



# MICRO.NUTRIENT

*Driven by Science. Inspired by You.*

Patient: **Doe, Jon**

Accession ID: 0000000000

Provider: Sample Provider, MD

**Order Status:** Complete

PATIENT		SPECIMEN		PROVIDER	
NAME <b>Doe, Jon</b>	AGE <b>31</b>	ACCESSION ID <b>0000000000</b>	DATE COLLECTED <b>03/06/2019</b>	Account ID <b>00000000</b>	CLIENT NAME <b>Sample Provider, MD</b>
DOB <b>8/22/1987</b>	Gender <b>Male</b>	ORDER ID <b>0000-000000000000-000000</b>	DATE RECEIVED <b>03/07/2019</b>	Address <b>123 S. Any Street ANYWHERE, TX 77000</b>	
Patient ID <b>00-000-00000</b>			DATE REPORTED <b>03/23/2019</b>		

## Welcome to your Micronutrient Profile, Jon!

Your body is unique and your story is too. Virtually all metabolic and developmental processes that take place in the body require micronutrients and strong evidence suggests that subtle vitamin, mineral, and antioxidant deficiencies can contribute to degenerative processes. These cellular deficiencies may suggest the underlying cause of a myriad of unwanted symptoms and, if corrected, can optimize physical and mental health performance.

### The SpectraCell Advantage

Superior insights, earlier interventions, customized treatment plans.

#### Functional



We measure the functional level and capability of nutrients present within your white blood cells, where metabolism takes place and where micronutrients do their job.

#### Long-term



This test measures intracellular micronutrient function over a period of 4-6 months, extending beyond static serum measurements.

#### Proprietary



Only SpectraCell offers the patented Spectrox® (reflects antioxidant capacity) and Immunindex (an overall measure of immune function).

### What we measure:

We have measured the functional levels of 31 micronutrients, from vitamins and minerals to fatty acids and metabolites, as well as an overall measurement of antioxidant capacity and immune function to provide you with a powerful tool for optimal health, performance, and insight into any health condition. We provide your unique nutrient status in the following areas:



#### VITAMINS & MINERALS

Discover your body's unique vitamin and mineral requirements and the disparities that exist within your makeup.



#### AMINO ACIDS

Learn how well your amino acids, the building block of protein, are functioning within your cells.



#### ENERGY, FAT AND METABOLISM

Know how well your body is metabolizing micronutrients for energy production.



#### ANTIOXIDANT STATUS & IMMUNE FUNCTION

Understand your body's ability to manage oxidative stress and your immune response to infections and disease.

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## Results At-A-Glance

### Functional Deficiencies

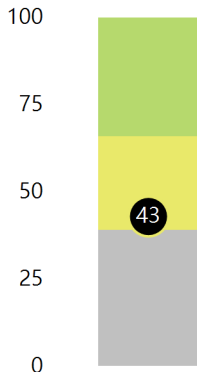
Abnormal	Suggested Supplementation *	Provider Comments
Chromium	200 mcg daily of chromium nicotinate or glycinate for 90 days	
Glucose-Insulin	Replace foods with high glycemic index (sugar, white flour) with whole foods (fruit, vegetables, and whole grains).	
Glutathione	600 mg b.i.d. (1200 mg daily) of N-Acetylcysteine (NAC) Take each dose with a meal	
Immunidex	Address individual micronutrient deficiencies.	
Vitamin B1	50 mg daily	
Vitamin B3	100 mg b.i.d. (200 mg daily) of Niacin	

\* The RDA (Recommended Daily Allowance) was first published in 1968 primarily for use in nutritional labeling of packaged foods. The DRI (Dietary Reference Intake), published in 1997, serves as replacements for the former RDA, although the actual values are generally within an order of magnitude, and are also primarily for use in nutritional labeling and fortification of packaged foods. In most cases, neither the RDA nor the DRI will be adequate to replete a nutrient in people who demonstrate a functional cellular deficiency of said nutrient. An evidence based approach was used to develop clinically relevant repletion recommendations, consisting of data from published studies and clinician expertise. However, the information presented is not intended nor implied to be a substitute for professional medical advice, diagnosis or treatment.

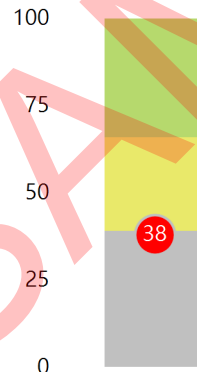
### Borderline Deficiencies

Borderline	Provider Comments
Copper	
Glutamine	
Magnesium	
Vitamin A	
Vitamin B2	

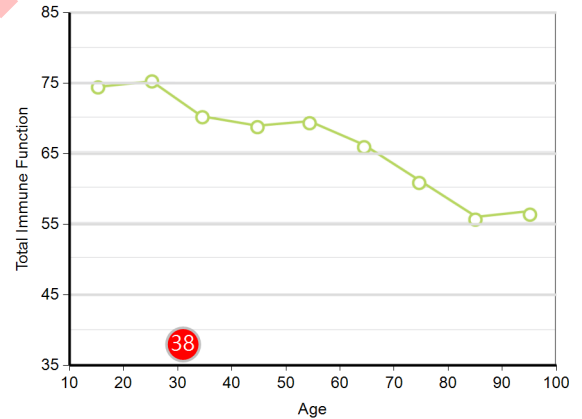
**Spectrox®**  
Total Antioxidant Function



**Immunidex**  
Total Immune Function



**Total Immune Function vs Age**



**Deficient**  
Values in this range indicate a poor growth response. Cell function is compromised and likely requires nutrient repletion.

**Average**  
Values in this range indicate an average growth response. Cell function is not yet optimal and may require nutrient repletion.

**Strong**  
Values in the range indicate a stronger than average growth response. Cells are functioning well.

#### Spectrox®

Total Antioxidant Function is a measurement of overall antioxidant function. The patient's cells are oxidatively challenged and the cells' ability to resist damage is determined.

#### Immunidex

Total Immune Function is an indication of how well a person's T-lymphocytes are functioning by measuring their response to mitogen stimulation (ability to grow). Since lymphocyte function is widely considered a systemic measure of general health, a healthy (stronger) response is desired. A less-than-optimal response may improve with nutrient repletion.

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Micronutrients	Patient Results	Reference Range	Patient Result	Interpretation
<b>B-VITAMINS</b>				
Vitamin B1		>>78%	73	Deficient
Vitamin B2		>>53%	56	Borderline
Vitamin B3		>>80%	75	Deficient
Vitamin B6		>>54%	70	
Vitamin B12		>>14%	20	
Folate		>>32%	50	
Pantothenate		>>7%	27	
Biotin		>>34%	45	
<b>AMINO ACIDS AND METABOLITES</b>				
Serine		>>30%	37	
Glutamine		>>37%	41	Borderline
Asparagine		>>39%	51	
Choline		>>20%	30	
Inositol		>>58%	73	
Carnitine		>>46%	59	
Oleic Acid		>>65%	72	
<b>OTHER VITAMINS &amp; MINERALS</b>				
Vitamin D3		>>50%	67	
Vitamin A		>>70%	72	Borderline
Vitamin K2		>31-85%	70	
Manganese		>>50%	77	
Calcium		>>38%	48	
Zinc		>>37%	50	
Copper		>>42%	44	Borderline
Magnesium		>>37%	39	Borderline
<b>CARBOHYDRATE METABOLISM</b>				
Fructose Sensitivity		>>34%	45	
Glucose-Insulin Interaction		>>39	33	Deficient
Chromium		>>40%	34	Deficient
<b>ANTIOXIDANTS</b>				
Glutathione		>>42%	34	Deficient
Cysteine		>>41%	57	
Coenzyme Q10		>>86%	97	
Selenium		>>74%	80	
Vitamin E		>>84%	92	
Alpha Lipoic Acid		>>81%	90	
Vitamin C		>>40%	73	

SAMPLE

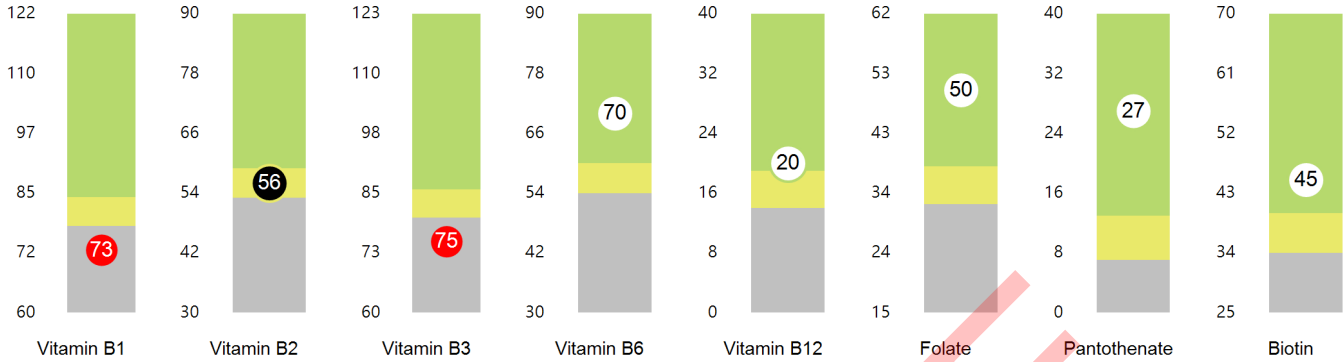
*The reference ranges listed in the above table are valid for male and female patients 12 years of age or older.*

<b>Deficient</b> Values in this area represent a deficiency and may require nutrient repletion or dietary changes	<b>Borderline</b> Values in this area represent a borderline deficiency and may indicate a need for nutrient repletion or dietary changes	<b>Normal</b> Values in this area represent a normal result
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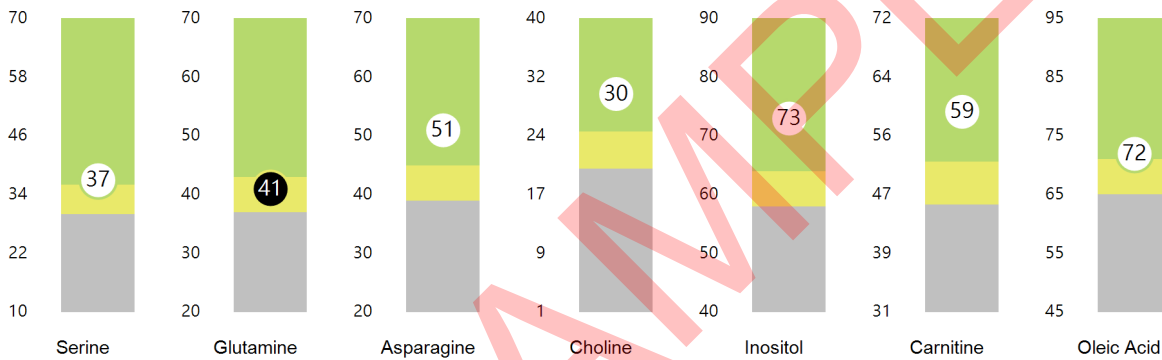
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● **Deficient**  
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 ● **Borderline**  
Values in this area represent a borderline deficiency and may indicate a need for nutrient repletion or dietary changes
 ● **Normal**  
Values in this area represent a normal result

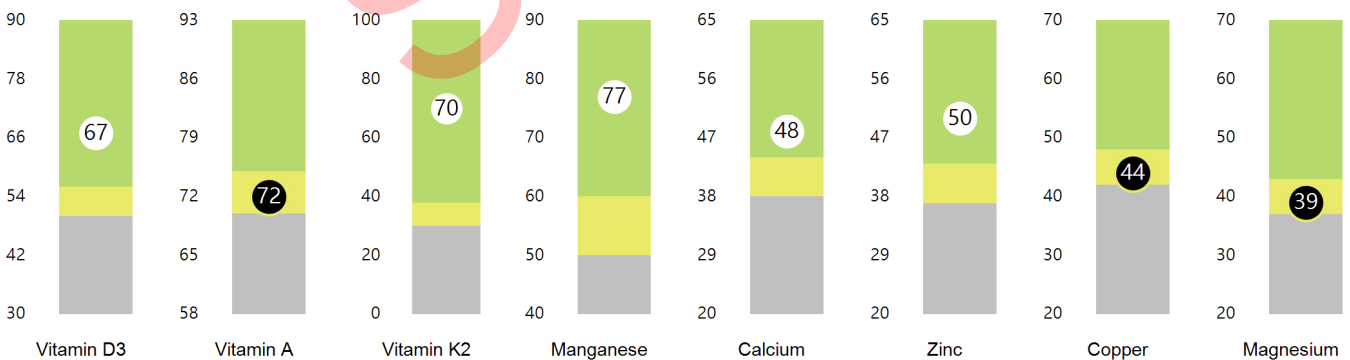
### B-Complex Vitamins



### Amino Acids & Metabolites



### Other Vitamins & Minerals



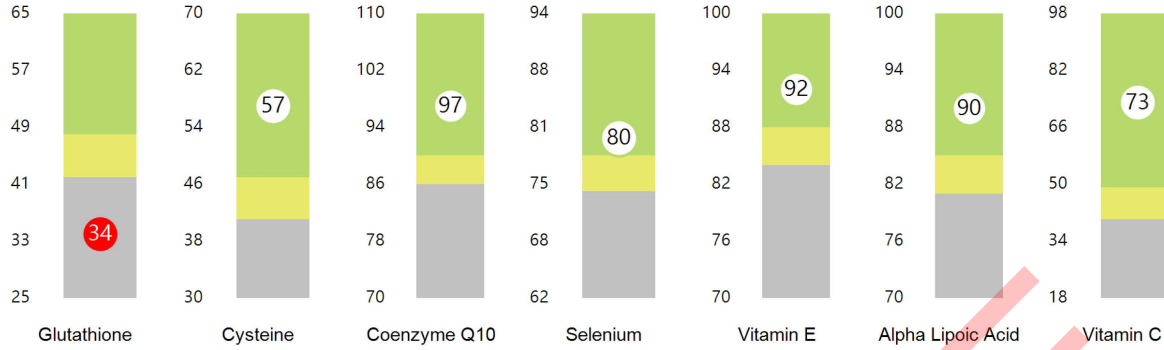
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● **Normal**  
Values in this area represent a normal result

### Individual Antioxidants



### Carbohydrate Metabolism

**Fructose Sensitivity**

This assay measures changes in the patient's lymphocyte growth response to a fructose challenge. Significant reduction in cell growth capacity is indicative of poor ability to metabolize fructose. This can be due to nutritional deficiencies of necessary cofactors in the fructose metabolizing pathway (e.g. copper, zinc) or may be due to genetic factors.

Fructose Sensitivity: 45

**Glucose-Insulin Interaction**

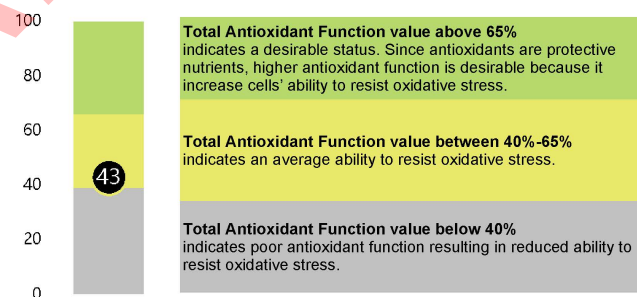
The patient's cells are challenged with glucose and their ability to grow in the presence or absence of insulin is determined. A significant decrease of cell growth is indicative of reduced ability to metabolize glucose.

Glucose-Insulin Interaction: 33

Chromium: 34

### Spectrox® - Total Antioxidant Function

Total Antioxidant Function is a measurement of overall antioxidant function. The patient's cells are oxidatively challenged and the cells' ability to resist damage is determined.



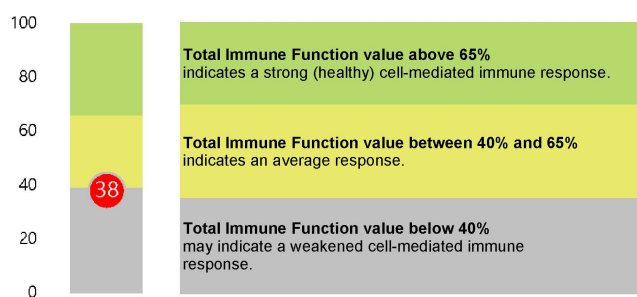
**Total Antioxidant Function value above 65%**  
indicates a desirable status. Since antioxidants are protective nutrients, higher antioxidant function is desirable because it increase cells' ability to resist oxidative stress.

**Total Antioxidant Function value between 40%-65%**  
indicates an average ability to resist oxidative stress.

**Total Antioxidant Function value below 40%**  
indicates poor antioxidant function resulting in reduced ability to resist oxidative stress.

### Immunidex - Total Immune Function

Total Immune Function is an indication of how well a person's T-lymphocytes are functioning by measuring their response to mitogen stimulation (ability to grow). Since lymphocyte function is widely considered a systemic measure of general health, a healthy (stronger) response is desired. A less-than-optimal response may improve with nutrient repletion.



**Total Immune Function value above 65%**  
indicates a strong (healthy) cell-mediated immune response.

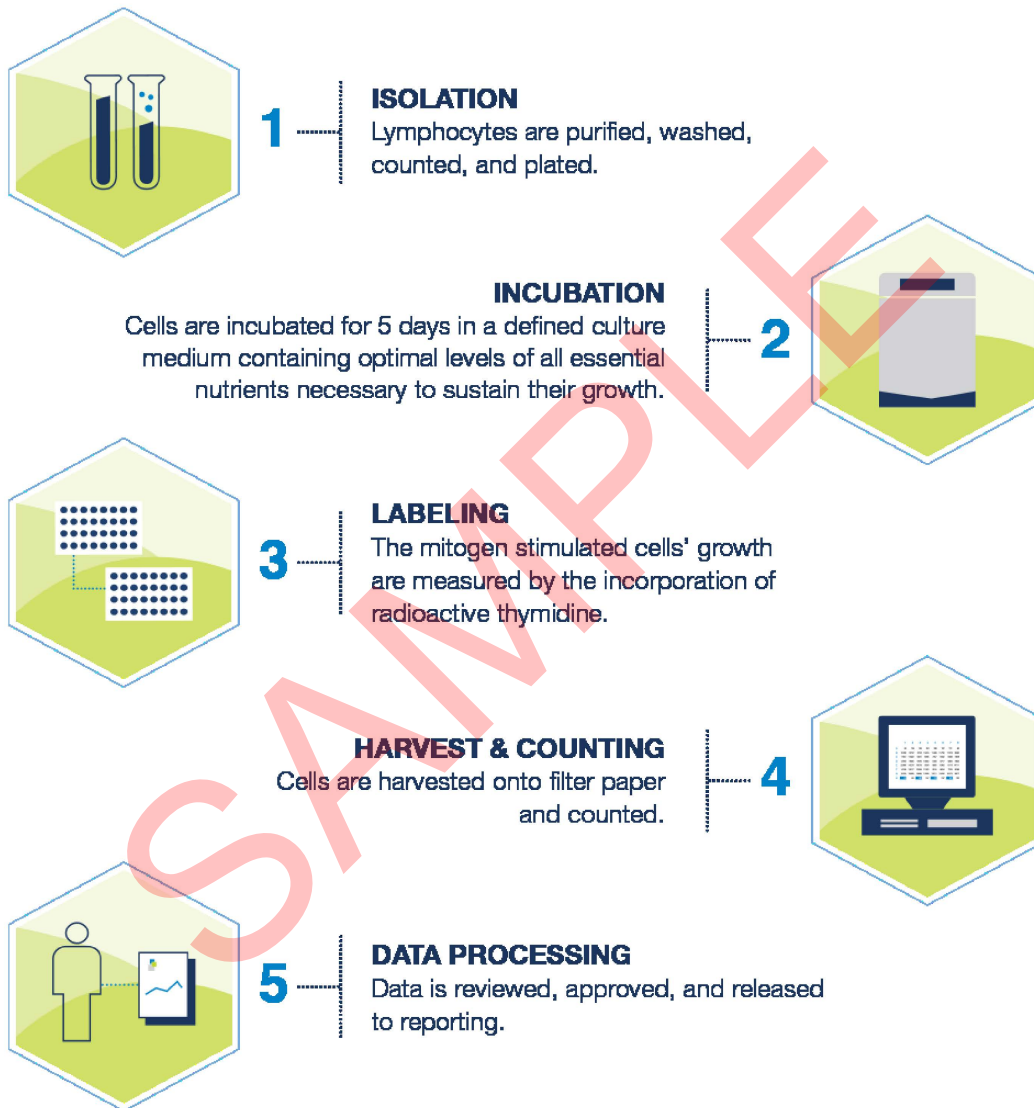
**Total Immune Function value between 40% and 65%**  
indicates an average response.

**Total Immune Function value below 40%**  
may indicate a weakened cell-mediated immune response.

## Overview of Test Methodology

Cellular Function = Performance, Not Just Potential

### Lymphocyte Proliferation Assay

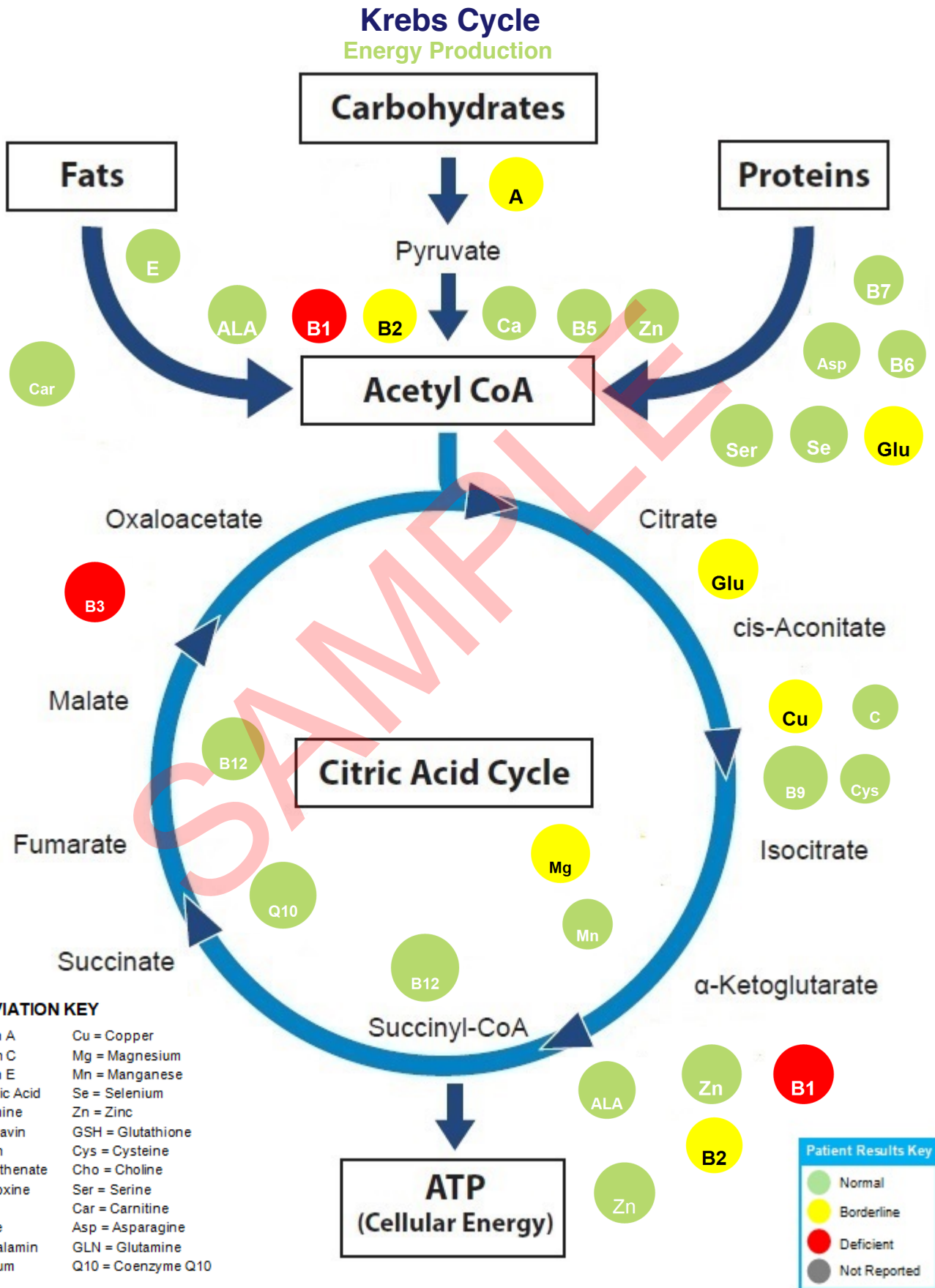


Routine turnaround time for the Micronutrient assay is 10-14 business days.

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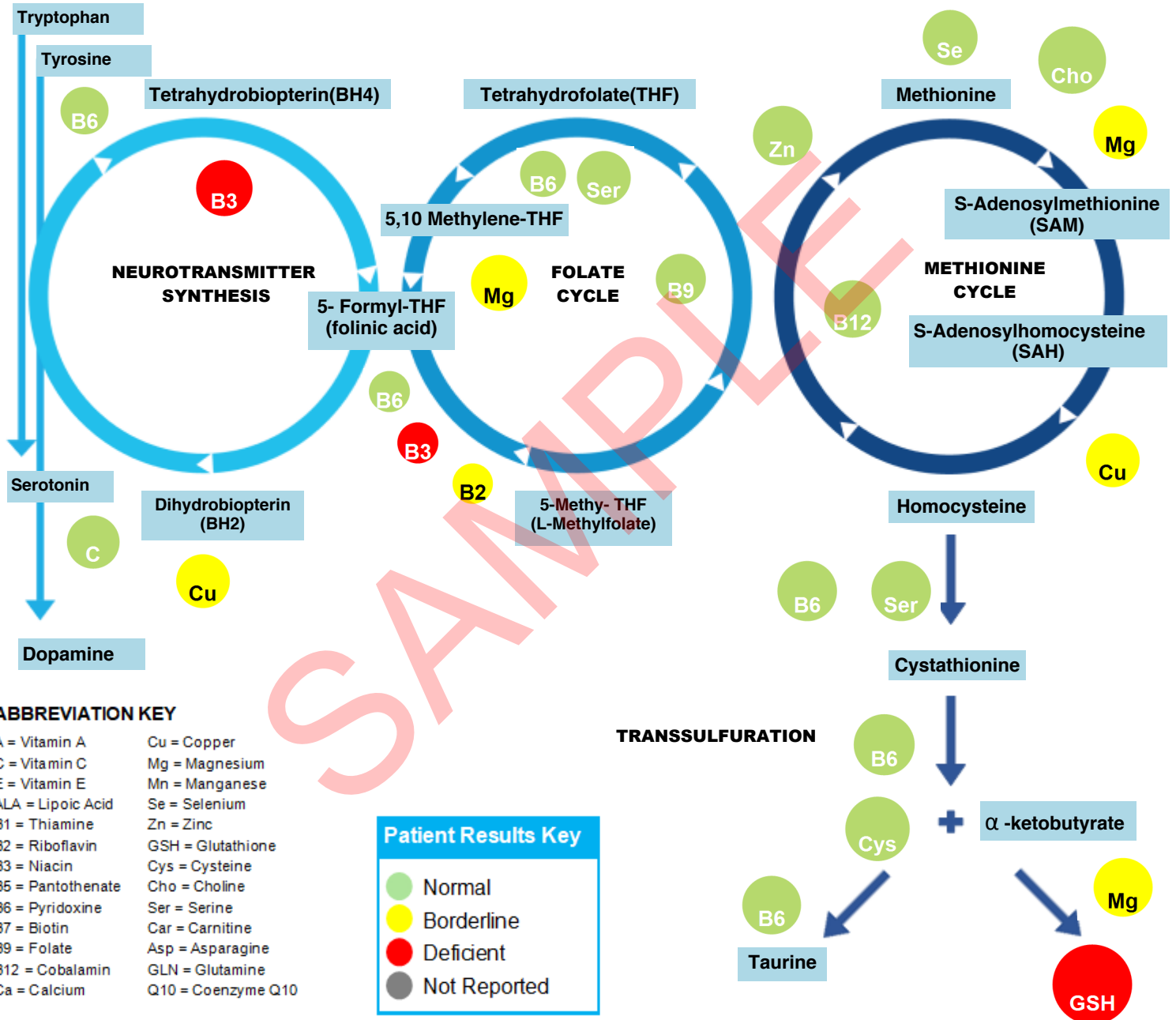
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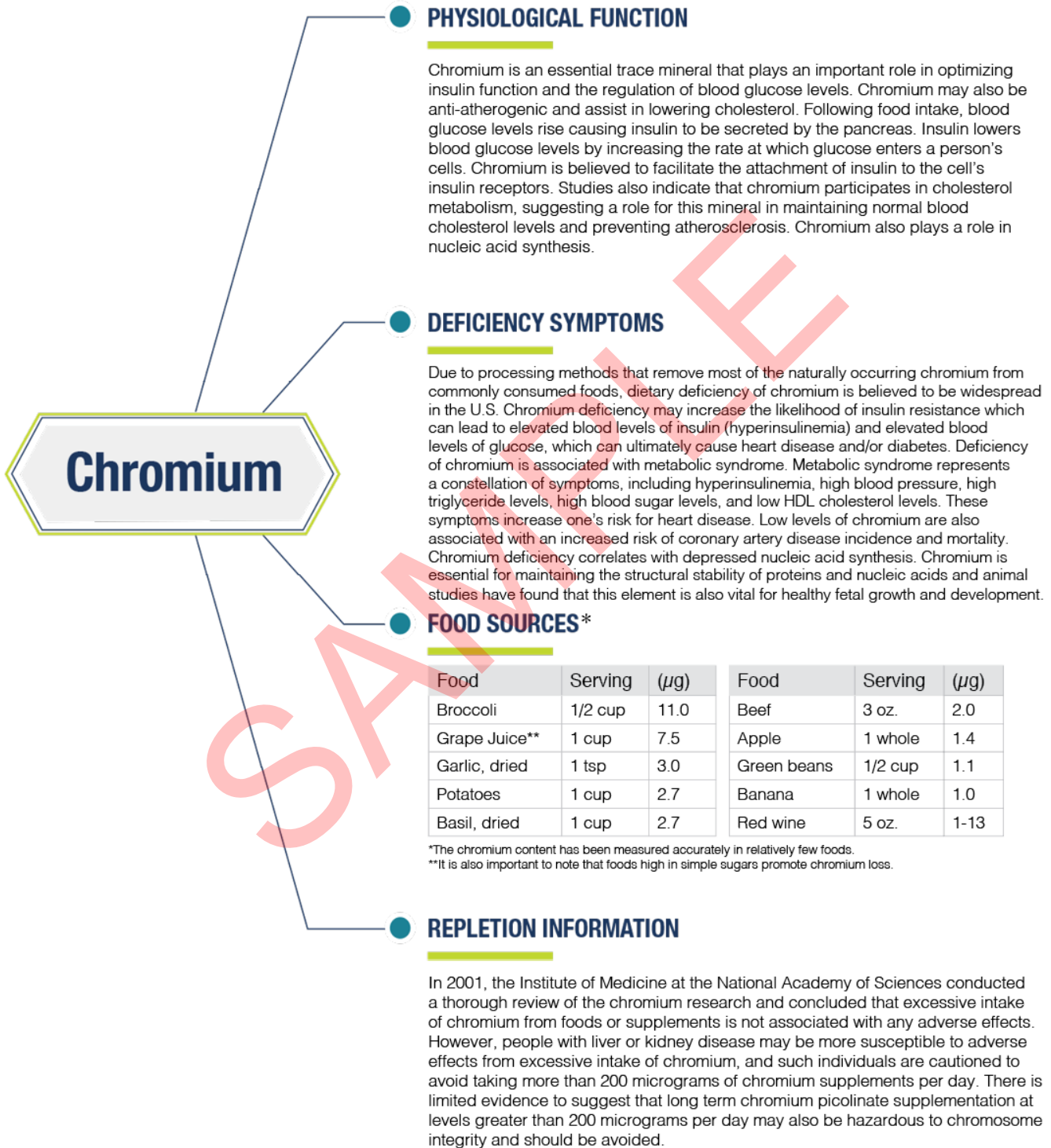
## Methylation Cycle

Detoxification, Cellular Adaptability, Gene Regulation



## Supplemental Information

### Cellular Function = Performance, Not Just Potential



## Supplemental Information

### Cellular Function = Performance, Not Just Potential

#### Glucose-Insulin Interaction

##### PHYSIOLOGICAL FUNCTION

A stimulation of lymphocyte growth by insulin may indicate a functional deficiency of insulin in vivo, or a metabolic defect in glucose utilization. At suboptimal glucose concentrations, supplementation of lymphocyte cultures with insulin exerted a sparing effect. This means that insulin addition makes uptake or utilization of glucose and amino acids more efficient, producing more cellular energy, and thus, a greater growth response. At optimal concentrations of glucose, insulin does not exert a sparing effect in healthy persons.

##### DEFICIENCY SYMPTOMS

Preliminary evidence suggests that persons with abnormal Glucose-Insulin Interaction exhibit hypoglycemia or hyperglycemia based on glucose tolerance testing. Morbidly obese persons with abnormal Glucose-Insulin Interaction may indicate insulin resistance. Thus, deficiency symptoms include fatigue, headaches, nausea, disorientation, dizziness, cold hands and feet, glucose intolerance.

##### FOOD SOURCES

Dietary suggestions are to replace, as much as possible, refined carbohydrates (table sugar, corn syrup, white flour, products made predominantly with white flour and/or sugar) with whole-food, unrefined carbohydrates (whole grain products, legumes, fruits). Reduce intake of foods with a high glycemic index.

##### REPLETION INFORMATION

If clinically indicated, it is suggested that further laboratory testing of glucose and insulin metabolism be conducted (glucose tolerance test, glycosylated hemoglobin).

Since chromium status is closely linked with insulin function and glucose tolerance, a chromium deficiency is one possible reason for abnormal Glucose-Insulin Interaction.

## Supplemental Information

### Cellular Function = Performance, Not Just Potential



## Supplemental Information

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#### ● PHYSIOLOGICAL FUNCTION

##### What Does the Immunidex Measure?

A patient's Immunidex score is one measurement to evaluate a person's cell-mediated immune system performance. Specifically, it measures T-cell lymphocyte proliferation. Since immune function is a systemic measure of general health, a higher Immunidex score is generally desired since it means a person can respond efficiently not only to exogenous threats such as pathogens or allergens, but also to endogenous threats like tumors. The immune system, comprised of both cell mediated (Th1) and humoral (Th2) components, when balanced and performing optimally, affords us critical protection and promotes health and wellness.

##### How is the Immunidex Performed?

A patient's lymphocytes are isolated from whole blood and introduced to a protein that stimulates growth. The protein mitogen used to trigger mitosis, or cell division, is PHA (phytohemagglutinin), which stimulates T-lymphocytes to proliferate. The proliferative response is measured by the incorporation of radioactive thymidine into newly synthesized DNA. Your patient's response is compared to responses of a reference population and results are reported to you as an Immunidex score.

##### What Affects the Immunidex Result?

Micronutrient deficiencies will undermine a person's immune function, and thus lower the Immunidex. Since the highly complex immune system is dependent on the intracellular availability of vitamins, minerals and antioxidants, correcting specific micronutrient deficiencies typically raises the Immunidex and contributes to tangible clinical benefits, such as reduced infections and may assist in achieving Th1/Th2 balance.

##### How Does the Immunidex Correlate with Antioxidant Function?

In general, the higher the antioxidant score (SpectroX®), the higher the Immunidex score. Antioxidant function plays an important role in promoting optimal T-cell (lymphocyte) function. It is important to find out if a patient has deficiencies in specific antioxidant nutrients so they can supplement wisely. But it is also important to measure a total antioxidant function because the metabolic pathways in which antioxidants are involved are highly complex, sometimes redundant and often overlapping. Research confirms that taking excess antioxidants that are not needed (i.e. where no deficiency exists) can actually cause them to become pro-oxidants and decrease antioxidant function.

##### How is Immunidex Related to Aging?

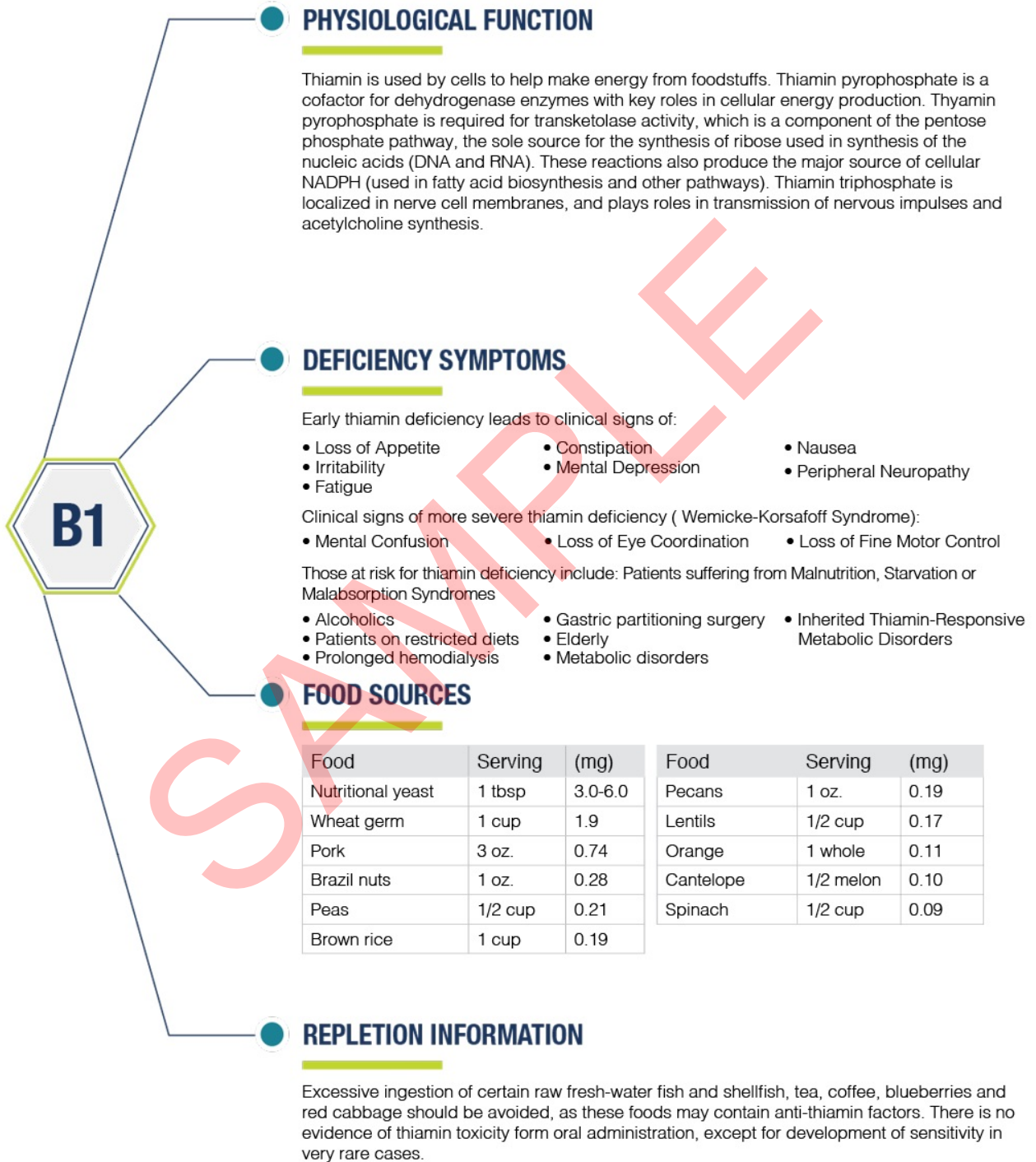
As we age, our immune function typically decreases as seen in the figure below. Although many factors are involved in this complicated process of decline, the Immunidex is one of many relevant aging biomarkers since age diminishes the ability of a person's lymphocytes to respond to challenges. The effects of both good and poor antioxidant function on the Immunidex is shown and emphasizes the importance of testing for antioxidant function (SpectroX®) and individual antioxidant deficiencies.

##### How Do You Order Immunidex?

The Immunidex is part of SpectraCell's Micronutrient Testing panel. There is no additional charge for this calculated test result. Ordering instructions are the same – same kit, same blood draw instructions.

## Supplemental Information

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## Supplemental Information

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