



3903425

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	POSITIVE	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	39.6	> 13.6	umol/g	
Butyrate	12.0	10.8 - 33.5	%	
Acetate	70.0	44.5 - 72.4	%	
Propionate	14.6	0.0 - 32.0	%	
Valerate	3.3	0.5 - 7.0	%	

GIT Functional Markers	Result	Range	Units	
Calprotectin.	410.0 *H	0.0 - 50.0	ug/g	
Pancreatic Elastase	>500.0	> 200.0	ug/g	
Secretory (slgA)	890.0	510.0 - 2010.0	ug/g	
Zonulin	104.0	0.0 - 107.0	ng/g	
Beta glucuronidase	4745.0 *H	337.0 - 4433.0	U/g	
Steatocrit	4.0	0.0 - 15.0	%	
a-Transglutaminase IgA	94.0	0.0 - 100.0	units/L	

Microbiome Mapping Summary

Parasites & Worms	Bacteria & Viruses	Fungi and Yeasts
	Proteus mirabilis. Fusobacterium species	

Key Phyla Microbiota

Firmicutes:Bacteroidetes Ratio

0.46

< 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	
<dl	< 1.0	x10 ⁶ org/g	●
<dl	< 1.0	x10 ⁴ org/g	●
<dl	< 1.0	x10 ³ org/g	●
<dl	< 1.0	x10 ³ org/g	●
<dl	< 1.0	x10 ⁵ org/g	●
<dl	< 1.0	x10 ⁴ org/g	●
<dl	< 5.0	x10 ⁶ org/g	●
<dl	< 1.0	x10 ² org/g	●

Worms

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	
<dl	< 1.00	x10 ⁵ CFU/g	●
<dl	< 1.00	x10 ⁴ CFU/g	●
<dl	< 1.00	x10 ⁴ CFU/g	●
<dl	< 1.00	x10 ³ CFU/g	●
<dl	< 1.00	x10 ⁴ CFU/g	●
<dl	< 3.00	x10 ² CFU/g	●
<dl	< 1.00	x10 ⁴ CFU/g	●
<dl	< 5.00	x10 ² CFU/g	●
2.33	< 3.00	x10 ³ CFU/g	●
<dl	< 3.50	x10 ⁹ CFU/g	●
<dl	< 18.00	x10 ⁷ CFU/g	●
<dl	< 5.00	x10 ⁶ CFU/g	●

Potential Autoimmune Triggers

<dl	< 5.00	x10 ⁵ CFU/g	●
<dl	< 5.00	x10 ⁵ CFU/g	●
<dl	< 5.00	x10 ³ CFU/g	●
<dl	< 5.00	x10 ⁴ CFU/g	●
<dl	< 1.00	x10 ⁷ CFU/g	●
<dl	< 5.00	x10 ⁴ CFU/g	●
5.49 *H	< 1.00	x10 ³ CFU/g	●
120.65 *H	< 10.00	x10 ⁷ CFU/g	●

Fungi & Yeast

Result	Range	Units	
<dl	< 5.00	x10 ³ CFU/g	●
<dl	< 5.00	x10 ² CFU/g	●
<dl	< 3.00	x10 ² CFU/g	●
<dl	< 3.00	x10 ³ CFU/g	●
<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 ³ CFU/g	
C. difficile, Toxin A	<dl	< 1.00	x10 ³ CFU/g	
C. difficile, Toxin B	<dl	< 1.00	x10 ³ CFU/g	
Enterohemorrhagic E. coli	<dl	< 1.00	x10 ³ CFU/g	
Enteroinvasive E. coli/Shigella	<dl	< 1.00	x10 ³ CFU/g	
Enterotoxigenic E. coli LT/ST	<dl	< 1.00	x10 ³ CFU/g	
Shiga-like Toxin E. coli stx1	<dl	< 1.00	x10 ³ CFU/g	
Shiga-like Toxin E. coli stx2	<dl	< 1.00	x10 ³ CFU/g	
Salmonella species.	<dl	< 1.00	x10 ⁴ CFU/g	
Vibrio species.	<dl	< 1.00	x10 ⁵ 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	1.4 *L	1.6 - 250.0	x10 ⁹ CFU/g	
Bifidobacterium species	10.2	> 6.7	x10 ⁷ CFU/g	
Bifidobacterium longum	9.3	> 5.2	x10 ⁶ CFU/g	
Enterococcus species	579.4	1.9 - 2000.0	x10 ⁵ CFU/g	
Escherichia species	4305.0 *H	3.7 - 3800.0	x10 ⁶ CFU/g	
Lactobacillus species	2821.0	8.6 - 6200.0	x10 ⁵ CFU/g	
Lactobacillus Rhamnosus	19.0	8.3 - 885.0	x10 ⁴ CFU/g	
Clostridium species	20.2	5.0 - 50.0	x10 ⁶ CFU/g	
Oxalobacter formigenes	11.00 *L	> 15.00	x10 ⁷ CFU/g	
Akkermansia muciniphila	5.00	1.00 - 50.00	x10 ³ CFU/g	
Faecalibacterium prausnitzii	412.8	200.0 - 3500.0	x10 ³ 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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ASHA CLARKE
17-Jul-1978 **Female**

20 CRINUM CRESCENT
SOUTHPORT QLD 4215







LAB ID : 3903425
UR NO. : 6201648
Collection Date : 04-Jul-2023
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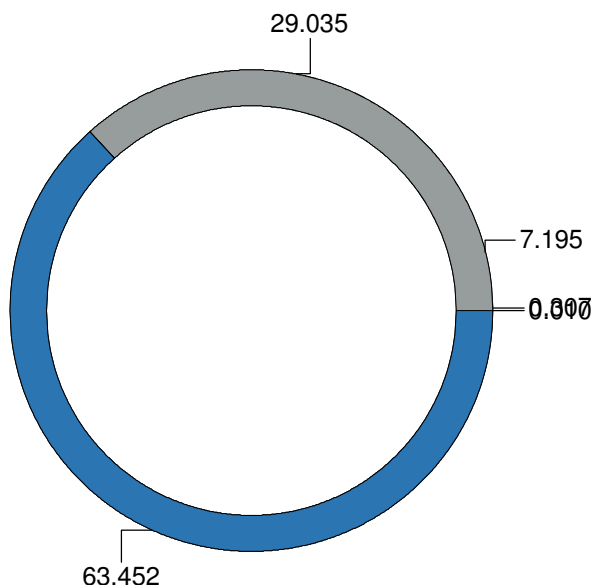
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Introduction:

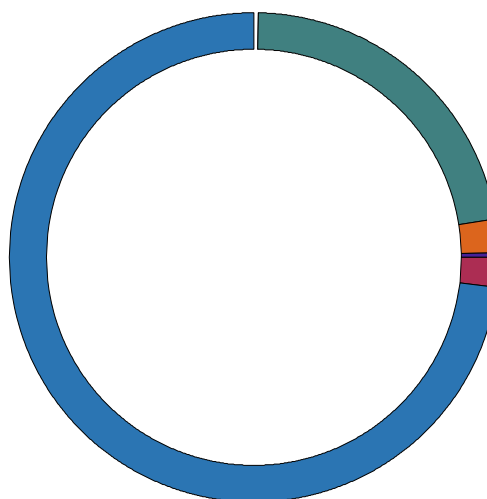
Your gut microbiome is a collective name for the 40 trillion cells and up to 1000 microbial species that include bacteria, viruses, fungi, parasites, and archaea and reside in our gut. The number of gut bacterial cells is approximately equal to the total number of human cells in our body, so if we consider 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	63.452	50.000 - 95.000	%
 Firmicutes Phylum	29.035	3.500 - 40.000	%
 Proteobacteria Phylum	7.195	0.500 - 12.500	%
 Verrucomicrobia Phylum	0.307	0.000 - 2.400	%
 Actinobacteria Phylum	0.010	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 POSITIVE:

Faecal occult blood has been detected in this specimen. The presence of blood in the stool may be the result of several causes besides colorectal bleeding, including hemorrhoids or gastrointestinal infection. Results should be considered with other clinical information available to the physician.

Please note: A positive result indicates that the sample likely contains a human haemoglobin concentration >20ng/ml (Limit of detection).

Review this result with other inflammation markers such as calprotectin.

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



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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.

ELEVATED CALPROTECTIN:

Elevated faecal calprotectin indicates a high probability of intestinal inflammation.

For patients with known inflammatory bowel disease in remission, faecal calprotectin above 50 ug/g is associated with an increased risk of relapse over the next 12 months. In patients with faecal calprotectin below 50ug/g with strong clinical indications of intestinal inflammation, repeat testing may be useful. In small bowel Crohn's disease, the faecal calprotectin may not be elevated. Elevated faecal calprotectin may occur with other conditions including colorectal cancer, NSAID ulceration, coeliac disease, diverticulitis and chronic inflammation.

Further investigative procedures are necessary to determine the cause of inflammation.

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 ELEVATED:

Beta-glucuronidase is a bacterial enzyme that may limit the body's ability to excrete compounds such as drugs, hormones, and environmental toxins. Certain bacteria may also increase Beta-glucuronidase such as elevated levels of E.coli.

Treatment:

Consider Calcium-D-glucarate which may assist with lowering B-glucuronidase levels. It is also suggested to introduce a low-calorie/vegetarian diet for 4 weeks which may also be beneficial with lowering faecal B-glucuronidase levels. Additionally, one human study has suggested that consuming glucomannan can reduce fecal beta-glucuronidase activity. Glucomannan is a type of prebiotic fiber found in konjac root which is commonly used to make low calorie pasta and noodles.

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

PROTEUS MIRABILIS ELEVATED:

PHYLUM: Proteobacterium

DESCRIPTION:

Proteus mirabilis is a gram-negative facultative anaerobe with swarming motility and is found abundantly in soil and water, as well as being part of the normal human intestinal flora. It may act as a potential pathogen, with elevation associated with gastrointestinal infection and diarrhea, nosocomial infections, urinary tract infections and may also be seen with a high fat diet or in obesity.



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Proteus may contribute to loose stools or diarrhea.

TREATMENT SUGGESTIONS: If treatment is warranted, trimethoprim/sulfamethoxazole or fluoroquinolone may be used. The use of herbal antimicrobials may also be effective. Rule out allergy to above medication before prescribing/taking.

FUSOBACTERIUM SPECIES ELEVATED:

PHYLUM: Fusobacteriota

DESCRIPTION:

Fusobacterium species are gram-negative bacteria and are common members of the human oral and faecal microbiome. It has been demonstrated to promote the release of intestinal inflammatory factors and disrupt the intestinal barrier function. As such F. nucleatum elevation may contribute to the etiology of some gastrointestinal disorders, such as appendicitis, colon cancer, and inflammatory bowel disease (IBD). It may also induce an increase in secretory IgA and a decrease in beneficial bacteria levels such as Lactobacillus. Review this level with faecal calprotectin.

TREATMENT SUGGESTIONS: If treatment is warranted, effective antibiotics may include metronidazole or erythromycin. The use of herbal antimicrobials (Tea polyphenols- green and black tea extracts and peppermint) and probiotic treatment may also be effective. Rule out allergy to above medication before prescribing/taking.



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Normal Bacterial Flora Comment

BACTEROIDES FRAGILIS LOW:

PHYLUM: Bacteroidetes

DESCRIPTION: Bacteroides fragilis is an anaerobic, Gram-negative bacterium. It is part of the normal microbiota of the human colon and is generally commensal. Bacteroides fragilis plays an intricate role in the human colon and usually has a beneficial relationship with the host. Low Bacteroides fragilis levels have been associated with inflammatory bowel disease and Crohn's.

TREATMENT SUGGESTIONS: Treatment may involve the use of probiotics and dietary modification.

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.

ESCHERICHIA SPECIES ELEVATED:

PHYLUM: Proteobacteria

DESCRIPTION:

Escherichia is a genus of Gram-negative, non-spore-forming, facultatively anaerobic, rod-shaped bacteria and normal inhabitants of the gastrointestinal tract. Species include E. albertii, E. fergusonii, E. hermannii, E. marmotae and most notably E. coli. High levels may be indicative of increased intestinal inflammatory activity and be associated with irritable bowel syndrome, Crohn's, ulcerative colitis and diarrhea. Studies have also revealed that chronic psychological stress may be associated with an increase in E.Coli colonisation.

TREATMENT SUGGESTIONS: Commensal probiotic cocktails are suggested to prevent and reverse gut elevated colonization.

OXOLOBACTER FORMIGENES LOW:

PHYLUM: Proteobacterium

DESCRIPTION:

Oxalobacter formigenes is a Gram negative oxalate-degrading anaerobic bacterium. Oxalate is formed in the liver by amino acid catabolism as well as present in a wide range of foods including tea, coffee, chocolate and certain fruits and vegetables. High concentration of oxalate in the urine is related to the potential formation of calcium oxalate kidney stones. Oxalobacter Formigenes is the main known bacterial species involved in oxalate degradation in the gut and maintains oxalate homeostasis. Levels of O. Formigenes tends to decrease with age as well as with the use of antibiotics or other drugs. Low levels may be associated with calcium oxide stone formation, inflammatory bowel disease or Crohn's.

TREATMENT SUGGESTIONS:

Treatment options include probiotic treatment and low oxalate diet modification. Urinary oxalate levels may also need to be investigated.



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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 subsp 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