

Date Received: 10/23/2007

Date Reported: 11/1/2007

### Cardiovascular Health Profile

**Methodology:** Automated Chemistry, Immunometric Assay, Competitive Immunology, HPLC, ICP-MS

## Results

### Reference Limits

### Lipoprotein Factors

Parameter	Value	Target Range	Unit
Total Cholesterol	176	<= 200	mg/dL
HDL Cholesterol	80	30 - 85	mg/dL
LDL Cholesterol (Direct)	101	<= 130	mg/dL
Triglycerides	106	35 - 160	mg/dL
Lipoprotein (a)	> 100 <b>H</b>	<= 37	mg/dL

### Lipoprotein Ratios

LDL/HDL	1.3	<= 3.3
Total/HDL	2.2	<= 4.5

Male		Female		Risk (*)
LDL/HDL	Total/HDL	LDL/HDL	Total/HDL	
1.0	3.4	1.5	3.3	0.5xAverage
3.6	5.0	3.2	4.4	1.0xAverage
6.3	9.6	5.0	7.1	2.0xAverage
8.0	23.4	6.1	11.0	3.0xAverage

\*Adapted from the Framingham Heart Study

### Chronic Inflammatory Markers

Ferritin	170	H		6 - 159	ng/mL
Fibrinogen	517	H		203 - 480	mg/dL
c-Reactive Protein (HS)	0.5			<= 3.0	mg/L

Cardio CRP value (mg/L)	CHD Risk Level
<1	Low
1-3	Average
>3 (up to 10)*	High

\* If the cardio CRP concentration exceeds 10 mg/L after repeat testing, the patient should be evaluated for noncardiovascular etiologies.

### Other Important Indicators


Parameter	Value	Unit	Reference Range
Insulin	<= 1.9 L	uIU/mL	2.0 - 12.0
Testosterone	< 20	ng/dL	<= 81
Sex Hormone Binding Globulin	132 H	nmol/L	18 - 114
Free Androgen Index (calc.)	ND		1.0 - 6.6

### Oxidant Stress Factors

### Percentile Ranking by Quintile

			1st	2nd	3rd	4th	5th	95% Reference Interval	
			20% 40% 60% 80%						
Homocysteine	6.7		4.0				10.0	3.0 - 14.0	nmol/mL
Coenzyme Q10	1.14		0.50				1.50	0.40 - 2.30	mg/L
Vitamin E	33.6 <b>H</b>		8.6				24.6	7.1 - 31.0	mg/L
Lipid Peroxides	1.3						1.5	<= 2.0	nmol/mL

*Others*

Magnesium 22  23 15 - 35 ppm packed cell:

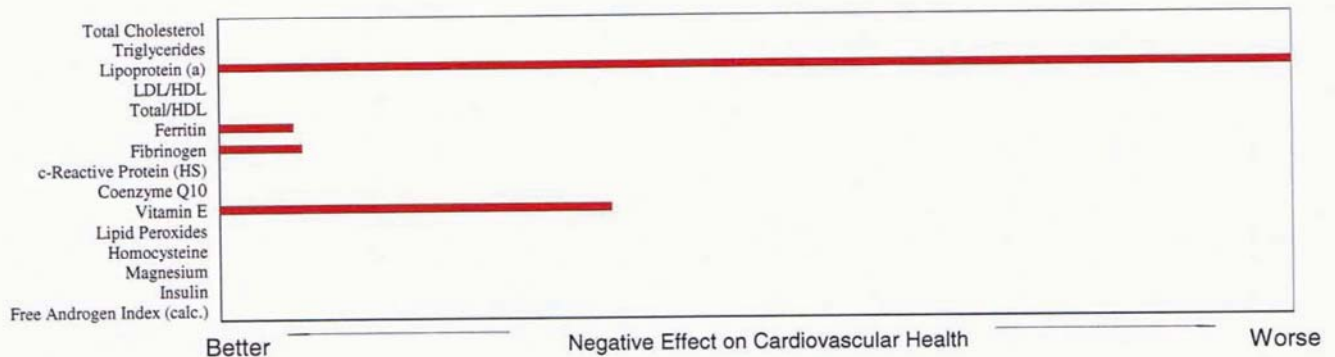
Fibrinogen performed by Clinical Diagnostics  
Labs 2910 N. Druid Hills Rd.  
Atlanta, GA 30328  
Lab Director: Robert M. David PhD

Georgia Lab Lic. Code #067-007

New York Clinical LFI #4578  
Florida Clinical Lab Lic. #800008124

Testing Performed by Metamatrix, Inc. 3425 Corporate Way Duluth, GA 30096

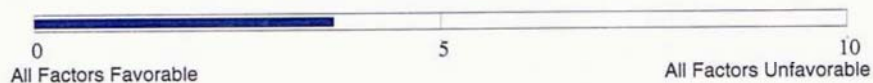
Ordering Physician:



Most of the nutritional and metabolic measurements included in the Cardio/ION profile are associated to some degree with your cardiovascular health. However, those shown on the previous page of this report are ones that most strongly and specifically affect your cardiovascular health. Some factors are favorable for cardiac health when they are high, while others should be low. The chart above helps you to see where the most significant abnormalities are; the longest bars on the chart show the most abnormal results on a scale of increasing negative effects on cardiovascular health.

The "Cardiovascular Index" chart below shows your test results with all of the factors summarized as a single index. Depending on your results, some steps that your doctor may want you to take to improve your cardiovascular health are shown in the tables of recommendations at the end of these pages. It is important that you follow your doctor's instructions to achieve the lowest index.

**Cardiovascular Index = 3.7**



• These guidelines are intended as a starting point for the clinician who requested the test and are based only on the laboratory results included in this report. Final recommendations should be implemented by the clinician with consideration of medical history and current clinical observations.

• These tests are not intended for the diagnosis of specific disorders.

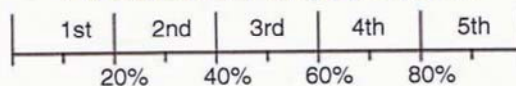
Ordering Physician:

Date Received: 10/23/2007

Date Reported: 11/1/2007

**Amino Acid Analysis - 20 Plasma**

Methodology: ION Exchange HPLC

Ranges are for ages 13  
and over.Result  
umol/L**Percentile Ranking by Quintile****95%  
Reference  
Interval****Essential Amino Acids**

1 Arginine	59		59		39 - 115
2 Histidine	48 L		60		42 - 96
3 Isoleucine	34 L		42		31 - 88
4 Leucine	71 L		80		60 - 152
5 Lysine	143		130		95 - 216
6 Methionine	20		17		13 - 28
7 Phenylalanine	51		48		39 - 76
8 Threonine	68 L		83		57 - 165
9 Tryptophan	50		38		26 - 61
10 Valine	138 L		159		118 - 295

**Essential Amino Acid Derivatives****Neuroendocrine Metabolism**

11 Glycine	223		177		124 - 431
12 Serine	93		66		48 - 119
13 Taurine	32 L		36		25 - 116
14 Tyrosine	29 L		43		31 - 85

**Ammonia/Energy Metabolism**

15 Asparagine	26 L		34		25 - 58
16 Aspartic Acid	7		6		4 - 15
17 Citrulline	14 L		24		16 - 49
18 Glutamic Acid	30 L		33		19 - 153
19 Glutamine	387 L		427		303 - 626
20 Ornithine	62		38		24 - 99

Georgia Lab Lic. Code #067-007

New York Clinical Lab PFI #4578  
Florida Clinical Lab Lic. #800008124Laboratory Directors: J. Alexander Bralley, PhD  
Robert M. David, PhD

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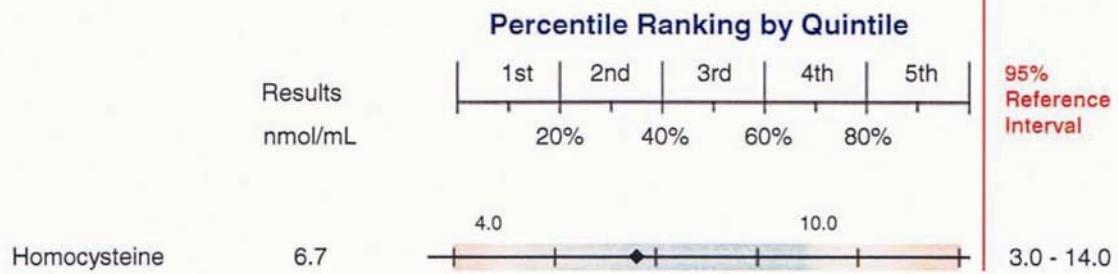
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**Homocysteine - Plasma**

Methodology: Competitive Immunoassay



Ordering Physician:

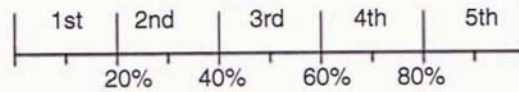
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**Element - Erythrocytes and Whole Blood**

Methodology: Inductively Coupled Plasma /Mass Spectroscopy

**Percentile Ranking by Quintile**

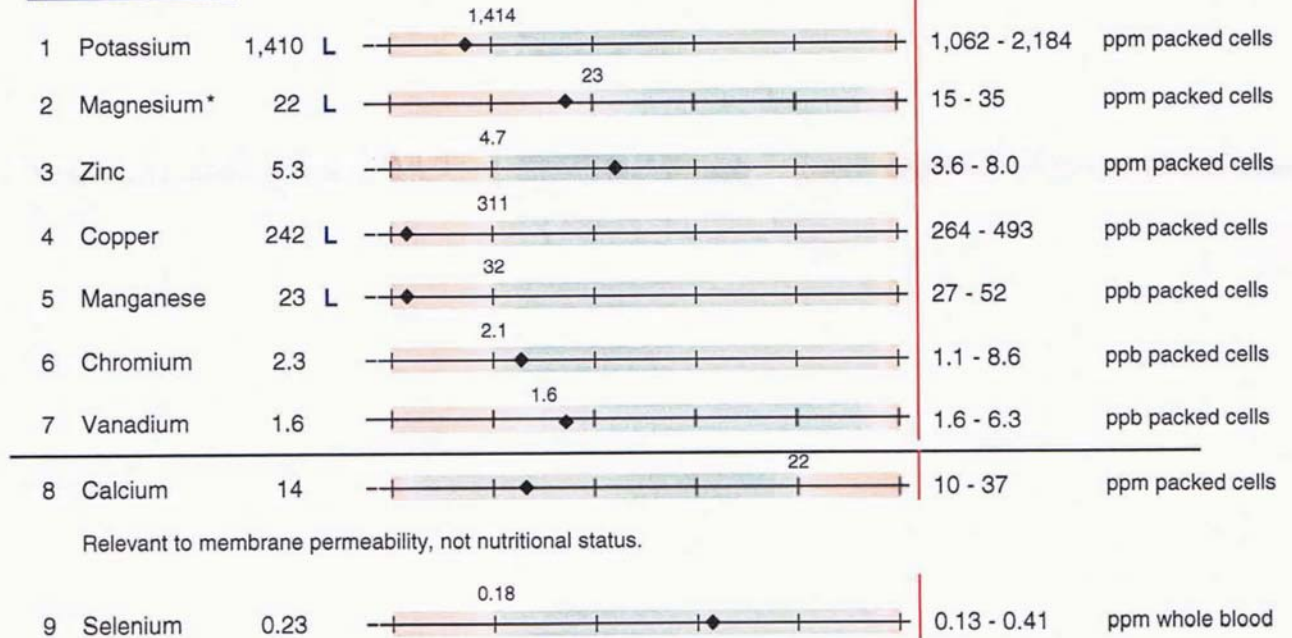


95%  
Reference  
Interval

Results

Reference Limits

**Nutrient Elements**



\*The expanded abnormal range approximates the population at risk for magnesium insufficiency disorders. See: Johnson S, Med Hypotheses. Feb 2001;56(2):163-170.

**Element - Erythrocytes and Whole Blood**

Methodology: Inductively Coupled Plasma /Mass Spectroscopy



Results for whole blood toxic elements that are within normal limits do not rule out metal accumulation in other tissues. This can be evaluated by urinary porphyrin or 24-hour urine chelation challenge tests.

**Lead Levels Considered Elevated in Adults(1)**

- ◆ At levels above 800 ppb, serious, permanent health damage may occur (extremely dangerous).
- ◆ Between 400 and 800 ppb, serious health damage may be occurring, even if there are no symptoms (seriously elevated).
- ◆ Between 250 and 400 ppb, regular exposure is occurring. There is some evidence of potential physiological problems (elevated).
- ◆ Between 100 and 250 ppb, lead is building up in the body and exposure is occurring.

(1) Lead Exposure in Adults. A Guide for Health Care Providers, State of New York, Department of Public Health.

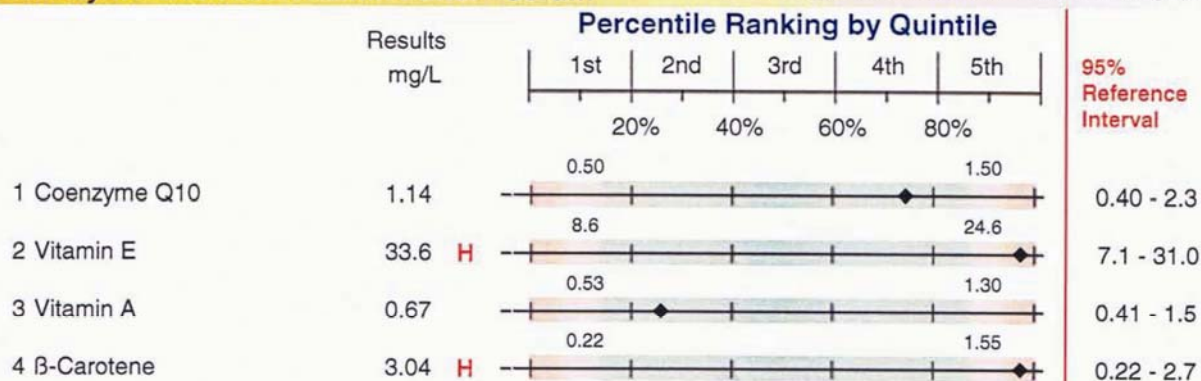
In children, lead levels even below 100 ppb are associated with IQ deficits.(2)

(2) Lanphear BP, Hornung R, Khoury J, et al. Low-level environmental lead exposure and children's intellectual function: an international pooled analysis. *Environ Health Perspect.* Jul 2005;113(7):894-899.



**CoEnzyme Q10 Plus Vitamin Panel - Serum**

Methodology: High Performance Liquid Chromatography

**Lipid Peroxide - Serum**

Methodology: High Performance Liquid Chromatography

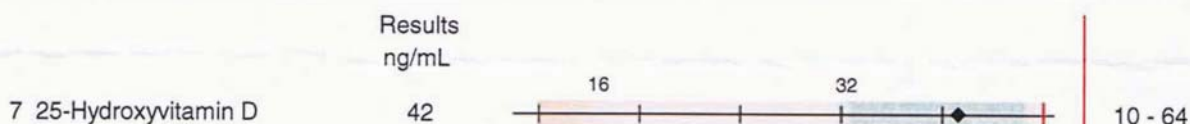
**8-Hydroxy-2 deoxyguanosine - Urine**

Methodology: LC/Tandem Mass Spectroscopy, Colorimetric

Ranges are for ages 13 and over.

**Vitamin D - Serum**

Methodology: Chemiluminescent immunoassay (CLIA)



Levels of 25-hydroxyvitamin D that fall below 16 ng/mL (40 nmol/L) reflect frank vitamin D deficiency. Studies based on functional markers have identified levels below 32 ng/mL (80 nmol/L) as hypovitaminosis D where stores are depleted and PTH levels may begin to rise. Optimal values lie in the 32-40 ng/ml range (4th and 5th quintiles) for the Metamatrix reference population that comes largely from North America. Extremely high levels may be toxic.

1. Zittermann A. Vitamin D in preventive medicine: are we ignoring the evidence? Br J Nutr. May 2003;89(5):552-572.
2. Hollis BW. Circulating 25-hydroxyvitamin D levels indicative of vitamin D sufficiency: implications for establishing a new effective dietary intake recommendation for vitamin D. J Nutr. Feb 2005;135(2):317-322.

Conversion factors: nmol/L = ng/mL x 2.5 | ng/mL = nmol/L x 0.4

Ordering Physician:

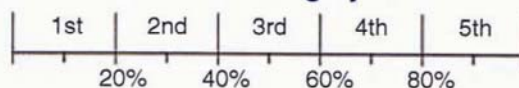
Date Received: 10/23/2007

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**Fatty Acids - Plasma**

Methodology: Capillary Gas Chromatography/Mass Spectrometry

Ranges are for ages 13 and over.

Results  
uM**Percentile Ranking by Quintile****95%  
Reference  
Interval****Polyunsaturated Omega-3**

1 Alpha Linolenic (18:3n3)	34	18	9 - 98
2 Eicosapentaenoic (20:5n3)	110	24	9 - 276
3 Docosapentaenoic (22:5n3)	48	24	14 - 83
4 Docosahexaenoic (22:6n3)	194	100	49 - 325

**Polyunsaturated Omega-6**

5 Linoleic (18:2n6)	2,448	1,303 2,534	1,052 - 3,224
6 Gamma Linolenic (18:3n6)	9.1	4.8 26.1	2.7 - 42.8
7 Eicosadienoic (20:2n6)	10.9	6.3 18.8	4.7 - 24.4
8 Dihomogamma Linolenic (20:3n6)	63	47 161	33 - 224
9 Arachidonic (20:4n6)	480	380 925	269 - 1,170
10 Docosadienoic (22:2n6)	1.6	0.7 2.8	0.3 - 4.7
11 Docosatetraenoic (22:4n6)	2.0 L	4.1 17.9	2.4 - 25.9

**Polyunsaturated Omega-9**

12 Mead (20:3n9)	18.9 H	6.3 17.9	4.8 - 23.6
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**Monounsaturated**

13 Myristoleic (14:1n5)	1.4	3.9	<= 7.5
14 Palmitoleic (16:1n7)	92	106	<= 195
15 Vaccenic (18:1n7)	152 H	48 111	39 - 142
16 Oleic (18:1n9)	1,571	718 1,669	598 - 2,173
17 11-Eicosenoic (20:1n9)	10.6	4.7 11.4	3.6 - 15.9
18 Erucic (22:1n9)	4.1	2.5 6.8	1.9 - 8.3
19 Nervonic (24:1n9)	100	46 112	32 - 142



Ordering Physician:

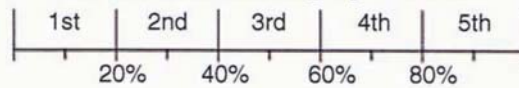
Date Received: 10/23/2007

Charles E. Law MD

**Fatty Acids - Plasma**

Methodology: Capillary Gas Chromatography/Mass Spectrometry

Ranges are for ages 13 and over.

Results  
uM**Percentile Ranking by Quintile****95%  
Reference  
Interval****Saturated**

20 Capric (10:0)	1.4	1.1	4.1	0.8 - 7.7
21 Lauric (12:0)	3.4	3.0	12.7	2.3 - 30.2
22 Myristic (14:0)	30	23	92	16 - 146
23 Palmitic (16:0)	2,010	1,363	2,811	1,134 - 3,731
24 Stearic (18:0)	917	543	989	485 - 1,163
25 Arachidic (20:0)	16.1	12.1	26.0	9.6 - 32.1
26 Behenic (22:0)	29 L	34	73	26 - 90
27 Lignoceric (24:0)	29	24	57	17 - 70
28 Hexacosanoic (26:0)	< 0.4		0.63	<= 1.34

**Odd Chain**

29 Pentadecanoic (15:0)	6.2		15.8	<= 21.3
30 Heptadecanoic (17:0)	17		25	<= 32
31 Nonadecanoic (19:0)	2.1		2.7	<= 3.5
32 Heneicosanoic (21:0)	< 0.3		2.1	<= 3.2
33 Tricosanoic (23:0)	11		27	<= 35

**Trans**

34 Palmitelaidic (16:1n7t)	3.9 H		2.7	<= 4.6
35 Total C:18 Trans	28		77	<= 122

**Ratios**

36 LA/DGLA	39 H		29	9 - 55
37 EPA/DGLA	1.77	0.15		0.09 - 5.15
38 AA/EPA	4.4		41.3	1.5 - 60.7
39 Triene/Tetraene	0.039 H		0.025	<= 0.035

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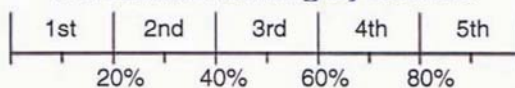
Date Reported: 11/1/2007

**Organix™ Comprehensive - Urine**

Methodology: LC/Tandem Mass Spectroscopy, Colorimetric

Results are expressed as mcg/mg creatinine.

Ranges are for ages 13 and over.

**Percentile Ranking by Quintile****95%  
Reference  
Interval****NUTRIENT MARKERS**

Results

**Fatty Acid Metabolism***(Carnitine & B2)*

1 Adipate	1.3	5.7	<= 10.3
2 Suberate	1.7	1.8	<= 3.3
3 Ethylmalonate	3.4	5.5	<= 8.5

**Carbohydrate Metabolism***(B1, B3, Cr, Lipoic Acid, CoQ10)*

4 Pyruvate	1.0	4.1	<= 7.1
5 Lactate	9.2	19.4	2.5 - 57.0
6 β-Hydroxybutyrate	0.4	2.8	<= 12.8

**Energy Production (Citric Acid Cycle)***(B comp., Q10, Amino acids, Mg)*

7 Citrate	907	948	127 - 1,55
8 Cis-Aconitate	58	76	29 - 122
9 Isocitrate	78	92	36 - 130
10 α-Ketoglutarate	16.0	27.8	2.6 - 60.0
11 Succinate	16.4 H	12.3	1.1 - 34.0
12 Fumarate	0.94 H	0.71	<= 1.40
13 Malate	3.2 H	2.3	<= 4.3
14 Hydroxymethylglutarate	3.8	6.8	<= 9.7

**B-Complex Vitamin Markers***(B1, B2, B3, B5, B6, Biotin)*

15 α-Ketoisovalerate	0.35	0.60	<= 0.94
16 α-Ketoisocaproate	0.41 H	0.39	<= 0.58
17 α-Keto-β-Methylvalerate	0.7	1.6	<= 2.7
18 Xanthurenate	0.4	0.6	<= 1.2
19 β-Hydroxyisovalerate	11.3 H	9.0	<= 15.3

**Methylation Cofactor Markers***(B12, Folate)*

20 Methylmalonate	2.0	2.3	<= 3.4
21 Formiminoglutamate	0.39	1.45	<= 2.87

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Ordering Physician:

Date Received: 10/23/2007

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**Organix™ Comprehensive - Urine**

Methodology: LC/Tandem Mass Spectroscopy, Colorimetric

Ranges are for ages 13 and over.

\* Units for 8-Hydroxy-2-deoxyguanosine are ng/mg creatinine

**CELL REGULATION MARKERS****Neurotransmitter Metabolism Markers**

(Tyrosine, Tryptophan, B6, antioxidants)

		1st	2nd	3rd	4th	5th	95% Reference Interval
22	Vanilmandelate	2.0	1.1			3.8	0.4 - 5.3
23	Homovanillate	18.7	1.6			7.7	0.7 - 17.0
24	5-Hydroxyindoleacetate	3.8	1.5			5.6	1.0 - 8.5
25	Kynurenate	1.0				1.6	<= 2.5
26	Quinolate	5.3				10.2	<= 16.5

**Oxidative Damage and Antioxidant Markers**

(Vitamin C and other antioxidants)

27	p-Hydroxyphenyllactate	0.4				0.7	<= 1.4
28	8-Hydroxy-2-deoxyguanosine *	1.9				5.3	<= 7.6

**TOXICANTS AND DETOXIFICATION****Detoxification Indicators**

(Arg, NAC, Met, Mg and antioxidants)

29	2-Methylhippurate	0.039				0.050	<= 0.100
30	Orotate	1.7				1.0	<= 1.6
31	Glucarate	6.1				7.0	<= 11.9
32	a-Hydroxybutyrate	0.6				1.2	<= 2.2
33	Pyroglutamate	23				60	< 95
34	Sulfate	351	166			390	111 - 477

**COMPOUNDS OF BACTERIAL OR YEAST/FUNGAL ORIGIN****Bacterial - general**

35	Benzoate	1.1				2.5	<= 8.2
36	Hippurate	143				542	<= 1,099
37	Phenylacetate	< 0.06				0.06	<= 0.20
38	Phenylpropionate	< 0.5				0.5	<= 0.5
39	p-Hydroxybenzoate	0.9				1.2	<= 2.8
40	p-Hydroxyphenylacetate	11				20	<= 35
41	Indican	20				80	<= 124
42	Tricarballic acid	0.6				1.6	<= 3.6

**L. acidophilus / general bacterial**

43	D-Lactate	0.8				5.5	<= 11.0
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**Clostridial species**

44	3,4-Dihydroxyphenylpropionate	< 0.16				0.16	<= 0.40
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**Yeast / Fungal**

45	D-Arabinitol	84				32	<= 59
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Creatinine = 62 mg/dl

New York Clinical Lab PFI #4578  
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## ION Analyte Pattern Analysis

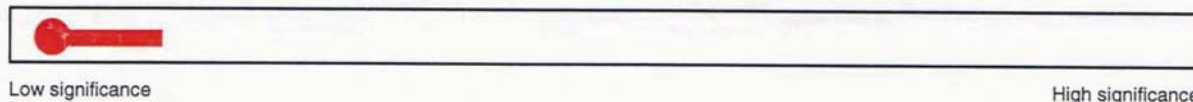
A multi-analyte report can provide greater insight about health risks and special nutrient needs. Patterns of abnormalities can reinforce the degree of significance indicated by a single measurement. Analytes from the various profiles in the ION report are combined below into categories associated with clinical/metabolic conditions.

The categories included cover the most common areas of concern relevant to these profiles. Above each thermometer are listed the analytes used to calculate the *degree of significance*. An H or L appears when the patient result is in the fifth quintile (80%) of the population. An additional **X** next to an analyte indicates that the patient result is outside the 95% reference interval for that analyte.

The thermometer advances to the right as the number and severity of relevant abnormalities increases. The longer the filled bar, the greater the degree of significance or likelihood that a health threat may exist in that category. The preceding laboratory reports provide the detail upon which these thermometers are based.

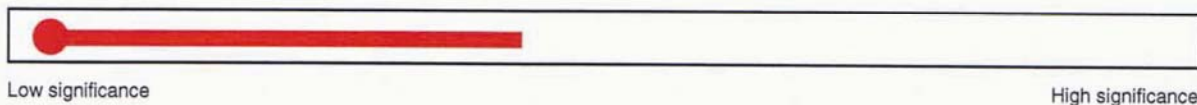
### Cardiovascular System

Arginine	Hcys	Calcium	Magnesium	L
CoQ10	Vitamin E	Lipid Peroxide	8-OHdG	
AA/EPA				



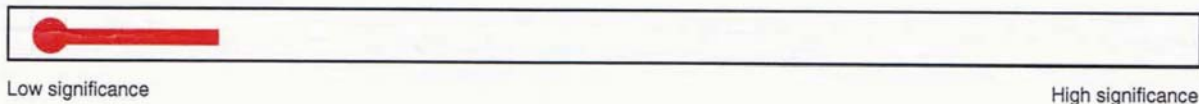
### Fatigue

Isoleucine	L	Leucine	L	Phenylalanine	Valine	L
Magnesium	L	CoQ10		Adipate	Suberate	
a-KG		Succinate	H	Malate	H	Xanthurenate
Methylmal		FIGLU				



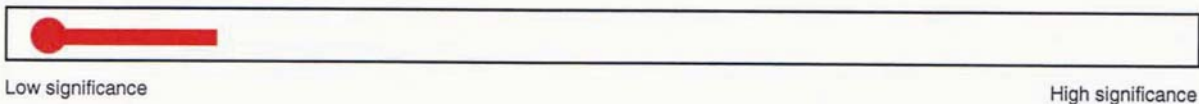
### Metabolic Syndrome (Syndrome X)

Chromium	Magnesium	L	Vanadium	Zinc
Palmitic	Stearic		AHB	BHB
bHiVal	H			



### Mental/Emotional

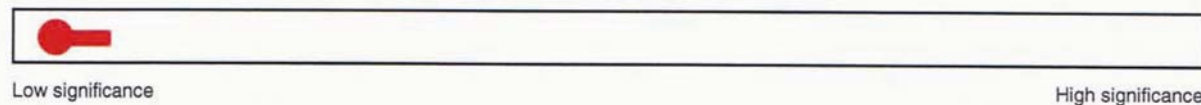
Tryptophan	Tyrosine	<b>X</b> L	Magnesium	L	EPA
DHA	Xanthurenate		Methylmal		FIGLU
VMA	5-HIA				



## ION Analyte Pattern Analysis

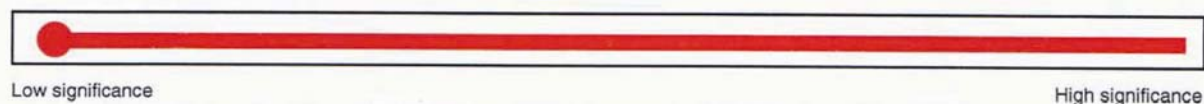
### Intestinal Bacterial Metabolites

PhAc	PhProp	pHBenz	pHPhAc
Indican	Tricarballoylate	D-Lactate	3,4-DHPP



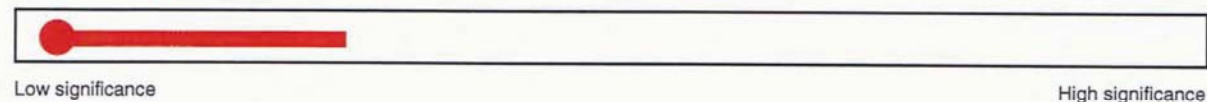
### Intestinal Yeasts / Fungal Metabolites

D-Arabinitol X H



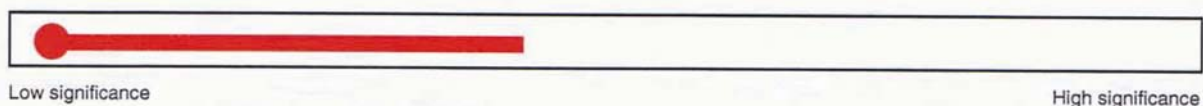
### Digestion/Absorption

Arginine	Histidine	L	Isoleucine	L	Leucine	L
Lysine	Methionine		Phenylalanine		Threonine	L
Tryptophan	Valine	L	Chromium		Copper	X L
Manganese X L	Selenium		Vanadium		Zinc	



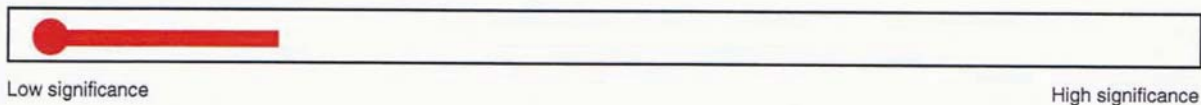
### Toxic Exposure

Aluminum	Cadmium	Lead	Mercury	H
Palmitelaidic H	C18TrFA	Citrate	Cis-Aconitate	
Isocitrate	Quinolate	2-MeHipp	Orotate	X H
Glucarate				



### Detoxification Impairment

Methionine	Glycine	Serine	Taurine	L
Glutamine L	Pyroglutamate	Sulfate	Benzoate	



## ION Analyte Pattern Analysis

### Oxidative Stress/Antioxidant Insufficiency

Taurine	L	Copper	X L	Manganese	X L	Selenium
Zinc		Lead		Mercury	H	Vitamin E
Vitamin A		β-Carotene		Lipid Peroxide		8-OHdG
pHPHlac		Sulfate				



Low significance

High significance

### Mitochondrial Functional Impairment

Magnesium	L	CoQ10		Adipate		Suberate	
EtMal		Pyruvate		Lactate		AHB	
BHB		Succinate	H	Fumarate	H	Malate	H



Low significance

High significance

### Amino Acid Insufficiency

Arginine		Histidine	L	Isoleucine	L	Leucine	L
Lysine		Methionine		Phenylalanine		Threonine	L
Tryptophan		Valine	L	α-KG		Succinate	H
Sulfate							

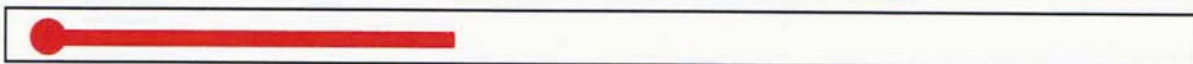


Low significance

High significance

### Essential Fatty Acid Insufficiency

ALA		EPA		DHA		LA	
GLA		DGLA		Palmitoleic		Mead	H
Triene/Tetra	X H						



Low significance

High significance

### Disordered Methyl Group (Single carbon) Transfer

Hcys		Pentadecanoic		Heptadeca		Nonadecanoic
Tricosanoic		Xanthurenate		Methylmal		FIGLU
Kynurenate						



Low significance

High significance



## ION Analyte Pattern Analysis

### Disordered Tryptophan Metabolism

Tryptophan

Xanthurenate

5-HIA

Kynurenate

Quinolinat

Indican



Low significance

High significance

<u>Abbreviation</u>	<u>Analyte Name</u>	<u>Abbreviation</u>	<u>Analyte Name</u>
2-MeHipp	2-Methylhippurate	DHA	Docosahexaenoic (22:6n3)
5-HIA	5-Hydroxyindoleacetate	3,4-DHPP	3,4-Dihydroxyphenylpropionate
8-OhdG	8-Hydroxy-2-deoxyguanosine	EPA	Eicosapentaenoic (20:5n3)
AA/EPA	Arachidonic (20:4n6)/Eicosapentaenoic (20:5n3)	FIGLU	Formiminoglutamate
AHB	a-Hydroxybutyrate	GLA	Gamma Linolenic (18:3n6)
aKbMeVal	a-Keto-β-Methylvalerate	Hcys	Homocysteine
aKiCap	a-Ketoisocaproate	HVA	Homovanillate
aKiVal	a-Ketoisovalerate	HMG	Hydroxymethylglutarate
ALA	Alpha Linolenic (18:3n3)	LA	Linoleic (18:2n6)
BHB	β-Hydroxybutyrate	PhAc	Phenylacetate
BHiVal	β-Hydroxyisovalerate	PhProp	Phenylpropionate
C18TrFa	Total C:18 Trans	pHBenz	p-Hydroxybenzoate
CoQ10	Coenzyme Q10	pHPhAc	p-Hydroxyphenylacetate
DGLA	Dihomogamma Linolenic (20:3n6)	pHPhLac	p-Hydroxyphenyllactate
		Triene/Tetraene	Mead/Arachidonic Ratio
		VMA	Vanilmandelate

## Supplement Recommendation Summary

With knowledge of a patient's full medical history and concerns, the ION Profile laboratory results may be used to help create an individually optimized nutritional support program. Based strictly on the results from this test, the summary table below shows estimates of nutrient doses that may help to normalize nutrient-dependent metabolic functions. All amounts are adult doses that should be reduced for children according to body weight.

### Customized Vitamin and Mineral Formulation

Nutrients listed in this section are normally contained in a multi-vitamin preparation. "Base" amounts may be used for insurance of health even when no abnormalities are found.

Customized preparations of the multi-vitamin/mineral formula shown below may be produced by compounding pharmacies. If such a product is made according to these specifications each dose should be thoroughly stirred into a few ounces of water or diluted fruit juice to fully release carbonates and avoid stomach bloating effects.

	Daily Amounts	
	Base	Units Added
Vitamin A	2500 IU	
B-Carotene	5500 IU	
Vitamin C	250 mg	2000 mg
Vitamin D	400 IU	200 IU
Vitamin E	100 IU	200 IU
Vitamin K*	100 mcg	
Thiamin (B1)	5 mg	5 mg
Riboflavin (B2)	5 mg	10 mg
Niacin (B3)	25 mg	20 mg
Pyridoxine (B6)	15 mg	
Folic Acid	400 mcg	
Vitamin B12	50 mcg	
Biotin	100 mcg	1000 mcg
Pantothenic Acid (B5)	25 mg	25 mg
Calcium	500 mg	500 mg
Iodine*	75 mcg	
Magnesium	250 mg	400 mg
Zinc	15 mg	15 mg
Selenium	100 mcg	100 mcg
Copper	1 mg	
Manganese	5 mg	6 mg
Chromium	200 mcg	
Molybdenum*	25 mcg	
Boron*	1 mg	
Citric Acid*	200 mg	
Malic Acid*	200 mg	

\* Nutrients with an asterisk are not modified based on the ION test results.

MM03

***Other Items Indicated for individual supplementation***

Various conditionally essential nutrients and other potentially beneficial interventions appear in this section only if relevant abnormalities are present. These ingredients are not included in the customized vitamin formula on the previous page.

Amino acids listed on this page result from functional markers of individual amino acid insufficiency and do not reflect amino acids measured in plasma.

Item	Amount
Potential to Benefit from Probiotics	Mild
Alpha-Ketoglutarate	700 mg
Antifungals	As needed
Arginine	1000 mg
Coenzyme Q10	120 mg
Lipoic Acid	100 mg
Potassium	600 mg



Ordering Physician:

## Customized Free-Form Amino Acids

The table below shows the recommended custom amino acid formula based on the results of your laboratory test for fasting plasma amino acid levels. The Base Formula contains a constant percentage of the essential amino acids. To achieve your optimal formula, additional amounts of individual amino acids ("Grams Added") are added and the "Base Formula amount" is adjusted to assure the total appropriate amount of powder. The final percentage in your powder will be different from those in the table because of the addition of specific amounts of each essential amino acid.

Directions: Adults mix 1 and 1/2 measuring teaspoon (5g) into juice or water 2 times daily between meals as a dietary supplement, or as directed by a health care practitioner. Children under 12 years old: 1 teaspoon 1-2 times daily between meals.

Base Formula amount:	237 gm	% of Base	Grams Added	mg per day
	5-Hydroxytryptophan*	0.0 % +	1	33
	Arginine	9.4 % +	0	743
	Histidine	10.1 % +	13	1231
	Isoleucine	9.4 % +	11	1109
	Leucine	12.9 % +	9	1319
	Lysine	9.4 % +	0	743
	Methionine	7.7 % +	0	608
	Phenylalanine	12.9 % +	0	1019
	Taurine	0.0 % +	13	433
	Threonine	8.1 % +	7	873
	Valine	11.1 % +	9	1177
	Pyridoxal-5-phosphate	.3 % +	0	24
	Alpha-ketoglutaric acid	8.5 % +	0	672
	*...or L-Tryptophan (Requires doctor's order)		5	167

Only the essential amino acids are included in this formula because from these all of the other amino acids can be formed, raising the levels of any that might be low. Pyridoxal-5-phosphate (an active form of B6) and alpha-ketoglutaric acid cofactor nutrients are key factors needed for the body's utilization of amino acids. The formula may be ordered as a powder that dissolves easily in beverages or may be added to foods such as applesauce. Other forms of supplemental dietary protein or amino acids may need to be restricted while using your customized formula. If enhanced energy levels prevent sleep, avoid bedtime use.

In your organic acid profile, your level of urinary orotate was elevated. Caution should be exercised when supplementing clinical amounts of amino acids.