Sample ID PRM7H3P7Q

Dysbiosis Index

The dysbiosis index is a numerical measure used to evaluate the balance of microbial communities in the human gut, indicating the degree of dysbiosis, or microbial imbalance, which can be associated with various health conditions.

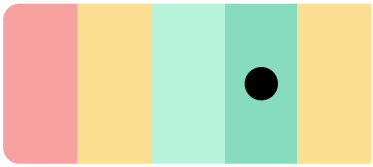
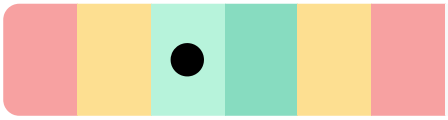
Your microbiota is severely dysbiotic. The bacteria composition in your sample is deviating from a healthy reference population.

Diversity

The diversity is computed using normalized fluorescent signal strengths from a selection of 28 uncorrelated bacteria markers. Diversity displays the distribution of bacteria as 'Deviating', 'Slightly deviating' or 'Expected' depending on the number of different species and their abundance in the sample, calculated based on Shannon diversity index.

Your gut microbiota diversity is deviating.

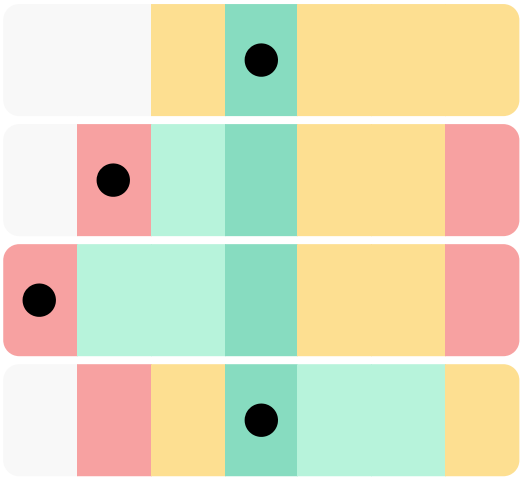
Bacteria Abundances

Group name	Bacteria name	Reduced -3 -2 -1 / Normal / Elevated 1 2 3
A1. Prominent gut microbes ✓	Bacteroides spp. & Prevotella spp.	
	Bacillota	

A2. Diverse gut bacterial communities

✗

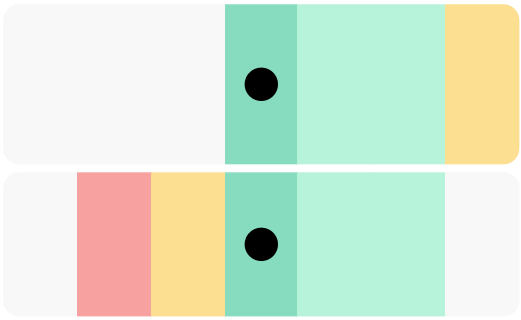
- Actinomycetota
- Bacilli
- Clostridia
- Bacillota (various)



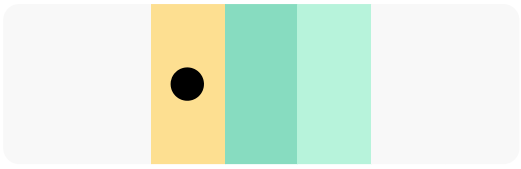
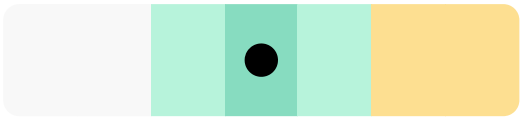
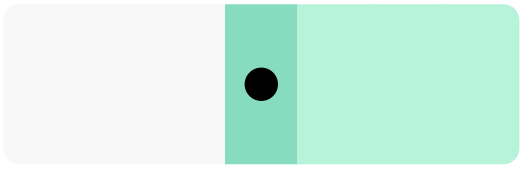
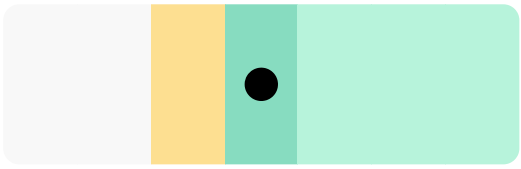
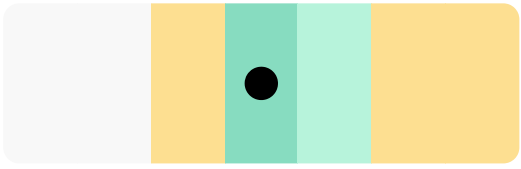
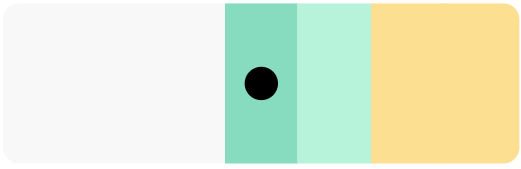
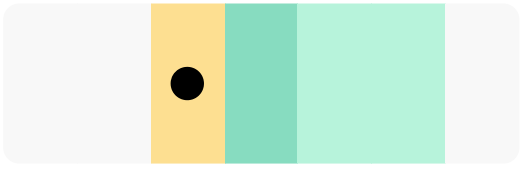
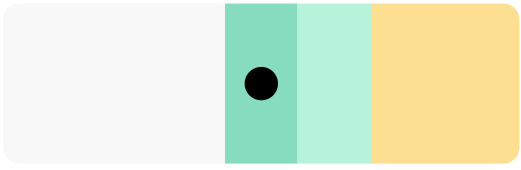
B1. enriched on animal-based diets

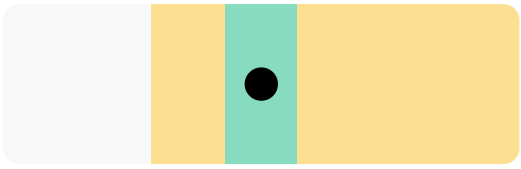
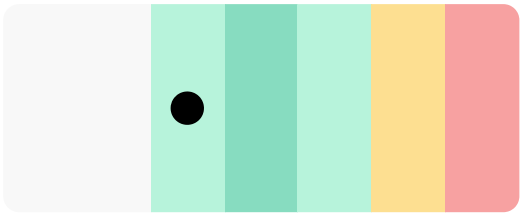
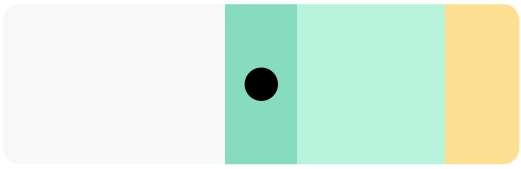
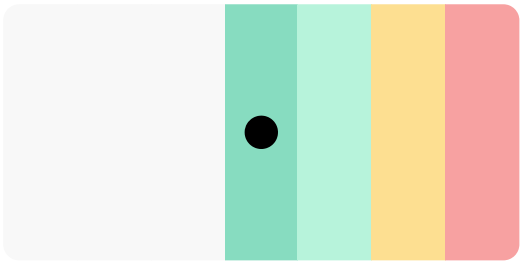
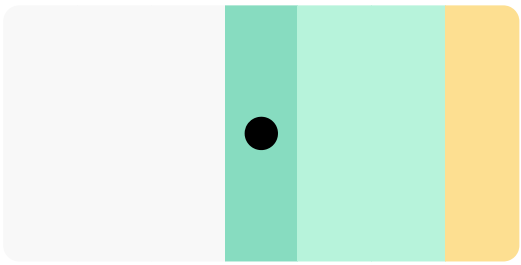
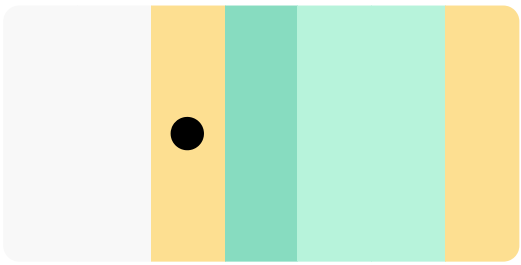
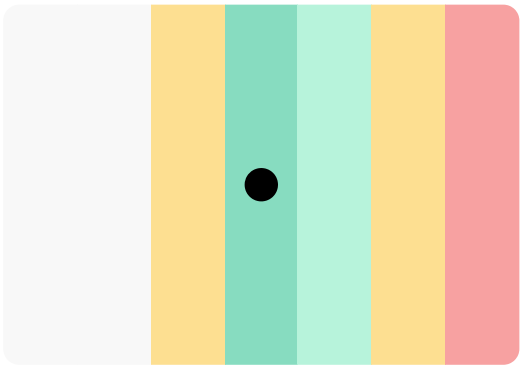
✓

- Alistipes onderdonkii
- Alistipes

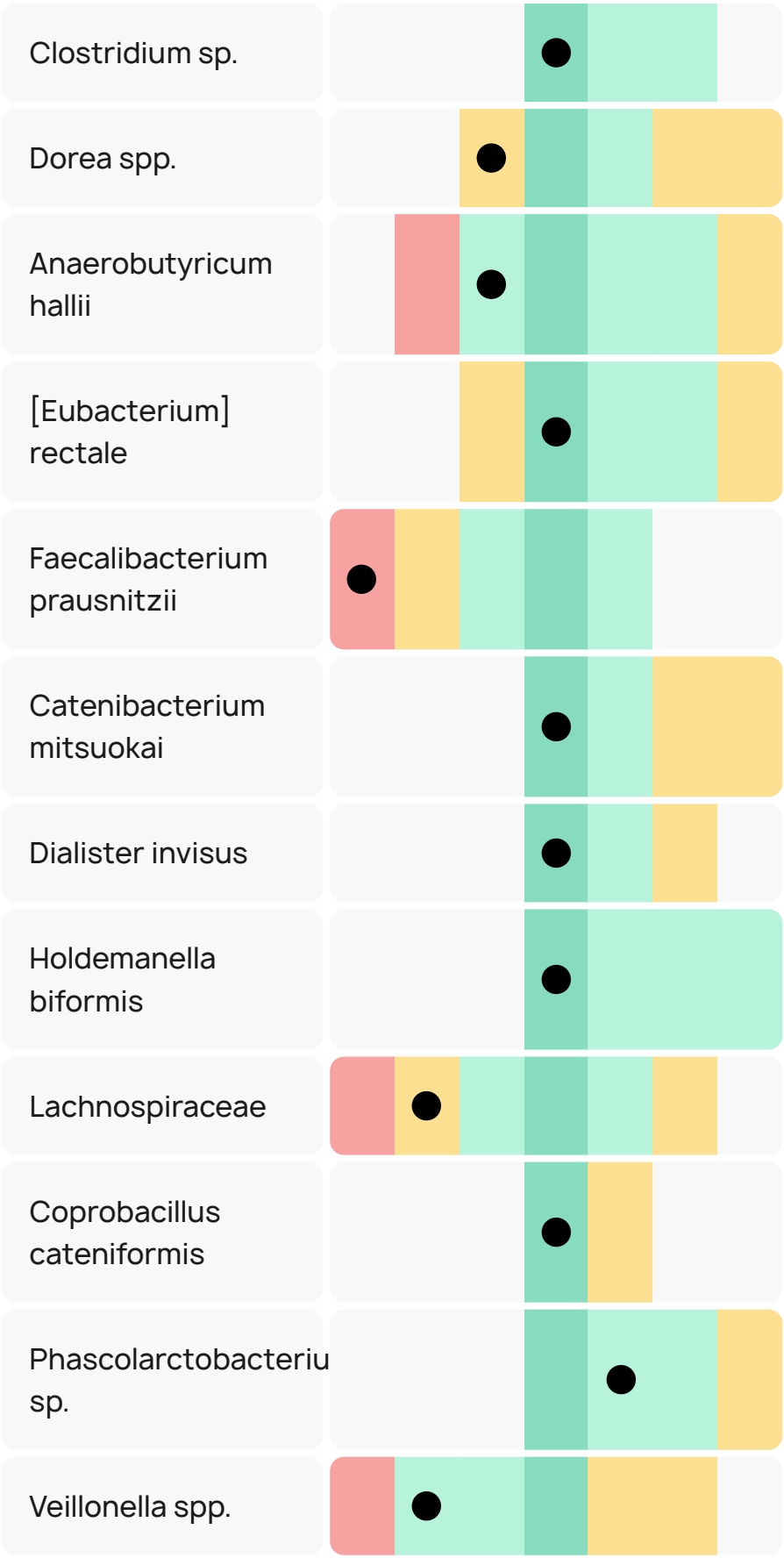


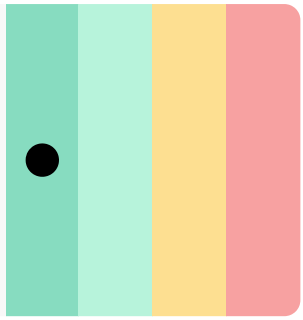
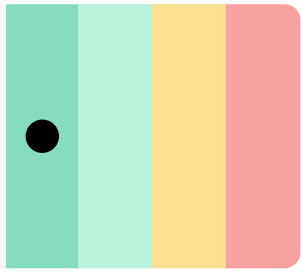
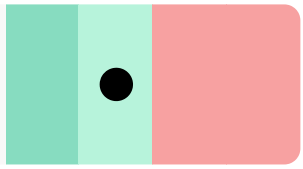
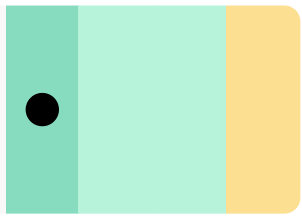
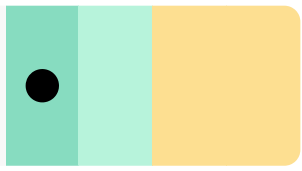
C1. Complex carbohydrate degraders

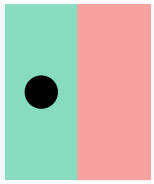
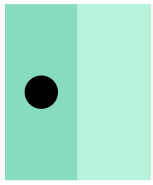
Bacteroides pectinophilus	
Bacteroides spp.	
Bacteroides stercoris	
Parabacteroides johnsonii	
Bacteroides zoogleoformans	
Parabacteroides spp.	
Eubacterium siraeum	
Clostridium methylpentosum	
Ruminococcus albus & R. bromii	

C2. Lactic acid bacteria and probiotics !	Bifidobacterium spp	
	Streptococcus salivarius ssp. thermophilus	
	Lactobacillus spp. 2	
	Lactobacillus ruminis & Pediococcus acidilactici	
	Streptococcus salivarius ssp. thermophilus & S. sanguinis	
	Lactobacillus spp.	
	Streptococcus agalactiae & [Eubacterium] rectale	
D1. Gut epithelial integrity marker ✓	Akkermansia muciniphila	

D2. Major SCFA producers



E1. Inflammation indicator ✓	Ruminococcus gnavus	
E2. Potentially virulent ✓	Bacteroides fragilis	
E3. Facultative anaerobes ✓	Pseudomonadota	
	Enterobacteriaceae	
	Shigella spp. & Escherichia spp.	
E4. Predominantly oral bacteria ✓	Actinomycetales	
	Dialister invisus & Megasphaera micronuciformis	
	Streptococcus spp.	
	Streptococcus spp. 2	

E5. Genital, respiratory, and skin bacteria ✓	Acinetobacter junii	
	Mycoplasma hominis	

Bacteria groups overview

A1. Prominent gut microbes

Prominent gut microbes represent the two most abundant bacteria phyla in the gut: Bacillota (Firmicutes) and Bacteroidota (Bacteroidetes). Increased Bacillota-to-Bacteroidota ratio has been associated with obesity and metabolic syndrome, while decreased Bacillota with IBD.

A2. Diverse gut bacterial communities

Diverse gut bacterial communities cover a broad range of gut commensals within the indicated taxa. Imbalanced levels of any of these taxa indicate changes in the variety and composition of microbes in the gut relative to those typically found in a healthy population, often associated with lower species richness (internal observation).

B1. enriched on animal-based diets

Alistipes are bile-resistant bacteria, highly **enriched on animal-based diets**. They can metabolize tryptophan into indole derivatives. While moderate levels are beneficial, excessive indole production may come at the expense of serotonin levels, which are essential for regulating mood and cognition. For this reason, elevated Alistipes levels are often linked to depression. Increased abundance of A. onderdonkii may also serve as a marker of high body fat and total cholesterol. On the other hand, decreased levels of these species are associated with increased inflammation in conditions like non-alcoholic fatty liver disease (NAFLD) and Crohn's disease.

C1. Complex carbohydrate degraders

Complex carbohydrate degraders thrive on various types of dietary fiber and prebiotics, such as inulin, resistant starch, and pectin, which are abundantly found in foods like oats, bananas, apples, garlic and onions (high FODMAP foods). By breaking down complex carbohydrates, they support the production of short-chain fatty acids (SCFA) and other beneficial metabolites that are important for cross-feeding among microbial species. Notably, many bacteria in this group contribute to the build-up of intestinal gas, so an increase in their abundance may be linked to bloating and abdominal pain.

C2. Lactic acid bacteria and probiotics

Lactic acid bacteria and probiotics produce lactic acid and other antimicrobial substances that help control pathogen growth, support the gut barrier, modulate the immune system, and aid in the fermentation of dietary fibers. These functions are essential for preventing infections, reducing inflammation, supporting nutrient synthesis (notably as major producers of vitamins B and K), and maintaining overall gut health. Many of these bacteria are also marketed as probiotics and are naturally found in fermented food such as yogurt. Of note, proton pump-inhibitor use may increase the abundance of Streptococcus and Lactobacillus species. Overgrowth of lactate producers in the gut can promote sulphide formation by sulphate-reducing bacteria, potentially harming gut health and contributing to conditions like colitis.

D1. Gut epithelial integrity marker

Gut epithelial integrity marker: A. muciniphila regulates mucus production in the intestinal lining, supporting metabolic health and reducing inflammation. Diminished levels of this bacterium have been associated with metabolic disorders and cardiovascular disease. Polyphenols and prebiotic fibers, which are abundant in foods like red berries, cocoa powder, seeds and nuts, support healthy levels of A. muciniphila. Increased levels of this species are also expected in patients treated with metformin.

D2. Major SCFA producers

Major SCFA producers are critical for producing acetate, propionate, and butyrate through the fermentation of resistant starches and dietary fibers. These short-chain fatty acids (SCFAs) maintain gut barrier integrity, regulate gut acidity, reduce inflammation, and facilitate gut-brain communication. Butyrate, in particular, serves as a primary energy source for colonocytes and plays a pivotal role in maintaining intestinal barrier function. Decreased levels of butyrate-producing bacteria, such as F. prausnitzii, are linked to inflammatory and functional gastrointestinal disorders, including irritable bowel syndrome (IBS) and inflammatory bowel disease (IBD). Reduced levels are also associated with mental health conditions like anxiety and depression, likely due to impaired gut-brain signalling. Of note, while SCFA producers provide critical benefits, overgrowth of bacteria in this group can lead to excess gas production, potentially causing bloating and abdominal discomfort.

E1. Inflammation indicator

R. gnavus, recently reclassified as Mediterraneibacter gnavus, is a common marker of inflammation-associated diseases and serves as an **inflammation indicator**. It produces pro-inflammatory molecules during mucin degradation, which can compromise the gut mucosal barrier, leaving the underlying mucus layer vulnerable to opportunistic pathogens and toxins.

E2. Potentially virulent

Potentially virulent: Some B. fragilis strains produce a virulence factor known as the Bacteroides fragilis toxin (BFT), which can disrupt epithelial cell tight junctions, increase intestinal permeability, and trigger inflammation. IBS patients with increased abundance of this marker may respond better to low FODMAP diet.

E3. Facultative anaerobes

Facultative anaerobes represent bacteria tolerating and thriving in oxygenated environments. A healthy human colon is strictly anaerobic. An increase in the abundance of these microbes, coupled with a decrease in other markers, may indicate an oxygenated gut environment, which could suggest inflammation and occult intestinal bleeding.

E4. Predominantly oral bacteria

Predominantly oral bacteria are microbes that typically thrive in the oral environment. An increased relative abundance of these bacteria in fecal samples may indicate diminished gut microbiota or potential colonization of the gut by oral bacteria, which could be linked to oral diseases or disruptions in oral-gut microbial balance.

E5. Genital, respiratory, and skin bacteria

Genital, respiratory, and skin bacteria are linked to hospital-acquired infection, typical in immunocompromised individuals. They are often linked to urinary tract infection.

Diet recommendations

Add dietary fiber to your diet.

Anaerobutyricum hallii	Reduced
Bacillota	Reduced
Veillonella spp.	Reduced
Shigella spp. & Escherichia spp.	Elevated
A1	Reduced

Vegetables
carrots, beets, broccoli, artichoke, brussels sprouts, kale, spinach, tomatoes, legumes, sweet potatoes, celery, asparagus

Fruits
apples, bananas, strawberries, blueberries, raspberries, blackberries, pears, avocado, coconut

Supplements
fiber supplements

Seeds, Grains And Nuts
oats, popcorn, quinoa, brown rice, barley, buckwheat, wild rice, chia seeds, sunflower seeds, pumpkin seeds, almonds, pistachios, walnuts, peanuts

Increase your diet with food rich in polyunsaturated fatty acids.

Dorea spp.	Reduced
Lachnospiraceae	Reduced

Oils
sunflower oil, corn oil, soybean oil, flaxseed oils

Meats
salmon, sardines, trout, shellfish, mackerel

Supplements
omega-3 supplements

Seeds, Grains And Nuts
flaxseeds, walnuts

Vegetables
legumes, broccoli, spinach, kale

Fruits
dried apricots, olives, avocados, berries, raisins

Increase your intake of fermented vegetables in your diet.

C2	Reduced

Vegetables
sauerkraut, pickles, miso, kimchi

Reduce your intake of simple carbohydrates.

C1	Elevated

Increase your intake of dietary fibers while reducing consumption of sugars and animal-protein. If applicable, establish a regular sleeping routine.

D2	Reduced

Vegetables
carrots, beets, broccoli, artichoke, brussels sprouts, kale, spinach, tomatoes, legumes, sweet potatoes, celery, asparagus

Fruits
apples, bananas, strawberries, blueberries, raspberries, blackberries, pears, avocado, coconut

Supplements
fiber supplements

Seeds, Grains And Nuts
oats, popcorn, quinoa, brown rice, barley, buckwheat, wild rice, chia seeds, sunflower seeds, pumpkin seeds, almonds, pistachios, walnuts, peanuts

Add a variety of plant-based foods rich in fibers and prebiotics to support microbial diversity.

A2	Reduced

Vegetables
carrots, beets, broccoli, artichoke, brussels sprouts, kale, spinach, tomatoes, legumes, sweet potatoes, celery, asparagus

Fruits
apples, bananas, strawberries, blueberries, raspberries, blackberries, pears, avocado, coconut

Supplements
fiber supplements

Seeds, Grains And Nuts
oats, popcorn, quinoa, brown rice, barley, buckwheat, wild rice, chia seeds, sunflower seeds, pumpkin seeds, almonds, pistachios, walnuts, peanuts

Moderate your intake of high FODMAP foods like garlic, onions, and certain fruits. Focus on a balanced diet with low FODMAP options.

C1	Elevated
D2	Elevated
E2	Elevated

Focus on a diet rich in anti-inflammatory foods like leafy greens, berries, nuts, and fatty fish to help manage inflammation. Reduce processed foods and sugars.

E3	Elevated