

## INTRODUCTION

Vibrant Wellness is pleased to present to you 'Gut Zoomer' testing to help you make healthy lifestyle choices in consultation with your healthcare provider. It is intended to be used as a tool to encourage general healthy lifestyle choices.

Gut Zoomer is a health analytics tool based on the gut microbiome which provides potential risks for intestinal permeability, cardiovascular, metabolic, neurological, intestinal, autoimmune, liver, hormonal, and nutritional health conditions. Additionally, it has panels for detection of gut pathogens and digestive markers. It is intended to be used to improve functions associated with a general state of health, and where it is well understood as well as accepted that healthy lifestyle choices may play an important role in these health outcomes.

## Methodology:

Gut Zoomer is split into 6 sections: Gut Pathogens, Gut Commensal, Digestion and Immune Balance, Gut Inflammatory, Gut Antibodies, and Gut Metabolites. Gut Pathogens uses real-time PCR Assay designed for semi-quantitative and qualitative detection of group- specific DNA in clinical stool samples. Gut Commensal uses deep metagenomic PCR to semi-quantitatively assess the presence of key commensal bacterial populations, providing resolution from phylum down to species level to support comprehensive gut microbiome profiling. Digestion and Immune Balance panel and Gut Inflammatory markers are a quantitative assay that detects calprotectin, anti-gliadin, eosinophil protein X, lactoferrin, zonulin, lysozyme, MMP 9, pancreatic elastase 1, S100A12, and sIgA levels with Sandwich ELISA Enzyme-Linked ImmunoSorbent Assay methodology. ELISA (enzyme-linked immunosorbent assay) methodology is used for detecting  $\beta$ -glucuronidase, pH, and fecal immunochemical test (FIT). Gut Antibodies panel utilizes a multiplexed microarray chip technology to provide accurate quantitative analysis of gut-related antibody markers. Tandem mass spectrometry methodology (LC-MS/MS) is used for detecting Gut Metabolites like fatty acids markers and bile acid markers and dietary fiber detection. Colorimetric assay methodology is used for detecting fat malabsorption like fecal fat, fecal triglycerides, and total phospholipids.

## Interpretation of Report:

The following terminologies are used consistently in the report and are explained below.

**Gut Diversity** is an indicator for the amount of individual bacteria from each of the bacterial species present in your gut microbiome. There are two indices calculated including Shannon's Index (scale 0-3) and Simpson's Index (scale 0-1). For both calculations, higher index value represents increased diversity of species. While Shannon's is a better indicator of "richness" of the diversity, Simpson's is a better indicator of "evenness." The calculated Index values are surrounded with a risk indicator (green – high diversity, yellow – moderate diversity, and red – low diversity).

**Gut Phyla** distribution is displayed in a pie chart with each pie representing the % of individual phyla tested.

Key Ratios are calculated and displayed comprising of F/B (Firmicutes to Bacteroidetes ratio) and P/B (Prevotella to Bacteroides ratio), along with the corresponding risk indicator.

**Gut Commensal** bacteria is represented using relative abundance values. Relative abundance is the percent composition of an organism of a particular kind relative to the total number of organisms in your gut microbiome. The abundance of individual bacterial phylum/family/genus/species is calculated by comparing the relative abundance to the healthy reference range. Reference ranges have been established using results from 200 healthy individuals. The abundance is always mentioned in the report along with the potential associated risks; however, it is applicable only when indicated in RED. Associated probiotic tests are displayed in each panel with suggestions based on potential associated risks.

**Gut Pathogens** comprising of pathogenic bacteria, parasites, virus, and fungi are indicated as DETECTED or NOT DETECTED along with the levels in respective units. Worm and antibiotic resistance gene testing are displayed as DETECTED or NOT DETECTED based on the test result.

**Digestion and Immune Balance, Gut Inflammatory, Gut Antibodies, and Gut Metabolites** markers are displayed along with a risk indicator and the corresponding reference range for each test calculated using results from 200 healthy individuals. All test results are displayed with risk indicator and abundance direction as applicable. (red – high risk, yellow – moderate risk and green – low risk).

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### Interpretation of Report:

Comments provided by Vibrant Wellness are for educational purposes only and are not intended to be used as or substituted for medical advice. We do not treat or cure medical conditions. Vibrant Wellness does not replace the care of a medical practitioner or counselor and does not recommend self-diagnosis or self-medication. Depending on the nature of your testing, if you receive a high risk or moderate risk result, confirmatory testing may be recommended, and you will be encouraged to seek medical attention for additional follow up. Vibrant Wellness shall not be liable to you or anyone else for loss or injury caused in whole or part by procuring, compiling, interpreting, delivering, or reporting information through this report. Also, in no event shall Vibrant Wellness be held liable to you or anyone else for any decisions made or action taken or not taken by you in reliance on such information.

### Please note:

Consider all supplements in relation to medical history and symptoms. Not all recommended supplements are appropriate in all individual cases. It is important that you discuss any modifications to your diet, exercise, and nutritional supplementation with your healthcare provider before making any changes. Pediatric ranges have not been established for these tests.



## Gut Diversity

INDEX	Reference	Current	Previous	PHYLA
Shannon's Index		2.4		
Simpson's Index		0.74		

**NOTE**  
*Shannon's Index:* Higher values indicate richness.  
*Simpson's Index:* Higher values indicate evenness.

KEY RATIOS	Current	Previous	Result	Reference
Firmicutes/Bacteroidetes	1.4			≤0.9
Higher risk for obesity, metabolic disorders, and inflammation.				
Prevotella/Bacteroides	0.55			≥0.48

## Gut Commensals

Reference Range: In Control: <2 Moderate: 2-3.9 Risk: >3.9

Risk Category	Current	Previous	Risk Score	Risk Association
Intestinal Permeability	2.8			Low butyrate production, Low propionate production, Low acetate production
GENUS/SPECIES IMBALANCE Bifidobacterium, Blautia, Prevotella, Clostridium				
Intestinal Gas	2.8			Elevated carbon dioxide production, Elevated hydrogen sulfide production
GENUS/SPECIES IMBALANCE Clostridium, Fusobacterium				
SIBO	1.0			
GENUS/SPECIES IMBALANCE				
Irritable Bowel Syndrome	2.8			Irritable bowel syndrome
GENUS/SPECIES IMBALANCE Bifidobacterium				
Inflammatory Bowel Disease	2.9			Ulcerative colitis
GENUS/SPECIES IMBALANCE Fusobacterium, Bifidobacterium, Blautia				



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Gut Commensals			Reference Range: <div><div></div>In Control: &lt;2</div> <div><div></div>Moderate: 2-3.9</div> <div><div></div>Risk: &gt;3.9</div>	
Risk Category	Current	Previous	Risk Score	Risk Association
<div><div></div>Autoimmune Health</div>	2.9		<div><div></div><div></div><div></div></div>	Celiac disease, Inflammation, Allergy
<div>GENUS/SPECIES IMBALANCE</div> <div>Bifidobacterium, Actinomyces</div>				
<div><div></div>Metabolic Health</div>	2.9		<div><div></div><div></div><div></div></div>	Altered bile acid metabolism, Poor biosynthesis of GLP-2
<div>GENUS/SPECIES IMBALANCE</div> <div>Clostridium, Bifidobacterium</div>				
<div><div></div>Liver Health</div>	2.9		<div><div></div><div></div><div></div></div>	Primary sclerosing cholangitis
<div>GENUS/SPECIES IMBALANCE</div> <div>Fusobacterium</div>				
Hormones	1.4		<div><div></div><div></div><div></div></div>	
<div>GENUS/SPECIES IMBALANCE</div>				
<div><div></div>Nutrition</div>	2.8		<div><div></div><div></div><div></div></div>	Poor vitamin synthesis, Poor tryptophan metabolism, Poor tyrosine metabolism
<div>GENUS/SPECIES IMBALANCE</div> <div>Bifidobacterium, Blautia hydrogenotrophica</div>				
Cardiovascular Health	0.9		<div><div></div><div></div><div></div></div>	
<div>GENUS/SPECIES IMBALANCE</div>				
<div><div></div>Neurological Health</div>	2.9		<div><div></div><div></div><div></div></div>	Alzheimer's disease, Autism, Poor biosynthesis of neurotransmitters
<div>GENUS/SPECIES IMBALANCE</div> <div>Bifidobacterium, Prevotella</div>				
<div><div></div>Probiotic Health</div>	2.8		<div><div></div><div></div><div></div></div>	
<div>GENUS/SPECIES IMBALANCE</div>				
<div><div></div>Keystone Health</div>	2.9		<div><div></div><div></div><div></div></div>	Reduced keystone species
<div>GENUS/SPECIES IMBALANCE</div> <div>Bifidobacterium, Blautia, Prevotella</div>				
Supplement Suggestions				
<div>PROBIOTICS</div> <div><i>Irritable Bowel Syndrome:</i> Lactobacillus plantarum 299v</div>				
<div>SUPPLEMENTS</div> <div><i>Intestinal Permeability:</i> Vitamin D</div>				





Gut Commensals

Supplement Suggestions

SUPPLEMENTS

**Intestinal Gas:** Garlic

**Inflammatory Bowel Disease:** Vitamin D

**Autoimmune Health:** Iron

**Metabolic Health:** Vitamin D, Berberine

**Nutrition:** Vitamin B6, Vitamin C

**Neurological Health:** α-lipoic acid, Coenzyme Q10, N-acetyl-cysteine, Soy isoflavones, Phenylalanine

**Keystone Health:** Galactooligosaccharides, Xylo-oligosaccharides (XOS)

SUPPORTIVE SUPPLEMENTS

**Intestinal Permeability:** Resistant starch

**Autoimmune Health:** Vitamin C, Zinc

**Metabolic Health:** Galactooligosaccharides, Fructooligosaccharides


**Liver Health:** Vitamin D, Curcumin

**Neurological Health:** Berberine, 5-HTP

**Keystone Health:** Resistant starch

Consider these supplements in relation to medical history and symptoms. Not all recommended supplements are appropriate in all individual cases. Consult a knowledgeable healthcare provider before taking any supplemental nutrients or probiotics.

GUT PATHOGENS

Bacteria	Current	Previous	Reference	
 Enterotoxigenic E.coli (ETEC) Lt/St	5.8e3		≤3e2	

**Enterotoxigenic E.coli (ETEC) Lt/St:** Enterotoxigenic E.coli (Etec) Lt/St is a strain of Escherichia coli producing heat-labile and heat-stable toxins. Exposure to this bacterium occurs through contaminated food or water. Symptoms associated with its infection may include profuse watery diarrhea, abdominal cramps, and nausea.

Supplement Suggestions

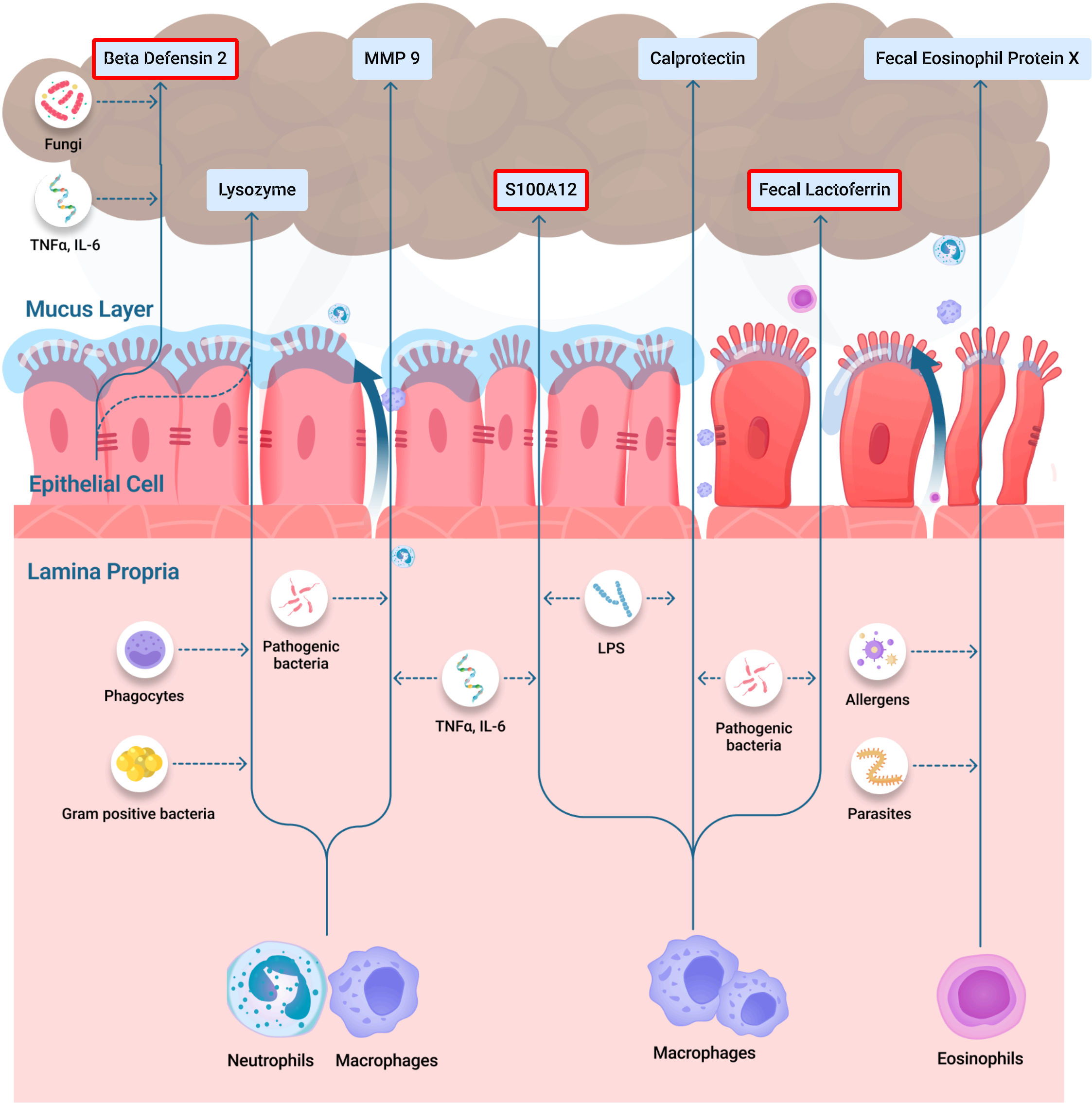
SUPPLEMENTS

**Enterotoxigenic E.coli (ETEC) Lt/St:** Berberine

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Gut Inflammation

Gut Lumen





## GUT INFLAMMATORY MARKERS

Test Name	Current	Previous	Result	Reference
Beta Defensin 2 (ng/mL)	66.7		<div><div></div><div></div></div>	≤34.9
Beta-defensin is an antimicrobial peptide produced by epithelial cells lining the gut mucosa. It is secreted in response to microbial overgrowth, particularly involving gram-negative bacteria and fungi. Elevated levels of beta-defensin indicate an active immune response to these microorganisms or the presence of inflammation. Sustained elevation may signal persistent gut inflammation and damage to the epithelial barrier. Symptoms associated with elevated beta-defensin include abdominal pain and diarrhea, which are commonly observed in inflammatory bowel disease (IBD) and Candida overgrowth.				
S100A12 (mcg/ml)	76.2		<div><div></div><div></div></div>	≤50.0
S100A12 is primarily secreted by activated neutrophils in response to pro-inflammatory stimuli. Its release is a component of the immune response to bacterial overgrowth and other microbial pathogens, particularly during infections or dysbiosis. Elevated levels of S100A12 indicate heightened neutrophil activity and active inflammation, typically associated with inflammatory bowel disease (IBD). Increased S100A12 levels correlate with disease severity and immune system activation, which can lead to mucosal damage and gut barrier dysfunction. Symptoms include rectal bleeding and persistent diarrhea, frequently observed in conditions such as ulcerative colitis (UC) and Crohn's disease.				
Fecal Lactoferrin (mcg/ml)	17.2		<div><div></div><div></div></div>	≤6.4
Lactoferrin, a glycoprotein released by neutrophils, serves as a marker of gastrointestinal inflammation. It is released in response to bacterial infections and immune activation, indicating significant neutrophil infiltration and active inflammation, often associated with inflammatory bowel disease (IBD). Elevated lactoferrin levels suggest ongoing immune activity and mucosal damage, which can lead to symptoms such as abdominal discomfort and blood in the stool, commonly observed in IBD subtypes such as active Crohn's disease and ulcerative colitis.				

## Supplement Suggestions

SUPPLEMENTS
Fecal Lactoferrin: Palmitoylethanolamide
SUPPORTIVE SUPPLEMENTS
Beta Defensin 2: Butyrate
S100A12: Butyrate

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## DIGESTION AND IMMUNE BALANCE

Test Name	Current	Previous	Result	Reference
Fecal Zonulin (ng/mL)	317.3		<div><div></div><div></div></div>	25.1-160.8
Zonulin, a regulatory protein involved in intestinal permeability, is a marker for "leaky gut." It is produced by intestinal epithelial cells and hepatocytes in response to gut microorganisms, gluten, and other environmental triggers, regulating the integrity of tight junctions in the gut lining. Elevated fecal zonulin levels are associated with metabolic syndrome, obesity, Crohn's disease, and increased gut permeability. High levels indicate disrupted tight junctions, resulting in symptoms such as bloating, diarrhea, food sensitivities, and fatigue. Zonulin is a key marker of gut dysbiosis and systemic metabolic disorders.				

## Supplement Suggestions

### ***Fecal Zonulin:*** Vitamin A

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## GUT ANTIBODIES

Test Name	Current	Previous	Result	Reference
Deamidated Gliadin Peptide	11.8			≤10.0

The deamidated gliadin peptide (DGP) antibody test detects immune responses to modified gliadin, a component of gluten. In the small intestine, the enzyme tissue transglutaminase (tTG) modifies gliadin by deaminating it, essentially by removing specific amine groups and converting gliadin into deamidated gliadin peptides (DGPs). These peptides are more immunogenic, triggering a stronger autoimmune response, particularly in genetically susceptible individuals. Elevated DGP antibodies are often present in early or atypical celiac disease and may appear even before tTG antibodies. Such elevations may result from gluten consumption or gluten cross-contamination, making this test especially valuable in pediatric or IgA-deficient populations. Symptoms can include bloating, diarrhea, irritability, or unexplained iron-deficiency anemia. The DGP antibody test aids in identifying gluten sensitivity and early manifestations of celiac disease, providing critical insights into immune reactivity to gluten before significant mucosal damage occurs.

Actin Antibody

14.9

0.1 10 20 ≤10.0

The actin antibody test identifies autoantibodies directed against filamentous actin (F-actin), a key cytoskeletal protein found within intestinal epithelial cells and hepatocytes. The presence of these antibodies reflects an autoimmune response often triggered by significant epithelial damage and disruption of cellular integrity. Elevated actin antibody levels are most commonly associated with autoimmune hepatitis but may also appear in severe forms of celiac disease, particularly those involving villous atrophy or refractory disease states. In the gastrointestinal context, their presence suggests advanced mucosal injury and immune dysregulation. Symptoms may include persistent diarrhea, abdominal discomfort, fatigue, and in hepatic involvement, jaundice or elevated liver enzymes. The actin antibody test serves as a marker of tissue-specific autoimmunity and helps evaluate the extent of epithelial and mucosal damage, making it particularly valuable in assessing the severity and chronicity of immune-mediated gut disorders.

## Supplement Suggestions

**Deamidated Gliadin Peptide:** Curcumin, Omega-3 fatty acids, EGCG, Vitamin C

**Actin Antibody:** Curcumin, Omega-3 fatty acids, Green tea extract

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MALABSORPTION

DIETARY FIBER	Current	Previous	
<div><div></div>Vegetable Fiber</div>	DETECTED		

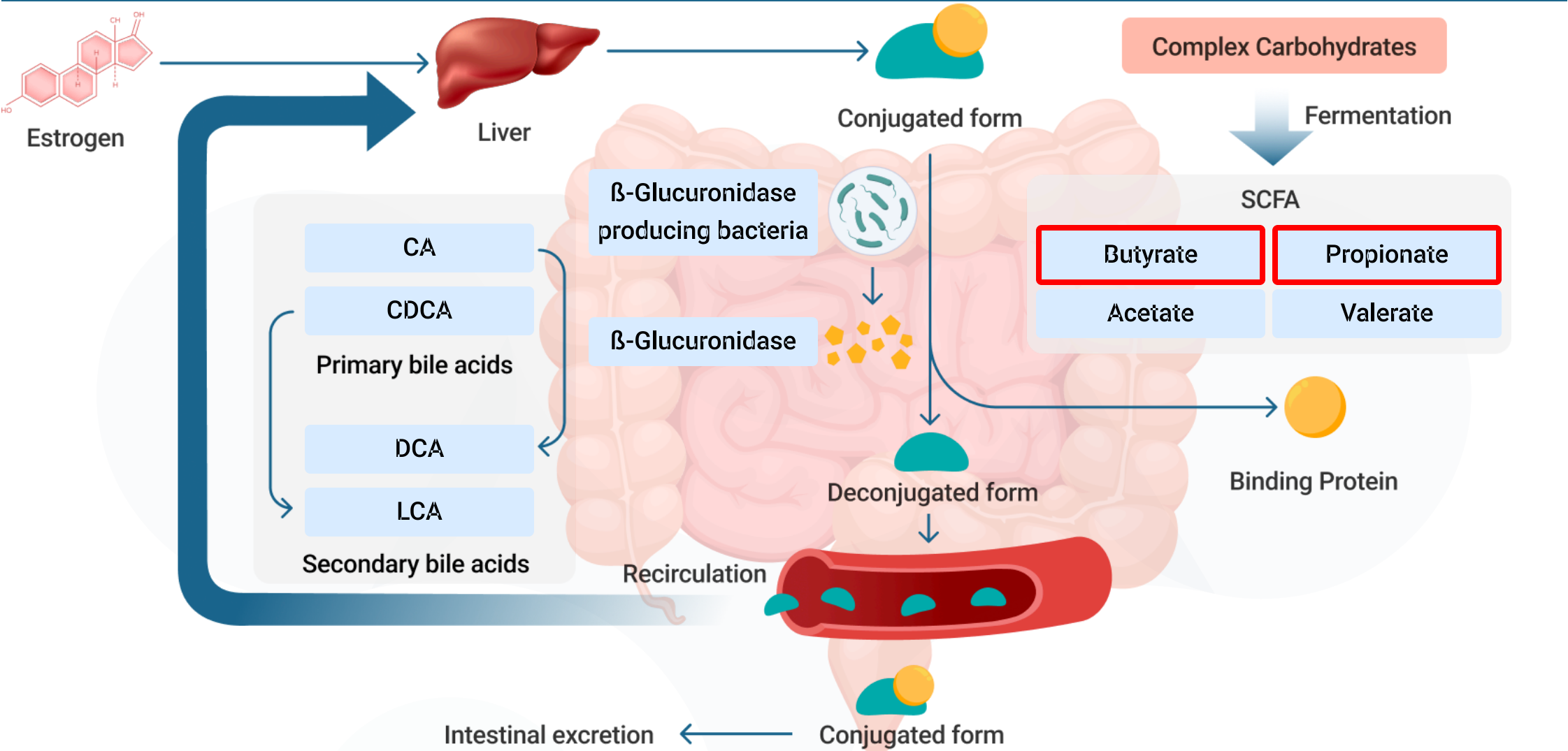
**Vegetable Fiber:** Vegetable fibers in stool may indicate improper digestion, inadequate chewing, or digestive enzyme insufficiency, all of which can compromise nutrient absorption. Consuming vegetable fiber benefits gut health by promoting regular bowel movements and supporting healthy microbiota. However, undigested fibers can result in symptoms like bloating, abdominal discomfort, or irregular stools. Encouraging thorough chewing and mindful eating helps optimize digestion, thereby improving nutrient uptake and reducing the risk of weight gain, obesity, and related metabolic disorders.

Supplement Suggestions

**SUPPORTIVE SUPPLEMENTS**  
**Vegetable Fiber:** Betaine HCL, Taurine

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Gut Metabolites



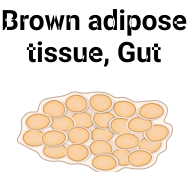
CHOLIC ACID (CA)

- Fat malabsorption (greasy stools) from dysregulated bile synthesis and affected cholesterol metabolism.
- Digestive discomfort due to gut dysbiosis.



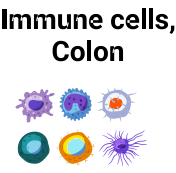
CHENODEOXYCHOLIC ACID (CDCA)

- Affected bowel movements from gut inflammation and impaired motility.
- Insulin resistance and poor blood sugar regulation due to disrupted GLP-1 sensitivity.



DEOXYCHOLIC ACID (DCA)

- Elevated gut inflammation via NF- $\kappa$ B.
- Bowel discomfort due to low stool water content affecting gut motility and bowel movement.



LITHOCHOLIC ACID (LCA)

- Toxin build-up due to poor detoxification
- Frequent gut infections from reduced immunity via VDR.
- Bloating and irregular stools from gut dysbiosis.



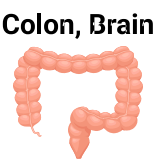
$\beta$ -GLUCURONIDASE

- Increased toxin reabsorption due to impaired glucuronidation.
- Hormonal imbalances leading to estrogen dominance.
- Elevated risk of inflammation.



ACETATE

- Dysregulated cholesterol levels due to altered lipid metabolism.
- Mood swings from affected neuronal signaling.
- Increased inflammation.



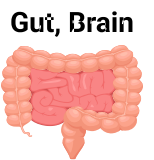
PROPIONATE

- Potential weight regulation issues due to altered energy homeostasis.
- Impaired satiety leading to overeating due to affected GLP-1 secretion.



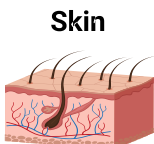
BUTYRATE

- Gastric discomfort from weakened intestinal lining.
- Poor blood sugar control due to disrupted glucose regulation via GLP-1.
- Brain fog from impaired neurogenesis.



VALERATE

- Affected skin barrier function leading to dry, irritated, and itchy skin



$\beta$ -GLUCURONIDASE PRODUCING BACTERIA

- Increased toxin reabsorption due to glucuronide cleavage (release of toxins or hormones).
- Hormonal disruptions, including estrogen dominance.
- Gut microbiota imbalance leading to inflammation.





## GUT METABOLITES

SHORT CHAIN FATTY ACIDS	Current	Previous	Result	Reference
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Propionate is a key short-chain fatty acid (SCFA) produced during the bacterial fermentation of dietary fibers and resistant starch. This process involves the microbial conversion of carbohydrates into SCFAs via anaerobic pathways. Propionate contributes to gut health by regulating microbial composition, serving as an energy source for intestinal epithelial cells, reducing gut inflammation, and promoting gut barrier integrity. Propionate exerts its effects through G-protein-coupled receptors 41 and 43 (GPR41 and GPR43). Activation of GPR41 regulates energy metabolism, while propionate’s interaction with GPR43 modulates appetite control and gut barrier integrity. Both receptors enhance insulin sensitivity through glucagon-like peptide-1 (GLP-1), which aids in glucose metabolism and improves insulin secretion. However, elevated levels of fecal propionate can lead to constipation associated with slower bowel transit time.



Butyrate is a short-chain fatty acid (SCFA) primarily produced through the bacterial fermentation of resistant starch and dietary fibers. This process involves the microbial hydrolysis of dietary polysaccharides into monosaccharides, which are then fermented to form butyrate. Butyrate serves as a vital energy source for colonocytes and supports gut barrier function by enhancing tight junction integrity. It also reduces intestinal inflammation and oxidative stress, promoting a healthy gut environment. Butyrate exerts its effects through G-protein-coupled receptors 41 and 43 (GPR41 and GPR43), contributing to insulin sensitivity via glucagon-like peptide-1 (GLP-1), which aids in glucose metabolism and enhances insulin secretion. Recent studies have shown that butyrate can support neurogenesis (the formation of new neurons) in the brain via the ‘gut-brain axis.’ Low fecal butyrate levels can cause gastrointestinal issues due to a compromised intestinal lining, impaired blood sugar regulation from disrupted GLP-1 activity, and cognitive symptoms like brain fog due to affected neurogenesis.



Total short-chain fatty acids (SCFAs) refer to the combined concentration of acetate, butyrate, propionate, valerate, iso-butyrate, and other SCFAs in the gut. They are produced through the anaerobic fermentation of indigestible dietary fibers, such as resistant starch and polysaccharides, by gut microbiota. SCFAs play essential roles in maintaining gut health by serving as energy sources for intestinal epithelial cells, strengthening the gut barrier, and regulating microbial diversity. They help suppress intestinal inflammation, support gut homeostasis, and influence systemic metabolic and immune responses. SCFAs interact with G-protein-coupled receptors 41 and 43 (GPR41 and GPR43), affecting gut motility, energy metabolism, and inflammatory pathways. Their benefits extend beyond the gut, impacting insulin sensitivity, lipid metabolism, and neuroimmune interactions. Low fecal SCFA levels indicate dysbiosis and are linked to various health conditions, including irritable bowel syndrome, inflammatory bowel disease, obesity, and metabolic disorders. Symptoms of reduced SCFAs may include bloating, abdominal discomfort, fatigue, and irregular bowel movements.

## Supplement Suggestions

### SUPPLEMENTS

**Propionate:** Magnesium

**Butyrate:** Fructans, Inulin, Vitamin B2

**Total Short Chain Fatty Acids:** Fructans, Inulin

### SUPPORTIVE SUPPLEMENTS

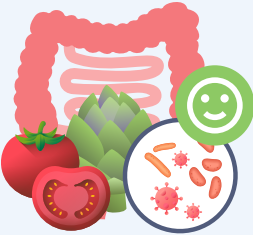
**Propionate:** Aloe vera extract

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## Suggestions


### Prebiotics


Prebiotics are non-digestible fibers that serve as a food source for beneficial gut bacteria, promoting a balanced microbiome and enhancing digestive health. By nourishing beneficial microbes, prebiotics help strengthen the gut barrier, support nutrient absorption, and regulate inflammation, all of which contribute to overall well-being. Based on the assessment of gut commensals, pathogenic microorganisms, and digestive health markers, increasing your intake of prebiotic-rich foods or supplements may help improve gut health and microbial balance.





SUPPLEMENTS	Galactooligosaccharides	5.5 g/day	Fructooligosaccharides	20 g/day	Resistant starch	15 g/day
	Fructans	7.5 g/day	Inulin	10 g/day	Xylo-oligosaccharides (XOS)	1.4 g/day

### FOOD SOURCES

 **Fruits**  
Bananas, Green Bananas

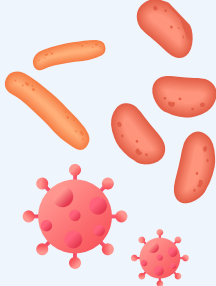
 **Vegetables**  
Onions, Garlic, Cooked Potatoes, Asparagus, Bamboo Shoots

 **Dairy**  
Milk, Cheese, Yogurt, Butter

 **Fiber**  
Legumes, Wheat, Chicory Root, Corn Husks

### Probiotics

Probiotics are beneficial bacteria and yeasts that contribute to gut health by maintaining a balanced microbiome, supporting digestion, and enhancing immune function. A healthy gut microbiome aids in breaking down nutrients, producing essential vitamins, and preventing the overgrowth of harmful microbes, which collectively support metabolic balance and immune resilience. Based on the assessment of gut commensals, pathogenic microorganisms, and digestive health markers, incorporating probiotic-rich foods and supplements may help improve your gut health and support overall well-being.



SUPPLEMENTS	Butyrate	150 mg/day	Lactobacillus plantarum 299v	10 billion CFU/day
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### FOOD SOURCES

 **Vegetables**  
Sauerkraut, Tempeh, Kimchi

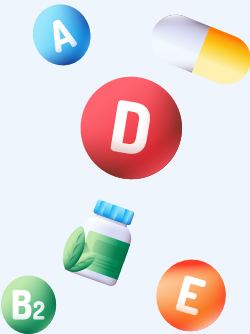









## Suggestions

### Nutrients

Essential nutrients, including vitamins and minerals, play a vital role in maintaining gut health by supporting digestive processes, microbial diversity, and immune function. Proper nutrient intake helps regulate gut motility, maintain intestinal integrity, and reduce inflammation, which in turn promotes overall metabolic and physiological balance. Based on the evaluation of key biomarkers, ensuring adequate intake of these nutrients through a well-balanced diet or supplementation may help optimize gut function and overall well-being.



SUPPLEMENTS	Vitamin D	600 IU/day	Vitamin C	90 mg/day	Vitamin B6	1.3 mg/day
	Coenzyme Q10	300 mg/day	N-acetyl-cysteine	600 mg/day	Omega-3 fatty acids	950 mg/day
	Iron	8 mg/day	Zinc	11 mg/day	Phenylalanine	33mg/kg/day
	Vitamin A	3,000 IU/day	Betaine HCL	350 mg/day	Taurine	3 g/day
	Vitamin B2	1.3 mg/day	Magnesium	400 mg/day		
FOOD SOURCES	 <b>Fruits</b> Citrus Fruits, Bananas					
	 <b>Vegetables</b> Spinach, Potatos, Garlic, Onions, Carrots, Beets					
	 <b>Dairy</b> Milk, Cheese, Yogurt, Butter					
	 <b>Fiber</b> Whole Grains, Nuts, Flaxseed, Walnuts, Lentils, Legumes, Soy Products, Seeds, Almonds					
	 <b>Animal Protein</b> Eggs, Meat, Fatty Fish, Poultry, Shellfish, Organ Meats (heart, Liver), Salmon, Mackerel, Sardines, Tuna, Red Meat, Fish, Liver, Seafood					




Suggestions

Botanicals

Botanicals are plant-derived compounds, such as polyphenols, flavonoids, and terpenoids, that support gut health by aiding digestion, modulating the microbiome, and reducing gastrointestinal inflammation. Many botanicals possess prebiotic, antimicrobial, and anti-inflammatory properties, which help maintain gut microbial balance and improve digestive efficiency, ultimately benefiting systemic health. Based on the assessment of relevant biomarkers, incorporating specific botanical extracts may help promote gut health and enhance overall well-being.



SUPPLEMENTS	Berberine	500 mg/day	Curcumin	0.1 g/day	Garlic	4 g/day
	Aloe vera extract	100 mg/day				
FOOD SOURCES	<div> <b>Vegetables</b></div> <div>Barberry, Goldenseal, Turmeric, Garlic Bulb (allium Sativum), Aloe Vera</div>					



GUT PATHOGENS							
Bacteria	Current	Previous	Reference	Bacteria	Current	Previous	Reference
Clostridium difficile	<1e1		≤5e2	Clostridium difficile Toxin A	<1e2		≤5.8e2
Clostridium difficile Toxin B	<1e2		≤5.8e2	Clostridium perfringens	<1e2		≤1e2
Campylobacter spp.	<1e1		≤4.8e2	Campylobacter coli	<1e1		≤5e2
Campylobacter jejuni	<1e1		≤5e2	Campylobacter upsaliensis	<1e1		≤5e2
Vibrio (vulnificus)	<1e2		≤5e2	Vibrio (parahaemolyticus)	<1e2		≤7e2
Vibrio (cholerae)	<1e2		≤5e2	Enteropathogenic E.coli (EPEC)	<1e2		≤5e2
Enteroaggregative E.coli (EAEC)	<1e2		≤6.5e2	Enterotoxigenic E.coli (ETEC) Lt/St	5.8e3		≤3e2
Shiga-Like Toxin Producing E.coli (STEC) Stx1/Stx2	<1e2		≤3e2	E.coli O157	<1e2		≤3e2
Shigella/EIEC	<1e2		≤8e2	Helicobacter pylori	<1e2		≤3e3
Non-pylori Helicobacter spp.	<1e2		≤1e3	Listeria	<1e3		≤1.5e3
Klebsiella pneumoniae	<1e2		≤1e3	Yersinia enterocolitica	<1e2		≤5e2
Salmonella	<1e2		≤9e2	Plesiomonas shigelloides	<1e2		≤8e2
Edwardsiella tarda	<1e3		≤2e3	Aeromonas spp.	<1e2		≤1e3
Staphylococcus aureus	<1e3		≤1e3	Bacillus cereus	<1e1		≤5e2
Parasites - Protozoans	Current	Previous	Reference	Parasites - Protozoans	Current	Previous	Reference
Cryptosporidium	<1e3		≤2.5e3	Giardia lamblia	<1e2		≤3e3
Chilomastix mesnili	<1e2		≤5e2	Dientamoeba fragilis	<1e2		≤5e2
Entamoeba coli	<1e3		≤3e3	Blastocystis hominis	<1e3		≤1.5e3
Isospora belli	<1e3		≤1e3	Pentatrichomonas hominis	<1e2		≤5e2
Entamoeba histolytica	<1e2		≤2.5e3	Cyclospora cayetanensis	<1e3		≤5e3
Cyclospora spp.	<1e3		≤5e3	Endolimax nana	<1e3		≤1.5e3
Trichomonas hominis	<1e2		≤5e2	Balantidium coli	<1e2		≤4.6e2



GUT PATHOGENS							
Fungi	Current	Previous	Reference	Fungi	Current	Previous	Reference
Candida spp.	<1e1		≤1e2	Candida albicans	<1e1		≤2.5e2
Candida glabrata	<1e2		≤7.6e2	Rodotorula spp.	<1e2		≤1e3
Geotrichum spp.	<1e3		≤2e3	Microsporidium spp.	<1e3		≤1.2e3
Virus	Current	Previous	Reference	Virus	Current	Previous	Reference
Adenovirus F40/41	<1e2		≤5e2	Astrovirus	<1e2		≤5e2
Norovirus GI	<1e1		≤5e2	Norovirus GII	<1e1		≤5e2
Sapovirus I	<1e2		≤5e2	Sapovirus II	<1e2		≤5e2
Sapovirus IV	<1e2		≤5e2	Sapovirus V	<1e2		≤5e2
Enterovirus	<1e2		≤1e2	Epstein Barr virus	<1e2		≤1e3
Rotavirus A	<1e2		≤5e2	Cytomegalovirus	<1e2		≤1e3
Human bocavirus	<1e1		≤1e2				
Antibiotic Resistance Genes	Current	Previous		Antibiotic Resistance Genes	Current	Previous	
Helicobacter - Clarithromycin	NOT DETECTED			Helicobacter - Fluoroquinolones	NOT DETECTED		
Fluoroquinolones	NOT DETECTED			Vancomycin	NOT DETECTED		
b-lactamase	NOT DETECTED			Macrolides	NOT DETECTED		
Tetracycline	NOT DETECTED			Aminoglycoside	NOT DETECTED		
Bactrim	NOT DETECTED			Carbapenem	NOT DETECTED		
Rifampin	NOT DETECTED			Polymyxins	NOT DETECTED		
Parasites - Helminths	Current	Previous		Parasites - Helminths	Current	Previous	
Larval Nematode	NOT DETECTED			Taenia solium	NOT DETECTED		
Fasciola/Fasciolopsis	NOT DETECTED			Dipylidium caninum	NOT DETECTED		
Enterobius vermicularis	NOT DETECTED			Ancylostoma duodenale	NOT DETECTED		
Necator americanus	NOT DETECTED			Taenia spp.	NOT DETECTED		





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GUT PATHOGENS

Parasites - Helminths	Current	Previous	Parasites - Helminths	Current	Previous
Strongyloides stercoralis	NOT DETECTED		Schistosoma	NOT DETECTED	
Hymenolepis	NOT DETECTED		Diphyllobothrium latum	NOT DETECTED	
Mansonella	NOT DETECTED		Ascaris lumbricoides	NOT DETECTED	
Trichuris trichiura	NOT DETECTED				

GUT INFLAMMATORY MARKERS

Test Name	Current	Previous	Result	Reference
Beta Defensin 2 (ng/mL)	66.7		<div><div></div></div>	≤34.9
Lysozyme (ng/mL)	92.9		<div><div></div></div>	≤575.0
MMP 9 (ng/mL)	0.1		<div><div></div></div>	≤0.2
S100A12 (mcg/ml)	76.2		<div><div></div></div>	≤50.0
Calprotectin (mcg/g)	18.3		<div><div></div></div>	≤50.0
Fecal Lactoferrin (mcg/ml)	17.2		<div><div></div></div>	≤6.4
Fecal Eosinophil Protein X (mcg/g)	2.6		<div><div></div></div>	≤4.8

DIGESTION AND IMMUNE BALANCE

Test Name	Current	Previous	Result	Reference
Pancreatic Elastase 1 (mcg/g)	201.6		<div><div></div></div>	≥200.0
Fecal Immunochemical Test (FIT) (mcg/g)	1.7		<div><div></div></div>	≤10.0
Fecal Zonulin (ng/mL)	317.3		<div><div></div></div>	25.1-160.8
pH	7.2		<div><div></div></div>	6.1-7.8
sIgA (mcg/g)	672.3		<div><div></div></div>	426.0-1450.0

GUT ANTIBODIES

Test Name	Current	Previous	Result	Reference
Lipopolysaccharide Antibody	3.7		<div><div></div></div>	≤10.0



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GUT ANTIBODIES

Test Name	Current	Previous	Result	Reference
Anti-Saccharomyces Cerevisiae Antibody	6.3		<div><div></div><div></div><div></div></div>	≤10.0
Tissue Transglutaminase	5.2		<div><div></div><div></div><div></div></div>	≤10.0
Deamidated Gliadin Peptide	11.8		<div><div></div><div></div><div></div></div>	≤10.0
Fecal Anti Gliadin	8.9		<div><div></div><div></div><div></div></div>	≤10.0
Actin Antibody	14.9		<div><div></div><div></div><div></div></div>	≤10.0

MALABSORPTION

DIETARY FIBER	Current	Previous	DIETARY FIBER	Current	Previous
Meat Fiber	NOT DETECTED		Vegetable Fiber	DETECTED	

FAT MALABSORPTION	Current	Previous	Result	Reference
Total Fecal Fat (mg/g)	35.9		<div><div></div><div></div><div></div></div>	2.9-37.5
Total Fecal Triglycerides (mg/g)	2.2		<div><div></div><div></div><div></div></div>	0.3-2.5
Long Chain Fatty Acids (mg/g)	26.4		<div><div></div><div></div><div></div></div>	0.9-28.1
Total Cholesterol (mg/g)	3.3		<div><div></div><div></div><div></div></div>	0.5-5.3
Total Phospholipids (mg/g)	2.1		<div><div></div><div></div><div></div></div>	0.3-6.4

GUT METABOLITES

BILE ACID METABOLITES	Current	Previous	Result	Reference
Cholic Acid (CA) (%)	0.06		<div><div></div><div></div><div></div></div>	≤0.36
Chenodeoxycholic Acid (CDCA) (%)	0.37		<div><div></div><div></div><div></div></div>	≤1.25
Deoxycholic Acid (DCA) (%)	44.50		<div><div></div><div></div><div></div></div>	24.25-75.84
Lithocholic Acid (LCA) (%)	45.50		<div><div></div><div></div><div></div></div>	24.16-75.75
LCA/DCA Ratio	1.02		<div><div></div><div></div><div></div></div>	0.32-3.38

SHORT CHAIN FATTY ACIDS	Current	Previous	Result	Reference
Acetate (%)	61.4		<div><div></div><div></div><div></div></div>	60.2-72.7



GUT METABOLITES

SHORT CHAIN FATTY ACIDS	Current	Previous	Result	Reference
Propionate (%)	32.4		<div><div></div><div></div><div></div></div> <div>015.330.3</div>	15.4-30.3
Butyrate (%)	2.4		<div><div></div><div></div><div></div></div> <div>0512.4</div>	5.1-12.4
Valerate (%)	3.0		<div><div></div><div></div><div></div></div> <div>00.73.5</div>	0.8-3.5
Total Short Chain Fatty Acids (micromol/g)	36.0		<div><div></div><div></div><div></div></div> <div>045.3210</div>	45.4-210.1
ESTROGEN METABOLISM	Current	Previous	Result	Reference
β-Glucuronidase (U/mL)	561		<div><div></div><div></div><div></div></div> <div>02300</div>	≤2300.0

Gut Commensals - Gut Microbiome

Test Name	Current	Previous	Result	Reference
Acinetobacter <sup>-</sup>	7.4		<div><div></div><div></div><div></div></div> <div>020</div>	≤20.0
Actinomyces	21.2		<div><div></div><div></div><div></div></div> <div>0.120</div>	≤20.0
Akkermansia muciniphila <sup>-</sup>	26.3		<div><div></div><div></div><div></div></div> <div>09.9</div>	≥10.0
Alistipes	14.3		<div><div></div><div></div><div></div></div> <div>0.120</div>	≤20.0
Alloprevotella <sup>-</sup>	27.8		<div><div></div><div></div><div></div></div> <div>09.9</div>	≥10.0
Atopobium	8.4		<div><div></div><div></div><div></div></div> <div>020</div>	≤20.0
Atopobium parvulum	12.0		<div><div></div><div></div><div></div></div> <div>020</div>	≤20.0
Bacillus subtilis	28.5		<div><div></div><div></div><div></div></div> <div>09.9</div>	≥10.0
Bacteroidales <sup>-</sup>	10.6		<div><div></div><div></div><div></div></div> <div>09.920</div>	10.0-20.0
Bacteroides <sup>-</sup>	14.3		<div><div></div><div></div><div></div></div> <div>09.920</div>	10.0-20.0
Bacteroides caccae <sup>-</sup>	13.5		<div><div></div><div></div><div></div></div> <div>020</div>	≤20.0
Bacteroides vulgatus <sup>-</sup>	12.3		<div><div></div><div></div><div></div></div> <div>09.9</div>	≥10.0
Bifidobacterium	9.1		<div><div></div><div></div><div></div></div> <div>09.9</div>	≥10.0
Bifidobacterium adolescentis	12.0		<div><div></div><div></div><div></div></div> <div>09.920</div>	10.0-20.0
Bifidobacterium animalis	26.1		<div><div></div><div></div><div></div></div> <div>09.9</div>	≥10.0



Gut Commensals - Gut Microbiome

Test Name	Current	Previous	Result	Reference
Bifidobacterium animalis subspecies lactis	10.8		<div><div></div><div></div></div> <div>09.9</div>	≥10.0
Bifidobacterium catenulatum	24.0		<div><div></div><div></div></div> <div>09.9</div>	≥10.0
Blautia	8.8		<div><div></div><div></div></div> <div>09.920</div>	10.0-20.0
Blautia hydrogenotrophica	5.7		<div><div></div><div></div></div> <div>09.920</div>	10.0-20.0
Bradyrhizobiaceae <sup>-</sup>	7.9		<div><div></div><div></div></div> <div>020</div>	≤20.0
Butyricimonas <sup>-</sup>	28.5		<div><div></div><div></div></div> <div>09.9</div>	≥10.0
Butyrivibrio	27.6		<div><div></div><div></div></div> <div>09.9</div>	≥10.0
Catenibacterium	23.8		<div><div></div><div></div></div> <div>09.9</div>	≥10.0
Christensenella minuta	>30		<div><div></div><div></div></div> <div>09.9</div>	≥10.0
Clostridia clusters IV	20.9		<div><div></div><div></div></div> <div>09.9</div>	≥10.0
Clostridia clusters XIVa	26.0		<div><div></div><div></div></div> <div>09.9</div>	≥10.0
Clostridia clusters XVIII	18.8		<div><div></div><div></div></div> <div>09.9</div>	≥10.0
Clostridiales Family XIV Incertae Sedis	28.1		<div><div></div><div></div></div> <div>09.9</div>	≥10.0
Clostridium	4.5		<div><div></div><div></div></div> <div>09.920</div>	10.0-20.0
Clostridium hathewayi <sup>-</sup>	11.8		<div><div></div><div></div></div> <div>020</div>	≤20.0
Clostridium ramosum	17.1		<div><div></div><div></div></div> <div>020</div>	≤20.0
Clostridium symbiosum <sup>-</sup>	9.3		<div><div></div><div></div></div> <div>020</div>	≤20.0
Clostridiales Incertae Sedis IV	8.0		<div><div></div><div></div></div> <div>020</div>	≤20.0
Collinsella	12.1		<div><div></div><div></div></div> <div>020</div>	≤20.0
Coprococcus	11.5		<div><div></div><div></div></div> <div>09.920</div>	10.0-20.0
Desulfovibrio <sup>-</sup>	7.9		<div><div></div><div></div></div> <div>020</div>	≤20.0
Desulfovibrio piger <sup>-</sup>	13.8		<div><div></div><div></div></div> <div>09.920</div>	10.0-20.0
Dialister invisus <sup>-</sup>	27.6		<div><div></div><div></div></div> <div>09.9</div>	≥10.0








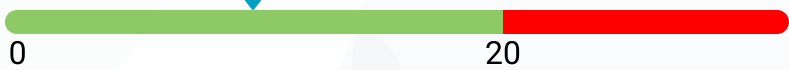

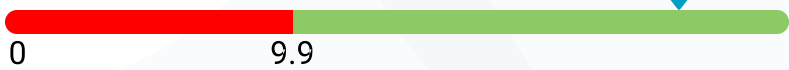
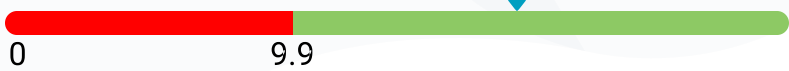

















Gut Commensals - Gut Microbiome

Test Name	Current	Previous	Result	Reference
Dorea	10.6		<div><div></div><div></div></div>	≤20.0
Eggerthella lenta	5.2		<div><div></div><div></div></div>	≤20.0
Enterobacter aerogenes <sup>-</sup>	11.8		<div><div></div><div></div></div>	≤20.0
Enterobacteria <sup>-</sup>	9.5		<div><div></div><div></div></div>	≤20.0
Enterobacteriaceae <sup>-</sup>	11.1		<div><div></div><div></div></div>	10.0-20.0
Enterococcus	11.5		<div><div></div><div></div></div>	10.0-20.0
Enterococcus gallinarum	7.3		<div><div></div><div></div></div>	≤20.0
Enterococcus species	9.9		<div><div></div><div></div></div>	≤20.0
Escherichia coli <sup>-</sup>	13.0		<div><div></div><div></div></div>	10.0-20.0
Eubacterium	14.2		<div><div></div><div></div></div>	≥10.0
Eubacterium rectale	16.6		<div><div></div><div></div></div>	10.0-20.0
Faecalibacterium prausnitzii	14.0		<div><div></div><div></div></div>	10.0-20.0
Fusobacterium <sup>-</sup>	25.2		<div><div></div><div></div></div>	10.0-20.0
Haemophilus <sup>-</sup>	29.9		<div><div></div><div></div></div>	≥10.0
Hafnia	21.4		<div><div></div><div></div></div>	≥10.0
Holdemania	7.3		<div><div></div><div></div></div>	≤20.0
Lachnospiraceae	13.5		<div><div></div><div></div></div>	10.0-20.0
Lactobacillaceae	9.7		<div><div></div><div></div></div>	≤20.0
Lactobacillus	29.7		<div><div></div><div></div></div>	≥10.0
Lactobacillus animalis	26.6		<div><div></div><div></div></div>	≥10.0
Lactobacillus ruminis	8.8		<div><div></div><div></div></div>	≤20.0
Lactobacillus sakei	26.5		<div><div></div><div></div></div>	≥10.0
Lactococcus	9.2		<div><div></div><div></div></div>	≤20.0



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Gut Commensals - Gut Microbiome

Test Name	Current	Previous	Result	Reference
Leuconostoc	20.4			≥10.0
Marvinbryantia	12.2			≤20.0
Methanobrevibacter smithii	15.8			10.0-20.0
Mycoplana <sup>-</sup>	9.7			≤20.0
Oscillospira <sup>-</sup>	28.5			≥10.0
Parabacteroides	25.7			≥10.0
Pediococcus	19.1			≥10.0
Peptostreptococcus	23.2			≥10.0
Phascolarctobacterium <sup>-</sup>	21.2			≥10.0
Porphyromonas gingivalis <sup>-</sup>	0.9			≤20.0
 Prevotella <sup>-</sup>	7.8			10.0-20.0
Prevotella copri <sup>-</sup>	2.8			≤20.0
Propionibacterium freudenreichii	>30			≥10.0
Proteus mirabilis <sup>-</sup>	9.2			≤20.0
Pseudobutyrvibrio <sup>-</sup>	29.2			≥10.0
Pseudomonas <sup>-</sup>	9.2			≤20.0
Roseburia	21.0			≥10.0
Roseburia intestinalis	11.9			10.0-20.0
Ruminococcaceae	13.0			10.0-20.0
Ruminococcus	12.0			10.0-20.0
Ruminococcus bromii	24.9			≥10.0
Ruminococcus gnavus	12.4			10.0-20.0
Ruminococcus obeum	11.0			≤20.0



Gut Commensals - Gut Microbiome

Test Name	Current	Previous	Result	Reference
Solobacterium moorei	7.8		<div><div></div><div></div></div>	≤20.0
β-Galactosidase producing bacteria	14.3		<div><div></div><div></div></div>	≤20.0
β-Glucuronidase producing bacteria	18.7		<div><div></div><div></div></div>	≤20.0
Staphylococcaceae	10.8		<div><div></div><div></div></div>	≤20.0
Staphylococcus epidermidis	9.8		<div><div></div><div></div></div>	≤20.0
Staphylococcus pasteuri	11.6		<div><div></div><div></div></div>	≤20.0
Staphylococcus species	9.6		<div><div></div><div></div></div>	≤20.0
Streptococcus species	14.0		<div><div></div><div></div></div>	≤20.0
Tyzzarella	12.1		<div><div></div><div></div></div>	≤20.0
Tyzzarella 4	15.1		<div><div></div><div></div></div>	≤20.0
Veillonella <sup>-</sup>	13.4		<div><div></div><div></div></div>	10.0-20.0
Veillonellaceae <sup>-</sup>	>30		<div><div></div><div></div></div>	≥10.0

Gut Commensals - Probiotic Organisms

Test Name	Current	Previous	Result	Reference
Bacillus coagulans	28.5		<div><div></div><div></div></div>	≥10.0
<div>Bifidobacterium bifidum</div>	5.2		<div><div></div><div></div></div>	≥10.0
Bifidobacterium breve	21.5		<div><div></div><div></div></div>	≥10.0
Bifidobacterium dentium	23.5		<div><div></div><div></div></div>	≥10.0
Bifidobacterium infantis	16.8		<div><div></div><div></div></div>	≥10.0
Bifidobacterium longum	29.7		<div><div></div><div></div></div>	≥10.0
Escherichia coli Nissle <sup>-</sup>	25.6		<div><div></div><div></div></div>	≥10.0
Lactobacillus acidophilus	29.3		<div><div></div><div></div></div>	≥10.0
Lactobacillus brevis	28.5		<div><div></div><div></div></div>	≥10.0



Gut Commensals - Probiotic Organisms

Test Name	Current	Previous	Result	Reference
Lactobacillus bulgaricus	24.8		<div><div></div><div></div></div> <div>09.9</div>	≥10.0
Lactobacillus casei	25.9		<div><div></div><div></div></div> <div>09.9</div>	≥10.0
Lactobacillus fermentum	20.1		<div><div></div><div></div></div> <div>09.9</div>	≥10.0
Lactobacillus paracasei	27.5		<div><div></div><div></div></div> <div>09.9</div>	≥10.0
Lactobacillus plantarum	>30		<div><div></div><div></div></div> <div>09.9</div>	≥10.0
Lactobacillus reuteri	28.7		<div><div></div><div></div></div> <div>09.9</div>	≥10.0
Lactobacillus rhamnosus	29.8		<div><div></div><div></div></div> <div>09.9</div>	≥10.0
Lactobacillus rhamnosus GG	26.9		<div><div></div><div></div></div> <div>09.9</div>	≥10.0
Lactobacillus salivarius	29.0		<div><div></div><div></div></div> <div>09.9</div>	≥10.0
Saccharomyces boulardii	24.7		<div><div></div><div></div></div> <div>09.9</div>	≥10.0
Streptococcus	14.0		<div><div></div><div></div><div></div></div> <div>09.920</div>	10.0-20.0
Streptococcus thermophilus	13.7		<div><div></div><div></div><div></div></div> <div>09.920</div>	10.0-20.0



## Risk and Limitations

This test has been developed and its performance characteristics determined by Vibrant America LLC., a CLIA certified lab and Vibrant Genomics, a CLIA and CAP certified lab. These assays have not been cleared or approved by the U.S. Food and Drug Administration. Vibrant Wellness provides additional contextual information on these tests and provides the report in a more descriptive fashion.

Gut Zoomer testing is performed at Vibrant Genomics and Vibrant America utilizing ISO-13485 developed technology. Vibrant America has effective procedures in place to protect against technical and operational problems. However, such problems may still occur. Examples include failure to obtain the result for a specific test due to circumstances beyond Vibrant's control. Vibrant may re-test a sample to obtain these results but upon re-testing the results may still not be obtained. As with all medical laboratory testing, there is a small chance that the laboratory could report incorrect results. A tested individual may wish to pursue further testing to verify any results.

Tested individuals should not change their diet, physical activity, or any medical treatments they are currently using based on the results without consulting their personal health care provider. The information in this report is intended for educational purposes only. While every attempt has been made to provide current and accurate information, neither the author nor the publisher can be held accountable for any errors or omissions. Tested individuals may find their experience is not consistent with Vibrant's selected peer reviewed scientific research findings of relative improvement for study groups. The science in this area is still developing and many personal health factors affect diet and health. Since subjects in the scientific studies referenced in this report may have had personal health and other factors different from those of tested individuals, results from these studies may not be representative of the results experienced by tested individuals. Further, some recommendations may or may not be attainable, depending on the tested individual's physical ability or other personal health factors. A limitation of this testing is that many of these scientific studies may have been performed in selected populations only. The interpretations and recommendations are done in the context of these studies, but the results may or may not be relevant to tested individuals of different or mixed ethnicities. Please note that pediatric ranges have not been established for these tests. Interference studies have not been established for individuals on immunosuppressive drugs.

Based on test results and other medical knowledge of the tested individual, health care providers might consider additional independent testing, or consult another health care provider or genetic counselor.

Vibrant Wellness makes no claims as to the diagnostic or therapeutic use of its tests or other informational materials. Vibrant Wellness reports and other information do not constitute medical advice and are not a substitute for professional medical advice. Please consult your healthcare practitioner for questions regarding test results, or before beginning any course of supplementation or dietary changes.

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