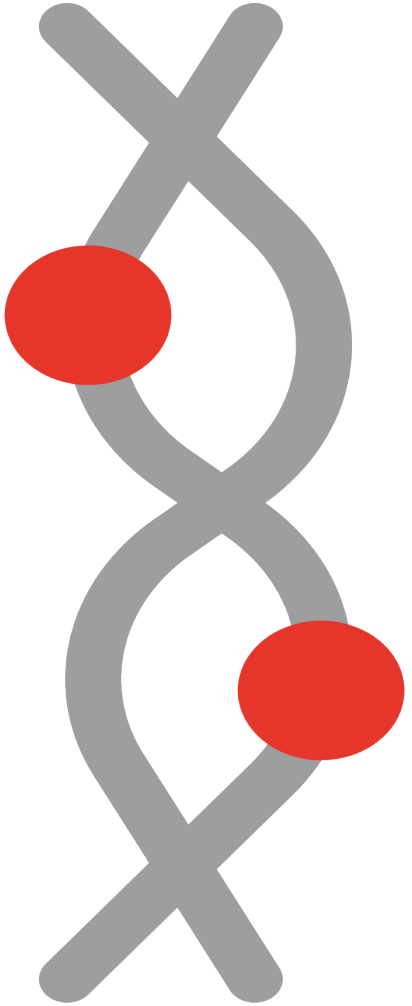
Fagron genomics



Gene Comprehensive Nutrigenomic Report

Accession Number: ##########
Specimen Collected: ##/##/####
Specimen Received: ##/##/####
Report Generated: November 17, 2022
Specimen Type: Buccal Swab
Provider: ######## ########
Patient Name: ###### ######
Patient DOB: ##/##/####
Patient Gender: Male

Do not make any decisions about your health solely based on the information contained in this report. Always consult with a licensed and experienced health practitioner when you receive this report.

GX Sciences | 844-258-5564 | www.GXSciences.com
Lab | 4150 Freidrich Lane, Ste H | Austin, TX 78744
Laboratory Director: James W. Jacobson, Ph.D

– 36 – Male

(-/-) No clinical abnormality | (+/-) Heterozygous result | (+/+) Homozygous result

rsID	Gene	Genetic Result	Therapeutics Associated With Positive Result	Highly Recommended Therapeutics	Provider Discretion: As Needed Formula Recommendations	Lifestyle Recommendations	Laboratory Recommendations
Essential Vitamins							
rs4501570	TTPA	-/-	Vit E (alpha Tocopherol)				
rs4606052	TTPA	-/-					
rs4587328	TTPA	-/-					
rs7501331	BCOM1	+/-	Vitamin A	**10,000 units of Vitamin A daily**		Recommend Foods High in Vit A	Consider Routine Vitamin A Level
rs12934922	BCOM1	+/-					
rs11558471	SLC30A8	-/-	Avoid High Dose Zinc				
rs33972313	SLC23A1	-/-	High Dose Vitamin C				

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rsID	Gene	Genetic Result	Therapeutics Associated With Positive Result	Highly Recommended Therapeutics	Provider Discretion: As Needed Formula Recommendations	Lifestyle Recommendations	Laboratory Recommendations
rs1395	SLC5A6	-/-	Biotin (B7) and Pantothenate (B5)				
rs6535454	CoQ2	+/+	CoQ-10, PQQ	**Mito-Cell PQQ™**			Consider Routine CoQ10 level
rs731236	VDR Taq	+/-	Vitamin D Vitamin K		Vitamin D3+K2 (5000 units daily)		Consider Routine Vitamin D Level
rs2282679	GC or DBP	-/-					
rs1801198	TCN2	+/-	Methyl B12 Adenosyl B12		Methylation Pro Topical™ OR Methylation Complete Fast Dissolves™ once daily		Consider Routine Plasma B12 Level
rs1867277	FOXE1	-/-	Iodine				Consider Routine Thyroid Panel
rs225014	DIO2	+/-	Selenium		Seleniomethionine 200 mcg per day if Free T3 is Low		

Summary for Essential Vitamins

Highly Recommended Therapeutics

- 10,000 units of Vitamin A daily
- Mito-Cell PQQ™

Provider Discretion: As Needed Formula Recommendations

- Vitamin D3+K2 (5000 units daily)
- Methylation Pro Topical™ OR Methylation Complete Fast Dissolves™ once daily
- Seleniomethionine 200 mcg per day if Free T3 is Low

Lifestyle Recommendations

- Recommend Foods High in Vit A

Laboratory Recommendations

- Consider Routine Vitamin A Level
- Consider Routine CoQ10 level
- Consider Routine Vitamin D Level
- Consider Routine Plasma B12 Level
- Consider Routine Thyroid Panel

VITAMIN A

VARIANTS IN THE BCOM1 GENE HAVE BEEN ASSOCIATED WITH DISRUPTED VITAMIN A SYNTHESIS

BENEFITS

Helps maintains healthy teeth, skin and tissues

Promotes good eyesight

Has a role in a healthy pregnancy and breastfeeding

May play a role in cancers, age-related macular degeneration & measles

DEFICIENCY VS HIGH INTAKE

Deficiency

- Risk for eye problems - blindness, night blindness, xerophthalmia (non-reversible corneal damage)
- Hyperkeratosis (dry, scaly skin)
- Diarrhea

High intake

- Birth defects in eyes, skull, lungs and heart
- Acute/Chronic Vitamin A poisoning
  - Dizziness
  - Nausea
  - Headaches
  - Skin irritation
  - Pain in joints and bones
  - Coma
- Increased fracture risk

FOODS HIGH IN VITAMIN A

Meats & fish (beef liver, tuna, herring, salmon, chicken)

Breakfast cereals

Fruits (oranges, cantaloupe, mangos, apricots)

Black-eyed beans

Dairy products (fat-free or skim milk, part-skim ricotta cheese, low-fat yogurt)

Hard boiled eggs

Vegetables (broccoli, spinach, dark leafy greens, carrots, sweet potatoes, pumpkin, peppers (sweet, red, raw), summer squash)

Pistachios

Gene Information Key

rsID	Gene	"-" variant	"+" variant
rs12934922	BCOM1	A	T
rs7501331	BCOM1	C	T
rs6535454	CoQ2	A	G
rs225014	DIO2	T	C
rs1867277	FOXE1	G	A
rs2282679	GC or DBP	T	G
rs33972313	SLC23A1	C	T
rs11558471	SLC30A8	A	G
rs1395	SLC5A6	G	A
rs1801198	TCN2	C	G
rs4501570	TTPA	A	G
rs4587328	TTPA	C	T
rs4606052	TTPA	C	T
rs731236	VDR Taq	A	G

Definitions

ESSENTIAL VITAMINS	The polymorphisms in this panel will identify any potential weakness of absorption, conversion or delivery or your essential vitamins.
BCOM1 Ala379Val	BCOM1 (?-carotene 15,15?-monooxygenase) converts beta-carotene into retinol (Vit A). Almost half of the population carry significant variants of the BCMO1 gene. There are two genetic variations of the BCMO1 gene which create significant weakness in the conversion to Vit. A. People with a T allele on both rs12934922 and rs7501331 have a 69% decreased conversion of beta-carotene to retinol. For people with only a single T in the rs7501331 SNP, the conversion is decreased by 32%. Vitamin A is a general term that covers several different forms of the vitamin. Animal food sources mainly provide retinyl palmitate, which is broken down in the intestines to retinol. In this form, it is stored by the body and then converted to an active form for use. The plant forms of vitamin A are called carotenes, such as beta-carotene which is found in abundance in carrots and other orange-colored foods. About 80-90% of the retinoids in the body are stored in the liver and used to maintain a steady level in the blood. The body then used the retinoids in a variety of ways including in stem cells, photoreceptors in the eye, epithelial cells, embryonic cells, various immune cells, red blood cells, and much more.
COQ2	CoQ2 (Para-hydroxybenzoate—polyprenyltransferase, mitochondrial) codes for an enzyme that functions in the final steps in the biosynthesis of CoQ10 (ubiquinone).. This enzyme, which is part of the coenzyme Q10 pathway, catalyzes the prenylation of parahydroxybenzoate with an all-trans polyprenyl group. Mutations in this gene cause coenzyme Q10 deficiency. Polymorphisms in this gene can lead to severe fatigue, muscle weakness, exercise intolerance and general mitochondrial weakness.
GC or DBP	GC aka DBP (Vit. D Binding Protein) gene codes for Vit. D binding protein. This protein belongs to the albumin family and is a multifunctional protein found in plasma, ascitic fluid, cerebrospinal fluid and on the surface of many cell types. It is manufactured in the hepatic parenchymal cells. DBP is capable of binding to all forms of Vit D including ergocalciferol (vitamin D2) and cholecaldiferol (vitamin D3), the 25-hydroxylated forms (calcifediol) and the active hormonal product, 1,25-dihydroxyvitamin D (calcitriol). The major proportion of vitamin D in blood is bound to this protein. It transports vitamin D metabolites between skin, liver and kidney, and then on to the various target tissues. It binds to vitamin D and its plasma metabolites and transports them to target tissues. Polymorphisms in this gene decrease the affinity of the protein to Vit. D which reduces the response rate to Vit. D therapy. Patients with these polymorphisms require high doses of Vit D supplementation.
SLC23A1	SLC23A1 (Solute Carrier Family 23A1) codes for an enzyme that functions as a sodium dependent Vit. C transporter. This enzyme functions a one of the two enzymes responsible for the absorption of vitamin C and its distribution to organs in the body. Polymorphisms in this gene have been linked to Vit. C deficiency and additionally to Glaucoma.
SLC30A8	The SLC30A8 (Solute Carrier Family 30A8) polymorphism that codes for a less efficient zinc efflux transporter that can result in the accumulation of zinc in intracellular vesicles. This gene is expressed at a high level in the pancreas and in the macula. Allelic variants of this gene confer susceptibility to diabetes mellitus and poor response to zinc containing supplements for macular degeneration.
SLC5A6	SLC5A6 (Solute Carrier Family 5A6) codes for an enzyme that is responsible for transport of pantothenate (B5) and biotin (B7). This polymorphism can affect both intestinal uptake, cellular delivery and transplacental vitamin transport. Both pantothenate and biotin are very important in the metabolism of fats and carbohydrates, carbon dioxide transport and in gluconeogenesis. Most symptoms of weakness in this enzyme can cause hair loss, skin rash, brittle nails and tingling of the extremities.
TTPA rs4501570	This gene encodes a soluble protein that binds alpha-tocopherol, a form of vitamin E, with high selectivity and affinity. This protein plays an important role in regulating vitamin E levels in the body by transporting vitamin E between membrane vesicles and facilitating the secretion of vitamin E from hepatocytes to circulating lipoproteins. Mutations in this gene cause vitamin E deficiency
HEALTH PRECAUTIONS	
DIO2	DIO1 (Deiodinase 1) codes for an enzyme in the iodothyronine deiodinase family. It catalyzes the activation, as well as the inactivation of thyroid hormone by outer and inner ring deiodination, respectively. Specifically, it is responsible for the selenium-dependent conversion of T4 thyroid to T3 thyroid.
INFLAMMATORY	This Enzyme category has significant effects on the inflammatory state of a person's body. Polymorphisms in these specific enzymes will significantly increase the levels of inflammation in the body. By supplementing these enzyme deficiencies, the patient will effectively reduce inflammatory damage to the body.
VDR Taq1	The Vitamin D (calcitriol) Receptor is a member of the nuclear receptor family. Upon activation by vitamin D (a secosteroid), the VDR causes the activation or deactivation of protein production by the cell. Impaired vitamin D function can result in signigicant immune weakness and increased cancer risk, as well as, early bone loss, an increased risk of cognitive decline and mood disorders.
METABOLIC RISK FACTOR	The polymorphisms in this category relate to increase risk of developing metabolic syndromes including diabetes, fatty liver, hypothyroidism and insulin resistance.
FOXE1	FOXE1 (Forkhead Box Protein E1) is a gene that codes for a protein that is intimately involved in thyroid hormone synthesis. Polymorphisms in this gene most commonly lead to an increased risk of hypothyroidism due to a weakened ability to synthesize thyroid hormone.
METHYLATION	Methylation is a primary biochemical process in the body that involves the addition of a "methyl" chemical group to a vitamin or neurotransmitter. The addition of the "methyl" group allows for very specific biochemical interactions. Poor "methylation" function alters the effectiveness, delivery and function of many vitamins and important chemicals in the cell.

TCN2	The protein product of the Transcobalamin 2 gene, TCN2, binds the active form of vitamin B-12. Individuals with the G/G phenotype at rs1801198 have decreased serum B-12 and increased homocysteine when compared to individuals with the C/C phenotype.

Disclaimers

TESTING:

Testing Performed By: TY

METHODOLOGY AND LIMITATIONS:

Testing for genetic variation/mutation on listed genes was performed using ProFlex PCR and Real-Time PCR with TaqMan® allele-specific probes on the QuantStudio 12K Flex. All genetic testing is performed by GX Sciences, 4150 Freidrich Lane, Ste H, Austin, TX. 78744. This test will not detect all the known alleles that result in altered or inactive tested genes. This test does not account for all individual variations in the individual tested. Test results do not rule out the possibility that this individual could be a carrier of other mutations/variations not detected by this gene mutation/variation panel. Rare mutations surrounding these alleles may also affect our detection of genetic variations. Thus, the interpretation is given as a probability. Therefore, this genetic information shall be interpreted in conjunction with other clinical findings and familial history for the administration of specific nutrients. Patients should receive appropriate genetic counseling to explain the implications of these test results. Details of assay performance and algorithms leading to clinical recommendations are available upon request. The analytical and performance characteristics of this laboratory developed test (LDT) were determined by GX Sciences' laboratory pursuant to Clinical Laboratory Improvement Amendments (CLIA) requirements.
CLIA #: 45D2144988 Laboratory Director: James Jacobson, PhD

DISCLAIMER:

This test was developed and its performance characteristics determined by GX Sciences. It has not been cleared or approved by the FDA. The laboratory is regulated under CLIA and qualified to perform high-complexity testing. This test is used for clinical purposes. It should not be regarded as investigational or for research. rsIDs for the alleles being tested were obtained from the dbSNP database (Build 142).

DISCLAIMER:

UND Result: If you have received the result Variant undetermined (UND) this indicates that we were not able to determine your carrier status based on your raw data. Please refer to the GX Sciences genetic knowledge database for more information: https://www.gxsciences.com/kb_results.asp

DISCLAIMER:

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DISCLAIMER:

These products are not approved by the Food and Drug Administration and are not intended to diagnose, treat, cure or prevent disease. These recommendations are for report purposes only and an individual is not required to use such products. These are recommendations only and do not replace the advisement of your own healthcare practitioner.

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FOXE1

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