Client Name:	John Doe	Sample Received:	
Client DOB:	1/1/1999	Report Date:	3/3/2022
Vial Number:	Sample Report	MaxGen PTID#:	P172
Client Sex:	Male	CLIA Certification:	01D2098265
Referring Account:	MaxGen Labs		
Note:			

Consult with a licensed healthcare professional before making changes based upon any information contained within this report. These recommendations and explanations are based upon clinical observation by MaxGen Labs and current medical research. These results are for educational purposes only and not intended to diagnose, treat or cure any disease or condition. The use of this test and its recommendations have not been approved by the FDA. MaxGen Labs and its staff are not responsible for how this test is used or any damages resulting from its use.

Basic Genetics & Information

Nutrigenomics: The study of how genetic expression is influenced by nutrition. Small variations in genetic structure may require specific nutritional support that is unique to each individual. Genetic testing provides insight to this need.

Genes: Transferred from parent to offspring, genes are the basic unit of heredity. Genes are found on chromosomes and are made up of DNA. Each person has two copies of a gene, one from each parent. Genes are named for the protein they create or the function they have, often being simplified into abbreviations (example: MTHFR – short for methylenetetrahydrofolate reductase).

DNA: Deoxyribonucleic Acid, or DNA, is a molecule within a gene that contains the instructions an organism needs to grow, function, and reproduce. It is the carrier of all genetic information and is made up of chemical base pairs: adenine (A), thymine (T), cytosine (C), guanine (G). The order of sequence determines the information needed to maintain life.

Single Nucleotide Polymorphism (SNPs): A variation in base pair sequencing that may alter the function of a gene. Nutrigenomic testing looks at these variations to determine how a gene may function. Each combination of base pairs may alter the function of a gene in different ways. The variations are described as:

Wild Type – most commonly found pairing in nature; no variation
Heterozygous – one variant copy from a parent; one non-variant copy from a parent
Homozygous – two variant copies, one from each parent

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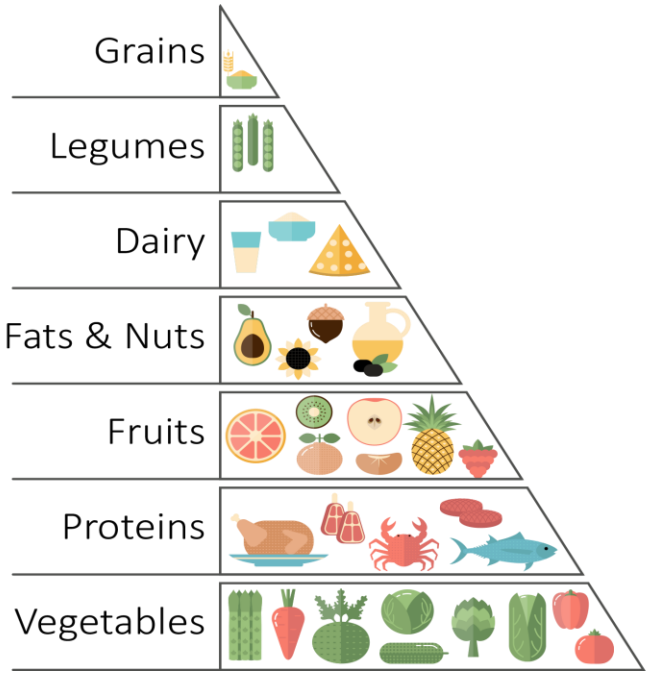
Diet & Genetics

Your genes control how your body responds to fats and carbohydrates, your metabolism, your emotional response to food, and habits that control weight management. Each page of this report will contain information that can help you create a long-term eating plan, one that balances not only the types of food you consume but also when you eat and what you can do to supplement your diet. The information contained in this report should be used as an addition to a wellness plan for longevity and health.



The most well researched diet is the Mediterranean Diet. It is made of low-inflammatory foods that contain a wide variety of nutrients. It is full of vegetables, fruits, lean meats, and healthy fats.
The majority of people should consume a healthy amount of fats, specifically from sources like nuts, avocados, and olives. While most people will do well eating this way, certain genes suggest whether or not you can tolerate extra fats and carbohydrates. In this report, we will discuss
the variations of tolerance to fats and carbs and how the Mediterranean Diet can be altered to accommodate.

Genetics play a major role in the development of disease; however, dietary and lifestyle factors can greatly enhance or reduce your risk of chronic health conditions. Along with your susceptibility factors, we will discuss what you can do to reduce your chance of developing these chronic diseases. Specifically, this report will dive into the concerns of weight management, diabetes, autoimmunity, and cardiovascular disease.

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Carbohydrates & Your Genetics

In addition to a standard Mediterranean Diet, there are several things that can be done to maintain a healthy weight and long-term wellness. Carbohydrates (sugars) are needed for energy production, and the source of those sugars is important. Carbohydrates come in the form of vegetables, fruit, legumes, and grains. When we talk about healthy carbohydrates, we mean this. They also come in the form of refined and processed sources. Pastas, cookies, cakes, and candies fall into this category. These are not considered healthy options. Refined carbs increase your chances of chronic disease.

Carbohydrate Sensitivity

Genes: FABP2

You are not genetically sensitive to refined carbs. While they should be limited long term, you can occasionally consume them as a treat. They still may contribute to inflammation.

Weight Loss

Genes: PLIN

You may have a lower BMI on a high complex carb diet. Consume at least 9 servings of vegetables a day. Refined carbs will increase BMI. Consider a gluten-free Mediterranean Diet. This gene determines the best diet for you if weight loss is a goal.

Diabetes & Blood Sugar

Genes: ADRA2, IRS1, PPARG, FTO

You have an average risk for diabetes and insulin resistance.

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Fats & Your Genetics

Contrary to popular belief, fats are actually a necessary part of a healthy diet. Sources of good, healthy fats include eggs, fish, nuts, seeds, avocados, and olives. Your genes determine if you will have a sensitivity to the various kinds of fats. Some people have introduced a high fat, low carb diet (Ketogenic) into their lifestyle with remarkable success. Others have not. Below, we discuss the various types of fat and whether or not you can successfully incorporate them into your diet.

Monounsaturated Fat

These fats are considered to be heart healthy, lowering so called bad cholesterol and anti-inflammatory. Examples: Olive Oils, Nuts, Avocados

Genes: PPARG

You can consume monounsaturated fats; however, you would not benefit from consuming excessive amounts.

Polyunsaturated Fat

These fats are considered to be heart-healthy, but some are higher producers of inflammation. Healthy examples include:
Wild-caught Salmon & Sunflower Seeds

Genes: PPARG

You would benefit from the consumption of polyunsaturated fats. Choose healthy, organic options like fatty fish and seeds. Avoid refined vegetable oils like canola, soy, or safflower.

Saturated Fat

Given a bad reputation over the years, saturated fats are actually required for proper hormone production. Some people are genetically sensitive to them and should lower consumption. Examples: Animal Fats, Coconut Oil, Butter

Genes: FABP2

You are not sensitive to saturated fats. They may still be inflammatory if consumed in large quantities. Avoid them if you are APOE2 or APOE4.

Cholesterol & Your Genetics

Cholesterol is a necessary fat that is needed for proper brain and hormone health. While it is suggested that so-called bad cholesterol and triglycerides will lead to heart disease, it is important to keep dietary cholesterol in perspective. Eating fat according to your genes can help.

Genes: FADS2, LPL, KCTD10, LIPC

You do not have an increased risk of elevated triglyceride levels.
You have an increased risk of elevated LDL and Total Cholesterol levels
You have an increased risk of lower HDL levels. Consider increasing exercise.
Consumption of animal products could potentially lower your HDL. Consider a pescatarian diet for optimal health.

Ketogenic Diet Results

Genes: ADIPOQ, APOE

You should avoid a high fat diet. You can most likely tolerate some mono and polyunsaturated fats; however, a significant amount of any kind of fats may lead to oxidative stress and inflammation. Consume no more than 20% of your daily calories as fats.

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Gluten, Dairy & Your Genetics

The next piece of the puzzle when it comes to dietary needs is knowing whether or not you have a food intolerance. While you do not require a genetic mutation to acquire one, if you are genetically susceptible, you should be advised to avoid potential food triggers. In this test, we look at the two most common culprits of autoimmunity: gluten and lactose.

Dairy - Lactose

Lactose is a sugar found in dairy products. While many people are already aware of lactose intolerance but others may not notice any symptoms.

Genes: APOA2, MCM6

You are not genetically lactose intolerant.

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Gluten

Gluten is the protein found in wheat, barley, and rye. Known for its sticky nature, gluten can be added to foods unexpectedly. If you are gluten-intolerant, you must work diligently to avoid any hidden sources, such as soups, sauces, and lunch meats. A gluten intolerance is not synonymous with Celiac Disease; although, for the purposes of this test, we strongly encourage you to be tested if you have the genetic potential. Gluten intolerance and/or Celiac Disease can lead to a number of physical symptoms: GI dysfunction, skin conditions, mood disorders, hormone issues, and autoimmunity.

Genes: CCR3, HLA-DQ2.5, IL21, MYO9B

You tested positive for potential gluten intolerance. If you have symptoms, consult with a healthcare provider to consider further testing and possible interventions. You could also take the proactive approach and avoid gluten all together.

GI Disease Results

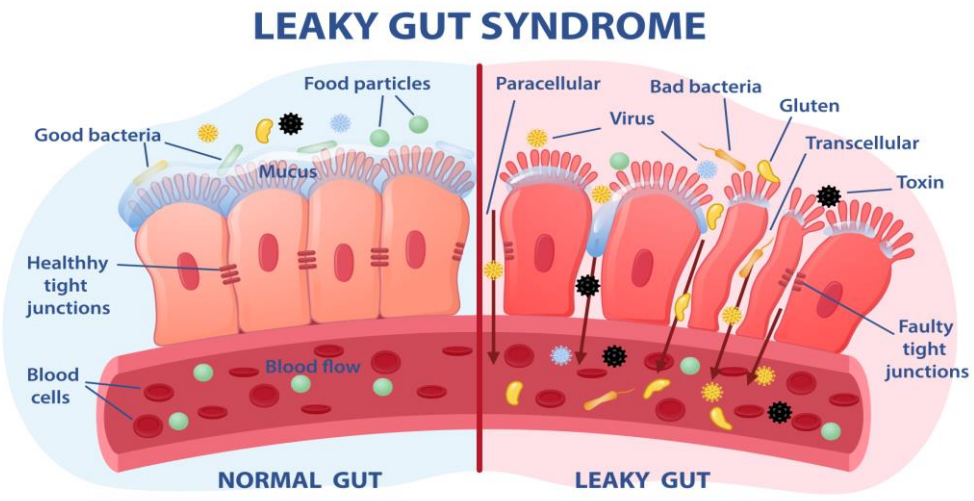
Genes: MYO9B

You may have an increased risk for developing autoimmune gastrointestinal diseases with the consumption of gluten.

Peanut Results

Genes: HLA-SNP

You do not have an increased risk for developing a peanut allergy.



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Weight Loss, Eating Habits & Your Genetics

Your attitude around food can often determine your physical reaction to it. Whether you are an emotional eater, prefer snacking, or are more of a picky eater can all be seen in your genetic code. These small behaviors can have a drastic impact on your weight and well-being.

Energy Consumption

Genes: FTO

You are prone to eating more calories than needed for daily energy expenditure. Consult with a healthcare practitioner to discuss your resting metabolic rate.

Caloric Output

Genes: LEPR

You have a lower resting metabolism.

Exercise & Weightloss

Genes: FTO

You are less likely to lose weight in response to exercise. You still need to move on a regular basis. The MaxFitness Panel can help you determine proper exercise protocols for your genetic type.

Caloric Restriction

Genes: PLIN

You may be able to use calorie restriction for weight loss. Consider consuming 10% less calories than your resting metabolic rate. Work with a practitioner to determine the best calculation.

Emotional Eating

Genes: FTO

You are not genetically prone to emotional eating.

Intermittent Fasting

Genes: PLIN

You do not have genetic issues with eating late at night and weight management. Intermittent fasting may not work for weight loss.

Bitter Foods

Genes: TASR

You are able to taste bitter foods. This may make you less likely to eat green vegetables due to taste. Be sure to consume at least 9 servings per day.

Feeling Full

Genes: FTO

You are not genetically prone to low satiety.

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Vitamins & Your Genetics

Your ability to metabolize vitamins plays a critical role in your health. While we like to think we can get all the vitamins we need from our food supply, due to modern agricultural practices this is becoming less likely. Vitamins are necessary for cellular health, which is the root of all bodily functions. If you want to avoid chronic lifestyle-related diseases, such as heart disease and diabetes, proper micronutrient levels must be monitored. If you have any potential for vitamin deficiencies, it is wise to consult with a practitioner about supplementation. Do not simply go to the health food store to buy generic multivitamins. Each genetic variant requires specific forms of micronutrients.

Vitamin E

This vitamin is a powerful antioxidant that protects cells from damage. Eating foods rich in vitamin E is recommended, including sunflower seeds, hazelnuts, and almonds. You could take a supplement for vitamin E, but most companies use soy or wheat germ as their source.

Genes: Intergenic- S

You may not have higher plasma levels of Vitamin E, which is a powerful antioxidant that protects cells from damage. Consider supplementation or eating more Vitamin E containing foods.

Vitamin C

This vitamin is critical for proper immune response. Deficiencies in vitamin C can lead to problems with connective tissues (such as bone, collagen, and muscles). Foods high in vitamin C are citrus fruits. Many opportunistic infections use vitamin C as a source of energy. This can lead to an increase in oxalic acid, which may cause significant symptoms.

Genes: SLC23A1

You are not genetically predisposed for Vitamin C deficiency.

B6 (Pyridoxine)

This vitamin is involved in several neurological functions, including the production of serotonin, noradrenaline, and protecting nerve cells. Foods that are rich in B6 include legumes, leafy green vegetables, eggs, and fish. You can also take a specific B6 supplement (use P-5-P).

Genes: NBPF3

You are genetically predisposed to Vitamin B6 deficiency. Consider supplementation and increasing foods that contain B6.

B2 (Riboflavin)

This vitamin is critical for nerve health, heart health, and healthy skin, hair, and nails. This vitamin works closely with all other B vitamins, helping to convert food sources into cellular energy (ATP). You could take riboflavin as a part of a healthy B complex.

Genes: MTHFR

You are not genetically predisposed to Vitamin B2 deficiency.

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Vitamin D & Your Genetics

Vitamin D is a fat-soluble vitamin that must be converted in the liver and kidneys. Limited foods supply Vitamin D, so substantial exposure to sunlight or specific supplementation can be used when a deficiency is present. Vitamin D is crucial for calcium concentrations, bone growth, immune function, and the reduction of inflammation.

For daily use, both D2 and D3 forms of Vitamin D are beneficial, but D3 (cholecalciferol) should be used for therapeutic dosing during a deficiency. Supplements between 5,000 IU and 10,000 IU are ideal for daily therapeutic dosing. Daily intake should be between 1,000 – 2,000 IU of Vitamin D or cod liver oil for general wellness.Ideally, Vitamin D should be absorbed from natural sunlight exposure. Between the hours of 10am – 3pm, UV rays should hit the face, neck, arms, and shoulders for 10-30 minutes at least twice a week (avoid skin burns).

The three VDR SNPs in this test are from a physician poll of the most common SNPs needed in clinical practice. For blood work, practitioners tend to look at 25(OH) D by itself, while other practitioners also look at 1,25(OH)2D. The 1,25-dihydroxyvitamin D is formed from 25(OH)D in the kidneys under the influence of Parathyroid Hormone and specific enzymes; whereas, 25(OH)D is converted in the liver. It is also recommended to measure HbA1c for blood sugar control.

Vitamin D Foods

Cod Liver Oil
Swordfish
Salmon
Beef Liver
Egg Yolks
Cheese

Vitamin D Testing

1,25 OH Vitamin D may be helpful in some complicated cases. Your Doctor may order the following tests:
25-hydroxy (OH) vitamin D
1,25 dihydroxyvitamin D

Health Conditions

Rickets
Osteoporosis
Cancer
Inflammatory Bowel Disease
Multiple Sclerosis
Type I and II Diabetes

VDR-BSM

You have a homozygous variation in VDR-BSM. You have a higher chance of developing bone mineral disorders. Consider increasing consumption of foods high in Vitamin D.

VDR-TAQ

You have a homozygous variation in VDR-TAQ. You should consider watching your Vitamin D levels and use natural sources of Vitamin D. The implications of this gene are highly dependent upon your ethnicity.

VDR-FOK

You have a heterozygous variation in VDR-FOK. Consider watching your Vitamin D levels and consuming foods high in Vitamin D.

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B12 & Your Genetics

Do you get enough Cobalamin, or Vitamin B12? Do you take the right form of B12? Since your body does not produce B12, it is important to make sure you get adequate amounts of it in the correct form. B12 is important for a number of processes in the body, especially the production of neurotransmitters, energy, and blood cells. People often feel better switching to the correct form of B12 based on genetics and/or increasing their consumption. Consider micronutrient testing on a yearly basis. Always avoid cyanocobalamin.

B12 Blood Levels

Many genes are associated with decreased serum B12 levels. Increasing supplementation or using dermal or injectable B12 can help bypass a possible genetic issue.

Genes: FUT2, TCN

You have a risk for low serum Vitamin B12 levels. Use organic acid or homocysteine testing to verify your need for B12.

Methy-B12 Need

Produced by the enzyme MTRR, Methylcobalamin is the main form of B12 used for detoxification and neurotransmitter production. It is bio-active and can be found in good quality supplements.

Genes: MTRR

There are no additional genetic indications that you need Methylcobalamin supplementation. Use organic acid or homocysteine testing to verify your need for B12.

Adenosyl-B12 Need

Adenosylcobalamin is mainly used to produce energy within the mitochondria. Many people report increased energy with Adeno-B12 supplementation.

Genes: MUT, MMAB

There are no genetic indications that you need Adenosylcobalamin supplementation. Adenosylcobalamin could be used in cases of fatigue.

Methyl-B12-Sensitivity

Some people report sensitivities to methylated B12, including increased aggression and hyperactivity. We can occasionally predict these sensitivities by looking at other variations.

Genes: COMT, VDR

You have three of the five genetic markers for Methylcobalamin sensitivity. Hydroxocobalamin is a safer form and can be used in cases of Methylcobalamin sensitivity.

Low B12 Symptoms

Fatigue
Poor Balance
Memory loss
Neuropathy
Tingling feet
Depression
Anxiety
Pale Skin
Smooth Tongue
Constipation
Diarrhea
Heart Palpitations

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Folate & Your Genetics

Folate, or B9, is a vitamin required for numerous processes in the body. DNA replication, neurotransmitter production and degradation, detoxification, and prevention of cardiovascular disease are just a few. It is found naturally in uncooked leafy green vegetables.

Folate - MTHFR

The MTHFR enzyme processes folates into methyl-folate, crucial for methylation, DNA synthesis, and numerous other processes in the body. Low levels of methylfolate have been associated with numerous symptoms and diseases. There are two main variants: C667T and A1298C.

Since MTHFR creates methylfolate, you can supplement with oral methylfolate. This can speed up the methylation cycle, returning detoxification and neurotransmitter production back to normal. This testing and approach has become common in fertility and psychiatric practices.

It is important to start slow and titrate up when using methyl folate. 400mcg is a common starting point for adults. Some research points to benefits from 400mcg to 15mg; however, many people do very well on doses under 2mg. Please see a practitioner for help with dosages.

MTHFR Symptoms

Depression
Anxiety
ADD/ADHD
Miscarriage
Cardiovascular Disease
Blood Clots
Bipolar
Schizophrenia
Cancer
Midline defects
And More

Your MTHFR Results

Genes: MTHFR

You have two copies of the A1298C MTHFR variation. This can result in a 40% decrease in conversion of dietary Folate into MethylFolate. Consider homocysteine or organic acid testing.

Avoiding synthetic folic acid and consuming a diet full of green leafy vegetables is important. MethylFolate supplementation may be appropriate if you have symptoms associated with Folate deficiency.

Methylfolate Sensitivity

Some people can be sensitive to methylfolate. In this case, different forms of vitamin B9 may be used. Consider folinic acid, and working with a practitioner.

Genes: COMT, VDR

You have three of the five genetic markers for MethylFolate sensitivity. Check your MTHFS status in the raw data to see if Folinic Acid is a safer option for you. If not, work with a provider to determine the best supplement plan.

Follow Up Testing

Genes: MTHFR, SLC19A1

You are genetically prone to Folate deficiency. Homocysteine, RBC Folate, and SAM/SAH ratio tests may be ordered by your doctor.

You do not have variations involving the Folate receptor.

A RBC Folate test can verify need for supplementation.

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Vitamin A & Your Genetics Expanded

Vitamin A is essential for proper vision, growth, immune function, and gut health. There are two types of vitamin A: retinoids and carotenoids. Carotenoids are found in orange plants, such as carrots, and are precursors to retinoids (the bioavailable form). Retinol is the active form that is required for health.

Vitamin A - BCMO1

When most people think about increasing their vitamin A levels, they typically reach for a carrot or orange-colored vegetable. However, this is a carotenoid, not a retinoid or retinol. Our bodies have to convert carotenoids into retinoids by an enzyme called BCMO1. Some people have issues in BCMO1 that slow down their ability to form retinol from beta carotene. Your test checked for five different variations that might slow down retinal formation within your body. Consider working with a provider to monitor your blood retinol levels.

Low Vitamin A Symptoms

- Vision issues
- Infertility
- Mood disorders
- Skin problems
- Thyroid dysfunction
- Growth delays
- Infections

Dietary Sources Of Retinoids

- Free range eggs
- Organic heavy cream
- Shrimp
- Cod-liver oil
- Grass fed butter
- Grass fed beef liver
- Grass fed beef
- Wild caught fatty fish

High Vitamin A Symptoms

- Hair loss
- Liver damage
- Mental confusion

Your Results

Genes: BCMO1

You have multiple heterozygous variants on BCMO1. This alone should not lead to Vitamin A deficiency. Test micronutrients yearly to determine your need for supplementation.

Vitamin A Caution

Vitamin A is a fat soluble vitamin and there are studies that show excessive intake can lead to toxic levels. High levels of retinol might contribute to increased levels of heart disease and cancer. Please discuss supplementation with a trained provider and monitor blood retinol levels.

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Inflammation & Your Genetics

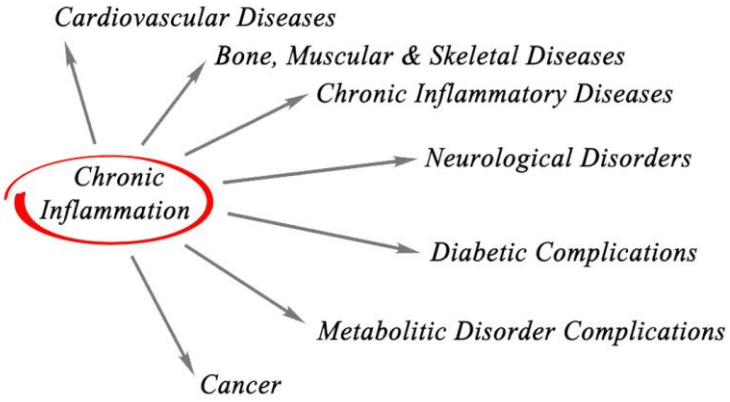
Inflammation is a natural part of our immune system that is used to protect us; however, it can become overactive. This increase in inflammation can cause many problems, such as cardiovascular, neurological, and autoimmune diseases. The Standard American Diet (SAD) is full of inflammatory foods and chemicals that add to this disease process. Your genes make you more susceptible to inflammation. Maintaining low levels of inflammation is the key to health.

Anti-Inflammatory Foods

- Blueberries
- Ginger/Turmeric
- Dark Chocolate
- Good fats
- Grass fed butter
- Free-range eggs
- Grass fed beef
- Wild caught fatty fish

Pro-Inflammatory Foods

- Sugar
- Vegetable oils
- Fried foods
- Wheat flour
- Dairy
- Bad fats
- Processed meats
- Conventional meats
- Fast foods
- Trans fat



Other Causes of Inflammation

- Lack of sleep
- Lack of exercise
- Lack of rest
- Over training
- Poor gut health
- Infection
- Toxic exposures
- Food Sensitivities

Labs Your Physician May Order

HS-CRP: High Sensitive C-Reactive Protein
ESR: Erythrocyte Sedimentation Rate
Omega 3/6 Ratios or Fatty Acid Tests
LPS: lipopolysaccharide

Generalized Inflammation

Genes: TNF

You are at a slight increased risk of inflammation. Fish oils, curcumin, and an anti-inflammatory diet should be considered. Pay close attention to gut health and any potential allergens or sensitivities.

Arachidonic Acid

Genes: FADS1

You are not genetically prone to high or low levels of the pro-inflammatory fatty acid, Arachidonic Acid.

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Detoxification & Your Genetics

Every day, we are exposed to hundreds of toxic chemicals in our environment. Our bodies also make toxic metabolic waste that has to be filtered hourly. Many of these pathways can be slowed down by different genetic variations. This section will break down some of your variations.

Insecticide Sensitivity

Organophosphate insecticides are one of the most toxic substances on the planet. They can cause diarrhea, PDD, autism, depression, aggression, and other emotional conditions. Children exposed to these have twice the risk of autism and PDD. Children tend to be more susceptible to insecticides.

Genes: PON1

You are genetically sensitive to pesticides. Consume organic foods, use a water filter, and avoid pesticides.

Acetaminophen

Due to the prevalence of acetaminophen use, knowing your genetic potential for toxic side effects is crucial. It has been associated with liver conditions, asthma, autism, GI issues, acidosis, blood cancers, and immune system depression. These are due to lowered glutathione levels.

Genes: CYP 2E1

You are not genetically predisposed for a toxic response to acetaminophen use. You should still consider natural alternatives, as it reduces Glutathione when used.

Glutathione

Glutathione is our master antioxidant and detoxifying molecule. Oxidative stress and toxic exposures can cause low levels of glutathione. Those with genetic predisposition to low levels may be more susceptible to the effects of environmental toxins.

Genes: GPX, GSTP1

You are not genetically predisposed to Glutathione deficiency. Toxins and oxidative stress can still cause decreased Glutathione levels.

Women's Health

In women, excessive levels of estrogen can lead to many conditions, including anxiety and even cancer. There are certain genetic situations that might limit someone's ability to remove estrogen from the body, which will increase estrogen levels.

Estrogen Levels

Genes: COMT & CYP1B1

You have two of the four genetic markers associated with conditions in estrogen metabolism. Monitor hormones with your doctor.

4-OH Estradiol

Genes: CYP 1B1

You are not genetically predisposed to metabolizing estrogen down the highly reactive 4-OH pathway. It is still recommended to monitor hormones with your doctor.

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APoE & Your Genetics

Apolipoprotein E (APOE) is a gene that codes for a transport lipoprotein that carries fats and cholesterol throughout the body. There are several E types, namely E2, E3, and E4. Both E1 and E5 exist; however, they are extremely rare. Most of the population carries the E3 status, and it is considered neutral for disease risk. Everyone has two E types (example: E2/E2, E3/E4, E4/E4, E3/E4 etc.), where one type is inherited from each parent. APOE status plays a role in cardiovascular disease and Alzheimer's risk. Exercise, especially lifting, climbing, and movement-based exercises are beneficial for all types.

E4 Risk Factors

Alzheimer's Disease
Faster progression of MS
Traumatic Brain Injury
Cardiovascular disease
Unable to detoxify heavy metals

E2 Risk Factors & Benefits

Hyperlipoproteinemia Type III
Elevated Triglycerides & LDL
Insulin & Glucose Concerns
Less risk for Alzheimer's
Vertebral Fractures
Neuro-protective
Vascular disease & Psoriasis

E4 Diet Recommendations

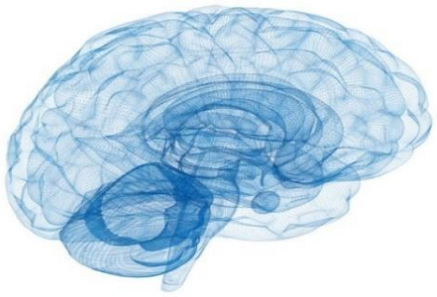
Intermittent Fasting
Mediterranean, low fat, or Paleo Diets
Avoid alcohol and saturated fat
Limit Seafood that is high in mercury
Limit cholesterol intake
Consider monitoring iodine levels
Consider regular sauna visits

E2 Diet Recommendations

Mediterranean Diet
Low Glycemic Diet
Intermittent Fasting
Avoid Refined Carbs
Paleo Diet
Low Fat

Your APOE Status

Your results: E3/E3 This combination is what is found most often in the general population.



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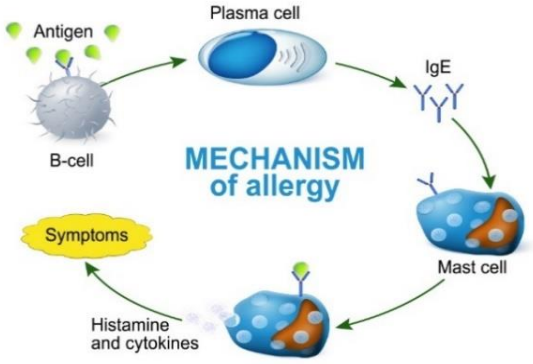
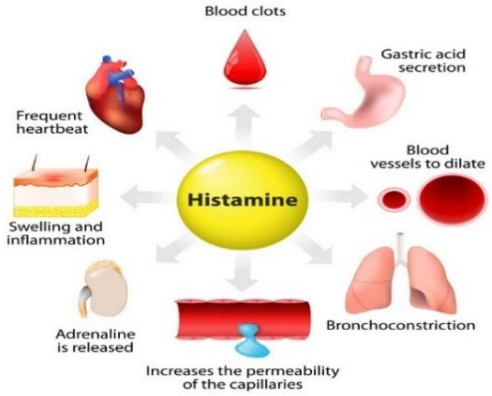
Histamine & Your Genetics

Histamine is commonly known as an immune system chemical that is released during mast cell degranulation or when exposed to allergens. However, it is also a neurotransmitter in the brain and plays a role in digesting food in the stomach. In humans, histamine is broken down by two main pathways, Histamine N-Methyltransferase (HNMT) and Diamine Oxidase (DAO/AOC1). Excessive histamine can cause numerous issues in the body, and there are some genetic predispositions that enhance these issues.





High Histamine Foods

Alcohol/Ferments	Walnuts	Bananas
Citrus Fruits	Cashews	Wheat
Dried Fruits	Peanuts	Strawberries
Soured Foods	Eggplant	Beans
Aged Cheese	Spinach	Chocolate
Smoked Meats	Shellfish	Food Dyes
Tomatoes		Food Additives

High Histamine Symptoms

- Headaches/Migraines
- Nasal Congestion
- Fatigue/Adrenal Fatigue
- Irregular Menstrual Cycles
- Digestive Issues
- Blood Pressure Issues
- Anxiety

DAO (AOC1)

The DAO Enzymes is responsible for breaking down dietary histamine and histamine outside of your cells. It requires adequate levels of copper and can be inactivated by certain drugs and curcumin.

You have two heterozygous variants in the DAO(AOC1) gene. This may reduce DAO enzyme activity. Consider digestive enzymes.

HNMT

HNMT is responsible for breaking down histamine inside of your cells and is common in asthma. This enzyme requires adequate levels of SAMe from the methylation cycle.

No variant detected that increases cellular histamine.

Client Name: John Doe
Client DOB: 1/1/1999
Client Sex: Male

Referring Account: MaxGen Labs
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MAO & Your Genetics

Monoamine oxidase (MAO) has two types, A and B, and plays a role in the oxidation of neurotransmitters. MAOA is chiefly responsible for the oxidation of serotonin and norepinephrine, while MAOB oxidizes phenylethylamine. Both oxidize dopamine. Each genetic variation of MAO creates different outcomes of the enzyme. MAO is also found on the X chromosome, so males who inherit the variation are technically hemizygous. Our algorithm, however, reports it as homozygous since we do not know the sex of each person performing this test. If your results suggest you have decreased MAO activity, it is suggested that you avoid cheese and other fermented/aged foods that are high in tyramine.

MAO-A (RS6323)	MAO-A (RS72554632)	MAO-B
You have the slower form of the MAO-A Enzyme. If you have symptoms associated with Slow MAO, consider the nutritional support listed below.	No variants detected. This should not cause symptoms.	You have a heterozygous variation. You could potentially have symptoms of neurotransmitter imbalance. See MAO rs6323 for details.

Fast MAO

A fast MAO enzyme will significantly decrease neurotransmitter levels and create symptoms of deficiency. Depression, anxiety, and low mood are commonsymptoms. Your practitioner may want to try nutraceuticals like St. Johns Wort, 5-HTP, tyrosine, resveratrol, B vitamins, sun and light exposure to help support a healthy mood.

Slow MAO

A slow MAO enzyme will allow for greater levels of neurotransmitters and cause symptoms of excess. Increased aggression and lack of empathy are common. In general, it is recommended to avoid caffeine, smoking, and stress when possible. Utilizing meditation, trying a low tyramine diet, and insuring proper B2, zinc, lithium orotate and hormone levels are all possible options to support a healthy mood.

Low Serotonin

Anxiety / Depression
Insomnia
Loss of pleasure
Paranoia, Inner rage
Weight Issues
Support:
5-HTP & St. John's Wort

Low Dopamine

Depression
Hopelessness
Lack of Motivation
Brain Fog/ Fatigue
Weight Issues
Low Libido
Support: Tyrosine, Bacopa

High Serotonin

Headaches
Diarrhea
Muscle Twitching
Confusion
Seizures
High Blood Pressure
Support: B2, B5

High Dopamine

Excessive Energy
ADD/ADHD
Anxiety
Agitation
Insomnia
Addiction
Support: B2, Methylation &Vit. C

Low Norepinephrine

Brain Fog, Depression
Low Blood Pressure
Adrenal Fatigue
Support: Vit. C, Copper Balancing, Tyrosine

Low PEA

Brain Fog, Depression
Difficulty Paying Attention
Incomplete Thoughts
Support: B6, DL-phenylalanine

High Norepinephrine

Anxiety, Sweating
Heart Palpitations
Constipation
Support: Methylation & B2

High PEA

Mind Racing
Insomnia, Anxiety
Schizophrenia
Support: Methylation & L-Threonine

Client Name: John Doe
Client DOB: 1/1/1999
Client Sex: Male

Referring Account: MaxGen Labs
Vial Number: Sample Report
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COMT & Your Genetics

Catechol-O-methyltransferase (COMT) is a gene that creates an enzyme that breaks down dopamine, norepinephrine, epinephrine, and estrogen. These chemicals play a major role in mood, stress response, and productivity. Estrogen needs to be balanced and reduced appropriately to avoid issues. COMT does require the methylation cycle, with SAMe and magnesium being required in adequate amounts. It has been observed that individuals with slower COMT tend to be sensitive to methyl donors. In these cases, non-methylated vitamins like Folinic Acid and Hydroxocobalamin might be better options. People who are sensitive to these tend to have mood swings and anger issues. It has also been observed that carriers of the VDR-TAQ variation have additional risks.

COMT V158M	COMT H62H	VDR-TAQ
You have the slow COMT (Worrier) variation. If you have symptoms associated with Slow COMT, consider the nutritional support listed below.	Follow the SLOW COMT nutritional support if symptoms occur. You may be senstive to Mercury. Monitor hormones with your doctor.	Possible decrease in Dopamine. Can help with slow COMT symptoms and worsen fast COMT symptoms.

Fast COMT

Fast versions of the COMT enzyme are associated with decreased levels of neurotransmitters like dopamine. People with this have been shown to have higher pain thresholds, are capable of operating under adverse stress (The Warrior Gene), and have lower levels of anxiety.

Low Dopamine

Depression	Constipation	**Support**:
Lack of Motivation	GERD	Tyrosine
Fatigue	Muscle Cramps	Bacopa
Focus Issues		

Low Epinephrine

Depression	Migraines	**Support**:
Restless Leg	Sleep Disorders	Methionine
		Tyrosine

Low Norepinephrine

Focus Issues	Brain Fog	**Support**:
Low Blood Pressure	Depression	Tyrosine
		Vit. C
		Copper Balancing

Slow COMT

Slower versions of the COMT enzyme are associated with increased levels of neurotransmitters like dopamine. This has been shown to lower pain thresholds, increase a person's sensitivity to stress, and increase anxiety (The Worrier Gene). However, these individuals typically have an advantage at memory and attention based tasks.

High Dopamine

ADD/ADHD	Insomnia	**Support**:
Anxiety	Addiction	Riboflavin
Mania	Excessive Energy	Vit. C
		Methylation

High Epinephrine

Anxiety	Weight Loss	**Support**:
Sweating	Constipation	Adaptogens
Heart Palpitations		Phosphatidylserine

High Norepinephrine

Anxiety	Sweating	**Support:**
Heart Palpitations	Constipation	Methylation
		Riboflavin

Client Name: John Doe
Client DOB: 1/1/1999
Client Sex: Male

Referring Account: MaxGen Labs
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Strength vs Endurance

The type of exercise that is best for you is largely dependent on gene expression. Certain genes determine muscle fiber types, which drive one to excel in long distance running or another in sprinting. Other genes determine whether you could become an elite endurance athlete. While research has been done on a variety of men (and few women), ones who are trained Olympians and others who are trying to get in shape, please keep in mind that you do have the ability to exercise and participate in sport regardless of genetic potential. Genetic testing does, however, help guide you on proper function for your body, and it allows you to modify your exercise routine to maximize gains.

Understanding the make up of your muscle fibers can help determine what form of exercise is best for you. Broadly put, muscle fibers are broken into two categories: fast twitch and slow twitch. While these categories can be further expanded, for the purposes of this report we will discuss the bigger picture. Fast twitch muscle fibers are important for short bursts, high energy, high strength actions. Exercises such as sprinting or heavy weight lifting require speed and brut force that are controlled by fast twitch fibers. On the other hand, slow twitch muscle fibers are important for endurance sports such as long distance running and swimming. They require greater amounts of oxygen and blood flow over longer periods of time. Most of the population has a mixture of these two fibers and could be served well by combining exercises; however, knowing your muscle fiber type can help you define the appropriate training both for pleasure or performance.

The gene ACTN3 is commonly known as the “gene for speed.” The wild type is found in a large population of elite athletes who focus on sprinting and fast action sports. Variants within this gene appear to reduce the fast twitch action of muscle fibers into a slow twitch action, creating an ideal setting for endurance sport. With the ADRB3 gene, one may have a greater chance of training to become an elite endurance athlete. The MSTN gene may play a role in whether one can perform instant muscle contractions that require peak muscle power (example: vertical box jumping) which would be required in HIIT training (High Intensity Interval Training).

Endurance Examples: long distance running, swimming, biking, dance, basketball, tennis, and soccer.
Strength Examples: low rep weight lifting, sprinting, sit ups, pull ups, climbing stairs, and box jumping.

Strength Vs Endurance

Genes: ACTN3

Your muscles are built for endurance training.

Elite Endurance Athlete

Genes: ADRB3

You have average endurance training abilities.

HIIT Training Safety

Genes: MSTN

You may have peak muscle power during instant movements. Consider adding strength training or HIIT exercises to your daily routine.

Client Name: John Doe
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Client Sex: Male

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Aerobic Capacity

VO2Max is maximum oxygen uptake, which suggests how much oxygen is used by the body during intense, prolonged periods of exercise. It is a common measurement used during endurance training. People who have higher VO2Max can typically succeed at endurance sports. In the fitness world, the ability to maximize cardiorespiratory function can play a critical role in whether one becomes an endurance athlete. One gene appears to aid in the ability to train, while the other determines sustainability.

The PPARGC1A gene has been studied in European men, and research suggests that variants of this gene may allow for normal oxygen use while training. People who do not have a variant here may be at a disadvantage during training, as it lowers aerobic capacity.

The GABPB1 (NRF2) gene has been studied for its aerobic sustainability and antioxidant function. This gene appears to determine longevity in endurance sport once a person is already fully trained. Variants of this gene add greater aerobic capacity for endurance athletes.

VO2Max Potential

Genes: PPARGC1A

You have normal potential for VO2Max during training. This may help you maintain oxygen uptake during training periods.

VO2Max Potential

Genes: GABPB1

You have greater potential for higher VO2Max once you are trained for endurance sports. This may help you sustain oxygen uptake during endurance sports.

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Resistance Training

Resistance training is a type of exercise that applies a force against your movement. When your muscles are contracting against an external force, you may have a greater ability to build bulk within the muscle belly, increase bone strength, and increase endurance. Subcutaneous fat loss may occur more readily with resistance training as compared to other forms of exercise. Women respond exceptionally well to resistance training, especially as it pertains to bone health. Consider using resistance training as a part of any exercise routine for general wellness and longevity.

Fat Loss

Genes: INSIG2

You may be able to lose subcutaneous fat with resistance training.

Bone Strength

Genes: IL15

You have a greater chance of building bone strength with resistance training.

Muscle Gains

Genes: LEPR

You can expect to have average muscle gains from resistance training.

Weight Loss

Exercise plays a critical role in maintaining an ideal physique; however, losing weight and having the right fat to muscle ratio may not be dependent on exercise alone. Several genes determine how one will respond to exercise. This information can help you determine how much emphasis to place on exercise routines as it relates to weight and fat mass loss. If you are a person who is less likely to lose weight or fat mass in response to exercise, it is important to focus more on the quality of food you consume instead of spending hours in a gym. Early childhood intervention with exercise programs may help some Children but not others. It is important for all children to be physically active regardless of this genetic variant.

Weight Loss With Exercise

Genes: FTO

You are less likely to lose weight with exercise. You should still move, but consider fitness routines that are low impact and enjoyable.

Weight Gain With Inactivity

Genes: FTO

You have an average chance of obesity if you are inactive.

Early Childhood Intervention

Genes: INSIG2

Early childhood intervention may allow you to lose weight with exercise.

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Cardiovascular Response to Exercise

There are variety of risks and benefits with any form of exercise. While every person needs to be physically active and get adequate amounts of exercise daily, some may need to know common risk factors that could occur with specific types of exercise routines. If you are an elite athlete or simply want to get fit, certain precautions should be taken into consideration. While these genetic factors are not diagnostic or absolutes, there are specific nutritional protocols that can reduce your risk of an incident while exercising. Please consult with a physician if any of these risks are of concern.

Insulin Response

Genes: LIPC

Exercising should make you more insulin sensitive. Consume branch chain amino acids and magnesium glycinate immediately following a workout. Monitor blood glucose, HbA1C, and HOMA-IR levels with your doctor.

Cholesterol Response

Genes: PPARD

You have an average chance of raising healthy HDL levels with exercise. Focus more on food choices discussed in the MaxFood panel.

Blood Pressure

Genes: EDN1

Exercise should help regulate your blood pressure. Consider hydroxocobalamin if Vitamin B12 is needed.

Genes: NOS3

You have an average risk of high blood pressure while exercising if you are unfit.

Cardiovascular Health

Genes: CCL1

You have an average risk of exercise induced ischemia.

Genes: LEPR

You have a moderate risk of ischemic heart disease. Consider yearly cardiometabolic testing and micronutrient testing.

Genes: ADRB3

You have an increased risk of exercise induced idiopathic venous thrombosis. Consider yearly cardiometabolic testing and micronutrient testing.

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Muscle Metabolism

Muscle Cramping

Genes: COL5A1

You may have decreased muscle cramping after exercising.

Muscle Weakness & Soreness

Genes: SLC30A8

You may have muscle soreness and strength loss after a workout. Consider using branch chain amino acids and magnesium glycinate immediately after a workout. Drink at least half your body weight in ounces of water daily.

Excessive Muscle Breakdown

Genes: ACTN3, SLC30A8

You may experience excessive muscle breakdown with intense exercise. This includes the possibility of increased creatine kinase and myoglobin levels post exercise.

Muscle Stiffness

Genes: ACTN3

You have a low chance of having stiff muscles. Warming up and stretching is still advisable.

Twitch Fibers

Genes: ACTN3, PPARGC1A, FTO

You most likely have more fast twitch fibers than slow. This is great for explosive sports.

Muscle Strength

Genes: MSTN, ACTN3, ADRB2

You can expect to have average peak muscle strength.

Client Name: John Doe
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Tendon, Joint & Bone Issues

MoInjuries to muscles, tendons, ligaments, and joints are common during exercise. Your genetics simply describe your propensity for these specific concerns, but injury can be exacerbated by a number of factors. To reduce your chances of injury, drink plenty of water, use proper form, and warm up appropriately. If you are already injured, consider changing your exercise routine so that you will not produce further damage.

Rotator Cuff Injury

MMP3

People with your genotype have shown to have a normal risk of rotator cuff injuries. Rotator cuff exercises are still recommended to prevent injury.

Tennis Elbow

Genes: COL5A1

People with your genotype have shown to have average risk of tennis elbow. Stretching and forearm strengthening exercises should still be considered.

Ankle Injury

Genes: NFIB, ACTN3

People with your genotype have shown to have increased risk of ankle injuries. Ankle strengthening exercises should be included in your exercise programs. Please discuss further with a qualified athletic trainer.

Meniscus Injury

Genes: GDF5

People with your genotype have shown to have increased risk of meniscus injury. Muscle strengthening exercises that support the knee should be considered, including core exercises. Please discuss further with a qualified trainer.

ACL Injury

Genes: COL5A1

People with your genotype have shown to have a normal risk of ACL injury

Achilles Tendinopathy

Genes: MMP3

You are not at a greater risk for developing Achilles tendinopathy.

Hip Fracture

Genes: GC, FTO

People with your genotype have shown to have average risk of hip fractures.

Knee Osteoarthritis

Genes: COL5A1

You have a moderate increased risk for knee osteoarthritis. Consider adding resistance training as a daily routine. You can also consider using collagen peptides.

Osteoarthritis

Genes: MMP3

You have a moderate risk of osteoarthritis as a response to exercise. Consider adding resistance training as a daily routine to build strength. You can also consider using collagen peptides.

Client Name: John Doe
Client DOB: 1/1/1999
Client Sex: Male

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Additional Information

Altitude Performance	• You have a moderate risk for acute mountain sickness.
Testosterone	• People with similar genetics are prone to having lower testosterone levels when compared to others.
Sleep Duration	• You may not sleep as long as others. If you have trouble sleeping, please discuss with a qualified professional.
Sleep Apnea	• You can expect to have a normal risk of sleep apnea
Sleep Dyspnea	• People with similar genetics have shown to have an increased risk of sleep dyspnea.
Combat Sports	• People with similar genetics are less likely to be a combat sports athlete
Soccer	• You have a normal likelihood of becoming an elite soccer performance
Gymnastics	• You have a higher likelihood of becoming a gymnast.
Elite Swimming	• You have an increased likelihood of becoming an elite swimmer.
Swimming	• You have an increased likelihood of being a distance swimmer.

MaxGen LABS

TheWorks

Client Name: John Doe
Client DOB: 1/1/1999
Vial Number: Sample Report
Client Sex: Male

Referring Account: MaxGen Labs
Sample Received:
Report Date: 3/3/2022
MaxGen PTID#: P172

Your Genetic Summary

B12 Levels	• You have a risk for low serum Vitamin B12 levels. Use organic acid or homocysteine testing to verify your need for B12.
Methyl-B12	• There are no additional genetic indications that you need Methylcobalamin supplementation. Use organic acid or homocysteine testing to verify your need for B12.
B12 Sensitivity	• You have three of the five genetic markers for Methylcobalamin sensitivity. Hydroxocobalamin is a safer form and can be used in cases of Methylcobalamin sensitivity.
Adeno-B12	• There are no genetic indications that you need Adenosylcobalamin supplementation. Adenosylcobalamin could be used in cases of fatigue.
Vitamin A	• You have multiple heterozygous variants on BCMO1. This alone should not lead to Vitamin A deficiency. Test micronutrients yearly to determine your need for supplementation.
Vitamin D	• You have two of three genetic markers for low Vitamin D. Consider testing both 25-OH Vitamin D and 1,25-OH Vitamin D.
Folate/MTHFR	• You have two copies of the A1298C MTHFR variation. This can result in a 40% decrease in conversion of dietary Folate into MethylFolate. Consider homocysteine or organic acid testing.
Folate Sensitivity	• You have three of the five genetic markers for MethylFolate sensitivity. Check your MTHFS status in the raw data to see if Folinic Acid is a safer option for you. If not, work with a provider to determine the best supplement plan.
Dietary Histamine	• You have two heterozygous variant in the DAO(AOC1) gene. This may have little impact on the DAO enzyme activity.
Cellular Histamine	• No variant detected that increases cellular histamine.
DHA Fish Oil	• You are genetically predisposed to Omega 3 Fatty Acid deficiency, specifically due to an inability to produce DHA. Consider supplementing with high DHA fish oil. Test Omega ratios.
Phos-Choline	• You have two of the four genetic markers associated with Phosphatidylcholine deficiency. Consider supplementing if support is needed for brain or liver health and pregnancy.
Arachidonic Acid	• You are not genetically prone to high or low levels of the pro-inflammatory fatty acid, Arachidonic Acid.
Inflammation	• You are at a slight increased risk of inflammation. Fish oils, curcumin, and an anti-inflammatory diet should be considered. Pay close attention to gut health and any potential allergens or sensitivities.
Estrogen levels	• You have two of the four genetic markers associated with conditions in estrogen metabolism. Monitor hormones with your doctor.
Bad Estrogen	• You are not genetically predisposed to metabolizing estrogen down the highly reactive 4-OH pathway. It is still recommended to monitor hormones with your doctor.
Pesticides	• You are genetically sensitive to pesticides. Consume organic foods, use a water filter, and avoid pesticides.
Glutathione	• You are not genetically predisposed to Glutathione deficiency. Toxins and oxidative stress can still cause decreased Glutathione levels.
Probiotic	• There are no probiotic recommendations based on some of your results. See the box below if there are additional recommendations.
Secretor Status	• FUT2 Secretor. There are no probiotic recommendations associated with this variant.

MaxGen LABS

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MaxFunction SNP Report

Gene	RS#	Result	Client	Minor	Short Description
AHCY-01	rs819147	-- Wild Type	TT	C - 31%	No genetic cause for low homocysteine or glutathione.
APOE	rs429358	-- Wild Type	TT	C - 15%	See APOE page for details. If rs 7412 is T =E2 If rs7412 is C = E3 (normal)
APOE	rs7412	-- Wild Type	CC	T - 8%	See APOE page for details. If rs429358 is C = E4 If rs 429358 is T = E3 (Normal)
BCMO1	rs11645428	-+ Heterozygous	GA	A - 15%	Genetic cause for Vitamin A deficiency. See Vitamin A page for details.
BCMO1	rs12934922	-+ Heterozygous	AT	T - 22%	Genetic cause for Vitamin A deficiency. See Vitamin A page for details.
BCMO1	rs6564851	-+ Heterozygous	GT	G - 47%	Genetic cause for Vitamin A deficiency. See Vitamin A page for details.
BCMO1	rs7501331	-+ Heterozygous	TC	T - 21%	Genetic cause for Vitamin A deficiency. See Vitamin A page for details.
BCMO1	rs6420424	-- Wild Type	GG	A - 43%	No genetic cause for Vitamin A deficiency.
CBS	rs4920037	-- Wild Type	GG	A - 13%	No genetic cause for reduced CBS enzyme activity.
CBS	rs2851391	-- Wild Type	CC	T - 38%	No genetic cause for reduced CBS enzyme activity.
CBS 360	rs1801181	++ Homozygous	AA	A - 29%	Genetic cause for upregulated CBS enzyme activity. Test homocysteine.
CBS 699	rs234706	-+ Heterozygous	GA	A - 19%	Genetic cause for upregulated CBS enzyme activity. Test homocysteine.
COMT 61 P199P	rs769224	-- Wild Type	GG	A - 2%	No genetic cause for down regulation of COMT.
COMT H62H	rs4633	++ Homozygous	TT	T - 237%	Genetic cause for mercury sensitivity. See COMT page for details.
COMT L136L	rs4818	-- Wild Type	CC	G - 29%	No genetic cause for down regulation of COMT.
COMT V158M	rs4680	++ Homozygous	AA	A - 36%	Slow COMT (Worrier) gene. See COMT page for details.
CYP1A2	rs762551	-- Wild Type	AA	C - 31%	Fast caffeine metabolizer. Limit caffeine to less than 300mg/daily.
CYP1B1 L432V	rs1056836	-+ Heterozygous	CG	G - 42%	No genetic cause for elevated 4-OH estradiol. Test hormones with your doctor.
CYP2E1 *6	rs6413432	-- Wild Type	TT	A - 16%	No genetic cause for NAPQI toxicity from Acetaminophen.
DAOA/DAAO	rs3741775	-- Wild Type	AA	C - 31%	No genetic cause for pathologies associated with DAAO enzyme activity.
DAO (AOC1)	rs2052129	-+ Heterozygous	GT	T - 23%	Genetic cause for low DAO enzyme activity. See Histamine page for details.
DAO (AOC1)	rs10156191	-+ Heterozygous	CT	T - 31%	Genetic cause for reduced DAO enzyme activity. See Histamine page for details.
DHFR	rs1643649	-- Wild Type	TT	C - 22%	No genetic cause for low tetrahydrofolate.
Factor 5	rs6025	-- Wild Type	CC	T - .00%	No genetic cause for increased risk of thrombosis.
FADS1	rs174548	-- Wild Type	CC	G - .00%	No genetic cause for phosphatidylcholine deficiency.
FADS1(MYRF)	rs174537	-+ Heterozygous	GT	T - 30%	No genetic cause for low or high Arachidonic Acid levels.
FADS2	rs1535	-+ Heterozygous	GA	G - 32%	Genetic cause for decreased DHA production. Use fish oil high in DHA.
FOLR2	rs651933	-- Wild Type	GG	A - 45%	No genetic cause for intracellular folate deficiency.
FUT2	rs602662	-+ Heterozygous	GA	A - 32%	Genetic cause for high serum B12 levels. See B12 page for details.
FUT2	rs492602	-+ Heterozygous	AG	G - 32%	Genetic cause for high serum B12 levels. See B12 page for details.
FUT2	rs601338	-+ Heterozygous	GA	A - 32%	Genetic cause for B12 deficiency. See B12 page for details.
G6PD	rs1050828	-- Wild Type	CC	T - 3%	No genetic need to avoid IV Vitamin C & H202.
G6PD	rs1050829	-- Wild Type	TT	C - 9%	No genetic need to avoid IV Vitamin C & H202.
G6PD	rs5030868	-- Wild Type	GG	A .00%	No genetic need to avoid IV Vitamin C & H202.
GPX1	rs1050450	-- Wild Type	GG	A - 2%	No genetic cause for glutathione deficiency and heavy metal toxicity.
GSTP1	rs1138272	-- Wild Type	CC	T - 3%	No genetic cause for inability to detoxify.
GSTP1	rs1695	-- Wild Type	AA	G - 35%	No genetic cause for inability to detoxify.
HFE	rs1799945	-- Wild Type	CC	G - 7%	Genetic cause for iron deficiency anemia in women. Test full iron panel.
HFE	rs1800562	-+ Heterozygous	AG	A - 1%	Genetic carrier for hemochromatosis.
HFE	rs1800730	-- Wild Type	AA	T - .00%	Genetic cause for iron deficiency anemia in women. Test full iron panel.

MaxGen LABS

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Client Name: John Doe
Client DOB: 1/1/1999
Vial Number: Sample Report
Client Sex: Male

Referring Account: MaxGen Labs
Sample Received:
Report Date: 3/3/2022
MaxGen PTID#: P172

Gene	RS#	Result	Client	Minor	Short Description
HNMT	rs1050891	-- Wild Type	AA	G - 20%	No genetic cause for elevated serum levels of histamine.
MAOA T1410C	rs1137070	-- Wild Type	CC	T - 44%	Genetic cause for reduced MAO activity & elevated serotonin levels.
MAOA	rs6323	-- Wild Type	TT	G - 37%	Genetic cause for SLOW MAO-a status. See MAO page for details.
MAOA	rs72554632	-- Wild Type	CC	T - .00%	No genetic cause for MAO deficiency.
MAOB	rs1799836	-+ Heterozygous	TC	C - 45%	Genetic cause for decreased MAO-b activity. See MAO page for details.
**Notice: MAO is a X linked gene and is only passed down from the maternal line. Male Children are technically "hemizygous."					
MAT1A R264H	rs72558181	-- Wild Type	CC	T - .00%	No genetic cause for hypermethioniemia.
MMAB	rs2287182	-- Wild Type	CC	T - 13%	No genetic cause for methylmalonic acidemia.
MTHFS	rs6495446	-+ Heterozygous	CT	T - 29%	Genetic cause for folinic acid or Leucovorin avoidance. See Folate page.
MTHFD1	rs2236225	-- Wild Type	GG	A - 34%	No genetic cause for 5,10 methylenetetrahydrofolate deficiency.
MTHFR A1298C	rs1801131	++ Homozygous	GG	G - 25%	Genetic cause for Folate deficiency. See Folate page for details.
MTHFR C677T	rs1801133	-- Wild Type	GG	A - 24%	No genetic cause for Folate deficiency.
MTR	rs1805087	-- Wild Type	AA	G - 21%	Decreased activity of MTR. Methyl B12 may be useful if Homocysteine is high.
MTRR	rs1801394	-- Wild Type	AA	G - 36%	No genetic cause for B12 deficiency.
MTRR	rs1532268	-- Wild Type	CC	T - 27%	No genetic cause for B12 deficiency.
MUT	rs1141321	-- Wild Type	CC	T - 26%	No genetic cause for B12 deficiency.
MUT	rs9369898	-+ Heterozygous	AG	G - 40%	Genetic cause for methylmalonic acidemia. Consider adenosylcobalamin.
NOS3	rs1799983	-- Wild Type	GG	T - 17%	No genetic cause for Nitric Oxide deficiency.
NOS3	rs2070744	-+ Heterozygous	TC	C - 23%	No genetic cause for cardiovascular disease.
NQO1	rs1800566	-+ Heterozygous	GA	A - 28%	Genetic cause for increased oxidative stress. Test urinary 8-OHdG.
PEMT	rs4244593	-- Wild Type	GG	T - 42%	No genetic cause for phosphatidylcholine deficiency.
PEMT	rs4646406	++ Homozygous	AA	A - 28%	Genetic cause for phosphatidylcholine deficiency. Consider supplementation.
PEMT	rs7946	++ Homozygous	TT	T - 30%	Genetic cause for phosphatidylcholine deficiency. Consider supplementation.
PON1 Q192R	rs662	-+ Heterozygous	TC	C - 45%	Genetic cause for insecticide sensitivity and arterial disease. Use olive oil daily.
Prothrombin (F2)	rs1799963	-- Wild Type	GG	A - .00%	No genetic cause for thrombosis or cerebral stroke.
SHMT1	rs1979277	-+ Heterozygous	AG	A - 23%	Genetic cause for inadequate methylation. Test RBC Folate and urinary B6.
SLC19A1	rs1051266	-- Wild Type	CC	T - 48%	No genetic cause for Folate deficiency.
SOD1	rs2070424	-- Wild Type	AA	G - 24%	No genetic cause for high levels of SOD1.
SOD1	rs4998557	-- Wild Type	GG	A - 33%	No genetic cause for oxidative stress.
SOD2	rs2758331	-- Wild Type	CC	A - 33%	No genetic cause for oxidative stress.
SOD2	rs4880	-- Wild Type	AA	G - 41%	No genetic cause for oxidative stress.
SOD3	rs1799895	-- Wild Type	CC	G - 2%	No genetic cause for oxidative stress.
SUOX(A628C)	rs7297662	++ Homozygous	AA	A - 47%	Genetic cause for sulfite oxidase deficiency. Use molybdenum supplementation.
SUOX(S370S)	rs773115	-- Wild Type	CC	G - .00%	No genetic cause for sulfite oxidase deficiency.
TCN1	rs526934	-- Wild Type	AA	G - 19%	No genetic cause for B12 deficiency.
TCN2	rs1801198	-+ Heterozygous	CG	G - 42%	Genetic cause for low serum B12 levels. See B12 page for details.
TNF C857T	rs1799724	-+ Heterozygous	CT	T - 12%	Genetic cause for inflammation and increased APOE4 risks. See APOE page.
TNF	rs1800629	-- Wild Type	GG	A - 9%	No genetic cause for high inflammation.
VDR TAQ	rs731236	++ Homozygous	GG	G - 38%	Genetic cause for Vitamin D deficiency. See Vitamin D page for details.
VDR-BSM	rs1544410	++ Homozygous	TT	T - 29%	Genetic cause for Vitamin D deficiency. See Vitamin D page for details.
VDR-FOK	rs2228570	-+ Heterozygous	AG	A - 32%	Genetic cause for Vitamin D deficiency. See Vitamin D page for details.

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Additional Combo SNPs

Gene	RS#	Result	Client	Minor	Short Description
MMp9 C1562T	rs3918242	-+ Heterozygous	CT	T	See PubMed.
Fcrl3-3-169C	rs7528684	-+ Heterozygous	GA	G	See PubMed.
IRF1	rs9282763	-+ Heterozygous	CT	C	See PubMed.

MaxFood SNP Report

Gene	RS#	Result	Client	Minor	Short Description
Diet Section					
FABP2 Ala54Thr	rs1799883	++ Homozygous	CC	C	No genetic cause for refined carbohydrate sensitivity.
KCTD10	rs10850219	-- Wild Type	GG	C	Genetic cause for reduced HDL levels on a high carb diet. Avoid refined carbs.
PLIN	rs894160	-+ Heterozygous	CT	T	High complex carb diet will lower BMI. Low carb diet will increase BMI.
LIPC	rs1800588	++ Homozygous	TT	T	High complex carb diet will lower BMI. Increase fiber intake.
FADS1(MYRF)	rs174537	-+ Heterozygous	GT	T	No genetic cause for altered Omega 6 levels.
APOA2	rs5082	++ Homozygous	AA	A	Genetic reason to consume less than 45% of calories from fat.
FABP2 Ala54Thr	rs1799883	++ Homozygous	CC	C	No genetic cause for saturated fat sensitivity.
FABP2 Ala54Thr	rs1799883	++ Homozygous	CC	C	Genetic cause for higher fatty acids in blood stream when eating fat.
FABP2 Ala54Thr	rs1799883	++ Homozygous	CC	C	Genetic cause for higher triglycerides.
ADIPOQ	rs17300539	-- Wild Type	GG	A	Genetic reason to avoid a high fat diet.
PPARG	rs1801282	-- Wild Type	CC	G	No genetic reason to consume extra monounsaturated fats.
ADIPOQ	rs17300539	-- Wild Type	GG	A	No genetic reason to consume extra monounsaturated fats.
PPARG	rs1801282	-- Wild Type	CC	G	Genetic reason to consume extra polyunsaturated fats.
APOA2	rs5082	++ Homozygous	AA	A	No genetic cause for altered lipid metabolism.
Vitamin Risks					
MTHFR C677T	rs1801133	-- Wild Type	GG	A	No genetic cause for Folate deficiency.
MTHFR A1298C	rs1801131	++ Homozygous	GG	G	Genetic cause for Folate deficiency.
BCMO1	rs12934922	-+ Heterozygous	AT	T	Genetic cause for Vitamin A deficiency.
BCMO1	rs7501331	-+ Heterozygous	TC	T	Genetic cause for Vitamin A deficiency.
MTHFR	rs1801133	-- Wild Type	GG	A	No genetic cause for Vitamin B2 deficiency.
NBPF3	rs4654748	-+ Heterozygous	CT	T	Genetic cause for Vitamin B6 deficiency.
SLC23A1	rs33972313	-- Wild Type	CC	T	No genetic cause for Vitamin C deficiency.
GC	rs2282679	-- Wild Type	TT	G	No genetic cause for Vitamin D deficiency.
INTERGENIC	rs12272004	-- Wild Type	CC	A	Genetic cause for Vitamin E deficiency.

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Gene	RS#	Result	Client	Minor	Short Description
			Food Intolerances		
CCR3	rs6441961	-+ Heterozygous	CT	C	Genetic cause for gluten intolerance. See Food Sensitivity page for details.
HLA-SNP	rs9275596	-- Wild Type	TT	C	No genetic cause for peanut allergy.
HLA-DQ8	rs7454108	-- Wild Type	TT	C	No genetic cause for gluten intolerance.
HLA-DQ2.5	rs2187668	-- Wild Type	CC	T	No genetic cause for gluten intolerance.
IL21	rs13119723	-- Wild Type	AA	G	No genetic cause for gluten intolerance.
IL21	rs6822844	-- Wild Type	GG	T	No genetic cause for gluten intolerance.
MYO9B	rs2305764	-+ Heterozygous	GA	G	Genetic cause for gluten intolerance. See Food Sensitivity page for details.
MCM6	rs4988235	++ Homozygous	AA	A	No genetic cause for lactose intolerance. See Food Sensitivity page for details.
APOA2	rs5082	++ Homozygous	AA	A	No genetic cause for weight gain when consuming dairy.
			Disease Risks		
MYO9B	rs2305764	-+ Heterozygous	GA	G	Genetic cause for GI diseases. See Food Sensitivity page for details.
			Eating Habits		
FTO	rs8050136	-- Wild Type	CC	A	Genetic cause for increased appetite. Watch portion control.
MC4R	rs17782313	-- Wild Type	TT	C	No genetic cause for consuming excessive calories.
MC4R	rs17782313	-- Wild Type	TT	C	No genetic cause of consuming excessive fat from calories.
ANKK1/DRD2	rs1800497	-+ Heterozygous	AG	A	Genetic cause for addictive eating behavior. Consult a counselor if needed.
FTO	rs9939609	-- Wild Type	TT	A	No genetic cause for increased appetite.
LEPR	rs2025804	++ Homozygous	AA	A	Genetic cause for lower resting metabolism.
NMB	rs1051168	-+ Heterozygous	GT	T	No genetic cause for leptin resistence.
FTO	rs9939609	-- Wild Type	TT	A	No genetic cause for leptin resistence.
LEPR	rs2025804	++ Homozygous	AA	A	No genetic cause of increased desire for snacking.
MC4R	rs17782313	-- Wild Type	TT	C	No genetic cause of increased desire for snacking.
FTO	rs9939609	-- Wild Type	TT	A	No genetic cause of binge or emotional eating.
FTO	rs9939609	-- Wild Type	TT	A	No genetic cause of binge or emotional eating.
TAS2R38	rs713598	-- Wild Type	CC	G	Genetic cause for ability to taste bitter foods. Eat 9 servings of veggies/day.
			Obesity & Weight loss		
ADRB3	rs4994	-- Wild Type	AA	G	No genetic cause for higher BMI. Eat according to Carb page.
FTO	rs1558902	-- Wild Type	TT	A	No genetic cause of obesity. Eat according to Carb page.
MC4R	rs17782313	-- Wild Type	TT	C	No genetic cause of obesity. Eat according to Carb page.
ITGB2	rs235326	++ Homozygous	GG	G	Genetic cause for obesity when eating Western Diet. Eat according to Carb page.
ADIPOQ	rs17300539	-- Wild Type	GG	A	No genetic cause of obesity. Eat according to Carb page.
APOA2	rs5082	++ Homozygous	AA	A	No genetic cause of obesity. Eat according to Carb page.
FTO	rs9939609	-- Wild Type	TT	A	No genetic cause of obesity. Eat according to Carb page.
FTO	rs8050136	-- Wild Type	CC	A	Genetic cause for losing less fat with exercize. Concentrate on ideal diet.
FTO	rs16945088	-- Wild Type	AA	G	No genetic cause for inability to lose weight.
PPM1K	rs1440581	-+ Heterozygous	CT	C	Genetic cause for inability to lose weight and control insulin with diet. Exercise.
ADIPOQ	rs17300539	-- Wild Type	GG	A	Genetic cause for weight gain after dieting. See Carb page for ideal diet.
PPARG	rs1801282	-- Wild Type	CC	G	No genetic cause for inability to lose weight with diet.
ACSL5	rs2419621	-+ Heterozygous	CT	T	Genetic cause for weight loss with diet alone. See Carb page for ideal diet.
PLIN	rs894160	-+ Heterozygous	CT	T	Genetic cause for fat loss with calorie restricted diet. Reduce caloried by 10%.
PLIN	rs894160	-+ Heterozygous	CT	T	No genetic need for time-restricted eating while losing weight.

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Gene	RS#	Result	Client	Minor	Short Description
Blood Sugar & Diabetes					
ADRA2A	rs10885122	-- Wild Type	GG	T	No genetic cause for diabetes/insulin issues.
IRS1	rs2943641	-+ Heterozygous	CT	T	Genetic cause for elevated blood sugar/diabetes. Avoid refined carbohydrates.
ADIPOQ	rs17300539	-- Wild Type	GG	A	Genetic cause for elevated blood sugar/diabetes. Avoid refined carbohydrates.
PPARG	rs1801282	-- Wild Type	CC	G	No genetic cause for diabetes/insulin issues.
ADRB2	rs1042714	-- Wild Type	CC	G	Genetic cause for elevated blood sugar/diabetes. Avoid refined carbohydrates.
FTO	rs8050136	-- Wild Type	CC	A	Genetic cause for elevated blood sugar/diabetes. Avoid refined carbohydrates.
FTO	rs9939609	-- Wild Type	TT	A	No genetic cause for diabetes/insulin issues.
PPARG	rs1801282	-- Wild Type	CC	G	No genetic cause for diabetes/insulin issues.
ADIPOQ	rs17300539	-- Wild Type	GG	A	Genetic cause for obesity and Type II Diabetes.
Blood Lipids					
FADS1	rs174537	-+ Heterozygous	GT	T	Genetic cause for elevated cholesterol. Test VLDL and Triglycerides yearly.
LPL	rs328	-- Wild Type	CC	G	No genetic cause for high triglycerides.
KCTD10	rs10850219	-- Wild Type	GG	C	Genetic cause for low HDL. Test yearly.
LIPC	rs1800588	++ Homozygous	TT	T	Genetic cause of low HDL with consumption of animal fat. Pescaterian Diet.

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GENE	rsID	Result	Client	Minor	Description
Muscle Performance					
ADRB3	rs4994	++ Homozygous	AA	A	No genetic cause for elite endurance athletic ability.
NRF2	rs7181866	-+ Heterozygous	GA	G	Genetic cause for elite endurance athletic ability.
PPARGC1A	rs8192678	++ Homozygous	TT	T	No genetic cause for elite endurance athletic ability.
ADRB2	rs1042713	-+ Heterozygous	AG	A	Genetic cause for elite endurance athletic ability.
GABPB1 (NRF2)	rs12594956	-+ Heterozygous	CA	A	Genetic cause for endurance athletic ability.
GABPB1 (NRF2)	rs8031031	-- Wild Type	CC	T	No genetic cause for endurance athletic ability.
LIPC	rs1800588	++ Homozygous	TT	T	No genetic cause for enhanced benefit from endurance training.
LPL	rs328	-- Wild Type	CC	G	Genetic cause for enhanced benefit from endurance training.
PPARD	rs2016520	++ Homozygous	TT	T	Genetic cause for enhanced benefit from endurance training.
ACTN3	rs1815739	++ Homozygous	TT	T	Potential for impaired muscle performance. Likely endurance athlete.
AMPD1	rs17602729	-- Wild Type	GG	A	No genetic cause for muscle cramping post exercise.
SLC30A8	rs13266634	-+ Heterozygous	CT	T	No genetic cause for post exercise strength loss and soreness.
MSTN	rs1805086	-- Wild Type	TT	C	No genetic cause for lower peak muscle power.
VO2Max					
GABPB1 (NRF2)	rs12594956	-+ Heterozygous	CA	A	Genetic cause for higher VO2 Max.
GABPB1 (NRF2)	rs8031031	-- Wild Type	CC	T	No genetic cause for higher VO2 Max.
PPARGC1A	rs8192678	++ Homozygous	TT	T	No genetic cause for lower baseline VO2 Max.
NRF2	rs7181866	-+ Heterozygous	GA	G	Genetic cause for higher VO2 Max.
Weight loss					
LPL	rs328	-- Wild Type	CC	G	No genetic cause for greater fat loss in response to exercise.
FTO	rs8050136	-- Wild Type	CC	A	Genetic cause for less fat loss in response to exercise.
INSIG2	rs7566605	-+ Heterozygous	GC	G	No genetic cause for less weight loss with exercise.
LEP	rs7799039	++ Homozygous	AA	A	Genetic cause for greater fat loss and lower BMI with exercise.
FTO	rs1121980	-- Wild Type	GG	A	No genetic cause for obesity with inactivity.
Resistance Training					
INSIG2	rs7566605	-+ Heterozygous	GC	G	No genetic cause for less benefits with resistance training.
IL15	rs1057972	-+ Heterozygous	TA	T	Genetic cause for more strength building with resistance training.
IL15RA	rs2296135	++ Homozygous	CC	C	Genetic cause for more strength building with resistance training.
Cardiovascular and Injury Risks					
PPARD	rs2016520	++ Homozygous	TT	T	No genetic cause for increased HDL with exercise.
NOS3	rs2070744	-+ Heterozygous	TC	T	Genetic cause for regulated blood pressure with exercise.
EDN1	rs5370	-- Wild Type	GG	T	No genetic cause for increased blood pressure with exercise if out of shape.
LIPC	rs1800588	++ Homozygous	TT	T	Genetic cause for insulin sensitivty in response to exercise.
CCL2	rs1024611	-- Wild Type	AA	G	No genetic cause for exercise induced ischemia.
ADRB2	rs1042714	++ Homozygous	CC	C	Genetic cause for exercise induced idiopathic venous thrombosis.
LEPR	rs1137101	-+ Heterozygous	AG	G	Genetic cause for exercise induced ischemic heart disease.
GDF5	rs143383	++ Homozygous	AA	A	Genetic cause for exercise induced osteoarthritis.
MMP3	rs679620	-+ Heterozygous	CT	C	No genetic cause for exercise induced Achilles Tendinopathy.

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Additional Fitness SNPs

GENE	rsID	Result	Client	Minor	Description
BDKRB2	rs1799722	++ Homozygous	TT	T	
ACE	rs1799752	-- Wild Type	AA	del	
CNR2	rs2501431	-+ Heterozygous	AG	A	
COL5A1	rs12722	-+ Heterozygous	CT	T	
HIF1A	rs11549465	-- Wild Type	CC	T	
IGF2	rs680	-+ Heterozygous	TC	A	
IGF2BP2	rs4402960	-+ Heterozygous	GT	T	
LPL	rs320	-+ Heterozygous	GT	G	
MMP3	rs650108	-+ Heterozygous	GA	A	
MPP7	rs1937810	-- Wild Type	TT	C	
MSTN : Intron Varia	rs11333758	-- Wild Type	TTT	TT	
NFIB	rs13286037	-- Wild Type	TT	A	
PPARD	rs2267668	-+ Heterozygous	AA	A	
EDN1*	rs2071942	-- Wild Type	GG	A	
	rs4789932	++ Homozygous	AA	A/C	