

Week 1 - Notes

Human microbiome: The **genes** which are carried by the human microbiota

Human microbiota: The particular community of microbes residing in and on the human body including (Archaea, Bacteria, Viruses, Microeukaryotes)

- what's really in the gut?

1. the phymocutes
2. bacteroidetes,

- which help to:

1. digest food
2. metabolize drugs and all kinds of other important functions.

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- **Why are viruses on the border of what we consider living**
 - They cannot reproduce without infecting a cell
- **True or False? The oral and fecal microbial communities from one person look more similar to each other than the oral microbial communities from two different people.**
 - False
- **What is the main difference between bacteria and archaea?**
 - They perform different cellular functions
- **Babies born by C-section have gut microbial communities that look most like their mom's?**
 - Skin microbiota

- **What do you think are the most important factors influencing a person's gut microbes? List three factors and explain why you think each might affect gut microbes.**

1. Family genes

at least two human genes have a major impact in shaping our gut ecosystem:

- the lactase gene LCT, which influences the abundance of lactose-digesting Bifidobacteria,
- and the fucosyl transferase gene FUT2, which determines the abundance of Ruminococcus torques.
- They also show that other human genes affecting microbiome composition are involved in important aspects of host metabolism, nutrition and immunity.

2. Medication use

Certain medications, such as antibiotic and proton pump inhibitors, can alter gut microbial composition.

- Proton pump inhibitors reduce acidity in the GI tract. Creating a higher luminal pH, which can promote small intestinal bacterial overgrowth.
- Antibiotic use can diminish taxonomic diversity which can persist over time.

3. Diet

A high fiber diet in particular affects the type and amount of microbiota in the intestines, and fibers that aren't digestible by your body but can help good bacteria grow in your gut. Since your body doesn't digest these plant fibers, they travel to your lower digestive tract to be a food source for the healthy bacteria in your gut.