

Bacteria Profiles

A.I. Bacteria



Bacteroides fragilis (B. fragilis)

- Very common in human microbiome
- Obligate anaerobe (it can't survive in oxygen)
- Eats complex plant sugars that the human digestive system can't handle
- Produces simpler sugars
- Helps us indirectly by using up resources so bad bacteria can't grow
- Can resist some antibiotics

Faecalibacterium prausnitzii (F. prausnitzii)

- Very abundant in healthy human gut (can be 5-15% of gut bacteria), less abundant in people with some bowel diseases
- Obligate anaerobe (it can't survive in oxygen)
- Consumes sugars
- Produces short-chain fatty acids (SCFAs) and carbon dioxide
- SCFAs increase nutrient absorption and help regulate the immune system
- Forms a protective layer that prevents other microbes from getting out of the gut

Escherichia coli (E. coli)

- Common but not abundant (usually less than 1% of someone's gut microbiome)
- Facultative anaerobe (can survive in oxygen or without oxygen)
- Produces vitamin K
- Opportunistic: it can spread & take over after dysbiosis (an imbalance in the gut microbiome)
- Survives in feces: untreated sewage can contaminate water with *E. coli*.



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Clostridium difficile (*C. difficile*)

- Common but not abundant (usually only present in small amounts)
- Obligate anaerobe (can't survive in oxygen), although it can form spores that survive
- Produces carbon dioxide
- After dysbiosis (microbiome imbalance, for example after taking antibiotics), can grow out of control and produce toxins
- Infections might be treated by Fecal Matter Transplant (FMT), where a healthy person gives a sample of their good bacteria (in their poo) to a sick person to repopulate their microbiome. (Don't do that at home! Doctors do this very carefully.)

Lactobacillus acidophilus (*L. acidophilus*)

- Part of gut microbiome
- Aerotolerant anaerobe (can survive small amounts of oxygen but prefers none)
- Produces carbon dioxide and lactic acid, making the gut more acidic (less hospitable to bad bacteria)
- Also found in fermented foods like miso
- Approved as a probiotic species

Lactoplantibacillus plantarum (*L. plantarum*)

- Not native to gut microbiome: can visit and help, but not stay permanently in the gut
- Aerotolerant anaerobe (can survive in oxygen and without oxygen)
- Produces carbon dioxide and lactic acid, making the gut more acidic (less hospitable to bad bacteria like *Listeria*)
- Might help against inflammatory bowel disease
- Approved as a probiotic species
- Also found in fermented foods like olives, tempeh, and sauerkraut



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