



3948070

COMPLETE MICROBIOME MAPPING

General Macroscopic Description

	Result	Markers
Stool Colour	Brown	Colour - Brown is the colour of normal stool. Other colours may indicate abnormal gut health.
Stool Form	Formed	Form - Sample form is categorised using the Bristol stool chart. A comment on stool appearance can be found in the comments section.
Mucous	Not Detected	Mucous - Mucous production may indicate the presence of an infection and/or inflammation.
Occult Blood	Negative	Blood (Macro) - The presence of blood in the stool may be the result of several causes besides colorectal bleeding, including hemorrhoids or gastrointestinal infection.

Short Chain Fatty Acids

	Result	Range	Units	
Short Chain Fatty Acids, Beneficial	58.2	> 13.6	umol/g	
Butyrate	14.1	10.8 - 33.5	%	
Acetate	68.6	44.5 - 72.4	%	
Propionate	14.0	0.0 - 32.0	%	
Valerate	3.3	0.5 - 7.0	%	

GIT Functional Markers

	Result	Range	Units	
Calprotectin.	15.0	0.0 - 50.0	ug/g	
Pancreatic Elastase	795.0	> 200.0	ug/g	
Secretory (slgA)	894.9	510.0 - 2040.0	ng/mL	
Zonulin	64.4	0.0 - 107.0	ng/mL	
Beta glucuronidase	1340.9	368.0 - 6266.0	U/g	
Steatocrit	<1.0	0.0 - 15.0	%	
a-Transglutaminase IgA	<20	0.0 - 100.0	units/L	

Microbiome Mapping Summary

Parasites & Worms

Dientamoeba fragilis.

Bacteria & Viruses

Citrobacter freundii.

Fungi and Yeasts

Key Phyla Microbiota

Firmicutes:Bacteroidetes Ratio

0.94

< 1.00

RATIO



Relative Commensal Abundance of the 6 Phyla groups can be found on page 4 of this report





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Parasites and Worms.

Parasitic Organisms

Result	Range	Units	
Cryptosporidium species	<dl < 1.0	x10 ⁵ org/g	
Entamoeba histolytica.	<dl < 1.0	x10 ⁵ org/g	
Giardia intestinalis	<dl < 1.0	x10 ⁵ org/g	
Blastocystis hominis.	<dl < 1.0	x10 ⁵ org/g	
Dientamoeba fragilis.	210.0 *H < 1.0	x10 ⁵ org/g	
Endolimax nana	<dl < 1.0	x10 ⁵ org/g	
Entamoeba coli.	<dl < 5.0	x10 ⁵ org/g	
Pentatrichomonas hominis	<dl < 1.0	x10 ⁵ org/g	

Worms

Ancylostoma duodenale, Roundworm	Not Detected		
Ascaris lumbricoides, Roundworm	Not Detected	Necator americanus, Hookworm	Not Detected
Trichuris trichiura, Whipworm	Not Detected	Enterobius vermicularis, Pinworm	Not Detected
Enterocytozoon spp	Not Detected	Hymenolepis spp, Tapeworm	Not Detected
Strongyloides spp, Roundworm	Not Detected	Taenia species, Tapeworm	Not Detected

Comment: Not Detected results indicate the absence of detectable DNA in the sample for the worms reported.
NOTE: Reflex testing is performed on clinically indicated samples

Opportunistic Bacteria/Overgrowth

Result	Range	Units	
Bacillus species.	<dl < 1.00	x10 ⁴ CFU/g	
Enterococcus faecalis	<dl < 1.00	x10 ⁵ CFU/g	
Enterococcus faecium	<dl < 1.00	x10 ⁵ CFU/g	
Morganella species	<dl < 1.00	x10 ⁵ CFU/g	
Pseudomonas species	<dl < 1.00	x10 ⁴ CFU/g	
Pseudomonas aeruginosa.	<dl < 3.00	x10 ⁴ CFU/g	
Staphylococcus species	<dl < 1.00	x10 ³ CFU/g	
Staphylococcus aureus	<dl < 5.00	x10 ³ CFU/g	
Streptococcus species	2.50 < 3.00	x10 ⁶ CFU/g	
Methanobrevibacter smithii	<dl < 3.50	x10 ⁵ CFU/g	
Desulfovibrio piger	<dl < 18.00	x10 ⁷ CFU/g	
Enterobacter cloacae complex.	0.79 < 5.00	x10 ⁵ CFU/g	

Potential Autoimmune Triggers

Citrobacter species.	<dl < 5.00	x10 ⁴ CFU/g	
Citrobacter freundii.	19.85 *H < 5.00	x10 ⁴ CFU/g	
Klebsiella species	<dl < 5.00	x10 ³ CFU/g	
Klebsiella pneumoniae.	<dl < 5.00	x10 ⁵ CFU/g	
Prevotella copri	<dl < 1.00	x10 ⁹ CFU/g	
Proteus species	<dl < 5.00	x10 ⁵ CFU/g	
Proteus mirabilis.	<dl < 1.00	x10 ⁴ CFU/g	
Fusobacterium species	0.85 < 10.00	x10 ⁴ CFU/g	

Fungi & Yeast

Result	Range	Units	
Candida species.	<dl < 5.00	x10 ⁵ CFU/g	
Candida albicans.	<dl < 5.00	x10 ⁴ CFU/g	
Geotrichum species.	<dl < 3.00	x10 ² CFU/g	
Saccharomyces cerevisiae.	<dl < 3.00	x10 ³ CFU/g	
Rhodotorula species.	<dl < 1.00	x10 ³ CFU/g	



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Bacterial Pathogens	Result	Range	Units	
Aeromonas hydrophila.	<dl	< 1.00	x10 ³ CFU/g	
Campylobacter species.	<dl	< 1.00	x10 ⁵ CFU/g	
C. difficile, Toxin A	<dl	< 1.00	x10 ⁴ CFU/g	
C. difficile, Toxin B	<dl	< 1.00	x10 ⁴ CFU/g	
Enterohemorrhagic E. coli	<dl	< 1.00	x10 ⁵ CFU/g	
Enteroinvasive E. coli/Shigella	<dl	< 1.00	x10 ³ CFU/g	
Enterotoxigenic E. coli LT/ST	<dl	< 1.00	x10 ⁵ CFU/g	
Shiga-like Toxin E. coli stx1	<dl	< 1.00	x10 ⁴ CFU/g	
Shiga-like Toxin E. coli stx2	<dl	< 1.00	x10 ⁴ CFU/g	
Salmonella species.	<dl	< 1.00	x10 ⁵ CFU/g	
Vibrio species.	<dl	< 1.00	x10 ⁴ CFU/g	
Yersinia species.	<dl	< 1.00	x10 ⁵ CFU/g	
Helicobacter pylori	<dl	< 1.0	x10 ³ CFU/g	

Comment: Helico Pylori virulence factors will be listed below if detected POSITIVE

H.pylori Virulence Factor, babA	Not Detected	H.pylori Virulence Factor, cagA	Not Detected
H.pylori Virulence Factor, dupA	Not Detected	H.pylori Virulence Factor, iceA	Not Detected
H.pylori Virulence Factor, oipA	Not Detected	H.pylori Virulence Factor, vacA	Not Detected
H.pylori Virulence Factor, virB	Not Detected	H.pylori Virulence Factor, virD	Not Detected

Viral Pathogens	Result	Range	Units
Adenovirus 40/41	Not Detected		
Norovirus GI/II	Not Detected		
Rotavirus A	Not Detected		
Sapovirus (I,II,IV,V)	Not Detected		
Astrovirus (hAstro)	Not Detected		

Normal Bacterial GUT Flora	Result	Range	Units	
Bacteroides fragilis	3.0	1.6 - 250.0	x10 ⁵ CFU/g	
Bifidobacterium species	21.7	> 6.7	x10 ⁵ CFU/g	
Bifidobacterium longum	19.7	> 5.2	x10 ⁵ CFU/g	
Enterococcus species	4.0	1.9 - 2000.0	x10 ³ CFU/g	
Escherichia species	2916.8	3.7 - 3800.0	x10 ⁴ CFU/g	
Lactobacillus species	104.2	8.6 - 6200.0	x10 ³ CFU/g	
Lactobacillus rhamnosus	13.0	8.3 - 885.0	x10 ³ CFU/g	
Clostridium species	40.1	5.0 - 50.0	x10 ⁷ CFU/g	
Oxalobacter formigenes	25.33	> 5.00	x10 ⁶ CFU/g	
Akkermansia muciniphila	32.71	1.00 - 50.00	x10 ⁷ CFU/g	
Faecalibacterium prausnitzii	250.4	200.0 - 3500.0	x10 ⁶ CFU/g	

Methodology:

GIT Functional markers performed by GCMS,EIA,FEIA.

Bacteriology,Virology,Fungi,Parasites & Worms performed by PCR,qPCR.

<dl = result below detectable limit. *H = Result greater than the reference range. *L = Result less than the reference range



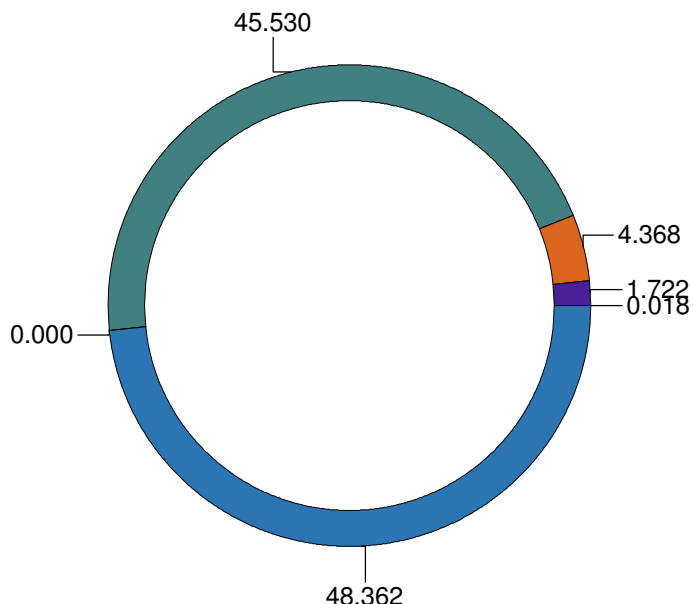
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Introduction:

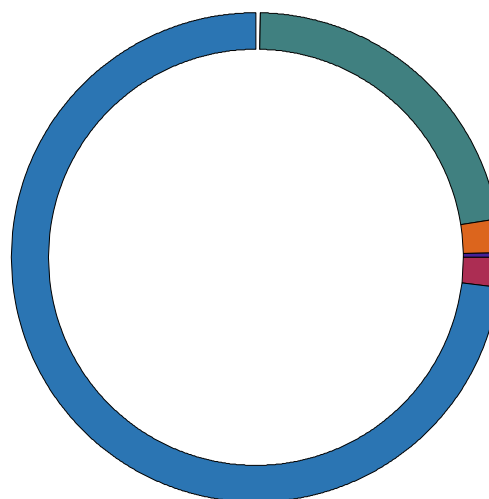
Your gut microbiome is a collective name for the 40 trillion cells and up to 1000 microbial species that include bacteria, viruses, fungi, parasites, and archaea and reside in our gut. The number of gut bacterial cells is approximately equal to the total number of human cells in our body, so if we consider only cell counts, we are only about half human. In terms of gene counts, the microbiome contains about 200 times more genes than the human genome, making bacterial genes responsible for over 99% of our body's gene content! Of all the microbial communities in the human body, the gut microbiome is by far the most dense, diverse, and physiologically important ecosystem to our overall health.

Relative Commensal Abundance	Result	Range	Units
 Bacteroidetes Phylum	48.362*L	50.000 - 95.000	%
 Firmicutes Phylum	45.530*H	3.500 - 40.000	%
 Proteobacteria Phylum	4.368	0.500 - 12.500	%
 Verrucomicrobia Phylum	1.722	0.000 - 2.400	%
 Actinobacteria Phylum	0.018	0.001 - 4.818	%
 Euryarchaeota Phylum	0.000	0.000 - 0.017	%

Your Phyla:



Healthy Phyla:



References:

NOTE: Relative abundance reference ranges have been based on a healthy population study.

King CH, et., al. (2019) Baseline human gut microbiota profile in healthy people and standard reporting template. PLoS One. 2019 Sep 11;14(9):e0206484.



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Pathogen Summary:

Macroscopy Comment

BROWN coloured stool is considered normal in appearance.

Faecal Occult Blood Negative:

Faecal occult blood has not been detected in this specimen. If the test result is negative and clinical symptoms persist, additional follow-up testing using other clinical methods is recommended.

Metabolism Comment

In a healthy gut Short Chain Fatty Acids (SCFAs) exhibited in the following proportions; Butyrate, Acetate, Propionate (16%:60%:24%).

The primary SCFAs butyrate, propionate and acetate are produced by predominant commensal bacteria via fermentation of soluble dietary fibre and intestinal mucus glycans.

Key producers of SCFAs include *Faecalibacterium prausnitzii*, *Akkermansia muciniphila*, *Bacteroides fragilis*, *Bifidobacterium*, *Clostridium* and *Lactobacillus* Spp.

The SCFAs provide energy for intestinal cells and regulate the actions of specialised mucosal cells that produce anti-inflammatory and antimicrobial factors, mucins that constitute the mucus barriers, and gut active peptides that facilitate appetite regulation and euglycemia. Abnormal SCFAs may be associated with dysbiosis, intestinal barrier dysfunction and inflammatory conditions.

SCFA PRODUCTION TABLE

BACTERIA	BUTYRATE	PROPIONATE	ACETATE
<i>Akkermansia muciniphila</i>		▲▲▲	▲▲
<i>Anaerostipes caccae</i>	▲▲▲		
<i>Bacteroides</i> spp.		▲▲▲	
<i>Bifidobacterium</i> spp.		▲	▲▲▲
<i>Blautia obeum</i>		▲▲	▲▲▲
<i>Coprococcus eutactus</i>	▲		
<i>Escherichia coli</i>			▲
<i>Eubacterium rectale</i>	▲▲		
<i>Faecalibacterium prausnitzii</i>	▲▲▲		
<i>Lactobacillus</i> spp.	▲	▲	▲
<i>Roseburia homini</i>	▲▲		
<i>Ruminococcus bromii</i>	▲		▲
<i>Subdoligranulum variabile</i>	▲		

KEY

▲ Low Producers

▲▲ Moderate Producers

▲▲▲ High Producers

GIT Markers Comment

PANCREATIC ELASTASE: Normal exocrine pancreatic function.

Pancreatic Elastase reflects trypsin, chymotrypsin, amylase and lipase activity.

This test is not affected by supplements of pancreatic enzymes.

Healthy individuals should be producing >500 ug/g of PE-1 under normal/healthy conditions.

PE-1 levels between 200 - 500 ug/g may indicate suboptimal production.

PE-1 levels <200 ug/g indicate clear inadequate production.

The clinician should therefore consider digestive enzyme supplementation if one or more of the following conditions is present:

Loose watery stools, Undigested food in the stools, Post-prandial abdominal pain, Nausea or colicky abdominal pain, Gastroesophageal reflux symptoms, Bloating or food intolerance.

Testing performed by chemiluminescence immunoassay (CLIA).

CALPROTECTIN Normal:

Faecal calprotectin values <50 ug/g are not indicative of inflammation in the gastrointestinal tract. Subjects with low faecal



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CLARE SCHOLES
29-May-1985 **Female**

4 WALPOLE STREET
MOUNT MARTHA VIC 3934

LAB ID : 3948070
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calprotectin levels normally do not need to be further investigated by invasive procedures. In patients with strong clinical indications of intestinal inflammation, repeat testing may be useful.

Test performed by Phadia ELIA Fluorescence enzyme immunoassay (FEIA).

SECRETORY IGA NORMAL:

Secretory IgA is within range.

Secretory IgA represents the first line of defence of the gastrointestinal mucosa and is central to the normal function of the gastrointestinal tract as an immune barrier. Review this level with other pathogenic bacteria and normal commensal flora. Lower levels within reference range should be interpreted clinically.

ZONULIN HIGH NORMAL:

Zonulin is a protein that modulates intestinal barrier function and can also be considered as a potential inflammatory marker.

Although this result is within range, the result should be interpreted with patient clinical symptoms as well as reviewing the presence of other proteobacteria that may be the result of increased Zonulin.

BETA-GLUCURONIDASE NORMAL:

B-Glucuronidase is considered normal and is within reference range.

Parasites/Worms Comment

ELEVATED DIENTAMOEBIA FRAGILIS LEVEL:

Dientamoeba fragilis appears to be extremely common and may have a cosmopolitan distribution, although there are large variations in prevalence. Dientamoeba fragilis has been linked to intestinal symptoms, especially in children. The most common symptoms associated with this organism are abdominal pain, intermittent diarrhoea, bloating and anorexia.

TREATMENT SUGGESTIONS:

Mild symptoms are self-limiting.

If treatment is warranted, metronidazole for 10 days or a single 2g dose of Tinidazole may be used. Tetracycline has also proven effective in adults.

Rule out allergy to above medication before prescribing/taking. Consult ID specialist if patient is showing severe symptoms or immunocompromised.

Opportunistic Bacteria Comment

METHANOBREVIBACTER SMITHII:

PHYLUM: Euryarchaeota

DESCRIPTION:

Methanobrevibacter smithii is a methane-producing microbe that plays an important role in the gut ecosystem by facilitating carbohydrate fermentation and production of short-chain fatty acids by commensal bacteria. Approximately 70% of the healthy cohort has below detectable levels of Methanobrevibacter smithii.

Potential Autoimmune Comments

CITROBACTER FREUNDII ELEVATED:

PHYLUM: Proteobacteria

DESCRIPTION:

Citrobacter freundii is a species of facultative anaerobic Gram-negative predominantly soil-dwelling bacteria, but can also be found in water, sewage, food, and the intestinal tract. Citrobacter freundii is an emerging opportunistic pathogen and elevation may be a cause of nosocomial infections, diarrheal infections and has increasingly become multidrug resistant (MDR).

TREATMENT SUGGESTIONS:

A practitioner may take into consideration a range of patient factors and symptoms to determine if treatment is necessary.

Citrobacter freundii infection is usually treated with antibiotics like fluoroquinolones, carbapenems and cephalosporins. The treatment plan depends up on the vulnerability of the microbe to the antibiotics and the degree of infection. Treatments may also include herbal antimicrobials and/or probiotics. Rule out allergy to above medication before prescribing/taking.



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Phyla Microbiota Comment

FIRMICUTES (PHYLUM) ELEVATED:

DESCRIPTION:

Firmicutes are a phylum of diverse bacteria which are primarily grouped into classes, Bacilli, Clostridia, Erysipelotrichia and Negativicutes. They are found in various environments, including the intestinal tract, and the group includes some notable pathogens. Firmicutes are involved in energy resorption in the gut microbiome and levels may be affected by diet. Elevated levels and disturbance of gastrointestinal microbiome balance, particularly Firmicutes/Bacteroidetes ratio, have been associated with inflammation, obesity, diabetes and with a high sugar/ fat diet.

TREATMENT SUGGESTIONS: Consider using Bifidobacterium or Saccharomyces containing probiotics. It may also be suggested to optimise the patient diet. A lower fat diet may help to normalize Firmicutes levels.

Normal Bacterial Flora Comment

BIFIDOBACTERIUM SPECIES LOW NORMAL:

PHYLUM: Actinobacteria

DESCRIPTION:

Bifidobacterium is a genus of gram-positive, nonmotile anaerobic bacteria that are ubiquitous inhabitants of the gastrointestinal tract and considered a probiotic. Bifidobacterium species prevent diarrhea and intestinal infections, alleviate constipation, and stimulate the immune system. Whilst, the Bifidobacterium species level is in range, it is below the average mean.

Lower levels may result from low fibre intake or reduced mucosal health. Additionally, Lower levels may be associated with irritable bowel syndrome or with pathogenic bacteria infection.

TREATMENT SUGGESTIONS: Treatment may involve the use of Bifidobacterium containing probiotics and treatment of any intestinal infections.

LACTOBACILLUS SPECIES LOW NORMAL:

PHYLUM: Firmicutes

DESCRIPTION:

Lactobacillus species is below average.

Lactobacillus is a genus of Gram-positive rod-shaped, non-spore-forming bacteria which constitute a significantly important component of the human gastrointestinal system.

Lactobacillus exhibits a mutualistic relationship with the human body, as it protects the host against potential invasions by pathogens, and in turn, the host provides a source of nutrients. Lactobacilli are among the most common probiotic found in food such as yogurt, and it is diverse in its application to maintain gut health and to help treat ailments clinically such as diarrhea and obesity.

Lactobacillus species promote the anti-inflammatory response, thereby supporting the improvement of symptoms pertaining to asthma, chronic obstructive pulmonary disease, neuroinflammatory diseases, cardiovascular diseases, inflammatory bowel disease (IBD) and chronic infections in patients. Reduced levels increase the risk of infections and inflammation. Studies have also revealed that chronic psychological stress and alcohol use may be associated with a decrease in Lactobacillus species, as well as antibiotic / medication use.

TREATMENT SUGGESTIONS: Treatment may involve the use of Lactobacillus containing probiotics and treatment of any intestinal infections.



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The Four “R” Treatment Protocol

REMOVE	Using a course of antimicrobial, antibacterial, antiviral or anti parasitic therapies in cases where organisms are present. It may also be necessary to remove offending foods, gluten, or medication that may be acting as antagonists. Consider testing IgG96 foods as a tool for removing offending foods.	ANTIMICROBIAL	Oil of oregano, berberine, caprylic acid
		ANTIBACTERIAL	Liquorice, zinc carnosine, mastic gum, tribulus, berberine, black walnut, caprylic acid, oil of oregano
		ANTIFUNGAL	Oil of oregano, caprylic acid, berberine, black walnut
		ANTIPARASITIC	Artemesia, black walnut, berberine, oil of oregano
		ANTIVIRAL	Cat's claw, berberine, echinacea, vitamin C, vitamin D3, zinc, reishi mushrooms
		BIOFILM	Oil of oregano, protease
REPLACE	In cases of maldigestion or malabsorption, it may be necessary to restore proper digestion by supplementing with digestive enzymes.	DIGESTIVE SUPPORT	Betaine hydrochloride, tilactase, amylase, lipase, protease, apple cider vinegar, herbal bitters
REINOCULATE	Recolonisation with healthy, beneficial bacteria. Supplementation with probiotics, along with the use of prebiotics helps re-establish the proper microbial balance.	PREBIOTICS	Slippery elm, pectin, larch arabinogalactans
		PROBIOTICS	Bifidobacterium animalis subsp. lactis, lactobacillus acidophilus, lactobacillus plantarum, lactobacillus casei, bifidobacterium breve, bifidobacterium bifidum, bifidobacterium longum, lactobacillus salivarius, lactobacillus paracasei, lactobacillus rhamnosus, Saccharomyces boulardii
REPAIR & REBALANCE	Restore the integrity of the gut mucosa by giving support to healthy mucosal cells, as well as immune support. Address whole body health and lifestyle factors so as to prevent future GI dysfunction.	INTESTINAL MUCOSA IMMUNE SUPPORT	Saccharomyces boulardii, lauric acid
		INTESTINAL BARRIER REPAIR	L-Glutamine, aloe vera, liquorice, marshmallow root, okra, quercetin, slippery elm, zinc carnosine, Saccharomyces boulardii, omega 3 essential fatty acids, B vitamins
		SUPPORT CONSIDERATION	Sleep, diet, exercise, and stress management