Metametrix
Clinical Laboratory
3425 Corporate Way
Duluth, GA 30096
770.446.5483 Fax:770.441.2237

Ordering Physician:
Squirrel Hill Family Wellness Ctr
Franne Berez MD
4354 Murray Avenue
Pittsburgh, PA 15217

Accession Number: **A1105130109**
Reference Number:
Patient: David W Carelli
Age: 48 *Sex:* Male
Date of Birth: 12/17/1962
Date Collected: 5/11/11
Date Received: 5/13/11
Report Date: 5/27/11
Telephone: (412) 422-5433
Fax: (412) 422-1935
Reprinted:
Comment: **FAX Results**

2100 Gastrointestinal Function Profile

Methodology: DNA Analysis, GC/MS, Microscopic, Colorimetric, Automated Chemistry, ELISA

Consistency = Loose

Percentile Ranking by Quintile

Results CFU/gram	1st	2nd	3rd	4th	5th	95% Reference Range
		20%	40%	60%	80%	

Predominant Bacteria (E+007)

	Results CFU/gram	1st	2nd	3rd	4th	5th	95% Reference Range
Obligate anaerobes							
Bacteroides sp.	1.9	1.6				6.7	>= 1.3
Clostridia sp.	1.8	1.5				6.2	>= 1.0
Prevotella sp.	2.3	1.6				6.2	>= 1.1
Fusobacteria sp.	2.0	1.6				7.4	>= 1.1
Streptomyces sp.	2.1	1.6				5.8	>= 1.0
Mycoplasma sp.	2.0	1.7				6.2	>= 1.2
Facultative anaerobes							
Lactobacillus sp.	2.1	1.8				7.8	>= 1.2
Bifidobacter sp.	4.2	2.3				7.6	>= 1.8
Obligate aerobes							
Escherichia coli	2.2	1.7				7.7	>= 1.1

Opportunistic Bacteria

No clinically significant amounts.

Units and Reference Ranges

Organisms are detected by DNA analysis. One colony forming unit (CFU) is equivalent to one bacterium. Each genome detected represents one cell, or one CFU. Results are expressed in scientific notation, so an organism reported as 2.5 E7 CFU/gram is read as 25 million colony forming units per gram of feces. The cutoff for significance of Opportunistic Bacteria has been set at 1.0E+ 005 (100,000). These are levels above which clinically significant growth may be present. Rather than reporting semi-quantitative +1 to +4 levels, the new methodology provides full quantitative analysis.

Predominant Bacteria play major roles in health. They provide colonization resistance against potentially pathogenic organisms, aid in digestion and absorption, produce vitamins and SCFA's, and stimulate the GI immune system. DNA probes allow detection of multiple species (sp.) within a genus, so the genera that are reported cover many species.

Opportunistic Bacteria may cause symptoms and be associated with disease. They can affect digestion and absorption, nutrient production, pH and immune state. Antibiotic sensitivity tests will be performed on all opportunistic bacteria found, although clinical history is usually considered to determine treatment since the organisms are not generally considered to be pathogens.

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Pathogenic Bacteria

		95% Reference Range
Helicobacter pylori	<0.01	<=1.0E+005
Clostridium difficile	<0.01	<=1.0E+005
E.H.E. coli	<0.01	<=1.0E+005
Campylobacter sp.	<0.01	<=1.0E+005

Yeast/Fungi

		Expected Value
Yeast/Fungi; taxonomy unavailable.	+4 => 100000 pg DNA/g specimen	Neg

A taxonomy unavailable finding may indicate ingested mold. The higher the number, the greater the indication for treatment, particularly when accompanied by clinical symptoms.

Yeast/Fungi
Yeast overgrowth has been linked to many chronic conditions, in part because of antigenic responses in some patients to even low rates of yeast growth. Potential symptoms include diarrhea, headache, bloating, atopic dermatitis and fatigue. Positives are reported as +1, +2, +3 or +4 indicating >100, >1000, >10000 or >100000 pg DNA/g.

Parasites

	Expected Value
No Ova or Parasites	

Parasites
Parasite infections are a major cause of non-viral diarrhea. Symptoms may include constipation, gas, bloating, increased allergy response, colitis, nausea and distention.

Adiposity Index

Firmicutes	66		<= 80
Bacteroidetes	34		>= 20

The **Adiposity Index** is derived by using DI probes that detect multiple genera of the phyla Firmicutes and Bacteroidetes. Abnormalities of these phyla may be associated with increased caloric extraction from food.

Drug Resistance Genes

aacA, aphD	Pos	gyrB, ParE	Neg
mecA	Pos	PBP1a, 2B	Neg
vanA, B, and C	Neg		

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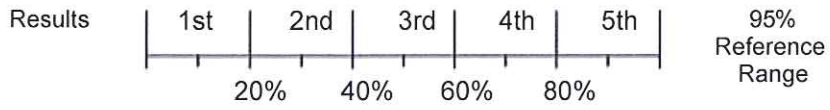
Percentile Ranking by Quintile



Beneficial SCFA

			95% Reference Range
Total SCFA	82	53	>= 35 mM/g
n-Butyrate	16.9	5.2	>= 3.9 mM/g
Acetate %	61	52 – 71	47 - 77 %
Butyrate %	21	10 – 25	7 - 30 %
Propionate %	17	13 – 25	10 - 29 %
Valerate %	0.9 L	1.0 – 3.6	0.4 - 4.6 %

Inflammation

			95% Reference Range
Lactoferrin	0.3	3.1	<= 6.3 ug/mL
WBCs	Neg		Neg-Rare
Mucus	Neg		Neg

Immunology

			95% Reference Range
Fecal sIgA	131	20 – 144	5 - 161 mg/dl
Anti-gliadin sIgA	2.5	6.4	<= 21.4 mg/dl

Beneficial SCFA
Short chain fatty acids (SCFA) are produced by bacterial fermentation of dietary polysaccharides and fiber. The product, N-butyrate, is taken up and used to sustain the normal activity of colonic epithielial cells. Butyra has been shown to lower the risk of colitis and colorectal cancer. A healthy balance of GI microbes depends on production of SCFA by or specie to allow the normal growth of another on in a complex cross-feeding network.

Inflammation
Lactoferrin, an iron-binding glycoprotein, is released in IBD but not in non-inflammatory IBS High levels are found in Crohn's, UC or infectior WBC's are elevated in general inflammation/infection. Mucus is often visualize in acute GI inflammation.

Immunology
High fecal sIgA indicates immune system reactions to the presence of antigens from bacteria, yeast or other microbes. Low sIgA can result from stress or malnutrition. Anti-gliadin sIgA is a screening marker for gluten sensitivity

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Additional Tests

pH	5.9	5.9 6.9	5.7 - 7.1
Occult blood	Neg		Neg
RBCs	Neg		Neg
Color	Brown		

Digestion

Elastase 1	345	321	>= 184 ug/g
Triglycerides	87	119	<= 181 mg/dL
Putrefactive SCFA	1.2	4.4	<= 7.4 mM/g
Vegetable Fibers	Rare		None-Few

Absorption

LCFAs	4.5	9.1	<= 15.1 mmol/L
Total Fat	8.8	12.9	<= 18.9 mmol/L
Cholesterol	129	142	<= 191 mg/dL

UC** = Unable to Calculate

Additional Tests
pH is influenced by numerous factors, but i is strongly related to the bacterial release of pH-lowering organic acids and pH-raising ammonia. Positive **occult blood** can signify GI tract bleeding, as can elevated **RBCs**. **Color** (other than brown) abnormalities can be due to upper GI bleeding, or bile duct blockage, steatorrhea or antibiotic use.

Digestion
Pancreatic elastase 1 levels below the reference limits are strongly correlated with pancreatic insufficiency. High triglycerides signify fat maldigestion. Putrefactive SCFA are result of bacterial fermentation of undigested protein. High numbers of vegetable fibers indicate maldigestion.

Absorption
High **LCFA** indicates fat malabsorption du to pancreatic or biliary insufficiency, or acute bacterial infection that produces intestinal cell destruction. High total fat usually signals malabsorption, as does elevated fecal cholesterol.

These test results are not for the diagnosis of disease. They are intended to provide nutritional guidelines to qualified healthcare professionals with full knowledge of patient history and concerns to assist in their design of an appropriate healthcare program.