

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**

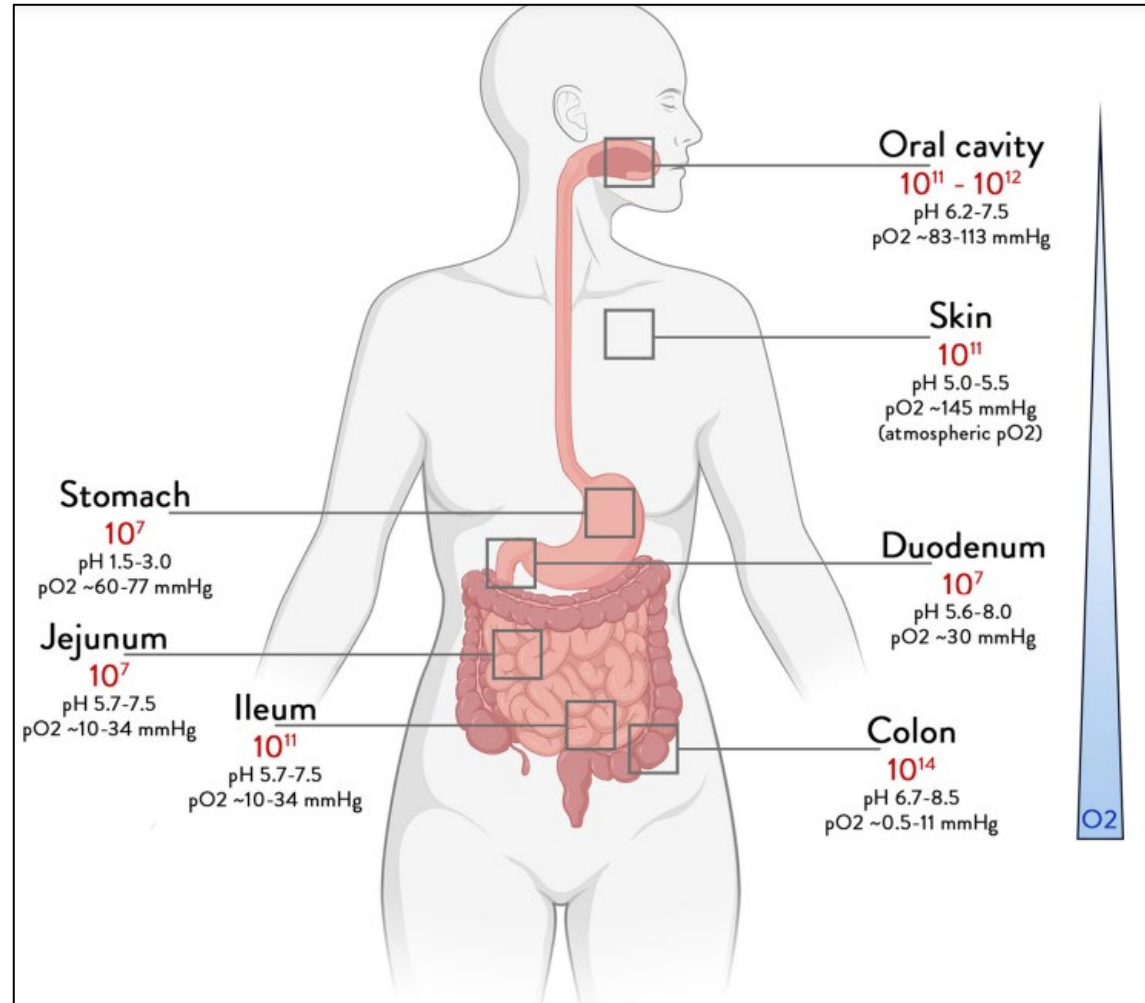
The microbes, their genes and their
products



Our body has a lot of microbiota

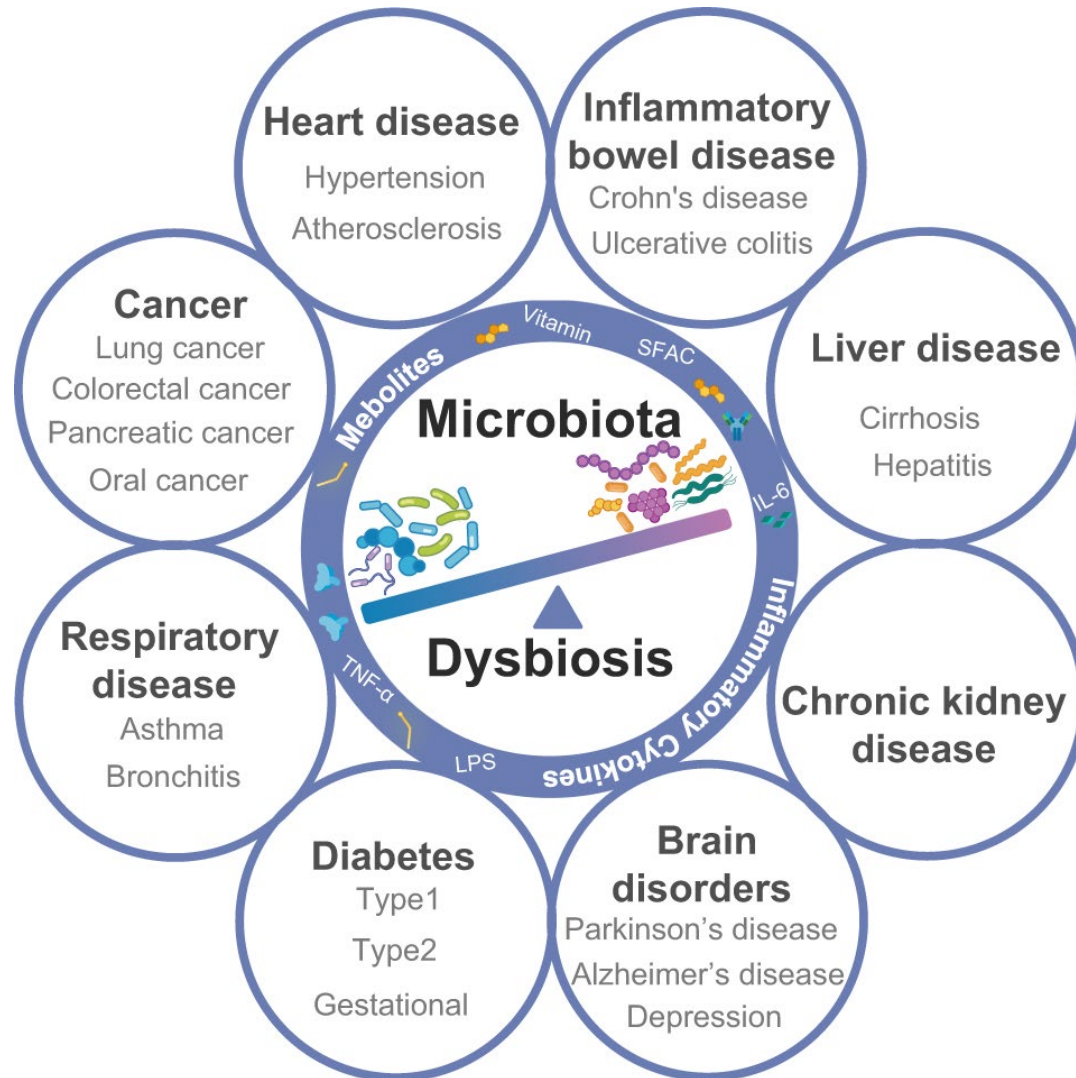
- 10-100 trillion microbial cells (bacteria, viruses fungi) live on and inside us

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

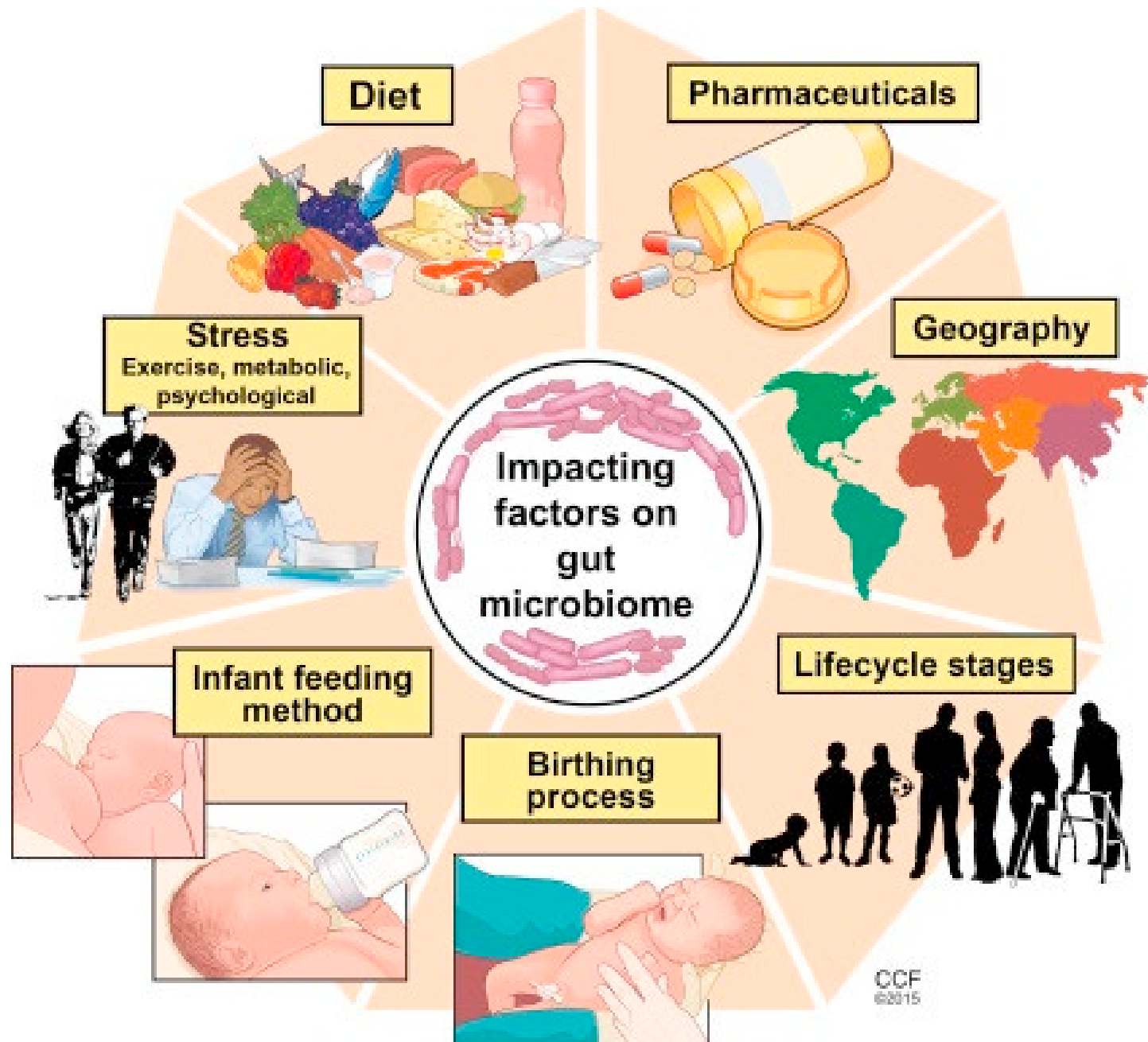
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Microbiota in health and diseases

Kaijian Hou¹, Zhuo-Xun Wu², Xuan-Yu Chen², Jing-Quan Wang², Dongya Zhang³, Chuanxing Xiao¹, Dan Zhu¹, Jagadish B. Koya², Liuya Wei⁴, Jilin Li⁵ and Zhe-Sheng Chen^{1,2}



Gut Microbiome Influencers





Diet and Gut Health

Gut health depends on the microbiome and can be measured by

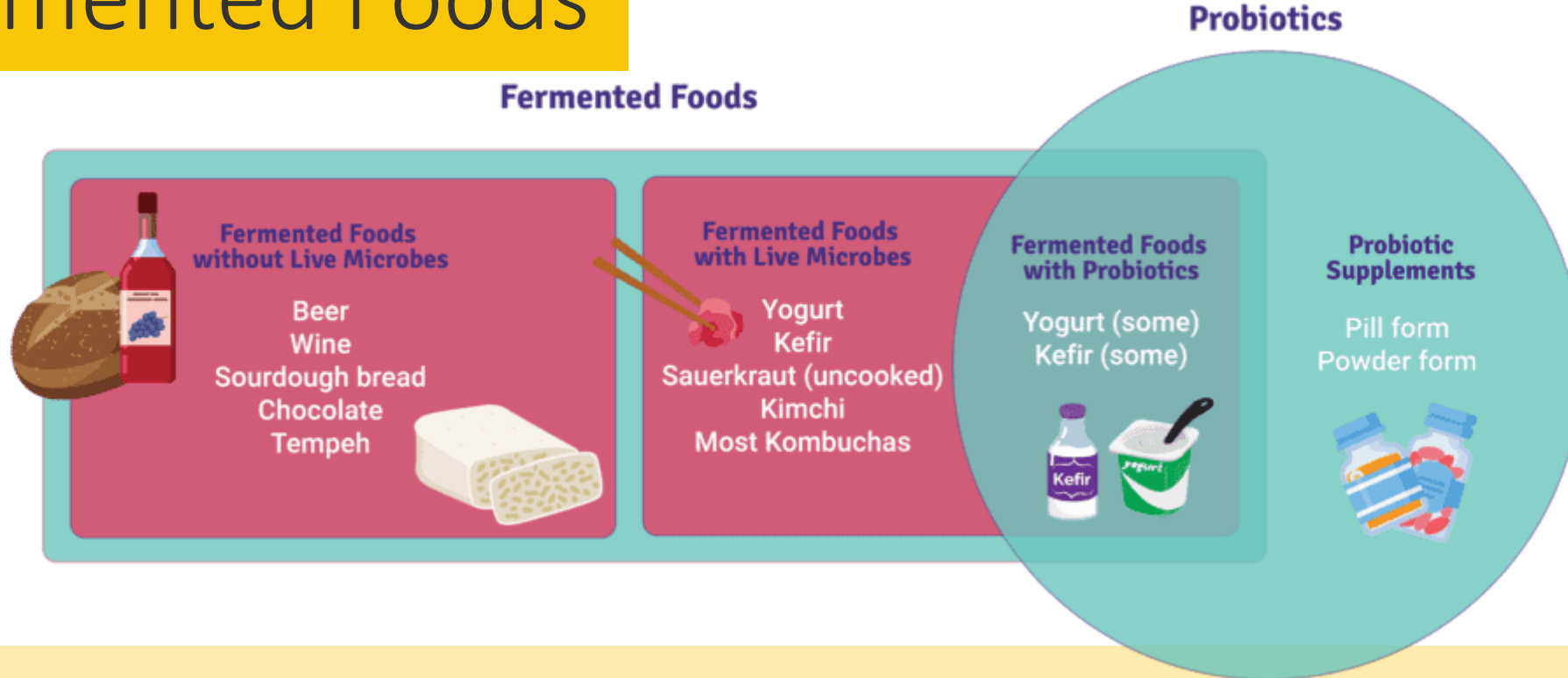
1. Abundance (how much bacteria is in the gut),
2. Diversity (the different kinds of bacteria in the gut) and
3. Metabolites of the microbiota (the type of by-products produced when the gut bacteria digests dietary components of our food)

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^{1*}, Annett Klinder¹, Francesca Fava¹, Aurora Napolitano², Vincenzo Fogliano², Clare Leonard³, Glenn R. Gibson¹ and Kieran M. Tuohy¹

- 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^{1} and Katie Adolphus²*

- 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)