

Comprehensive Digestive Stool Analysis



Genova Diagnostics®

Improving Healthcare for Chronic Disease

63 Zillicoa Street
Asheville, NC 28801
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Patient: **JONATHAN BARNETT**

Order Number: **E6140577**

DOB: June 30, 1956

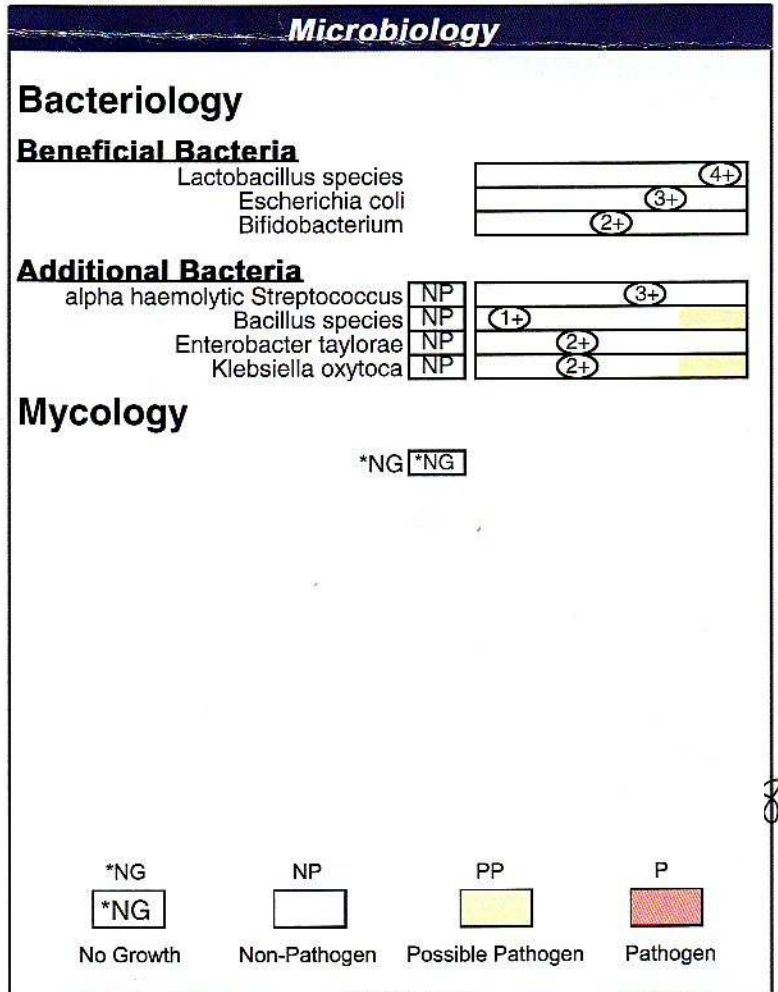
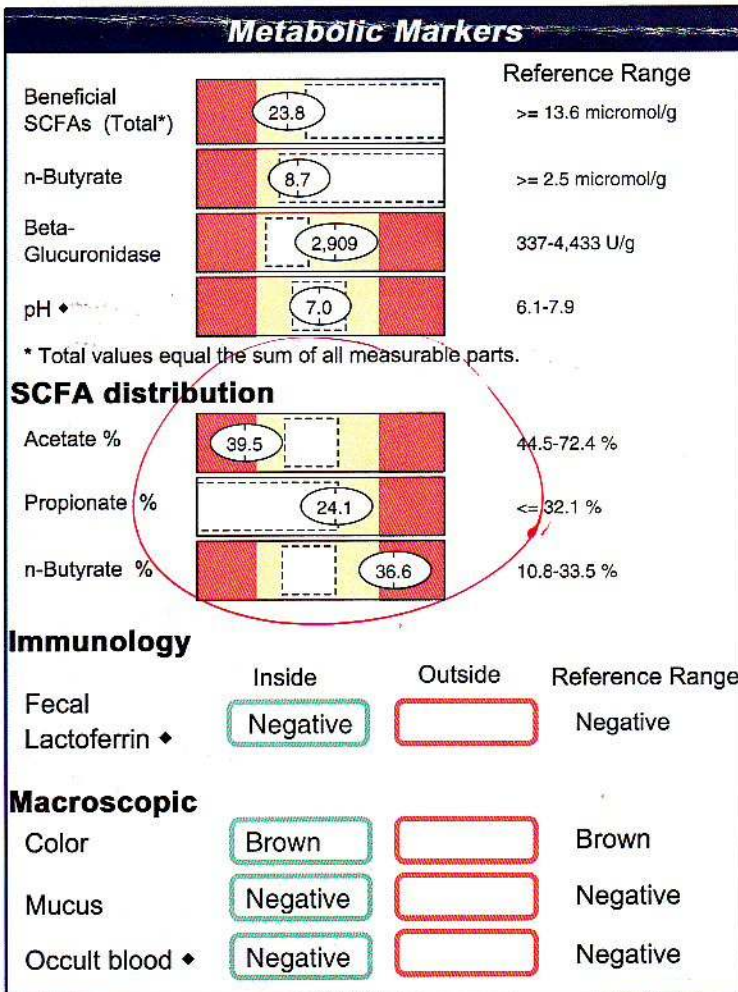
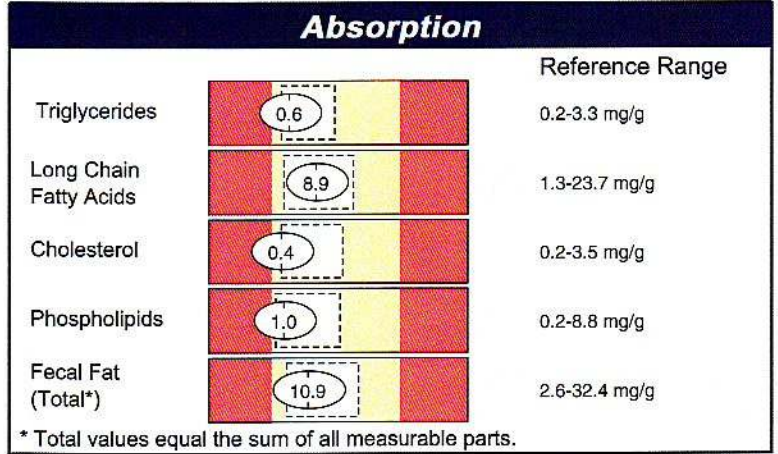
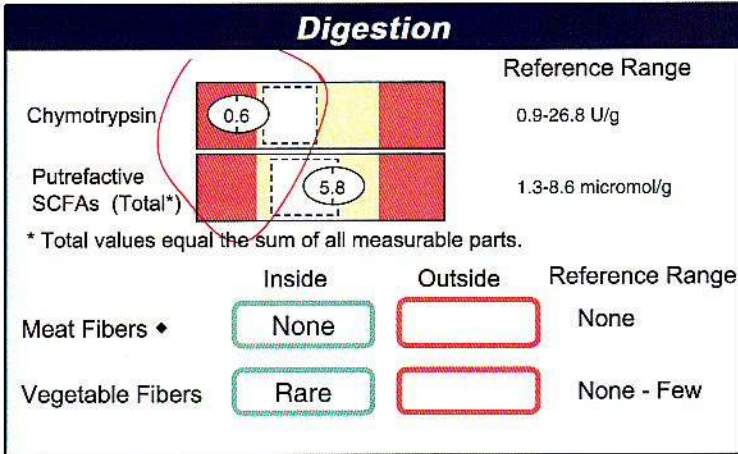
Completed: February 24, 2012

Sex: M

Received: February 14, 2012

MRN: 0001748821

Collected: February 13, 2012



Additional Tests (if indicated)

	In Range	Out of Range
Clostridium difficile ♦	Negative	<input type="text"/>
HpSA- H.pylori (ELISA IgG)	Negative	<input type="text"/>

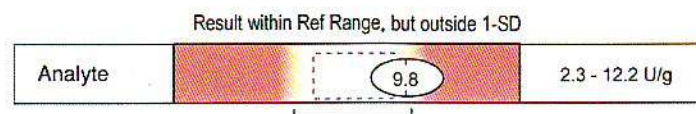
Commentary

The performance characteristics of all assays have been verified by Genova Diagnostics, Inc. Unless otherwise noted with ♦ as cleared by the U.S. Food and Drug Administration, assays are For Research Use Only.

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

The **Reference Range** is a statistical interval representing 95% or 2 Standard Deviations (2 S.D.) of the reference population.

One Standard Deviation (1 S.D.) is a statistical interval representing 68% of the reference population. Values between 1 and 2 S.D. are not necessarily abnormal. Clinical correlation is suggested. (See example below)



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

Triglycerides constitute the major component of dietary fat and are normally broken down by pancreatic lipase into glycerol and free fatty acids. Triglycerides are within the reference range, indicating adequate fat digestion or a lack of dietary fat.

Chymotrypsin is a key pancreatic enzyme catalyzing protein digestion. Thus, the fecal level is a measure of proteolytic activity and a marker for pancreatic enzyme output as a whole. Decreased values may reflect pancreatic insufficiency, inadequate stomach acid for enzyme activation, or prolonged transit time.

Valerate, iso-valerate and iso-butyrate are "putrefactive" short chain fatty acids, produced when anaerobic bacteria ferment undigested protein. Levels within the reference range suggest adequate protein digestion.

Long chain fatty acids (LCFAs) are within the reference range, suggesting adequate absorption of fats by the mucosa of the small intestine or a lack of dietary fat.

Commentary

Cholesterol is within the reference range, suggesting adequate absorption of cholesterol by the small intestine or low dietary intake.

Phospholipids are normal. 50% of phospholipids are derived from bile, with 25% coming from mucosal desquamation and 25% from dietary sources. Nearly 85% of intestinal phospholipids are absorbed. Normal levels of fecal phospholipids indicate average dietary fat intake and adequate digestion/ absorption.

Total fecal fats are within the reference range. The total fecal fat is calculated as the sum of fecal triglycerides, phospholipids, cholesterol and long chain fatty acids.

Beneficial (Total) short chain fatty acids (SCFAs) are acetate, propionate and n-butyrate. They are the end products of anaerobic microbial fermentation of dietary fiber. Levels thus reflect the concentration of intestinal flora as well as soluble fiber in the diet. These beneficial SCFAs are crucial to the health of the intestine, serving as sources of fuel for the cells and the rest of the body. They also help to regulate the fluid balance in the colon.

n-Butyrate is the most important of the beneficial SCFAs, and is the primary energy source for colonic epithelial cells. Adequate amounts are necessary for the healthy metabolism of the colonic mucosa, and have been shown to have protective effects against colorectal cancers.

Beta-glucuronidase is within the reference range. This is an inducible enzyme, produced by *E. coli* and anaerobes *Bacteroides*, and *Clostridia*. Its activity reverses the detoxication of compounds processed in the hepatic Phase II glucuronidation pathway (including many pharmaceuticals, carcinogens, bile acids, and estrogen).

Fecal pH is within the reference range. The pH of the stool is a reflection of several factors in the GI tract, such as gastric acid, pancreatic bicarbonate, short chain fatty acids, ammonia, bile, organic acids, and acids produced by beneficial flora. Proper levels enhance colonization by beneficial flora, deter possible pathogens, promote normal digestive processes, and promote SCFA production.

The SCFA Distribution reflects the relative proportions of the beneficial SCFAs (n-butyrate, propionate, and acetate), thus providing an indirect measure of balance among the anaerobic organisms in the colon. At least one is outside the reference range, suggesting some imbalance in bowel ecology. This should be assessed in the context of other markers.

Sufficient amounts of *Lactobacilli* and *E. coli* appear to be present in the stool. Ample amounts of *E. coli* have been associated with a balanced gut flora. The "friendly bacteria", *Lactobacilli* and *Bifidobacteria*, are important for gastrointestinal function, as they are involved in vitamin synthesis, natural antibiotic production, immune defense, digestion, detoxification of pro-carcinogens and a host of other activities. Supplementation with *Lactobacilli* might be considered in selected cases where the organisms are in the low range of normal. *Bifidobacteria* is below optimal levels. Ideally, levels of *Lactobacillus* and *E. coli* should be 2+ or greater. *Bifidobacteria* being a predominate anaerobe should be recovered at levels of 4+.

There is no detection of fecal lactoferrin. This indicates no active intestinal inflammation. However, non-inflammatory diarrhea caused by irritable bowel syndrome, small intestinal viral infections, non-invasive parasitic infections, or other etiologies may still be present even in the absence of lactoferrin.

Clostridium difficile is an anaerobic, spore-forming gram-positive bacterium that can be part of the normal intestinal flora. After a disturbance of the gut flora (usually with antibiotics), colonization with toxin producing *Clostridium difficile* can take place. Diarrhea, as a result of *Clostridium difficile* infection and toxin production may be much more common as a cause of diarrhea than once thought.

HpSA (*Helicobacter pylori* stool antigen): *Helicobacter pylori* 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.



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Bio - Center Lab

Ronald Hunninghake MD

Attn Annie

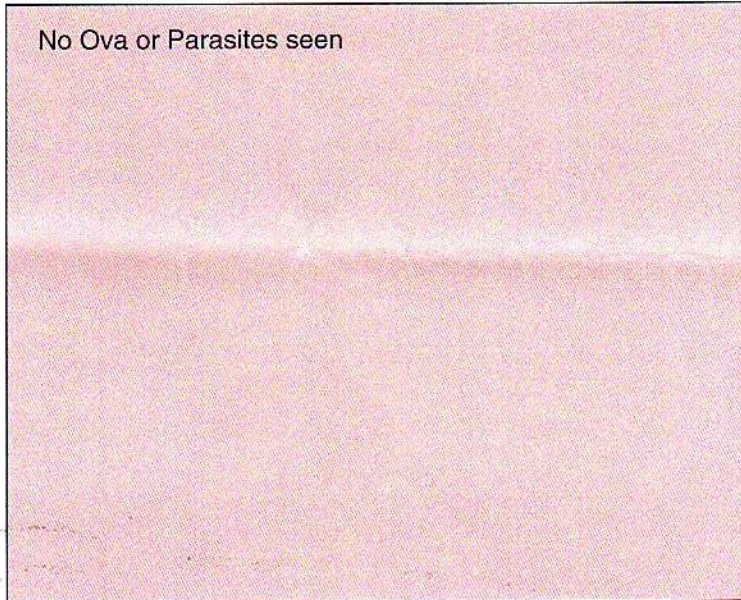
3100 N Hillside

Wichita, KS 67219

Parasitology

Microscopic Exam Results

Methodologies used for the Ova & Parasites examination are sedimentation concentration of specimens followed by analysis by iodine wet mount and Trichrome stain permanent smear.



Parasitology EIA Tests

	Inside	Outside	Reference Range
Cryptosporidium	Negative		Negative
Giardia lamblia	Negative		Negative
Entamoeba histolytica/dispar	Negative		Negative

Macroscopic Exam for Larvae (if ordered)

Commentary

Reported quantitation values were derived from a concentration of the sample(s) submitted and represent an "average" value.

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