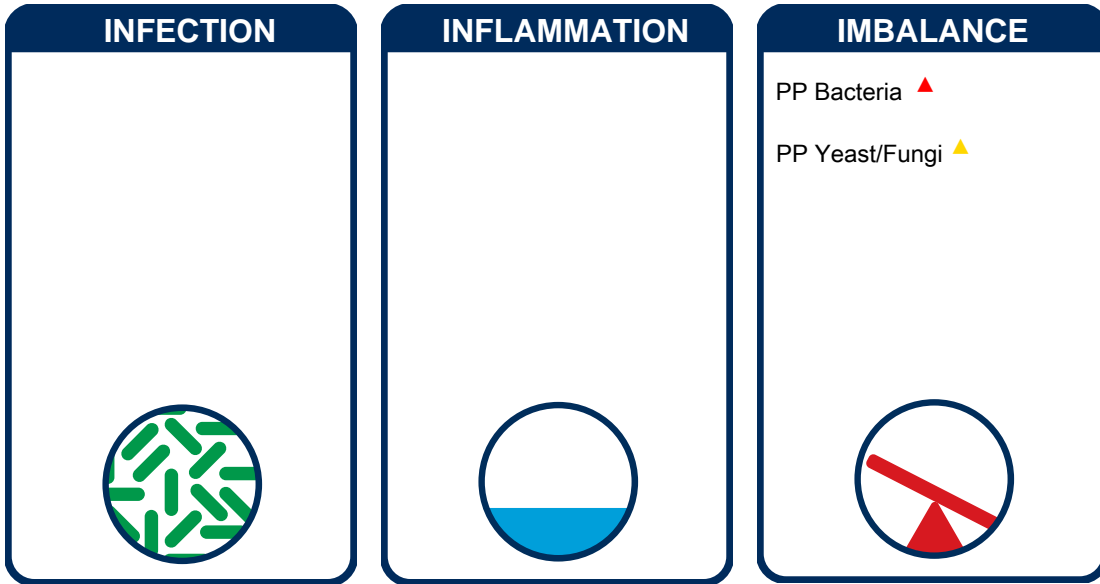


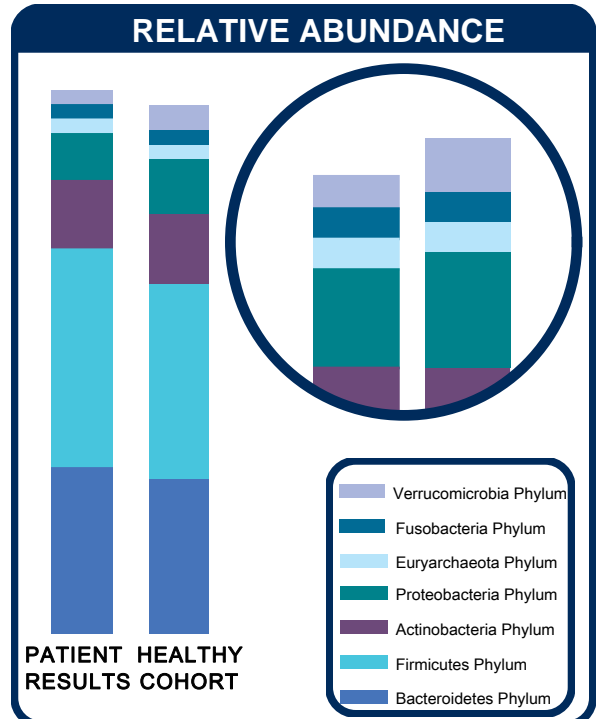
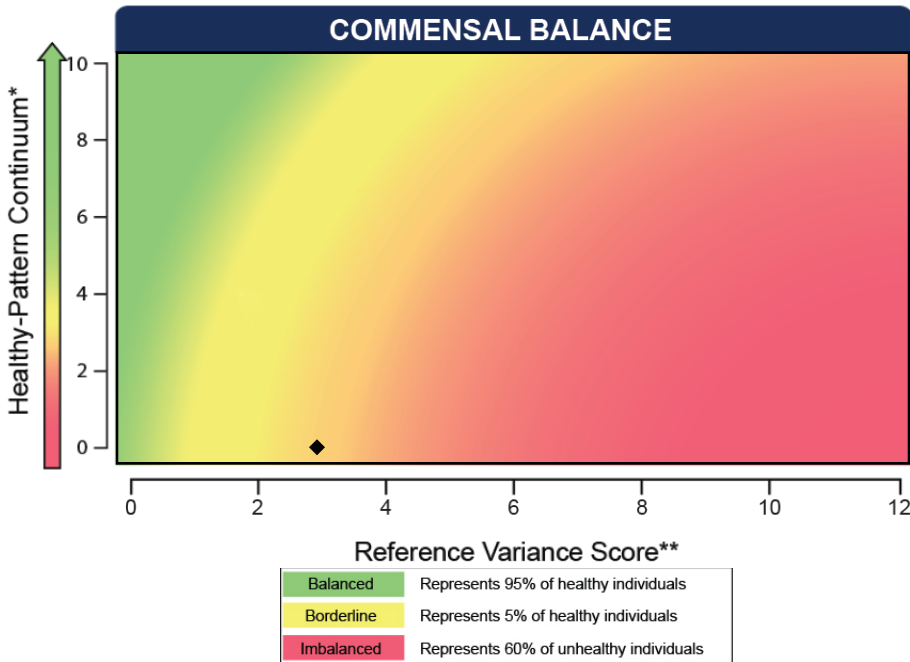


2205 GI Effects™ Microbial Ecology Profile - Stool

Interpretation At-a-Glance



See individual sections for detailed results



\*A progressive ranking scale based on a Genova proprietary algorithm that differentiates healthy and unhealthy commensal patterns.

\*\*The total number of Commensal Bacteria (PCR) that are out of reference ranges for this individual.

## Gastrointestinal Microbiome (PCR)

## Commensal Bacteria (PCR)

Result  
CFU/g stoolQUINTILE DISTRIBUTION  
1st | 2nd | 3rd | 4th | 5thReference Range  
CFU/g stool

## Bacteroidetes Phylum

<i>Bacteroides uniformis</i>	4.7E8		<=9.5E8
<i>Phocaeicola vulgatus</i>	4.9E8		<=8.3E8
<i>Barnesiella spp.</i>	1.6E8		3.0E6-2.9E8
<i>Odoribacter spp.</i>	4.0E7		<=9.5E7
<i>Prevotella spp.</i>	1.3E9		6.6E7-3.8E9

## Firmicutes Phylum

<i>Anaerotruncus colihominis/massiliensis</i>	<DL		<=2.0E7
<i>Butyrivibrio crossotus</i>	<DL		<=3.3E7
<i>Clostridium spp.</i>	7.0E5		<=1.5E7
<i>Coprococcus eutactus</i>	<DL		<=1.2E8
<i>Faecalibacterium prausnitzii</i>	3.2E7		1.1E6-1.1E9
<i>Lactobacillus spp.</i>	<DL		<=1.6E6
<i>Pseudoflavonifractor spp.</i>	3.2E6		1.3E4-2.9E7
<i>Roseburia spp.</i>	4.0E8		3.6E5-4.6E8
<i>Ruminococcus bromii</i>	<DL		<=1.5E9
<i>Veillonella spp.</i>	1.9E7 H		<=4.1E6

## Actinobacteria Phylum

<i>Bifidobacterium spp.</i>	1.7E9 H		4.6E5-2.6E8
<i>Bifidobacterium longum subsp. longum</i>	7.6E8 H		<=1.3E8
<i>Collinsella aerofaciens</i>	1.7E8 H		<=1.3E8

## Proteobacteria Phylum

<i>Desulfovibrio piger</i>	<DL		<=5.4E7
<i>Escherichia coli</i>	<DL		<=7.5E6
<i>Oxalobacter formigenes</i>	<DL		<=1.1E7

## Euryarchaeota Phylum

<i>Methanobrevibacter smithii</i>	<DL		<=2.0E7
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## Fusobacteria Phylum

<i>Fusobacterium spp.</i>	<DL		<=1.8E5
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## Verrucomicrobia Phylum

<i>Akkermansia muciniphila</i>	<DL L		>=8.5E3
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The gray-shaded portion of a quintile reporting bar represents the proportion of the reference population with results below detection limit.

Commensal results and reference range values are displayed in a computer version of scientific notation, where the capital letter "E" indicates the exponent value (e.g., 7.3E6 equates to  $7.3 \times 10^6$  or 7,300,000).

The methodology for the PCR Commensal Bacteria has been updated to qPCR. The reference ranges have been updated accordingly.

The names of some of the bacteria have been updated as a result of taxonomy changes and method improvements.



## Gastrointestinal Microbiome (Culture)

Human microflora is influenced by environmental factors and the competitive ecosystem of the organisms in the GI tract. Pathogenic significance should be based upon clinical symptoms.

Microbiology Legend			
<b>NG</b>	<b>NP</b>	<b>PP</b>	<b>P</b>
<b>No Growth</b>	<b>Non-Pathogen</b>	<b>Potential Pathogen</b>	<b>Pathogen</b>

### Additional Bacteria

**Non-Pathogen:** Organisms that fall under this category are those that constitute normal, commensal flora, or have not been recognized as etiological agents of disease.

**Potential Pathogen:** Organisms that fall under this category are considered potential or opportunistic pathogens when present in heavy growth.

**Pathogen:** The organisms that fall under this category have a well-recognized mechanism of pathogenicity in clinical literature and are considered significant regardless of the quantity that appears in the culture.

### Bacteriology (Culture)

*Lactobacillus spp.*

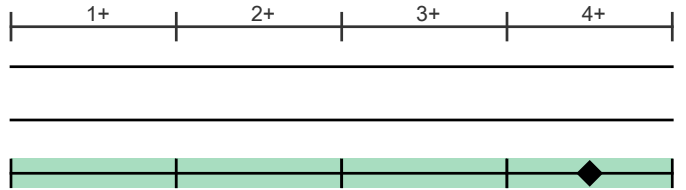
NG

*Escherichia coli*

NG

*Bifidobacterium (Anaerobic Culture)*

4+ NP



### Additional Bacteria

*Klebsiella ornithinolytica*

4+ NP

*Citrobacter species*

4+ PP

*Staphylococcus aureus*

1+ NP

*Pantoea species*

4+ NP

*Enterococcus faecalis*

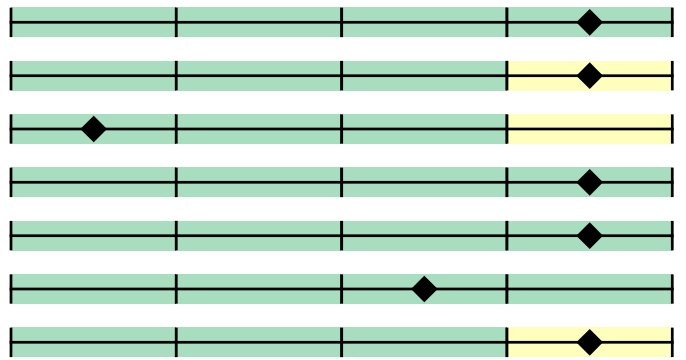
4+ NP

*Klebsiella ozaenae*

3+ NP

*Proteus mirabilis*

4+ PP



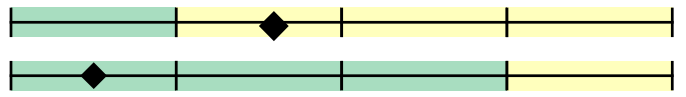
### Mycology (Culture)

*Candida albicans/dubliniensis*

1+ NP

*Yeast, not Candida albicans*

1+ NP



## KOH Preparation for Yeast

Methodology: Potassium Hydroxide (KOH) Preparation for Yeast

### Potassium Hydroxide (KOH) Preparation for Yeast

These yeast usually represent the organisms isolated by culture. In the presence of a negative yeast culture, microscopic yeast may reflect organisms not viable enough to grow in culture. The presence of yeast on KOH prep should be correlated with the patient's symptoms. However, moderate to many yeast suggests yeast overgrowth.

#### Results

KOH Preparation, stool

Few Yeast Present

The result is reported as the amount of yeast seen microscopically:

Rare: 1-2 per slide

Few: 2-5 per high power field (HPF)

Moderate: 5-10 per HPF

Many: >10 per HPF



## Parasitology

### Microscopic O&P Results

Microscopic O&P is capable of detecting all described gastrointestinal parasites. The organisms listed in the box represent those commonly found in microscopic stool analysis. Should an organism be detected that is not included in the list below, it will be reported in the Additional Results section. These results were obtained using wet preparation(s) and trichrome stained smear. For an extensive reference of all potentially detectable organisms, please visit [www.gdx.net/product/gi-effects-comprehensive-stool-test](http://www.gdx.net/product/gi-effects-comprehensive-stool-test)

Genus/species	Result
<b>Nematodes - roundworms</b>	
<i>Ancylostoma/Necator (Hookworm)</i>	Not Detected
<i>Ascaris lumbricoides</i>	Not Detected
<i>Capillaria philippinensis</i>	Not Detected
<i>Enterobius vermicularis</i>	Not Detected
<i>Strongyloides stercoralis</i>	Not Detected
<i>Trichuris trichiura</i>	Not Detected
<b>Cestodes - tapeworms</b>	
<i>Diphyllobothrium latum</i>	Not Detected
<i>Dipylidium caninum</i>	Not Detected
<i>Hymenolepis diminuta</i>	Not Detected
<i>Hymenolepis nana</i>	Not Detected
<i>Taenia spp.</i>	Not Detected
<b>Trematodes - flukes</b>	
<i>Clonorchis/Opisthorchis spp.</i>	Not Detected
<i>Fasciola spp./Fasciolopsis buski</i>	Not Detected
<i>Heterophyes/Metagonimus</i>	Not Detected
<i>Paragonimus spp.</i>	Not Detected
<i>Schistosoma spp.</i>	Not Detected
<b>Protozoa</b>	
<i>Balantidium coli</i>	Not Detected
<i>Blastocystis spp.</i>	Not Detected
<i>Chilomastix mesnili</i>	Not Detected
<i>Cryptosporidium spp.</i>	Not Detected
<i>Cyclospora cayetanensis</i>	Not Detected
<i>Dientamoeba fragilis</i>	Not Detected
<i>Entamoeba coli</i>	Not Detected
<i>Entamoeba histolytica/dispar</i>	Not Detected
<i>Entamoeba hartmanii</i>	Not Detected
<i>Entamoeba polecki</i>	Not Detected
<i>Endolimax nana</i>	Not Detected
<i>Giardia</i>	Not Detected
<i>Iodamoeba buetschlii</i>	Not Detected
<i>Cystoisospora spp.</i>	Not Detected
<i>Trichomonads (e.g. Pentatrichomonas)</i>	Not Detected
<b>Additional Findings</b>	
White Blood Cells	Not Detected
Charcot-Leyden Crystals	Not Detected
<b>Other Infectious Findings</b>	

## Parasitology

### PCR Parasitology - Protozoa

Methodologies: DNA by PCR, Next Generation Sequencing

Organism	Result	Units		Expected Result
<i>Blastocystis</i> spp.	<2.14e2	femtograms/microliter Cary Blair stool	Not Detected	Not Detected
<i>Cryptosporidium parvum/hominis</i>	<1.76e2	genome copies/microliter Cary Blair stool	Not Detected	Not Detected
<i>Cyclospora cayetanensis</i>	<2.65e2	genome copies/microliter Cary Blair stool	Not Detected	Not Detected
<i>Dientamoeba fragilis</i>	<1.84e2	genome copies/microliter Cary Blair stool	Not Detected	Not Detected
<i>Entamoeba histolytica</i>	<9.64e1	genome copies/microliter Cary Blair stool	Not Detected	Not Detected
<i>Giardia</i>	<1.36e1	genome copies/microliter Cary Blair stool	Not Detected	Not Detected

### Additional Results

	Result
Consistency††	Not Given

††Results provided from patient input.

### Zonulin Family Peptide

Methodology: EIA	Result	Reference Range
Zonulin Family Peptide, Stool	122.5	22.3-161.1 ng/mL

1

#### Reference:

- Scheffler L, et al. Widely Used Commercial ELISA Does Not Detect Precursor of Haptoglobin2, but Recognizes Properdin as a Potential Second Member of the Zonulin Family. *Front Endocrinol.* 2018;9:22.

Tests were developed and their performance characteristics determined by Genova Diagnostics. Unless otherwise noted with \*, the assays have not been cleared by the U.S. Food and Drug Administration.



## Macroscopic/Direct Exam for Parasites

*Methodology: Macroscopic Evaluation*

No human parasite detected in sample.

## Add-on Testing

*Methodology: EIA*

	<b>Result</b>	<b>Expected Value</b>
HpSA - <i>H. pylori</i>	Negative	Negative
<i>Campylobacter</i> spp. ♦	Negative	Negative
<i>Clostridium difficile</i> ♦	Negative	Negative
Shiga toxin <i>E. coli</i> ♦	Negative	Negative
Fecal Lactoferrin ♦	Negative	Negative

*Tests were developed and their performance characteristics determined by Genova Diagnostics. Unless otherwise noted with ♦, the assays have not been cleared by the U.S. Food and Drug Administration.*



## Commentary

Commentary is provided to the practitioner for educational purposes and should not be interpreted as diagnostic or as treatment recommendations. Diagnosis and treatment decisions are the practitioner's responsibility.

For more information regarding GI Effects clinical interpretation, please refer to the GI Effects Support Guide at [www.gdx.net/gieffectsguide](http://www.gdx.net/gieffectsguide).

## Bacteria Sensitivity

### Prescriptive Agents

<i>Citrobacter species</i>	R	I	S-DD	S	NI
Ampicillin	R				
Amox./Clavulanic Acid	R				
Cephalothin	R				
Ciprofloxacin				S	
Tetracycline				S	
Trimethoprim/Sulfa				S	

### Natural Agents

<i>Citrobacter species</i>	LOW INHIBITION	HIGH INHIBITION
Berberine		
Oregano		
Uva-Ursi		

#### Prescriptive Agents:

The R (Resistant) category implies isolate is not inhibited by obtainable levels of pharmaceutical agent.

The I (Intermediate) category includes isolates for which the minimum inhibition concentration (MIC) values usually approach obtainable pharmaceutical agent levels and for which response rates may be lower than for susceptible isolates.

The S-DD (Susceptible-Dose Dependent) category implies clinical efficacy when higher than normal dosage of a drug can be used and maximal concentration achieved.

The S (Susceptible) column implies that isolates are inhibited by the usually achievable concentrations of the pharmaceutical agent.

NI (No Interpretive guidelines established) category is used for organisms that currently do not have established guidelines for MIC interpretation.

Refer to published pharmaceutical guidelines for appropriate dosage therapy.

#### Natural Agents:

In this assay, inhibition is defined as the reduction level on organism growth as a direct result of inhibition by a substance. The level of inhibition is an indicator of how effective the substance was at limiting the growth of an organism in an in vitro environment. High inhibition indicates a greater ability by the substance to limit growth, while Low Inhibition a lesser ability to limit growth. The designated natural products should be considered investigational in nature and not be viewed as standard clinical treatment substances.



## Bacteria Sensitivity

### Prescriptive Agents

<i>Proteus mirabilis</i>	R	I	S-DD	S	NI
Ampicillin				S	
Amox./Clavulanic Acid				S	
Cephalothin				S	
Ciprofloxacin				S	
Tetracycline	R				
Trimethoprim/Sulfa				S	

### Natural Agents

<i>Proteus mirabilis</i>	LOW INHIBITION	HIGH INHIBITION
Berberine		
Oregano		
Uva-Ursi		

#### Prescriptive Agents:

The R (Resistant) category implies isolate is not inhibited by obtainable levels of pharmaceutical agent.

The I (Intermediate) category includes isolates for which the minimum inhibition concentration (MIC) values usually approach obtainable pharmaceutical agent levels and for which response rates may be lower than for susceptible isolates.

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The S (Susceptible) column implies that isolates are inhibited by the usually achievable concentrations of the pharmaceutical agent.

NI (No Interpretive guidelines established) category is used for organisms that currently do not have established guidelines for MIC interpretation.

Refer to published pharmaceutical guidelines for appropriate dosage therapy.

#### Natural Agents:

In this assay, inhibition is defined as the reduction level on organism growth as a direct result of inhibition by a substance. The level of inhibition is an indicator of how effective the substance was at limiting the growth of an organism in an in vitro environment. High inhibition indicates a greater ability by the substance to limit growth, while Low Inhibition a lesser ability to limit growth. The designated natural products should be considered investigational in nature and not be viewed as standard clinical treatment substances.

## Mycology Sensitivity

### Candida Susceptibility Profile for Azoles\*

Organism	Number of Isolates	% Sensitive	
		Fluconazole	Voriconazole
<i>Candida albicans</i>	25561	99.19%	99.51%
<i>Candida parapsilosis</i>	8777	98.64%	99.33%
<i>Candida kruseii</i>	3420	0.23%	97.79%
<i>Candida tropicalis</i>	1076	93.22%	90.57%
<i>Candida glabrata</i>	2898	27.1%	90.9%

**\*Results of pharmaceutical sensitivities against certain yeast species are based on internal Genova data pertaining to the frequency of susceptibility of the specific yeast to the listed antifungal agent. The pharmaceutical results are not patient-specific. Conversely, the results of inhibition to nystatin and natural agents are patient-specific.**

### Non-absorbed Antifungals

<i>Candida albicans</i>	LOW INHIBITION	HIGH INHIBITION
Nystatin		

### Natural Agents

<i>Candida albicans</i>	LOW INHIBITION	HIGH INHIBITION
Berberine		
Caprylic Acid		
Garlic		
Undecylenic Acid		
Uva-Ursi		

#### Nystatin and Natural Agents:

Results for Nystatin are being reported with natural antifungals in this category in accordance with laboratory guidelines for reporting sensitivities. In this assay, inhibition is defined as the reduction level on organism growth as a direct result of inhibition by a natural substance. The level of inhibition is an indicator of how effective the substance was at limiting the growth of an organism in an in vitro environment. High inhibition indicates a greater ability by the substance to limit growth, while Low Inhibition a lesser ability to limit growth. The designated natural products should be considered investigational in nature and not be viewed as standard clinical treatment substances.