

**Patient: Jane Doe**

**Order Number: E1210572**

DOB: September 16, 1960

Completed: October 05, 2013

Sex: F

Received: September 21, 2013

MRN:

Collected: September 20, 2013

**2200 GI Effects™ Comprehensive Profile – Stool**

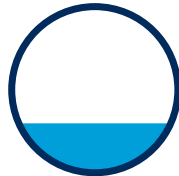
**Interpretation At-a-Glance**

**INFECTION**

Blastocystis hominis ▲



**INFLAMMATION**



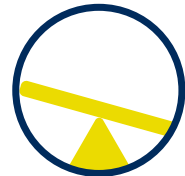
**INSUFFICIENCY**

Total Fecal Fats ▲

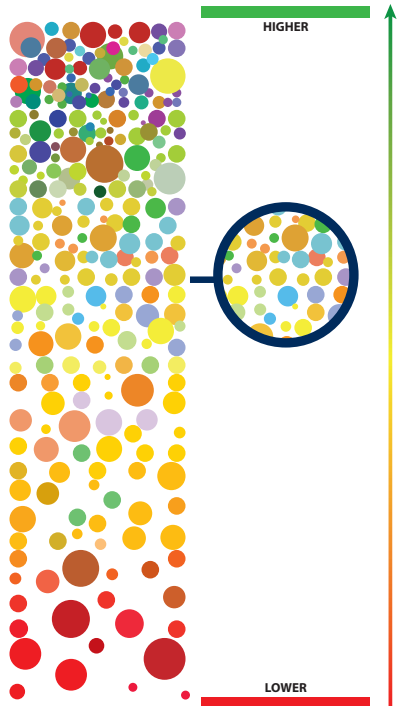


**IMBALANCE**

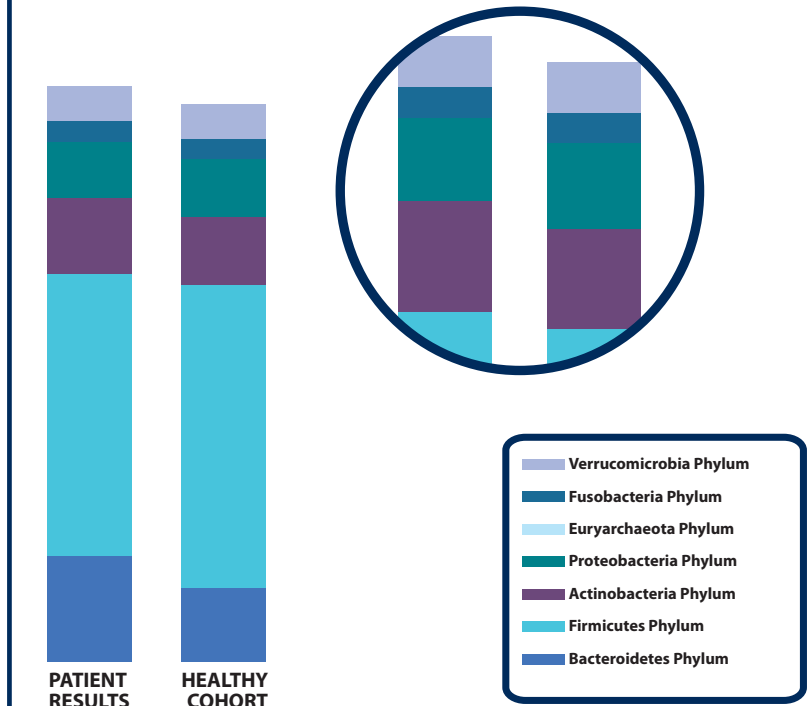
PP Bacteria ▲  
PP Yeast/Fungi ▲  
n-Butyrate ▼  
Total SCFA ▼



**DIVERSITY ASSOCIATION**



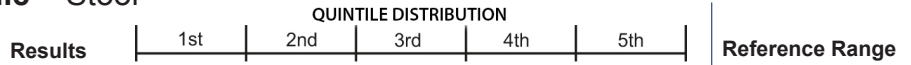
**RELATIVE ABUNDANCE**



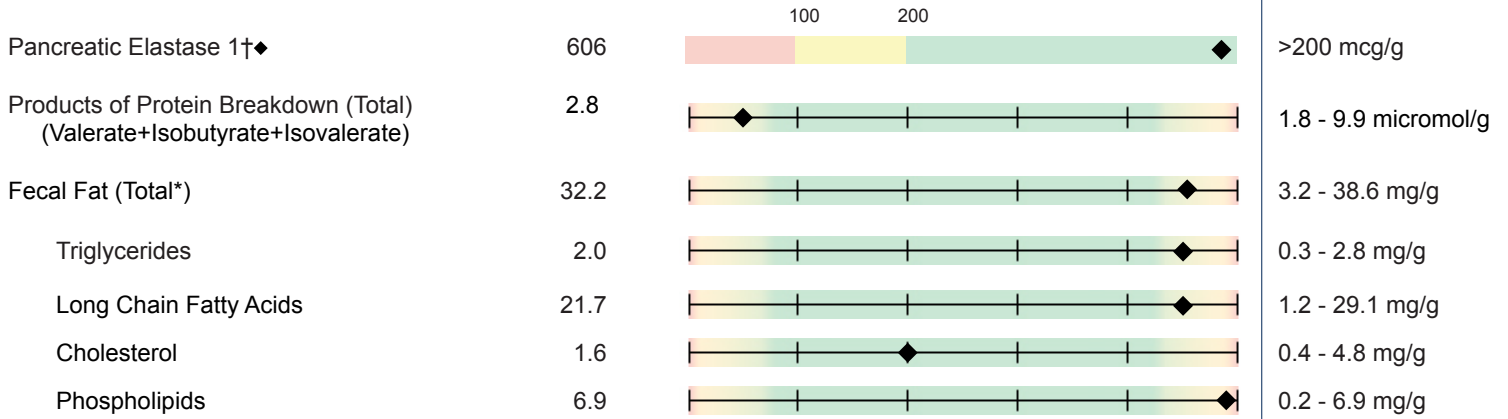


## 2200 GI Effects™ Comprehensive Profile – Stool

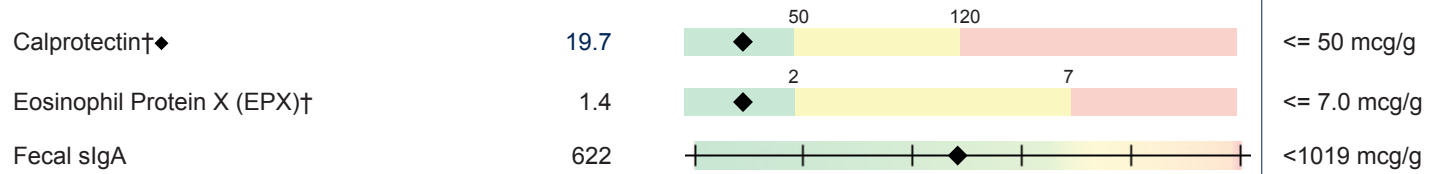
Methodology: GC/MS, Automated Chemistry, EIA



### Digestion and Absorption

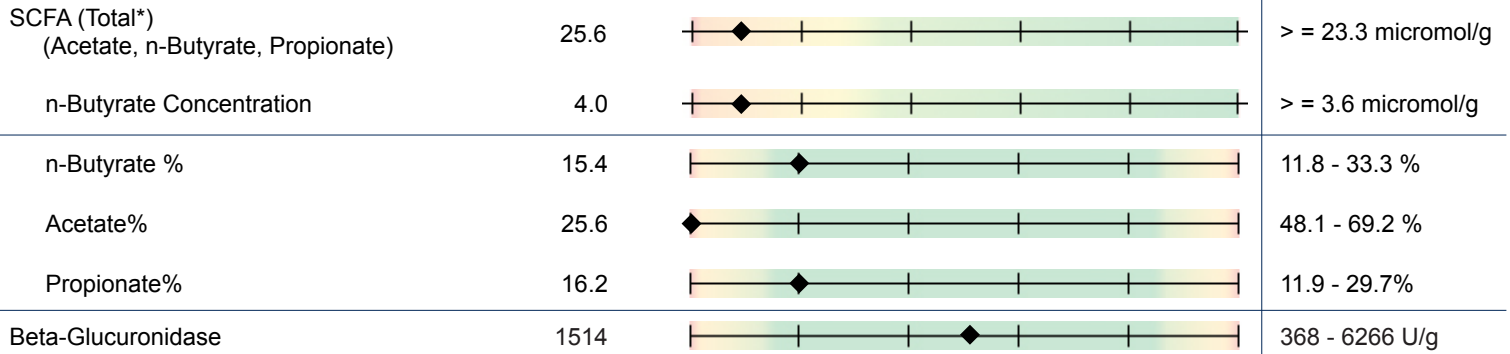


### Inflammation and Immunology



### Gastrointestinal Microbiome

#### Metabolic



\*Total Value equals the sum of all measurable parts.

†These results are not represented by quintile values.

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



Methodology: DNA by PCR

## Gastrointestinal Microbiome

	Result CFU/g stool	QUINTILE DISTRIBUTION					Reference Range CFU/g stool
		1st	2nd	3rd	4th	5th	
<b>Commensal Bacteria (PCR)</b>							
<b>Bacteroidetes Phylum</b>							
<i>Bacteroides-Prevotella</i> group	4.3E7						7.3E6 - 2.3E9
<i>Bacteroides vulgatus</i>	1.2E8						<4.6E9
<i>Barnesiella</i> spp.	<DL						<3.3E8
<i>Odoribacter</i> spp.	5.6E7						<2.0E8
<i>Prevotella</i> spp.	8.6E5						2.4E5 - 3.0E7
<b>Firmicutes Phylum</b>							
<i>Anaerotruncus colihominis</i>	6.4E6						<6.1E7
<i>Butyrivibrio crossotus</i>	1.5E5						7.8E3 - 8.6E5
<i>Clostridium</i> spp.	2.7E9						3.1E8 - 3.2E10
<i>Coprococcus eutactus</i>	2.7E7						<2.0E8
<i>Faecalibacterium prausnitzii</i>	8.2E8						1.2E5 - 7.1E7
<i>Lactobacillus</i> spp.	6.9E8						1.5E7 - 7.6E9
<i>Pseudoflavonifractor</i> spp.	2.9E7						1.2E5 - 2.1E8
<i>Roseburia</i> spp.	2.8E9						1.7E8 - 4.1E9
<i>Ruminococcus</i> spp.	8.9E8						1.2E8 - 6.9E11
<i>Veillonella</i> spp.	1.4E6						2.6E5 - 1.0E8
<b>Actinobacteria Phylum</b>							
<i>Bifidobacterium</i> spp.	<DL						<1.5E10
<i>Bifidobacterium longum</i>	<DL						<1.3E9
<i>Collinsella aerofaciens</i>	1.4E8						1.5E7 - 3.7E9
<b>Proteobacteria Phylum</b>							
<i>Desulfovibrio piger</i>	<DL						<2.8E7
<i>Escherichia coli</i>	6.0E7						5.5E4 - 7.9E8
<i>Oxalobacter formigenes</i>	3.9E6						<2.8E7
<b>Euryarchaeota Phylum</b>							
<i>Methanobrevibacter smithii</i>	<DL						<1.9E8
<b>Fusobacteria Phylum</b>							
<i>Fusobacterium</i> spp.	1.9E4						<4.8E5
<b>Verrucomicrobia Phylum</b>							
<i>Akkermansia muciniphila</i>	1.8E7						>1.7E6
<b>Firmicutes/Bacteroidetes Ratio</b>							
<i>Firmicutes/Bacteroidetes</i> (F/B Ratio)	53						21 - 620

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 x 10<sup>6</sup> or 7,300,000).

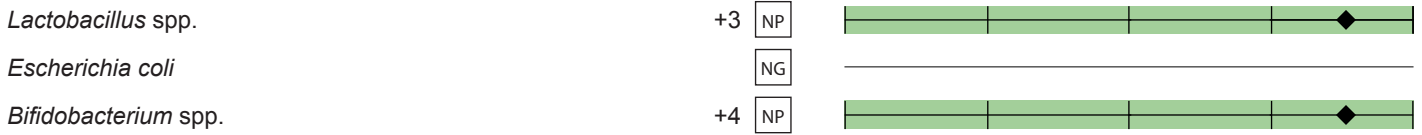
The Firmicutes/Bacteroidetes ratio (F/B Ratio) is estimated by utilizing the lowest and highest values of the reference range for individual organisms when patient results are reported as <DL or >UL.



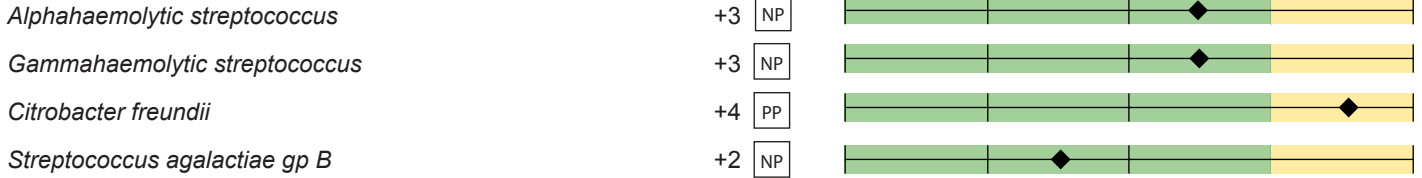
Methodology: culture/MALDI-TOF MS, Automated and Manual Biochemical Methods, Vitek 2® System Microbial identification and Antibiotic susceptibility

## Gastrointestinal Microbiome

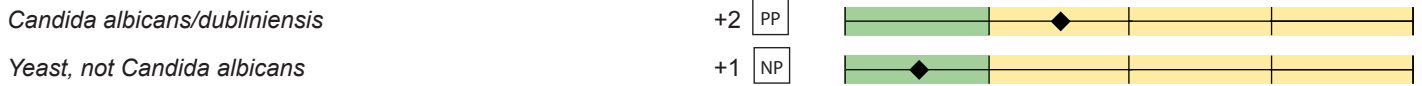
### Bacteriology (Culture)



### Additional Bacteria



### Mycology (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>
No Growth	Non-Pathogen	Potential Pathogen	Pathogen

#### 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 are well-recognized pathogens in clinical literature that have a clearly recognized mechanism of pathogenicity and are considered significant regardless of the quantity that appears in culture.



Methodology: Direct Microscopic Examination, EIA

## Parasitology

### Microscopic Exam Results:

Blastocystis hominis: Many

### Parasitology

Parasite Recovery: Literature suggests that >90% of enteric parasitic infections may be detected in a sample from a single stool collection. Increased sensitivity results from the collection of additional specimens on separate days.

### Lab Comments

SENSI'S: All yeast, add'l bacteria

### Parasitology EIA Tests:

	In Range	Out of Range
<i>Cryptosporidium</i> ◆	Negative	
<i>Giardia lamblia</i> ◆	Negative	
<i>Entamoeba histolytica</i> ◆	Negative	



Methodology: Vitek 2® System Microbial Antibiotic susceptibility, Manual Minimum Inhibition Concentration

## Bacteria Sensitivity

### Prescriptive Agents

	S	I	R
<b>Citrobacter freundii</b>	S	I	R
Ampicillin			R
Amox./Clavulanic Acid			R
Cephalothin			R
Ciprofloxacin	S		
Tetracycline	S		
Trimethoprim/Sulfa	S		

### Prescriptive Agents:

Microbial testing has been performed in vitro to determine antibiotic sensitivity and resistance at standard dosages. Prudent use of antimicrobials requires knowledge of appropriate blood or tissue levels of those agents. Antibiotics that appear in the “S” (susceptible) column are more effective at inhibiting the growth of this organism. Antibiotics that appear in the “I” (intermediate) column are partially effective at inhibiting the growth of this organism. Antibiotics that appear in the “R” (resistant) column allow continued growth of the organism in vitro and are usually less effective clinically. Inappropriate use of antibacterials often results in the emergence of resistance.

### Natural Agents

	LOW INHIBITION	HIGH INHIBITION
<b>Citrobacter freundii</b>		
Berberine		
Oregano		
Plant tannins		
Uva Ursi		

### Natural Agents:

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 natural substance was at limiting the growth of an organism in an in vitro environment. High Inhibition indicates a greater ability by the natural substance to limit growth, while Low Inhibition a lesser ability to limit growth. In accordance with laboratory guidelines for reporting sensitivities, results for Nystatin are now being reported with natural antifungals in this category.



## Mycology Sensitivity

### Azole Antifungals

	S	I	R
<b>Candida albicans/dubliniensis</b>	S		R
Fluconazole	=0.25		
Caspofungin		=0.25	
Voriconazole	=0.25		

### Non-absorbed Antifungals

	LOW INHIBITION	HIGH INHIBITION
<b>Candida albicans/dubliniensis</b>		
Nystatin		

### Natural Agents

	LOW INHIBITION	HIGH INHIBITION
<b>Candida albicans/dubliniensis</b>		
Berberine		
Caprylic Acid		
Garlic		
Undecylenic Acid		
Plant tannins		
Uva Ursi		

#### Prescriptive Agents:

Microbial testing has been performed in vitro to determine antibiotic sensitivity and resistance at standard dosages. Prudent use of antimicrobials requires knowledge of appropriate blood or tissue levels of those agents. Antibiotics that appear in the "S" (susceptible) column are more effective at inhibiting the growth of this organism. Antibiotics that appear in the "I" (intermediate) column are partially effective at inhibiting the growth of this organism. Antibiotics that appear in the "R" (resistant) column allow continued growth of the organism in vitro and are usually less effective clinically. Inappropriate use of antibacterials often results in the emergence of resistance.

#### Natural Agents:

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 natural substance was at limiting the growth of an organism in an in vitro environment. High Inhibition indicates a greater ability by the natural substance to limit growth, while Low Inhibition a lesser ability to limit growth. In accordance with laboratory guidelines for reporting sensitivities, results for Nystatin are now being reported with natural antifungals in this category.



Methodology: EIA, Fecal Immunochemical Testing (FIT)

## Additional Results

	Result	Expected Value	
Fecal Occult Blood ♦	Negative	Negative	<b>HpSA (<i>Helicobacter pylori</i> stool antigen)</b> <i>Helicobacter pylori</i> is a bacterium which causes peptic ulcer disease and plays a role in the development of gastric cancer. Direct stool testing of the antigen (HpSA) is highly accurate and is appropriate for diagnosis and follow-up of infection.
Color††	Brown		
Consistency††	Formed/Normal		
HpSA - <i>H.pylori</i>	Negative	Negative	<b><i>Campylobacter</i></b> <i>Campylobacter jejuni</i> is the most frequent cause of bacterial-induced diarrhea. While transmission can occur via the fecal-oral route, infection is primarily associated with the ingestion of contaminated and poorly cooked foods of animal origin, notably, red meat and milk.
<i>Campylobacter</i> spp♦	Negative	Negative	
<i>Clostridium difficile</i> ♦	Negative	Negative	
<i>Shiga toxin E. coli</i> ♦	Negative	Negative	<b><i>Clostridium difficile</i></b> is an anaerobic, spore-forming gram-positive bacterium. After a disturbance of the gut flora (usually with antibiotics), colonization with <i>Clostridium difficile</i> can take place. <i>Clostridium difficile</i> infection is much more common than once thought.
Fecal Lactoferrin ♦	Negative	Negative	

†† Results provided from patient input.

***Shiga toxin E. coli*** is a group of bacterial strains that have been identified as worldwide causes of serious human gastrointestinal disease. *Enterohemorrhagic E. coli* includes over 100 different serotypes; 0157:H7 is the most significant, occurring in over 80% of all cases. Contaminated food continues to be the principal vehicle for transmission; foods associated with outbreaks include alfalfa sprouts, fresh produce, beef, and unpasteurized juices.

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