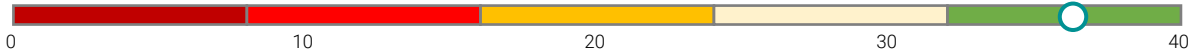
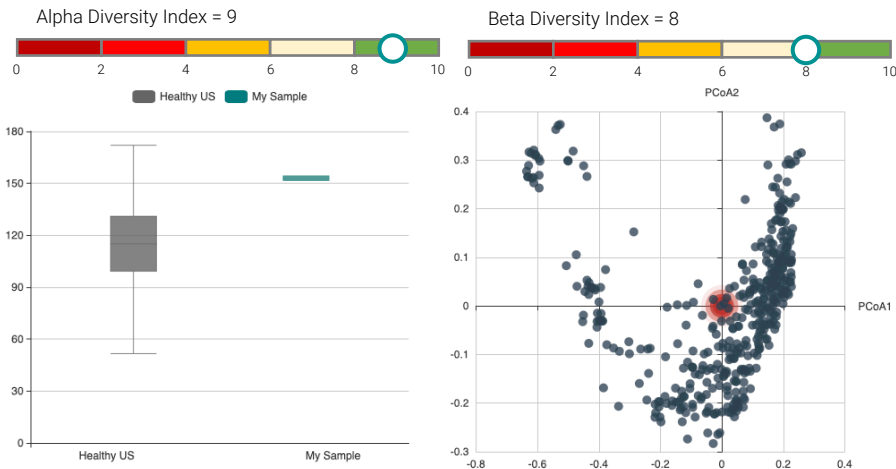


My Gut Microbiome Index (out of 40): 36



The Gut Microbiome Index (GMI) is an overall score for gut microbiome health. A score above 30 is considered excellent. It is calculated by assessing four key indicators of microbiome health for your gut microbiome and comparing them to the typical healthy gut microbiome. The four key indicators include [Alpha Diversity](#) (species richness), [Beta Diversity](#) (composition), [Pathogen Occurrence](#) (population of pathogens) and [Resistome Occurrence](#) (population of antibiotic resistance genes).

My Gut Microbiome Alpha- and Beta-Diversity



Number of species in gut microbiome: 423

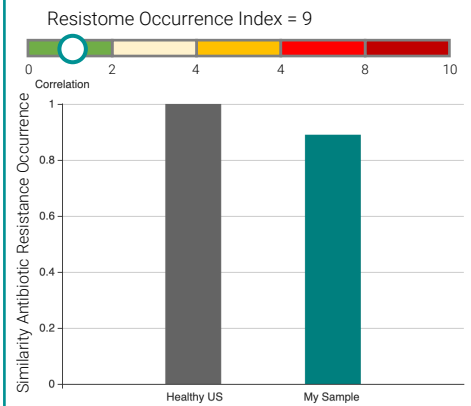
In ecology, [Alpha-Diversity](#) refers to the average diversity, or the richness of species, in a particular ecosystem. This marker is looking at your own personal species richness within your gut microbiome.

A Low Alpha-Diversity Index suggests that your gut microbiome was recently damaged by antibiotics, environmental toxins, stress, diet, or other factors.

See the results of the report section on [Functional Keystone Species in My Gut](#) to learn how to increase your protective keystone bacteria and improve your health.

[Beta-diversity](#) is the variation of species when comparing the composition of two separate ecosystems. This marker compares the composition of your gut microbiome to healthy populations in order to illustrate notable differences. The red dot for your sample not falling within the clusters of grey dots (healthy) leads to a low Beta-Diversity Index suggesting that your gut microbiome composition is trending away from a healthy gut to an imbalanced, dysbiotic gut.

My Gut Antibiotic Resistome



This section explores if the antibiotic resistance genes in your gut microbiome are similar in their composition to the ones naturally occurring in Healthy populations.

Reduced similarity can indicate an increased risk for antibiotic resistant infections. Consult your doctor on appropriate antibiotic usage. Avoid strong antibacterial household cleaners, consuming foods that contain antibiotics like low-quality meats and dairy, or drinking poorly purified but over-chlorinated water.

If your Index is low, you could benefit from a probiotic like *Bacillus subtilis* HU58, producing over 12 natural and targeted antibiotics to control unwanted bacterial overgrowths without contributing to overall antibiotic resistance. Supplementing the diet with HU58 can help to support the innate immune system's ability to reduce the likelihood and frequency of having to take broad-spectrum antibiotics.

Pathobiome

Low levels of pathogens are normal and characteristic of a healthy, diverse gut microbiome. Increased levels of pathogens however could indicate that a pathogen is playing a role in symptoms you are experiencing. This section compares the relative abundances (RA) of specific pathogens to normal levels present in the healthy gut and provides recommendations in case your pathogen levels are abnormally high.

Pathogen Occurrence Index = 10



BiomeFX is NOT a diagnostic test. If your Pathogen levels are abnormally high, consult your physician who can make a diagnosis and provide treatment if needed.

Pathogen Species	Healthy RA Range [%]	My Sample RA [%]	Nutrition	Lifestyle	Supplements
<i>Campylobacter</i>	0.01 – 0.01	0.01	Avoid undercooked chicken and choose milk from a reputable source. Consume more garlic, basil, cinnamon, clove, lemon, lemongrass, mandarin orange, oregano, rosemary, sage, and thyme.	<i>Campylobacter</i> is the #1 intestinal disease diagnosed in travelers returning to the United States. Choose clean drinking water when traveling abroad. Avoid cross-contamination of raw meats and cooked foods.	MegaSporeBiotic + HU58 <i>MegaSporeBiotic</i> and HU58 are very effective at crowding out pathogenic bacteria in the gut.

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Pathobiome ...continued

Pathogen Species	Healthy RA Range [%]	My Sample RA [%]	Nutrition	Lifestyle	Supplements
<i>Helicobacter pylori</i>	0.01 – 3.43	0.00	<p>Berries, cruciferous vegetables, honey, licorice flavonoids, and foods rich in omega-3 fatty acids have been shown to effectively limit the growth of <i>H. pylori</i>. Consume raspberries, strawberries, blackberries, blueberries, bilberries, cauliflower, turnips, cabbage, radish, broccoli sprouts, cold-water fish, flax, walnuts, chia seeds, licorice root, and oak tree and manuka honey to limit the growth of <i>H. pylori</i>.</p>	<p>Reduce intake of NSAIDs like ibuprofen, naproxen, and aspirin. Wash your hands before preparing or eating food. Limit direct contact with vomit or fecal matter.</p>	<p>MegaSporeBiotic + RestorFlora + MegaGuard + Mega IgG2000 or MegaMucosa + MegaOmega</p> <p><i>Bacillus subtilis</i> HU58 and <i>Saccharomyces boulardii</i> can both effectively crowd out <i>Helicobacter pylori</i> overgrowths. MegaGuard contains licorice root flavonoids that have been shown to significantly reduce <i>H. pylori</i> abundance. MegaIgG2000 and MegaMucosa both contain serum-derived bovine immunoglobulins (SBI) that have been shown to bind and remove <i>H. pylori</i> from the gut. MegaOmega contains healthy omega-3 fatty acids from anchovy, squid, sardine, herring, and mackerel.</p>
<i>Clostridium difficile</i>	0.04 – 0.09	0.00	<p>Avoid processed sugars. Increase consumption of prebiotic fibers and fermentable carbohydrates like green bananas, leeks, asparagus, onions, garlic, artichokes, chicory, and dandelion root.</p>	<p><i>C. diff</i> infections are common after taking antibiotics. Wash hands thoroughly. If antibiotics are needed, consider taking a spore-based probiotic along with antibiotics to protect the gut from a <i>C. diff</i> infection. Avoid smoking cigarettes, as this is associated with <i>C. diff</i> infections.</p>	<p>MegaSporeBiotic + HU58 + RestorFlora + Mega IgG2000 or MegaMucosa</p> <p><i>Clostridium difficile</i> is a spore-forming bacterium, which is why it can be so difficult to control. Utilizing the probiotic spores found in MegaSporeBiotic, RestorFlora, and HU58 can help to effectively crowd out the <i>C. diff</i> infection through competitive exclusion. Serum-derived bovine immunoglobulins (SBI) found in MegaIgG2000 and MegaMucosa have been shown to bind and remove <i>C. diff</i> toxins from the system, effectively reducing the toxic load on the system and relieving many of the symptoms associated with <i>C. difficile</i>.</p>
<i>Escherichia coli</i>	0.00 – 0.04	0.00	<p>Reduce intake of sugar, omega-6 fatty acids (eggs, canola oil, almonds, peanuts, sunflower seeds), animal protein, and saturated fats which can feed <i>E. coli</i>. Increase consumption of fruits and vegetables like bananas, kiwis, nectarines, onions, leeks, garlic, chicory and artichokes to help crowd out <i>E. coli</i>. Choose organic, antibiotic-free meats, as conventional foods can carry antibiotic-resistant strains of <i>E. coli</i>.</p>	<p>Cook food thoroughly, especially meat, and avoid potentially contaminated water sources. Avoid cross-contamination between raw meat and cooked foods.</p>	<p>MegaSporeBiotic + RestorFlora + MegaPreBiotic</p> <p><i>Bacillus subtilis</i> HU58 and <i>Saccharomyces boulardii</i> have been shown to be effective against <i>E. coli</i> infections. MegaPreBiotic contains FOS and GOS that increase the abundance of <i>Lactobacillus</i> and <i>Bifidobacterium</i> species that can increase the acidity of the gut through the production of lactate.</p>
<i>Salmonella enterica</i>	0.01 – 0.05	0.00	<p>Cook meat and eggs thoroughly before consuming. Consume prebiotic fibers from oats, barley, seaweed, bamboo shoots, wheat bran, legumes, cashews, pistachios, and beets to help clear <i>Salmonella</i> from the system. These foods contain β-glucans, xylo-oligosaccharides (XOS), galacto-oligosaccharides (GOS), and inulin that feed propionate-producing bacteria in the gut.</p>	<p>Fasting may improve clearance of <i>Salmonella</i>. Drink plenty of fluids, as this particular bacterium can be very dehydrating. Avoid cross-contamination between raw meat and cooked foods.</p>	<p>MegaSporeBiotic + HU58 + MegaPreBiotic</p> <p>MegaSporeBiotic and HU58 can help to crowd out unwanted pathogens like <i>Salmonella enterica</i>. MegaSporeBiotic and MegaPreBiotic also increase SCFA production like propionate, which can reduce <i>Salmonella</i> growth and limits its expansion.</p>

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Pathobiome ...continued

Pathogen Species	Healthy RA Range [%]	My Sample RA [%]	Nutrition	Lifestyle	Supplements
<i>Vibrio cholerae</i>	0.00 – 0.01	0.00	Wasabi, red chili powder, apples, hops, green tea, elephant garlic, and neem can inhibit the growth of <i>V. cholerae</i> .	Fasting may improve clearance of <i>Vibrio</i> . Drink plenty of fluids, as this particular bacterium can be very dehydrating. <i>V. cholerae</i> is transmitted through water, so drink water from a reputable source or use a good water filter.	MegaSporeBiotic + RestorFlora MegaSporeBiotic can help to crowd out unwanted pathogens like <i>Vibrio cholerae</i> . <i>Saccharomyces boulardii</i> can inhibit the toxicity of <i>Vibrio cholerae</i> .
<i>Candida</i> species	0.01 – 0.35	0.00	Limit consumption of sugars and alcohol. Consume plenty of garlic and turmeric. Bee propolis has also been shown to help control yeast overgrowth in the gut.	Drink and use safe water. Wash your hands thoroughly. Cook food (especially seafood) well and eat hot.	MegaMycBalance + MegaSporeBiotic MegaMycBalance can help balance the levels of yeast in the gut, and MegaSporeBiotic helps to increase microbial diversity and support the favorable gut bacteria that keep <i>Candida</i> under control.
<i>Blastocystis hominis</i> (parasite)	0.01 – 0.05	0.00	Spirulina, whey and pea protein, and fibers found in green bananas, kiwis, pears, onions, garlic, legumes (kidney beans, chickpeas, split peas), artichokes, cashews, and pistachios can make the intestines inhospitable to parasites. These nutrients increase the abundance of lactate-producing bacteria like <i>Lactobacillus</i> more effectively than direct supplementation. Increasing lactate production can effectively recondition the gut by changing the environment rather than attempting to kill the parasite itself, which often results in a flood of toxins.	Excessive antibiotic use can contribute to the overgrowth of <i>Candida</i> species. Limit the use of antibiotics or take antibiotics with a spore-based probiotic when necessary.	MegaSporeBiotic + RestorFlora + MegaPreBiotic MegaSporeBiotic contains <i>Bacillus coagulans</i> , which is a powerful lactate-producer. Commensal yeasts, such as <i>Saccharomyces boulardii</i> , have been shown to prevent the pathogens like <i>Blastocystis hominis</i> from adhering to the intestinal mucosa. MegaPreBiotic contains prebiotic fibers like FOS and GOS that feed lactate-producing <i>Lactobacillus</i> species. Increasing lactate production makes the gut less hospitable for parasites and encourages their departure from the gut.
<i>Giardia lamblia</i> (parasite)	0.01 – 0.05	0.00	Spirulina, whey and pea protein, and fibers found in green bananas, kiwis, pears, onions, garlic, legumes (kidney beans, chickpeas, split peas), artichokes, cashews, and pistachios can make the intestines inhospitable to parasites.	Wash your hands thoroughly. Choose clean, filtered water and avoid raw foods when traveling to developing countries. Aim for 8+ hours of sleep and choose light, restorative exercise like yoga or walking, as excessive, intense exercise can put added stress on the body.	MegaSporeBiotic + HU58 + MegaPreBiotic MegaSporeBiotic contains <i>Bacillus coagulans</i> , which is a powerful lactate-producer. MegaPreBiotic contains prebiotic fibers like FOS and GOS that feed lactate-producing <i>Lactobacillus</i> species. Increasing lactate production makes the gut less hospitable for parasites and encourages their departure from the gut.
<i>Cryptosporidium</i> (parasite)	0.00 – 0.03	0.00	Spirulina, whey and pea protein, and fibers found in green bananas, kiwis, pears, onions, garlic, legumes (kidney beans, chickpeas, split peas), artichokes, cashews, and pistachios can make the intestines inhospitable to parasites.	Wash your hands thoroughly. Choose clean, filtered water and avoid raw foods when traveling to developing countries. Aim for 8+ hours of sleep and choose light, restorative exercise like yoga or walking, as excessive, intense exercise can put added stress on the body.	MegaSporeBiotic + HU58 + MegaPreBiotic MegaSporeBiotic contains <i>Bacillus coagulans</i> , which is a powerful lactate-producer. MegaPreBiotic contains prebiotic fibers like FOS and GOS that feed lactate-producing <i>Lactobacillus</i> species. Increasing lactate production makes the gut less hospitable for parasites and encourages their departure from the gut.
<i>Entamoeba histolytica</i> (parasite)	0.00 – 0.03	0.00	Antioxidants found in apples, grapes, raspberries, strawberries, celery, green peppers, thyme, chamomile, rosehips, red wine, and black tea have been shown to safely target amoebas.	Avoid swimming or jumping into still, warm, brackish water that has loose bottom sediment. Wear a nose clip or hold your nose if you jump or dive into relatively warm water lakes, rivers, pools, or other similar bodies of water.	MegaSporeBiotic + HU58 MegaSporeBiotic and HU58 are very effective at crowding out pathogens in the gut.



Pathobiome ...continued

Pathogen Species	Healthy RA Range [%]	My Sample RA [%]	Nutrition	Lifestyle	Supplements
Yersinia enterocolitica	0.00 – 0.01	0.00	Follow a low-iron diet. Evidence shows that Yersinia enterocolitica growth is limited by low-iron availability. Consuming foods such as apples, onions, and leeks may increase the production of butyrate, and thereby reduce inflammation.	Avoid raw animal products, especially pork and pig intestines. When handling raw pork, make sure to avoid cross-contaminating surfaces and wash hands thoroughly after food preparation and before eating.	MegaSporeBiotic + MegaPreBiotic + MegaMucosa. MegaSporeBiotic can support overall immunity and effectively crowd out pathogens in the gut. MegaPreBiotic can help increase microbial diversity and butyrate production. MegaMucosa may help repair Y. enterocolitica-induced gut barrier damage.
Klebsiella pneumoniae (opportunistic)	0.01 – 0.15	0.00	Follow a low-iron diet and limit starchy vegetables, grains, and sugary foods. Foods that are high in iron include shellfish, spinach, liver and organ meats, red meat, beans, lentils, peas, fortified cereals, and dark chocolate.	Practice stress reduction techniques like yoga, meditation, or massage, as stress can cause dysbiosis and allow this opportunistic pathogen to grow out of control. Make sure to take a spore-based probiotic when taking antibiotics, as this species is antibiotic resistant and may grow out of control when protective keystone strains are absent.	Avoid iron supplements. Take HU58 + MegaSporeBiotic. HU58 and MegaSporeBiotic contain Bacillus subtilis, which has been shown to produce antimicrobial molecules that help to control K. pneumoniae overgrowth.
Adenovirus	0.00 – 0.01	0.00			
Norovirus	0.00 – 0.00	0.00			
Cytomegalovirus	0.00 – 0.00	0.00			
Epstein Barr virus	0.00 – 0.00	0.00			

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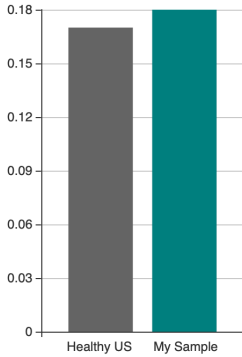
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Dysbiosis Ratios

This section compares the abundances of important groups of gut bacteria between your gut and the typical healthy gut microbiome. Elevated dysbiosis ratios for these bacterial phyla or genera point to disbalances in abundance (dysbiosis) which are associated with a range of health conditions. Check the recommendations for maintaining healthy ratios or to counteract cases of dysbiosis.

Healthy US My Sample



Firmicutes:Bacteroidetes (F/B) Ratio

Healthy Range: 0.15 - 0.18

My Ratio: 0.18

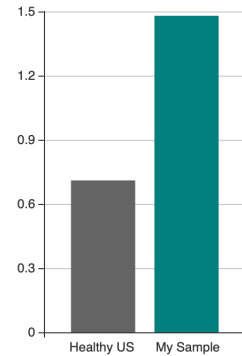
Recommendations if HIGH

Bacteroidetes can thrive on beta-glucans, resistant starch, arabinoxylan, pectin, cellulose, and inulin.

Nutrition: Consume more green bananas, apples, pears, guavas, plums, citrus fruits, barley, oats, whole grains, psyllium, flaxseed, leeks, Brussels sprouts, cabbage, cauliflower, broccoli, asparagus, onions, garlic, seaweed, algae, and reishi, maitake, and shiitake mushrooms. Reduce excessive fat and animal protein consumption.

Lifestyle: Engage in moderate exercise 30-60 minutes per day, get outdoors as often as possible, and reduce sleep disturbances by practicing relaxation techniques and avoiding screen time before bed. Consider adopting a pet.

In adults, *Bacteroidetes* and *Firmicutes* are the most prevalent phyla present in the gut. A Low *Firmicutes:Bacteroidetes* (F/B) ratio (smaller number) is generally associated with a reduced incidence of pathologic and chronic inflammation, while increased F/B ratios (larger numbers) are associated with obesity. Pet owners and people growing up on farms tend to have a healthier F/B ratio, and time spent outdoors increases exposure and colonization of *Bacteroidetes*. It is normal for pregnant women to have a rise in F/B ratios. Young children have lower F/B ratios that increase as they grow into adolescence and adulthood. F/B ratios tend to increase with age.



Proteobacteria:Actinobacteria (P/A) Ratio

Healthy Range: 0.5 - 0.9

My Ratio: 1.48

Fructooligosaccharides (FOS), galactooligosaccharides (GOS), xylooligosaccharides (XOS), inulin, and arabinoxylan can all increase the abundance of *Actinobacteria*.

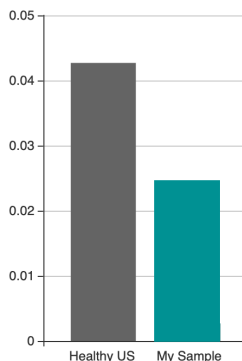
Nutrition: Consume more plant-derived carbohydrates and fibers from bananas, kiwis, mangos, pears, onions, garlic, legumes, beets, artichokes, bamboo shoots, oats, cashews, and pistachios. Limit your intake of saturated fats and sugar, as these increase the abundance of *Proteobacteria*.

Lifestyle: Enjoy moderately intense exercise 30-60 minutes per day, avoid exposure to toxic chemicals such as glyphosate, and consider taking a spore-based probiotic when traveling to high altitudes.

Together these phyla comprise about 10% of total gut microbes. Healthy adults tend to have no more than 4.5% *Proteobacteria*. *Proteobacteria:Actinobacteria* (P/A) ratios above 1.0 are associated with an increased risk of metabolic disease, cancer and obesity.

Increasing *Actinobacteria* can be accomplished by consuming plant-derived carbohydrate starch and polysaccharides, such as FOS, GOS, XOS, inulin or arabinoxylan.

The third trimester of pregnancy is associated with an increase in *Proteobacteria*. *Actinobacteria* is known to decrease with age. Infants of natural births and those who are breastfed have increased abundance of *Actinobacteria*.



Prevotella:Bacteroides Ratio

Healthy Range: 0.035 - 0.052

My Ratio: 0.0025

Certain fibers like fructooligosaccharides (FOS), xylooligosaccharides (XOS), beta-glucans, pectins, and xylans can increase the ratio of *Prevotella:Bacteroides*.

Nutrition: Consume more pears, apples, bananas, guavas, plums, oranges and other citrus fruits, onions, garlic, chicory root, barley, oats, sorghum, leeks, seaweed, and mushrooms such as reishi. Limit consumption of animal fat and protein as well as sugar.

Lifestyle: This ratio can be improved by limiting cigarette smoking, practicing stress reduction techniques, especially before bed, spending time in nature with animals (when possible), and avoiding excessive sterilization of the home. Spending time outdoors can enhance exposure to beneficial microbes in the environment, time with animals or on farms is also recommended, particularly in childhood.

High *Prevotella:Bacteroides* ratios are associated with lower BMI and reduced incidence of chronic, inflammatory disease.

Low *Prevotella:Bacteroides* ratios (smaller numbers) are associated with glucose intolerance, obesity, and metabolic diseases and are positively correlated with high intake of protein and animal fat as typical for a Western diet. Higher abundance of *Prevotella* is observed in individuals that consume diets rich in carbohydrates and fiber. *Bacteroides* is increased by sugar and saturated fat intake, while *Prevotella* generally thrives on fiber rich foods, like fruit, vegetables, beans and whole grains.

Levels of *Prevotella* tend to decrease with age, particularly among centenarian populations.

Supplements: Take *MegaSporeBiotic + MegaPreBiotic* *MegaPreBiotic* contains FOS, GOS, and XOS that can increase microbial diversity.

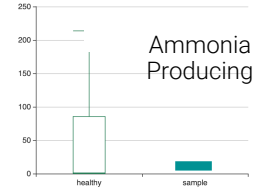


Biologically Important Bacteria in My Gut

This section explores the abundance of bacterial groups known to contributing important metabolic functions. The abundance levels are compared between your gut and the typical Healthy microbiome and recommendations in case of abnormal levels are provided.

Description

Recommendations

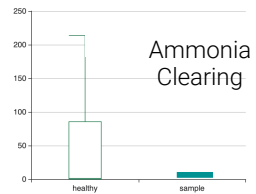


Ammonia Producing

Ammonia is a normal by-product of amino acid fermentation by gut microbes. Ammonia is also produced in the small intestine through the bacterial degradation of glutamine. Healthy liver and kidneys can filter and excrete ammonia through the urine.

If Ammonia Production is HIGH and Ammonia Clearing is LOW

Nutrition: Follow a low-protein diet by limiting consumption of meat, poultry, nuts, legumes, and dairy.

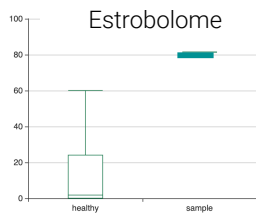


Ammonia Clearing

An overgrowth of ammonia-producing bacteria, paired with excessive protein intake as well as liver and kidney dysfunction however may lead to a toxic surge of ammonia in the blood. Hyperammonemia is also indicated in hepatic encephalopathy (liver disease).

Supplements: Take [HU58](#) to help balance intestinal ammonia levels. HU58 has been clinically shown to reduce blood ammonia levels in adults with elevated blood ammonia.

Reducing ammonia production in the gut may be accomplished by following a low protein diet, increasing healthy, omega-3 fatty acids, and feeding beneficial ammonia clearing bacteria that can metabolize ammonia in the gut.



Estrobolome

The estrobolome is a network of bacteria that metabolizes estrogens. The balance of estrogen in the body is partially mediated by the gut microbiome and associated β -glucuronidase activity. This enzyme conjugates estrogen into its active form.

If Estrogen Metabolism is LOW

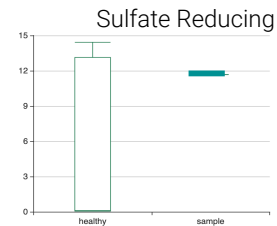
Nutrition: Limit intake of phytoestrogens like soy (tofu, tempeh, miso, soymilk), coffee, legumes, and oranges, in addition to sugar, red meat, and alcohol. Vegetarian diets have been shown to clear estrogens 3 times more efficiently.

Increased β -glucuronidase activity is associated with high fat, high protein diets and increased circulating levels of estrogen. Alternatively, high fiber diets are associated with decreased β -glucuronidase activity.

Supplement: Take [MegaSporeBiotic](#) + [MegaPreBiotic](#) to increase microbial diversity. The synbiotic combination of [MegaSporeBiotic](#) and [MegaPreBiotic](#) has been shown to increase microbial diversity by 30%.

PCOS, post-menopausal breast cancer and other estrogen-dominant diseases are associated with an overabundance of bacteria with high β -glucuronidase activity (*Firmicutes*, *Proteobacteria*, *E. coli*, *Salmonella*, *Pseudomonas*, *Bacteroides*, *Shigella*, and *Streptococcus*) and with a decreased abundance of SCFA-producing and gut barrier-protecting bacteria (*Akkermansia muciniphila*, *Lactobacillus*, and *Ruminococcaceae*).

Increasing abundance of *Bifidobacteria* and suppressing *Clostridiaceae* has also been shown to improve estrogen-related conditions.



Sulfate Reducing

People with irritable bowel diseases (IBD) and small intestinal bacterial overgrowth (SIBO) have increased abundance of sulfate-reducing bacteria. This is likely due to the fact that hydrogen sulfide blocks the anti-inflammatory function of butyrate in the gut.

If Sulfate Reduction is LOW

Nutrition: Consume more sulfur-containing foods like red meat, seafood, eggs, cheddar and parmesan cheese, dried apricots, peaches, onions, leeks, garlic, cabbage, brussels sprouts, broccoli, bok choy, asparagus, spinach, kale, peanuts, brazil nuts, walnuts, almonds, cocoa, and tea.

H₂S is the product of sulfate reduction by key bacterial genera such as *Desulfobacter*, *Desulfobulbus*, and *Desulfotomaculum*. This toxic compound inhibits butyrate oxidation, thereby indirectly damaging intestinal cells.

Foods that contain sulfur will increase the abundance of bacteria and archaea that can utilize sulfur for energy, called sulfate-reducing microbes. These bacteria and archaea protect the gut from methane-producing microbes by competing for hydrogen. Sulfate-reducing bacteria can also utilize lactate.

Sulfate-reducing bacteria are found in 50% of the population and are also associated with high-protein, low-fiber diets.

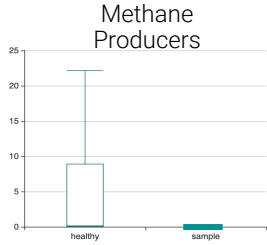
If Sulfate Reduction is HIGH

Nutrition: Limit consumption of sulfate-containing foods like red meat, seafood, eggs, cheddar and parmesan cheese, dried apricots, peaches, onions, leeks, garlic, cabbage, brussels sprouts, broccoli, bok choy, asparagus, spinach, kale, peanuts, brazil nuts, walnuts, almonds, cocoa, or tea.

Supplement: Take [MegaPreBiotic](#) to increase microbial diversity.



Biologically Important Bacteria in My Gut ...continued



Description

Methanogens may contribute to weight gain by increasing polysaccharide fermentation and nutrient production. Methane gas also slows the intestinal transit and affects gut motility, which may also allow increased time for nutrient absorption. Furthermore, methane producers compete with butyrate producers for substrate utilization, which may explain why methanogens are indirectly related to inflammatory gut conditions.

Recommendations

If Methane Production is HIGH

Nutrition: Consume more sulfur-containing foods like red meat, seafood, eggs, cheddar and parmesan cheese, dried apricots, peaches, onions, leeks, garlic, cabbage, brussels sprouts, broccoli, bok choy, asparagus, spinach, kale, peanuts, brazil nuts, walnuts, almonds, cocoa, and tea. Foods that contain sulfur will increase the abundance of bacteria that can utilize sulfur, called sulfate-reducing bacteria. These bacteria protect the gut from methane-producing bacteria by competing for hydrogen.

Supplements: Take [MegaGuard](#). Methane acts as a paralytic to slow down gastrointestinal transit time. MegaGuard contains licorice flavonoids and ginger extract that has been shown to improve gastrointestinal transit time.

Keystone species are beneficial bacteria that have a disproportionately large effect on both their habitat and the status of other microbial communities of the gut. Keystone species create an environment that is unfriendly to pathogens yet allows good gut microbes (commensal) to thrive. This section compares relative abundances between your gut and the healthy gut microbiome and offers recommendations in case abundance levels are low.



Functional Keystone Species in My Gut

Keystone Species	Function	Healthy RA Range [%]	My Sample RA [%]	My Sample Percentile	Recommendations if levels are LOW
<i>Akkermansia muciniphila</i>	metabolism, short-chain fatty acid (SCFA) production	0.00 – 19.42	0.30	59%	<p>Nutrition: Reduce intake of sugar and consume more sources of fructooligosaccharides (FOS) like mangos, bananas, kiwis, watermelon, pears, raspberries, nectarines, onions, garlic, chicory root, asparagus, leeks, and jicama. Cranberry polyphenols have also been shown to significantly increase the abundance of <i>Akkermansia</i>.</p> <p>SCFAs like butyrate can be used as signaling molecules for blood sugar control. Limiting your intake of sugar can spare your butyrate resources and reallocate them toward reducing inflammation and repairing the intestinal mucosal barrier.</p> <p>Lifestyle: Consider intermittent fasting. Engage in moderate exercise 2-3 times a week to increase the abundance of <i>Akkermansia</i>. Avoid prolonged exposure to cold temperatures.</p> <p>Supplements: MegaSporeBiotic and MegaPreBiotic have been shown to increase the abundance of <i>Akkermansia</i>.</p>
<i>Faecalibacterium prausnitzii</i>	SCFA production	0.00 – 60.35	1.65	27%	<p>Nutrition: Diets that are high in animal meat, saturated fat, sugar, and/or processed foods and deficient in fiber can reduce the abundance of <i>F. prausnitzii</i>. Consuming more whole fruits and vegetables and limiting the consumption of animal meats and fats can increase the abundance of <i>F. prausnitzii</i>.</p> <p>SCFAs like butyrate can be used as signaling molecules for blood sugar control. Limiting your intake of sugar can spare your butyrate resources and reallocate them toward reducing inflammation and repairing the intestinal mucosal barrier.</p> <p>Lifestyle: Participate in moderate exercise 2-3 times a week to increase the abundance of <i>Faecalibacterium prausnitzii</i>.</p> <p>Supplements: MegaSporeBiotic and MegaPreBiotic have been shown to increase the abundance of <i>Faecalibacterium prausnitzii</i>.</p>



Functional Keystone Species in My Gut ...continued

Keystone Species	Function	Healthy RA Range [%]	My Sample RA [%]	My Sample Percentile	Recommendations if levels are LOW
<i>Ruminococcus bromii</i>	cellulose degrader	0.00 – 11.11	0.93	88%	<p>Nutrition: Consume more resistant starches from grains, nuts, seeds, legumes, raw potatoes, green bananas, and rice and potatoes that have been cooked and then cooled. Cellulose from Brussels sprouts, broccoli, collard greens, cauliflower, and leafy green vegetables like kale and spinach can also increase the abundance of this keystone strain.</p> <p><i>Ruminococcus</i> is a cellulose degrader, which means that it prefers sources of cellulose and resistant starch.</p> <p>Supplements: MegaSporeBiotic</p>
<i>Ruminococcus flavefaciens</i>	cellulose degrader	0.00 – 0.21	0.00	0%	<p>Nutrition: Consume more navy beans, black beans, bamboo shoots, Brussels sprouts, broccoli, collard greens, cauliflower, and leafy green vegetables like kale and spinach.</p> <p>This keystone species feeds on cellulose and xylooligosaccharides (XOS).</p> <p>Supplements: MegaSporeBiotic</p>
<i>Roseburia intestinalis</i>	β-mannan degrader, butyrate producer	0.00 – 37.12	0.11	38%	<p>Nutrition: Consume more spirulina, nuts, seeds, legumes, coffee beans, coconut palm, tomato, raw potatoes, and green bananas. Limit consumption of protein, specifically whey and beef protein.</p> <p>This keystone species feeds on β-mannan and resistant starch.</p> <p>Lifestyle: Minimize psychological stressors and participate in 30-60 minutes of aerobic exercise 3 times a week to increase the abundance of <i>Roseburia intestinalis</i>.</p> <p>Psychological stress can reduce the abundance of this keystone species.</p>
<i>Eubacterium rectale</i>	butyrate producer	0.00	0.00	0%	<p>Nutrition: Resistant starches from nuts, seeds, grains, legumes, raw potatoes, and green bananas, as well as antioxidants from red wine, apples, coffee, cocoa, and berries, can increase the abundance of this keystone species.</p> <p>Lifestyle: Participate in moderate exercise 2-3 times a week to increase the abundance of <i>Eubacterium rectale</i>.</p>
<i>Bifidobacterium longum</i>	acetate producer	0.00 – 20.72	0.00	0%	<p>Nutrition: Consume more bananas, sugar beets, leeks, asparagus, onions, garlic, dandelion root, Jerusalem artichoke, chicory, potatoes, and green tea.</p> <p>Lifestyle: Moderate exercise can increase the abundance of <i>Bifidobacterium</i>.</p> <p>Supplements: MegaSporeBiotic + MegaPreBiotic</p> <p>MegaPreBiotic contains fructo-oligosaccharides (FOS) from green kiwifruit that has been shown to increase the abundance of <i>Bifidobacterium</i>.</p>



Functional Keystone Species in My Gut ...continued

Keystone Species	Function	Healthy RA Range [%]	My Sample RA [%]	My Sample Percentile	Recommendations if levels are LOW
<i>Lactobacillus</i> species	lactate producer	0.00 – 0.22	0.00	0%	<p>Nutrition: Consume more spirulina, pea and whey protein, bananas, legumes, cashews, pistachios, hummus, oat milk, beets, leeks, asparagus, onions, garlic, dandelion root, and artichokes. Inulin and GOS can increase the abundance of <i>Lactobacillus</i>.</p> <p>Lifestyle: Moderate exercise can increase the abundance of <i>Lactobacillus</i>.</p> <p>Supplements: MegaPreBiotic MegaPreBiotic contains FOS from kiwifruit and GOS that have been shown to increase the abundance of <i>Lactobacillus</i>.</p>



My Microbiome's Metabolic Potential

BiomeFX uses whole metagenome shotgun sequencing which reads the entire genomes of your gut microbiota. This information can not only be used to understand WHO inhabits your gut, but also HOW your microbiomes genes can contribute to your metabolic wellbeing. This section explores the metabolic potential of your gut microbiome and provides recommendations in case your levels are abnormal.

Keystone Species	Healthy RA Range [%]	My Sample RA [%]	My Sample Percentile	Recommendations
Saccharolytic fermentation				
Proteolytic fermentation				
Vitamin, mineral, and digestive enzyme production				
Histamine production				
Indole production				
Hydrogen sulfide production				
Serotonin, tryptophan, GABA production				
SCFA production				
Acylcarnitine production				
L-carnitine production				
Secondary bile salt production				
Trimethylamine production				
Indoxil sulfate production				
Indolepropionic acid production				
β-D-glucuronidase production				

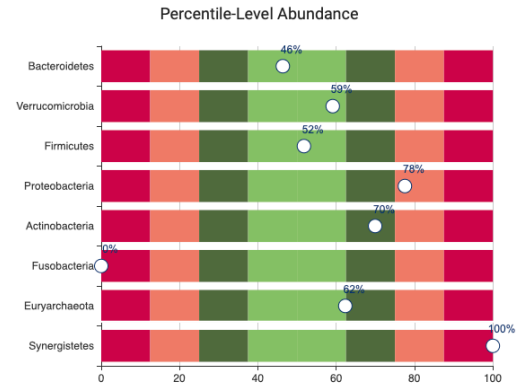
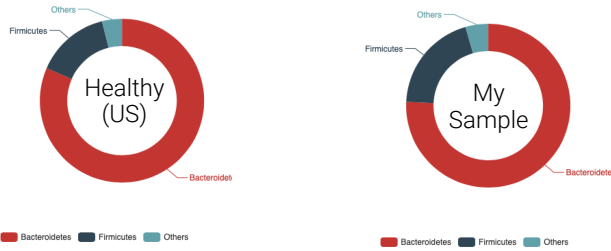
PREVIEW: This section will be released in BiomeFx Version 2.0

Appendix



My Gut Microbiome Composition (Phylum level)

This section explores the composition of your gut microbiome at phylum level resolution.



The [Donut Charts](#) to the left visualizes the most abundant bacterial phyla in your gut.

The [Percentile Chart](#) to the right compares the relative abundance (RA) for each bacterial phylum between your gut microbiome and the microbiomes typical for healthy populations. Percentile values between around 25% – 75% are typical, low values for a certain phylum suggest that in your case relative abundances are on the low side, high values suggest that your abundances are on the high side.

Phylum	Healthy Population Relative Abundance Range [%]	My Sample Relative Abundance [%]	My Sample Percentile
<i>Bacteroidetes</i>	54.30 – 82.50	81.50	46.37
<i>Firmicutes</i>	13.92 – 20.05	14.57	59.11
<i>Actinobacteria</i>	1.05 - 3.81	0.99	51.76
<i>Proteobacteria</i>	0.59 – 2.04	1.47	77.54
<i>Verrucomicrobia</i>	0.22 - 0.91	0.30	69.94
<i>Fusobacteria</i>	0.02 - 0.43	0.00	0.00
<i>Euryarchaeota</i>	0.00 - 0.34	0.12	62.32
<i>Synergistetes</i>	0.00 - 0.09	0.00	100.00

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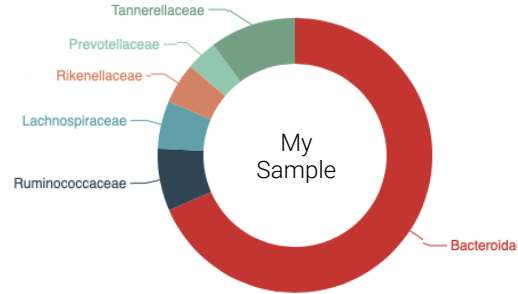
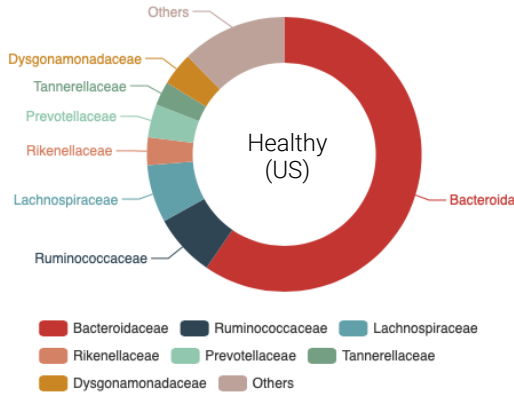


My Gut Microbiome Composition (Family level)

This section explores the composition of your gut microbiome at Family level resolution

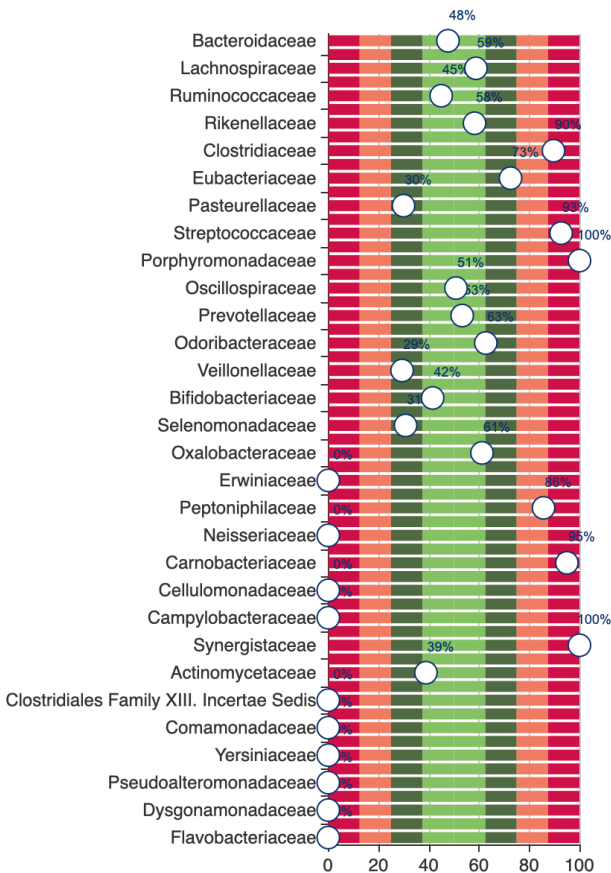
The Donut Charts visualize the most abundant bacterial genera in your gut.

The Percentile Chart below compares the relative abundance (RA) for each bacterial genera between your gut microbiome and the microbiomes typical for healthy populations. Percentile values between around 25% – 75% are typical, low values for a certain phylum suggest that in your case relative abundances are on the low side, high values suggest that your abundances are on the high side. The Table includes all Families that typically occur in the healthy microbiome at a RA > 0.35% plus below the green line those Families that typically occur at lower abundances but appear in your gut at a RA of 0.5% or greater.



Family	Healthy RA Range [%]	My Sample RA [%]	My Sample Percentile
<i>Bacteroidaceae</i>	43.02 - 72.27	68.46	47.65
<i>Ruminococcaceae</i>	6.82 - 12.20	4.79	44.96
<i>Lachnospiraceae</i>	2.27 - 11.58	5.62	58.78
<i>Rikenellaceae</i>	1.09 - 5.64	3.66	58.23
<i>Prevotellaceae</i>	0.36 - 7.98	0.21	53.31
<i>Tannerellaceae</i>	0.89 - 5.13	7.34	96.76
<i>Bifidobacteriaceae</i>	0.65 - 2.98	0.23	41.55
<i>Dysgonamonadaceae</i>	1.02 - 8.33	0.00	0.00
<i>Barnesiellaceae</i>	0.05 - 3.10	0.94	60.40
<i>Acidaminococcaceae</i>	0.00 - 1.17	0.19	12.20
<i>Veillonellaceae</i>	0.02 - 3.13	0.12	29.38
<i>Akkermansiaceae</i>	0.01 - 1.72	0.30	59.11
<i>Odoribacteraceae</i>	0.00 - 1.55	0.52	62.71
<i>Sutterellaceae</i>	0.00 - 1.50	0.00	0.00
<i>Oscillospiraceae</i>	0.00 - 1.29	0.39	50.85
<i>Enterobacteriaceae</i>	0.00 - 1.58	1.14	89.60
<i>Eubacteriaceae</i>	0.00 - 0.97	0.54	72.57
<i>Synergistaceae</i>	0.00 - 0.92	1.06	100.00
<i>Porphyromonadaceae</i>	0.00 - 0.91	0.99	100.00
<i>Coriobacteriaceae</i>	0.00 - 0.85	0.76	97.86
<i>Clostridiaceae</i>	0.00 - 0.79	0.69	89.67
<i>Erysipelotrichaceae</i>	0.00 - 0.78	0.53	92.54
<i>Streptococcaceae</i>	0.00 - 0.53	0.50	92.70

Percentile-Level Abundance



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Fun Fact: Unique Species in My Sample

This section explores some of the more unique aspects of your own gut microbiome.

Like your fingerprint, your gut microbiome is unique to you and may include some more "exotic" microbes that not everybody has. BiomeFX uses a special whole metagenome shotgun sequencing- and analysis technology to resolve your gut microbiome with sub-species level resolution. The table below explores some of the more unique species in your microbiome.

Unique Species	Relative Abundance in My Sample [%]
<i>Mitsuokella jalaludinii</i>	0.08
<i>Streptococcus sp. HSISS3</i>	0.04
<i>Streptococcus sp. HSISS2</i>	0.03