research
- ▶ From a Gastrointestinal standpoint, probiotic strains that have been studied and possibly beneficial to the gut:
  - *Bifidobacterium longum*
  - *Saccharomyces boulardii*
  - *Lactobacillus acidophilus*



# How to Improve Gut Health

- ▶ Do not spend a lot!
- ▶ Refrigerated or room temp. does not make a difference
- ▶ Every person is different and may have a different outcome taking the product
- ▶ You can do it naturally....

# How to Improve Gut Health: Probiotics





# How to Improve Gut Health:

## PREBIOTICS





# How to Improve Gut Health

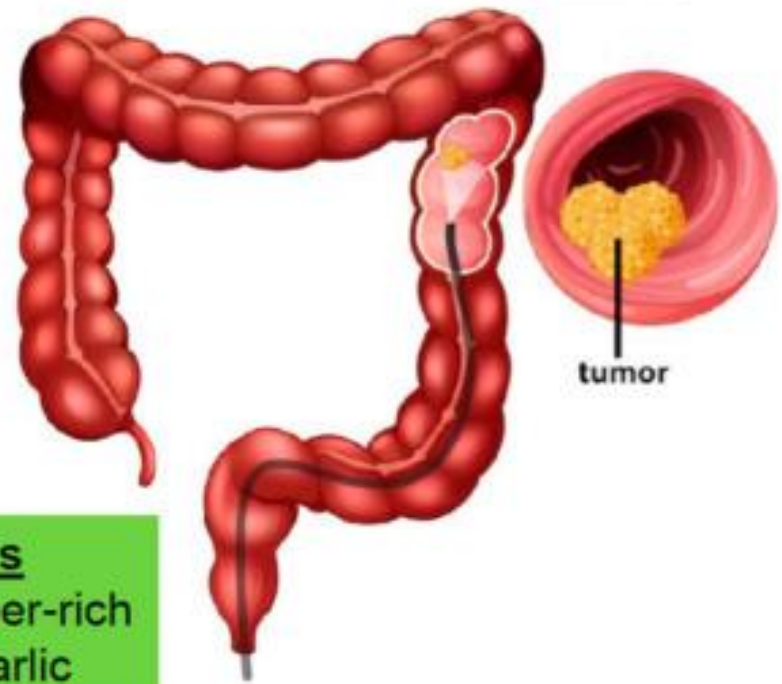
- ▶ Eat food in its whole, natural form
- ▶ Minimize processed foods
- ▶ Sleep: 7-8 hours per day
- ▶ Exercise: 3 hours/week over multiple sessions:
  - ▶ strength training two or more days per week
- ▶ Minimize Alcohol
- ▶ Avoid Smoking

# How do we Improve Gut Health

**Cancer causing foods**  
Hot dogs; Processed meat & bacons; Doughnuts; French fries; Chips, crackers & cookies

## Colorectal Cancer (CRC)

- ↑ Increased Bacterial Species in CRC
- Alistipes*
  - Akkermansia spp.*
  - Fusobacteria*
  - Porphyromonadaceae*
  - Coriobacteridae*
  - Methanobacterials*



- ↓ Reduced Bacterial Species in CRC
- Bifidobacterium*
  - Lactobacillus*
  - Ruminococcus*
  - Faecalibacterium spp.*
  - Treponema*
  - Roseburia*

**Cancer fighting foods**  
Cruciferous vegetables; Fiber-rich foods; Turmeric; Milk; Garlic



# Improving Overall GI Health in Women

- ▶ Hormones play a role in digestion
  - changes in bowel habits occur with premenopause and menopause
- ▶ Female anatomy can impact bowel habits
  - Constipation (pelvic floor issues)
  - Bowel leakage (urinary leakage)
    - This is treatable - medications, sacral neuromodulation
    - Please do not be afraid or embarrassed to talk to your doctor





A HAPPY COLON IS A HEALTHY COLON



**THANK YOU!**