GUT16

Calibrate Your Gut Health

Gut Microbiome Profile

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Introduction

Gut Inflammation plays a critical role in gut health, impacting metabolism, digestion, and immune function. Chronic inflammation is often linked to an imbalanced gut microbiome, influenced by diet, lifestyle, and environmental factors.

The 16S rRNA sequencing methodology is a powerful tool for analyzing the gut microbiome, enabling the identification of bacterial populations and their potential impact on health.

Your Gut Health At A Glance

Your gut health is characterized by a slightly higher Shannon Diversity index, indicating a relatively balanced and diverse microbiome community. The Firmicutes/Bacteroidetes ratio is lower than average, which may be beneficial in preventing inflammatory conditions such as obesity and diabetes. However, some potentially pathogenic genera, like Bifidobacterium adolescentis, are present at lower levels, while others, like Anaerobutyricum hallii, Faecalibacterium prausnitzii, and Coprococcus comes, are elevated, which may indicate an increased risk of inflammation. Elevated biosynthesis potentials for certain metabolites, such as SCFAs and BCAAs, suggest a healthy ability to regulate metabolic processes. Overall, while there are some positive signs, the presence of potentially pathogenic genera warrants attention to maintaining a balanced diet and lifestyle to support optimal gut health.

Gut Inflammation Profile

The gut microbiome's inflammatory response appears to be well-managed across various sections. Species like Faecalibacterium prausnitzii, Intestinimonas butyriciproducens, and Coprococcus comes are consistently optimal in inflammation-related biosynthesis pathways, indicating a healthy balance of anti-inflammatory mechanisms. However, some species such as Bifidobacterium adolescentis and Phocaeicola vulgatus display poor performance in certain contexts. Overall, the gut microbiome exhibits robust anti-inflammatory capabilities, which is beneficial for maintaining overall health.

Gastrointestinal Health Profile

The gut microbiome's GI health is generally well-supported by an optimal balance of microbial functions. Species like Faecalibacterium prausnitzii, Intestinimonas butyriciproducens, and Lachnospira eligens consistently exhibit optimal performance in GI-related biosynthesis pathways. However, some species such as Bacteroides thetaiotaomicron display poor performance in certain contexts. The presence of optimal fibre digestion, SCFAs biosynthesis, and lactate biosynthesis across sections also supports a healthy gut environment conducive to maintaining GI health.

Weight Management Profile

Weight management appears to be supported by an optimal balance of microbial functions across sections. Species like Anaerobutyricum hallii, Bifidobacterium longum, and Faecalibacterium prausnitzii consistently exhibit optimal performance in weight-related biosynthesis pathways. However, some species such as Blautia producta display suboptimal performance in certain contexts. The presence of optimal fibre digestion and SCFAs biosynthesis across sections also supports a healthy gut environment conducive to weight management.

Lifestyle Profile

The gut microbiome's response to lifestyle factors appears to be well-managed across various sections. Species like Bifidobacterium longum and Faecalibacterium prausnitzii consistently exhibit optimal performance in certain contexts, indicating resilience to lifestyle changes. However, some species such as Phocaeicola vulgatus display poor performance in certain contexts. The presence of optimal fibre digestion, SCFAs biosynthesis, and spermidine biosynthesis across sections also supports a healthy gut environment that can adapt to various lifestyles.

Insights Into Your Gut Health Profile

Refer to Appendix I, II, III & IV for detailed information of your Gut Health

Optimizing Your Gut Health

GutPro Optimization restores gut balance by replenishing essential beneficial bacteria and reinforcing the intestinal barrier. ***Lactobacillus Plantarum*** and ***Lactobacillus Reuteri*** help modulate inflammation and promote gut lining repair, while ***Lactobacillus Paracasei*** and ***Bifidobacterium Breve*** work together to improve microbial diversity and support digestion.

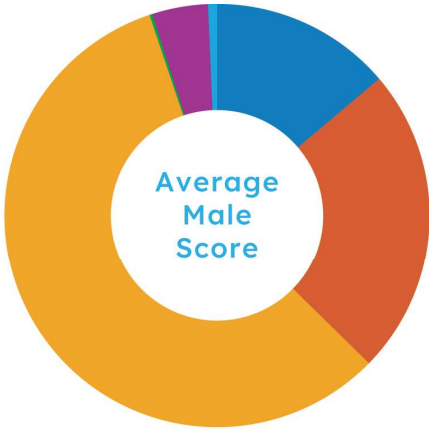
By enhancing short-chain fatty acid (SCFA) production and reducing harmful bacterial overgrowth, this blend aids in restoring optimal gut health and resilience.

Learn more at https://gutlinx.com/gutpro

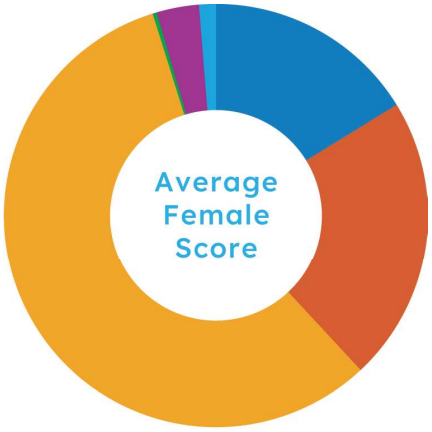
Gut Microbiota Composition (Phylum Level)

A phylum is a taxonomic rank in biology that groups organisms based on their characteristics. A phylum score is a measure of how well an organism fits into a particular phylum.

A taxonomic rank that groups organisms with similar characteristics. Phyla are ranked below kingdoms and above classes.



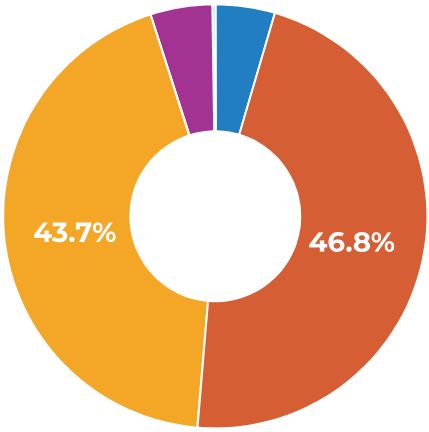
Actinobacteria (13.807) Bacteroidetes (23.534)
Firmicutes (57.516) Fusobacteria (0.211)
Proteobacteria (4.256) Others (0.676)



Actinobacteria (16.219) Bacteroidetes (21.844)
Firmicutes (57.119) Fusobacteria (0.308)
Proteobacteria (3.234) Others (1.277)

Gender differences in phylum distribution arise due to hormonal influences, diet, metabolism, and immune function. These factors impact gut microbial diversity and health outcomes.

My Sample Score



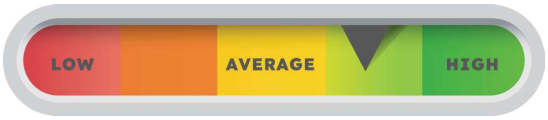
Compare your levels of Firmicutes, Bacteroidetes and Actinobacteria to see how they differ.

A deviation from normal microbiome distribution could lead to: - Weakened Immunity such as Gut inflammation

- Gastrointestinal health
- Metabolic Changes (Weight Gain, Insulin Resistance)

Actinobacteria (4.550) **Bacteroidetes (46.800)**
Firmicutes (43.720) **Fusobacteria (0.010)**
Proteobacteria (4.730) **Others (0.200)**

Gut Microbiota Indicators

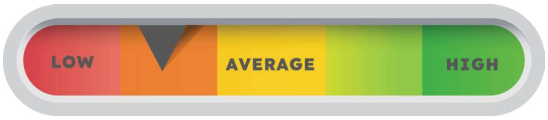


Microbial Diversity

The Shannon Index measures microbial diversity and richness by quantifying the variety and abundance of microbial species.

It provides insights that help guide lifestyle choices for sustained overall wellness.

Aim for High Score

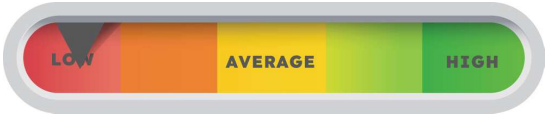


Quality of Microbial Genera

Good/Pathogenic Genus Index measures the ratio of beneficial to potentially harmful bacterial genera. It is an indicator for Dysbiosis.

A healthy balance promotes anti-inflammatory mechanisms, efficient digestion, and a robust immune response.

Aim for High Score



Weight Management

The Firmicutes-to-Bacteroidetes ratio (F/B) influences metabolism.

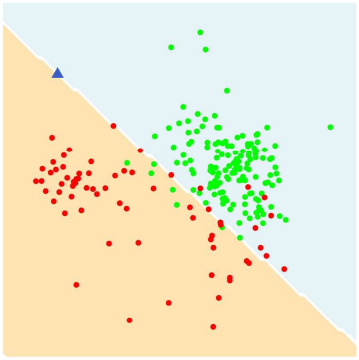
Elevated Firmicutes can increase calorie absorption, leading to weight gain.

Lower levels may compromise gut barrier function and increase inflammation.

Aim for Average Score

Gut Inflamation Profile

The Ordination Plot illustrates the comparison between your gut microbiome sample and the gut bacterial composition of a healthy population, specifically focusing on inflammation-related microbiota.



Red Cluster (Unhealthy Microbiota Profile)
This area represents bacterial compositions associated with an imbalanced or inflamed gut microbiome.

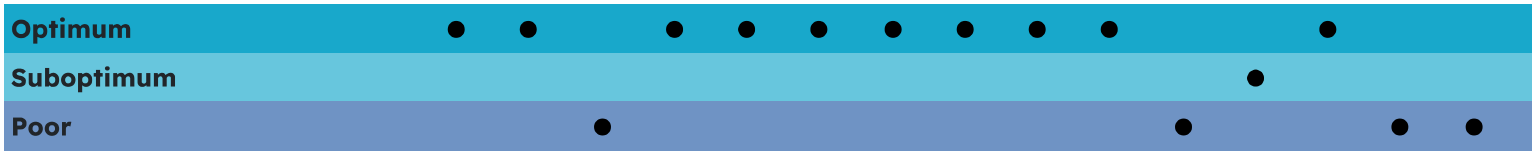
Green Cluster (Healthy Microbiota Profile)
The green dots represent samples from a healthy gut microbiome with a balanced bacterial composition that supports overall gut health.

Your microbiota should be in the green cluster, indicating a healthy gut composition

The two tables provide insights into your gut microbiota profile and metabolic pathways influence gut inflammation. Your results are classified into optimum, suboptimum, and poor.

Table 1

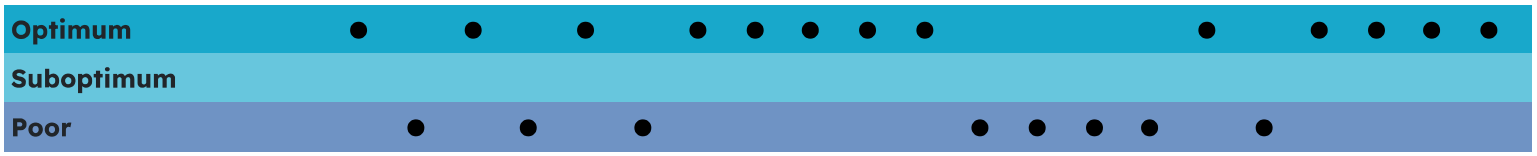
Gut Microbiota: The types of microorganisms present in your gut.



Optimum	Suboptimum	Poor
Anaerobutyricum hallii	Blautia producta	Bacteroides uniformis
Anaerostipes hadrus		Bifidobacterium adolescentis
Bacteroides ovatus		Phocaeicola dorei
Bifidobacterium longum		Phocaeicola vulgatus
Coprococcus comes		
Faecalibacterium prausnitzii		
Intestinimonas butyriciproducens		
Lachnospira eligens		
Phascolarctobacterium faecium		
Pseudobutyrivibrio xylanivorans		

Table 2

Metabolic Pathways: Involve tiny molecules called metabolites that help your body produce energy, break down food, and keep things running smoothly.



Optimum	Suboptimum	Poor
Biotin (VitB7 Biosynthesis)		BCAAs Biosynthesis
Citrulline Biosynthesis		Fat Degradation
Fibre Digestion		Histidine Biosynthesis
Folic Acid (VitB9 Biosynthesis)		Lipopolysaccharide Production
Indole Biosynthesis		Protein Digestion
Lactate Biosynthesis		Putrescine Biosynthesis
Menaquinon (VitK2 Biosynthesis)		Secondary Bile Acids Deconjugation
Pyridoxine (VitB6 Biosynthesis)		TMAO Biosynthesis
Riboflavin (VitB2 Biosynthesis)		
SCFAs Biosynthesis		
Spermidine Biosynthesis		
Thiamine (VitB1 Biosynthesis)		
Tryptophan Biosynthesis		

Insights Into Your Gut Health Profile

This section provides an explanation of the beneficial microbes present in your gut microbiome, as listed in Appendices I-V.

Each microbe's role in your gut health is explained, particularly how it influences your gut inflammation profile (INF), which in turn affects key areas such as weight management (WM), gastrointestinal health (GH) and Lifestyle (LF).

Understanding the Indicators
(1) Coloured buttons show which categories a microbe affects: INF, WM, GH, or LF. Grey means no significant link.
(2) The button color also shows the target abundance level: (Red = Low), (Yellow = Average), and (Green = High). Each microbe should reach the abundance level that matches the colour of its button.

Anaerobutyricum Hallii

Anaerobutyricum hallii (formerly Eubacterium hallii) is an anaerobic bacterium that lives inside the human digestive system.

INF WM GH LF

INFlammation	Produce short-chain fatty acids (SCFAs), which contribute to anti-inflammatory effects.
Weight Management	Support how body stores and burns fat, which influences weight gain or loss.

Anaerostipes Hadrus

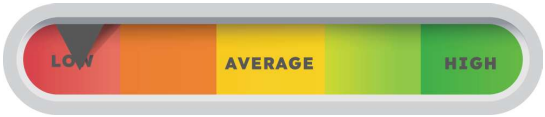
Anaerostipes hadrus is a Gram-positive bacterium from the genus of Anaerostipes which has been isolated from human faeces.

INF WM GH LF

INFlammation	Support healthy intestinal barrier and prevent harmful bacteria from triggering immune responses.
GI Health	Promote a healthy gut environment, which enhances digestion and nutrient absorption.

Bifidobacterium Adolescentis

Bifidobacterium adolescentis is an anaerobic species of bacteria found in the gastrointestinal tracts of humans and other primates.



INF WM GH LF

INFlammation	Strengthen the gut barrier and prevent harmful bacteria from triggering immune responses.
Weight Management	Ferment dietary fibres into beneficial metabolites and prevent excessive fat storage.
GI Health	Breakdown lactose to improve digestion and reduce symptoms like bloating and diarrhea.
Lifestyle	Produce metabolites that interact with the gut-brain axis, which helps to reduce stress and anxiety.

Insights Into Your Gut Health Profile

This section provides an explanation of the Opportunistic microbes present in your gut microbiome, as listed in Appendices I–V.

Opportunistic microbes in the gut microbiome are bacteria that normally exist in low to moderate numbers without causing harm. However, when the gut environment becomes imbalanced (due to diet, lifestyle, illness, or antibiotic use), they can overgrow and contribute to gut dysbiosis or inflammation.

Understanding the Indicators
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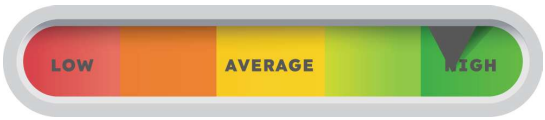
Bacteroides Ovatus

These organisms are gram-negative obligate anaerobes. They are nonpigmented and non-spore-forming and are mainly associated with the gut flora.



INF WM GH LF

INFlammation	Abundant levels, combined with adequate fiber intake, help break down polysaccharides into SCFAs, fueling colon cells and reducing gut inflammation.
GI Health	High levels disrupt the digestion of dietary fibres into short-chain fatty acids (Acetate, Propionate and Butyrate) and leading to poor gut lining.

Bacteroides Thetaiotaomicron

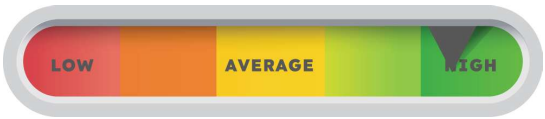
Bacteroides thetaiotaomicron is a Gram-negative, obligate anaerobic bacterium and a prominent member of the human gut microbiota, particularly within the large intestine.

INF WM GH LF

GI Health	High levels affect the metabolic byproduct production, which is essential to support the growth of other beneficial bacteria.
Lifestyle	Abundant levels support the biosynthesis or release of B vitamins—like B1, B2, B6, and folate—by fermenting complex carbohydrates from the diet.

Bacteroides Uniformis

Bacteroides uniformis is a putative bacterial species associated with the degradation of the isoflavone genistein in human feces.



INF WM GH LF

INFlammation	High levels can suggest acidic gut environment, which inhibits beneficial bacteria.
Weight Management	Abundant levels improved weight management through better glucose regulation, though its impact may vary based on dietiary habit.

Insights Into Your Gut Health Profile

This section provides an explanation of the Metabolites Pathway Potential present in your gut microbiome, as listed in Appendices I–V.

The potential of a metabolic pathway refers to how well your body processes and uses important substances called metabolites, which help with digestion, energy production, and overall health. Think of it like a factory—if all the workers (microbes and enzymes) and raw materials (nutrients) are available and working properly, the factory runs smoothly and produces everything it needs. But if something is missing or not working well, the process slows down, leading to poorer wellness.

Understanding the Indicators
(1) Coloured buttons show which categories a microbe affects: INF, WM, GH, or LF. Grey means no significant link.
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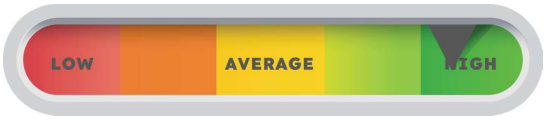
Fibre Digestion

Fibre is a carbohydrate that the body cannot digest. Yet it is essential for digestive health. It promotes regularity and prevents constipation. It slows down digestion and keeps blood sugar on an even keel.



INF WM GH LF

INFlammation	Reduce the growth of inflammatory pathogens by promoting beneficial bacteria (Bifidobacterium and Lactobacillus).
Weight Management	Reduce the risk of obesity by reducing the lipopolysaccharide (LPS) production.
GI Health	Prevent constipation and promote bowel regularity by stimulating peristalsis.
Lifestyle	Contribute to healthy aging by enhancing cellular repair and metabolic health.

Carbohydrates Digestion

Carbohydrate digestion begins in the mouth, where salivary amylase starts the breakdown. After breaking down throughout the digestive system, monosaccharides are absorbed into the bloodstream. As carbohydrates are consumed, the blood sugar levels increase, stimulating the pancreas to secrete insulin.

INF WM GH LF

GI Health	Prevent constipation and diarrhea by regulating gut motility through microbial fermentation of complex carbohydrates (fibre, resistant starch), which produces acetate, propionate, and butyrate.
Lifestyle	Reduce appetite by generating metabolites that regulate satiety hormones like GLP-1 and Peptide YY (PYY).

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Your Metabolites Pathway Potential

Protein Digestion

The digestion of protein entails breaking the complex molecule first into peptides, each having a number of amino acids, and second into individual amino acids.

INF WM GH LF

INFlammation	High levels of hydrogen sulfide and branched-chain fatty acids may irritate the gut lining and promote inflammation.
Weight Management	High levels of ammonia and BCAAs are associated with obesity and insulin resistance.
GI Health	Excess protein fermentation can lead to dysbiosis.
Lifestyle	Protein-derived metabolites (Spermidine, Polyamines) promote cellular repair and longevity.

Short-chain fatty acids (SCFAs) Biosynthesis

Short-chain fatty acids (SCFAs) biosynthesis refers to the process where gut bacteria produce small fatty acids like acetate, propionate and butyrate through the anaerobic fermentation of non-digestible dietary fibre, primarily occurring in the colon.

INF WM GH LF

INFlammation	Reduce inflammation-associated dysbiosis by balancing the composition of gut bacteria (Lactobacillus and Bifidobacterium).
Weight Management	Lower the risk of obesity by enhancing fat oxidation and reducing triglyceride accumulation.
GI Health	Create an acidic gut environment that inhibits pathogenic bacterial overgrowth.
Lifestyle	A high-fibre diet and regular exercise promote SCFAs production.

Branched-Chain Amino Acids (BCAAs) Biosynthesis

Branched-Chain Amino Acids (BCAAs) biosynthesis refers to the metabolic process by which the three essential amino acids, leucine, isoleucine and valine (which make up BCAAs), are synthesized in living organisms, primarily occurring in bacteria and plants.

INF WM GH LF

INFlammation	Excess BCAAs can induce inflammation.
Weight Management	High levels of circulating BCAAs are associated with obesity and insulin resistance.
Lifestyle	Support healthy aging by regulating cellular repair and muscle maintenance.

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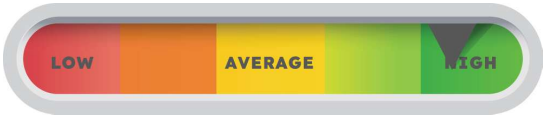
Your Metabolites Pathway Potential

Trimethylamine-N-oxide (TMAO)

Trimethylamine N-oxide (TMAO) is a small, colorless compound that's produced in the liver when gut bacteria metabolize dietary nutrients. TMAO levels in the blood are linked to an increased risk of cardiovascular disease and death.



INF WM GH LF

INFlammation	High levels are linked to a high ratio of Firmicutes to Bacteroidetes, leading to risk of inflammation.
Weight Management	TMAO is linked to increased cholesterol absorption and triglyceride accumulation, leading to weight gain.
GI Health	High levels reduce gut motility and microbiota activity, leading to digestive disorders.
Lifestyle	High levels result from protein-rich foods (such as red meat, eggs, and dairy), combined with a lack of exercise.

Lipopolysaccharides (LPS) Production

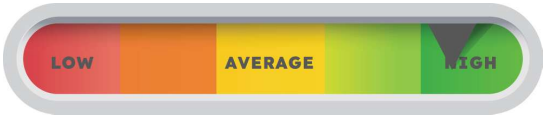
Lipopolysaccharides (LPS) are complex moleculeS that are a major component of the outer membrane of Gram-negative bacteria.

INF WM GH LF

INFlammation	High levels will reduce beneficial bacteria such as Bifidobacterium and Lactobacillus, leading to dysbiosis.
Weight Management	High levels promote the transport of dietary fats into the bloodstream, leading to abnormal cholesterol and triglyceride levels.
GI Health	High levels affect gut motility and nutrient absorption, leading to bloating, diarrhea, and constipation.
Lifestyle	High levels of LPS result from a diet high in fat, sugar, and ultra-processed foods.

Secondary Bile Acids Deconjugation

Secondary bile acid deconjugation is the process where gut bacteria remove the glycine or taurine residues from conjugated primary bile acids (like cholic and chenodeoxycholic acid), resulting in the formation of unconjugated bile acids, which can then be further transformed into secondary bile acids like deoxycholic acid and lithocholic acid.



INF WM GH LF

INFlammation	Some secondary bile acids are proinflammatory (e.g. deoxycholic acid), but some have anti-inflammatory properties (e.g. ursodeoxycholic acid).
Weight Management	Excessive secondary bile acid levels can promote the uptake of dietary fat in the gut but moderate levels regulate energy expenditure.
GI Health	Moderate levels support the gut barrier integrity.

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Calibrate Your Gut Health

Start your Gut Health Journey with us