

# What is Gut Health? How Does Wheat Affect Gut Health?



Wheat Retreat  
Friday May 2, 2025  
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# Presentation Outline



- What is Gut Health?
- Why do we care?
- How does **diet** affect our gut health?
- How does **wheat** affect our gut health?
- Summary notes



# What is Gut Health?

“Health” of the  
bacteria in the  
digestive tract

“Health” of the  
entire digestive  
system”

**Gut Microbiota**

Trillions of microbes (bacteria, viruses, fungi) that live in the digestive tract

**Gut  
Microbiome**

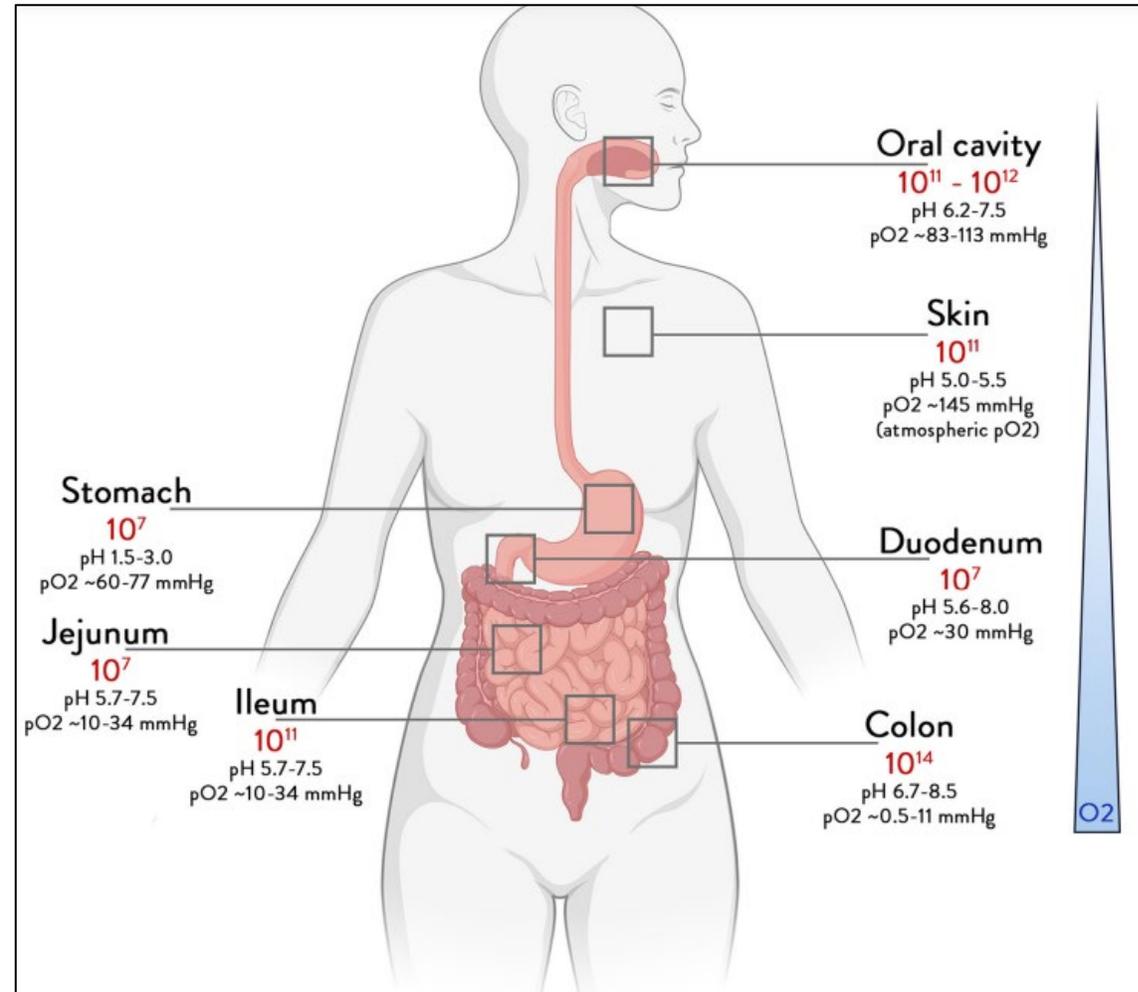
The microbes, their genes and their products



# Our body has a lot of microbiota

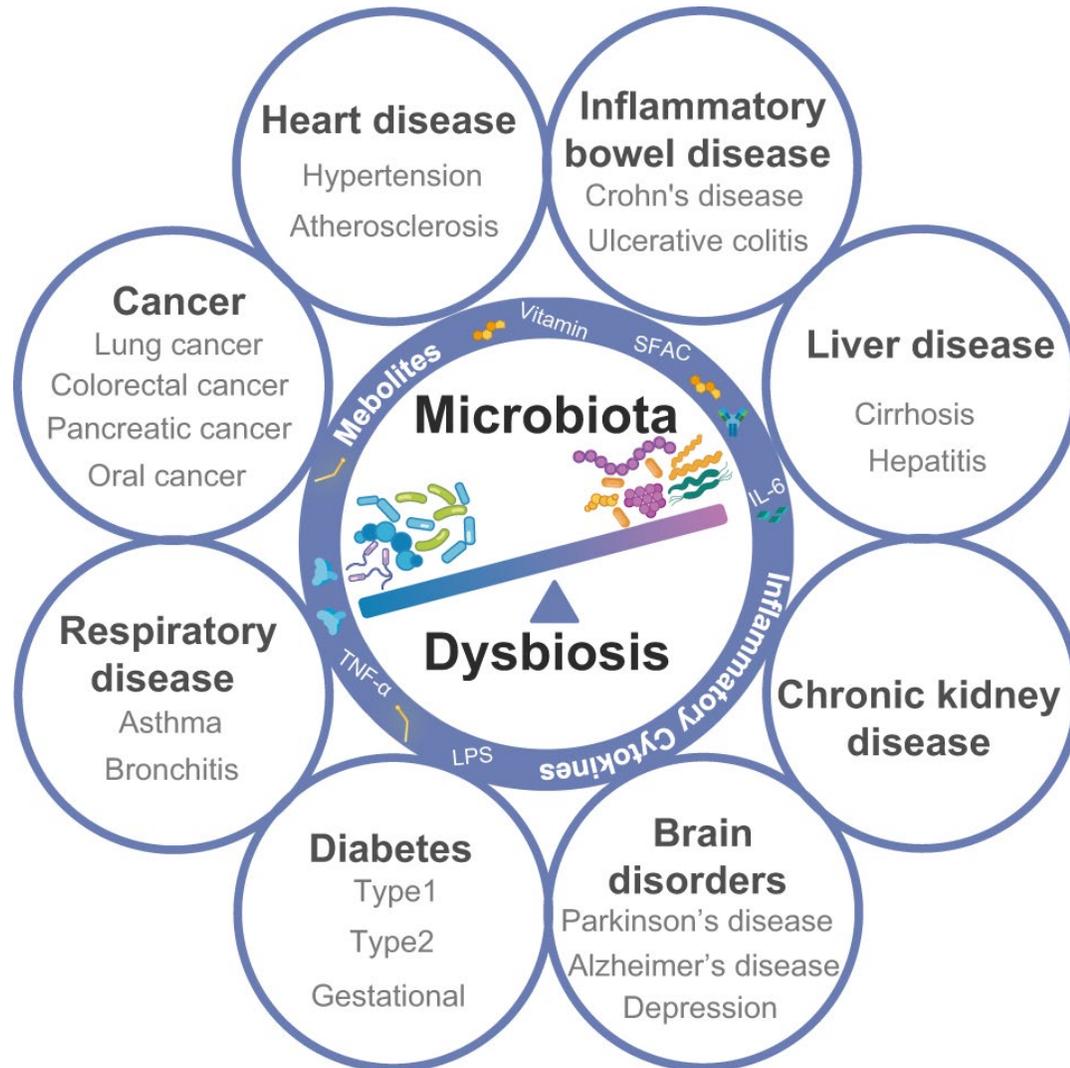
- 10-100 trillion microbial cells (bacteria, viruses, fungi) live on and inside us

**Our gut has the most microbiota**





# Why do we care about gut health?



- Our gut microbiota affects many parts of our body
- There are links between our gut and the health of many parts of our body

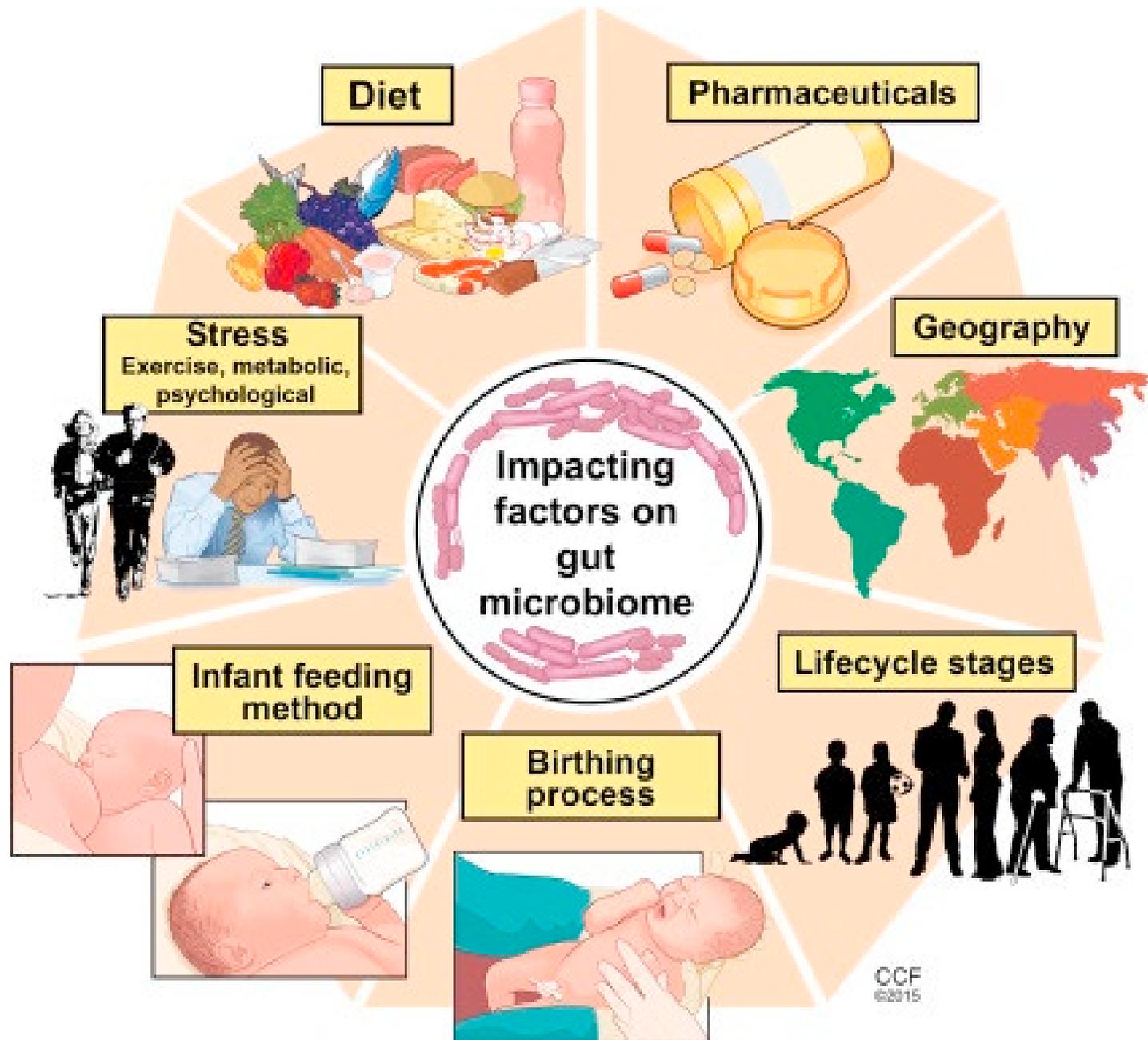
REVIEW ARTICLE **OPEN**

## Microbiota in health and diseases

Kaijian Hou<sup>1</sup>, Zhuo-Xun Wu<sup>2</sup>, Xuan-Yu Chen<sup>2</sup>, Jing-Quan Wang<sup>2</sup>, Dongya Zhang<sup>3</sup>, Chuanxing Xiao<sup>1</sup>, Dan Zhu<sup>1</sup>, Jagadish B. Koya<sup>2</sup>, Liuya Wei<sup>4</sup>, Jilin Li<sup>5</sup> and Zhe-Sheng Chen<sup>2</sup>



# Gut Microbiome Influencers



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# Diet and Gut Health

## **Gut health depends on the microbiome and can be measured by**

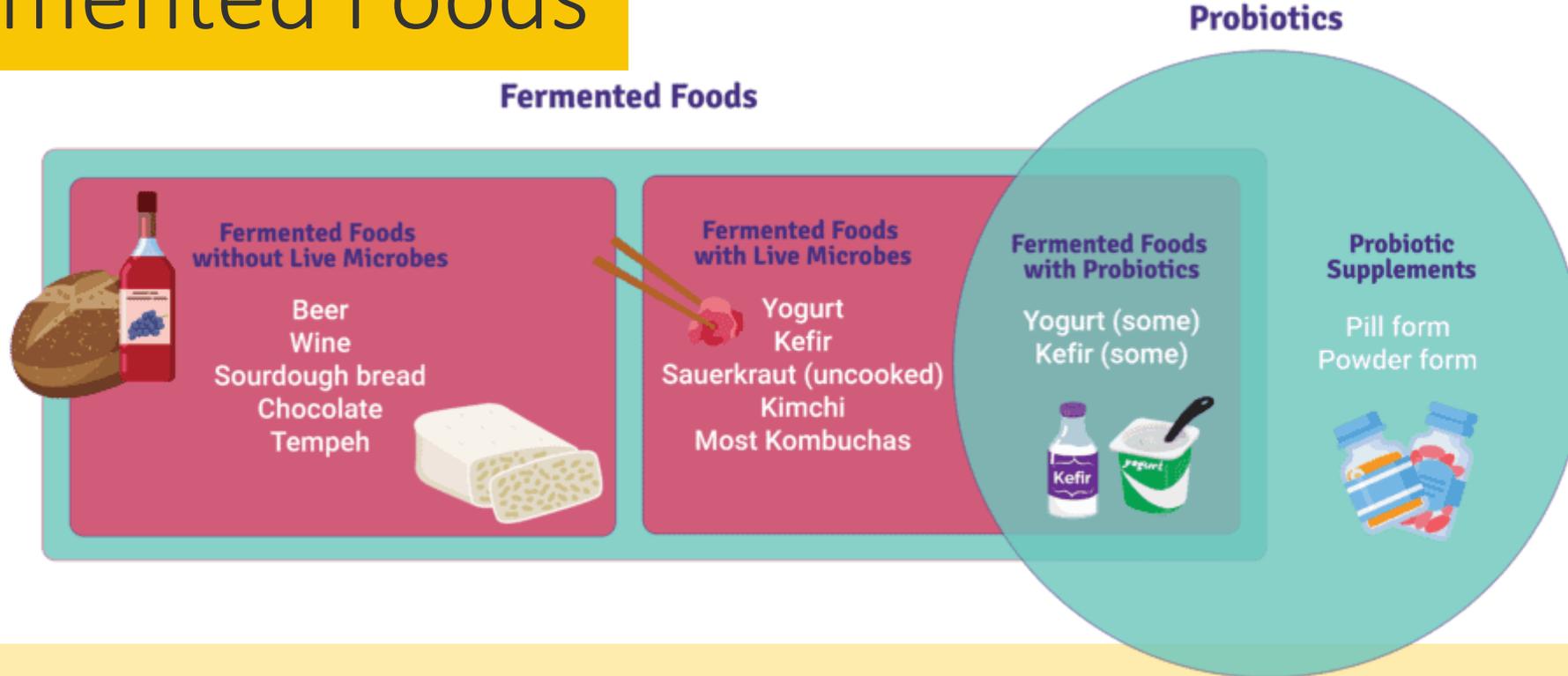
1. Abundance (how much bacteria is in the gut),
2. Diversity (the different kinds of bacteria in the gut) and
3. Metabolites of the microbiota (the type of by-products produced when the gut bacteria digests dietary components of our food)

## **Gut microbiome can be affected by:**

- Fermented Foods (probiotics)
- Prebiotics
- Postbiotics
- Dietary Fibre
- Whole Grains
- Phytochemicals



# Fermented Foods



- Foods or beverages that are produced by controlled microbial growth, some of which contain **probiotics**
  - **Probiotics** are live microorganisms which when administered in adequate amounts provide a health benefit on the host



# Prebiotics

- Indigestible parts of foods, such as fibres, that ferment in the gut and feed the good bacteria

Vegetables	Jerusalem artichokes, garlic, onion, asparagus cabbage, snow peas, green peas, leeks, shallots
Fruit	Apples, grapefruit, pomegranate, nectarines
Whole Grains	Oats, wheat, barley, rye crackers
Nuts and Seeds	Pistachio nuts, cashews
Legumes	Red kidney beans, soybeans, chickpeas, lentils



# Wheat can be a PREBIOTIC

*British Journal of Nutrition* (2008), **99**, 110–120  
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doi: 10.1017/S0007114507793923

## **Whole-grain wheat breakfast cereal has a prebiotic effect on the human gut microbiota: a double-blind, placebo-controlled, crossover study**

Adele Costabile<sup>1\*</sup>, Annett Klinder<sup>1</sup>, Francesca Fava<sup>1</sup>, Aurora Napolitano<sup>2</sup>, Vincenzo Fogliano<sup>2</sup>,  
Clare Leonard<sup>3</sup>, Glenn R. Gibson<sup>1</sup> and Kieran M. Tuohy<sup>1</sup>

- 31 adults consumed either:
  - 48 g of whole grain wheat cereal (5.7 g fiber) OR
  - 48 g of wheat bran rich cereal (13 g fiber)
- daily for 3 weeks
- Then after a 2 week break, they did the other diet
- Fecal samples before and after

- Beneficial or good gut bacteria were higher with both cereals but significantly more so with whole grain wheat cereal
- Provides evidence of a **PREBIOTIC effect of wheat (even with lower fibre)**



Wheat can  
have fibre and  
phytochemicals

**The Effects of Intact Cereal Grain  
Fibers, Including Wheat Bran on the  
Gut Microbiota Composition of  
Healthy Adults: A Systematic Review**

*Angie Jefferson<sup>1\*</sup> and Katie Adolphus<sup>2</sup>*

- Wheat bran is the largest contributor of cereal fibre and contains phytochemicals (such as arabinoxylan-oligosaccharides)
- Increases in wheat fibre (as low as 2 tablespoons or 6-8 g) and wheat phytochemicals had significant effects on microbial abundance, microbial diversity, and a compound from the bacterial digestion of fibre – all of which are beneficial for gut health



# Summary Notes

Gut health depends on the microbiome and can be measured by abundance, diversity and metabolites of the microbiota

Many factors can affect our gut health, and our gut health can influence many part of our body's health

Wheat contains many beneficial components that can benefit gut health (like dietary fibre, whole grains and phytochemicals)