MaxGen LABS

MaxFunction

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Client DOB: 1/1/2023
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Sample Type: Buccal Swab
Sample ID: Sample Report
Sample Received: Not Provided
Report Date: 3/4/25 7:54 PM
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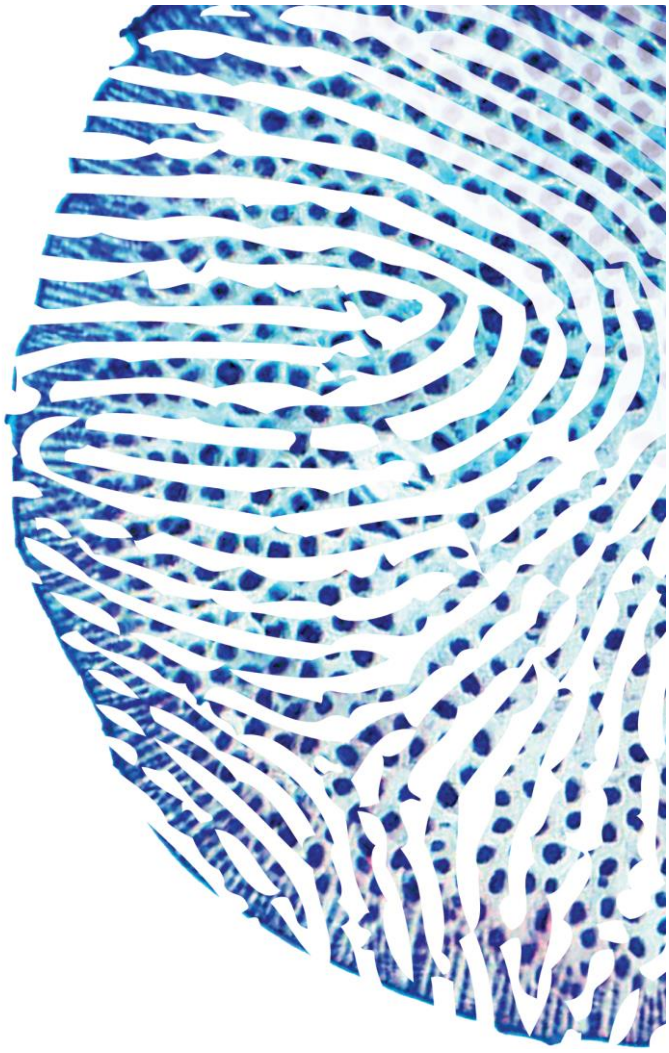
Account: MaxGen Labs
Office: MaxGen Labs
Contact:

Lab Notes:

SAMPLE REPORT

MaxFunction



Welcome to Your Personalized MaxFunction Nutrigenomic Report

This report offers personalized genetic insights designed to enhance your health and well-being. It is organized to guide you from foundational health elements to more specific and advanced areas, ensuring a comprehensive approach to your overall wellness. Always discuss any dietary or supplement changes with your physician or dietitian, especially if medications or complex health issues are involved. For assistance in finding a physician or dietitian, contact MaxGen Labs or visit our website.

Nutrigenomics Overview

Nutrigenomics is the study of how our genes interact with our diet and lifestyle to influence health and disease. This emerging field focuses on understanding the relationship between nutrition, gene expression, and overall well-being. By examining genetic variations, known as single nucleotide polymorphisms (SNPs), nutrigenomics helps identify how individual genetic differences can affect nutrient metabolism, dietary needs, and responses to various foods. This personalized approach allows for tailored dietary and lifestyle recommendations that can optimize health and prevent disease.

Importance of Nutrigenomics

The importance of nutrigenomics lies in its ability to provide personalized health insights based on an individual's unique genetic makeup. Traditional dietary guidelines often adopt a one-size-fits-all approach, which may not be effective for everyone due to genetic differences. By leveraging the principles of nutrigenomics, we can develop customized nutrition plans that address specific genetic predispositions, enhance nutrient absorption, and mitigate potential health risks. This personalized approach not only improves dietary effectiveness but also empowers individuals to make informed lifestyle choices that support long-term health and wellness.

Finding a Practitioner

Unlike genetic mutations that require the expertise of medical geneticists, nutrigenomic testing focuses on how your genes interact with your diet and lifestyle. For this, you should consult dietitians or practitioners who are specifically trained in nutrition and genetics. These professionals can provide personalized dietary advice based on your genetic profile. To find qualified practitioners near you, visit the MaxGenlabs.com website, where you can access a directory of experts who specialize in nutrigenomics.

Report Structure

The Foundational section is a great starting point for any wellness protocol. The recommendations within this section are generally accepted as basic health and wellness practices. Many focus on lowering the demand or stress on specific pathways within the body. By analyzing genetic weaknesses in different pathways, this section prioritizes which areas to focus on. Often, following these simple foundational recommendations can result in noticeable health improvements.

The Core section takes a more active role in supporting the body, diving deeper into specific pathways that may need additional help. Utilizing the latest research, this section prioritizes areas of nutrition, supplementation, and proactive lifestyle changes. It addresses not only vitamin absorption but also potential issues with vitamin bioactivation and cellular utilization, offering specific dietary forms of particular vitamins. These recommendations can make significant health improvements and are often more advanced and should be considered after implementing foundational changes.

The Advanced section delves deeply into the genetics behind specific enzymes, hormones, receptors, and other protein functions within the body. The recommendations here can include very targeted nutritional supplementation or lifestyle changes, important for both immediate health and preventative care. These suggestions are often based on longevity and aging research. It's easy to become overwhelmed with health protocols, diets, supplements, and reports like this one. We highly recommend starting with the Foundational section of the report. Many health goals can be achieved with guidance on basic practices. There are also times when new supplements or diets can cause adverse effects. We have done our best to predict and prioritize other pathways in these situations based on genetics.

High Quality Supplements

When choosing supplements, it's crucial to opt for high-quality brands to ensure safety and efficacy. Avoid buying supplements from sources like Amazon, where product authenticity and quality control can be questionable. Instead, choose reputable brands and trusted sources. We've partnered with Xymogen and Wholescripts to offer you a 10% discount (17% compared to Amazon) on high-quality supplements. Use the provided link to purchase directly from these reliable manufacturers and ensure you're getting the best for your health. www.wholescripts.com/register/MaxGen

Link: 10% Off - Direct from Manufacturer

How to use this report

This guide is designed to help you navigate and make the most of the information provided. Begin at page one and progress through the report sequentially, as the sections are arranged in order of physiological importance, starting with the most critical areas of your health. This ensures you address the most significant aspects first. You don't need to implement all the recommendations at once; focus on one section at a time and make gradual changes. Don't skip ahead! You may start feeling improvements early on as you begin to make lifestyle and diet choices that better fit you. And its perfec

Throughout the report, you'll find detailed descriptions of potential symptoms related to various genetic predispositions. Monitor your symptoms as you make changes, and use this feedback to guide your next steps. Remember that genetics is about probabilities, not certainties. The recommendations are based on your genetic tendencies, but they are not absolute. Your lifestyle, environment, and other factors also play significant roles in your health.

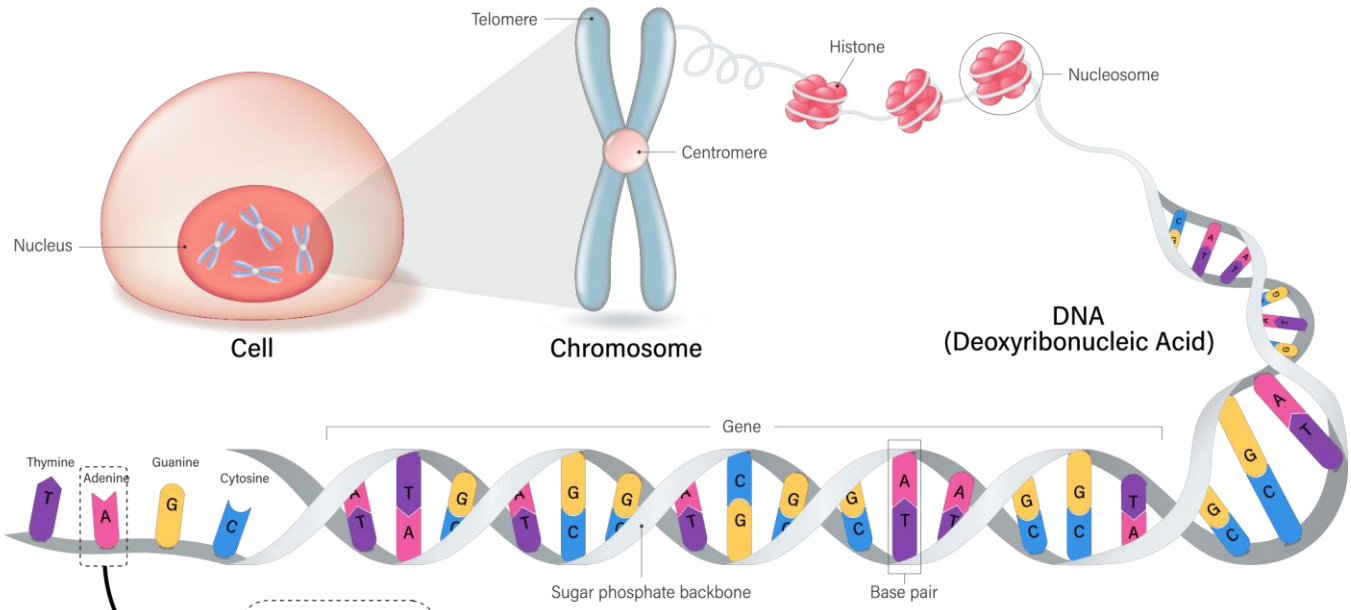
For personalized advice and to ensure you are making the best decisions, consider consulting with a dietitian or a nutritionally trained practitioner. They can help you interpret the report and tailor the recommendations to your unique needs. By following these guidelines, you can effectively use this report to improve your health and well-being. Remember, progress is a journey, and taking it one step at a time will help you achieve the best results.

Terminology

- **DNA and Genes**: DNA (deoxyribonucleic acid) is the molecule that carries genetic information in your cells. Genes are specific segments of DNA that contain instructions for the development, functioning, growth, and reproduction of your body.
- **Alleles:** An allele is a variant form of a gene, represented by different sequences of DNA bases (A, T, C, and G) at a specific location on a chromosome. These variations can result in different traits, such as eye color, and can be either dominant or recessive.
- **SNPs (Single Nucleotide Polymorphisms):** SNPs are the most common type of genetic variation among individuals. Each SNP represents a variation in a single DNA building block, known as a nucleotide. These variations can influence how individuals respond to certain drugs, their susceptibility to environmental factors, and their risk of developing particular diseases.

Genotype Information:

- **Wild Type (WT):** Refers to the typical or 'normal' sequence of a gene.
- **Heterozygous (+/-):** Indicates the presence of two different alleles for a particular gene.
- **Homozygous (++ or --):** Indicates the presence of two identical alleles for a particular gene.



Single Nucleotide Change

These single nucleotide changes are called Single Nucleotide Polymorphisms (SNPs). These are not acquired genetic mutations but naturally occurring variants. These variants can have no influence to very profound influences on biological processes in the body. These natural variants are what we look at within this report to determine what lifestyle changes might be ideal for you.

Lifestyle

The Lifestyle page provides practical and actionable recommendations designed to enhance your overall health and well-being through simple yet effective lifestyle modifications. These recommendations are based on your genetic insights and focus on foundational elements such as sleep, stress management, addiction, and environmental factors. By implementing these strategies, you can reduce stress on specific pathways within your body and create a solid foundation for improved health. Start with the recommendations that resonate most with you, and gradually incorporate more changes to experience the full benefits of a personalized approach to wellness.

Sleep Tendencies

Good sleep habits are essential for maintaining overall health and well-being. In this section, we will explore effective strategies to cultivate healthy sleep habits that support restorative rest and enhance daily functioning.

You have a biological tendency towards morning activities, earlier bedtimes, and decreased sleep quality.

Weight Loss & Sleep

There is a strong connection between sleep and weight management. Poor sleep quality and insufficient sleep can disrupt hormones that regulate appetite, leading to weight gain and other metabolic issues.

Your genetic profile indicates a normal need for sleep in relation to weight loss. Maintaining regular sleep patterns supports healthy metabolism and weight management.

Tips for Better Sleep

Achieving better sleep often requires making specific changes to your daily routine and environment. This section provides tips to help you create an optimal environment and adopt habits that promote restful and uninterrupted sleep.

Consider morning sun exposure, daily exercise, calming pre-sleep routine, ensure your room is dark while sleeping, consume antioxidant rich foods, like berries and dark leafy greens.

Avoid for Better Sleep

Identifying and avoiding sleep disruptors is crucial for achieving a good night's rest. This section outlines common sleep inhibitors and provides guidance on how to minimize their effects, helping you to avoid interruptions and enjoy more restorative sleep.

Consider avoiding caffeine & nicotine after 3PM.

Smoking Toxicity

Smoking introduces harmful chemicals into the body, leading to issues such as lung cancer, heart disease, and respiratory problems. This section explores the genetic susceptibility to toxic effects of smoking.

You have an risk of adverse effects of cigarette smoking. Consider glutathione-boosting supplements, Vitamin C containing fruitsto minimize the harmful effects of smoking.

Quitting Difficulty

Some individuals struggle more with quitting, focusing on the role of genetics in addiction and withdrawal. Understanding these challenges is key to developing effective cessation strategies.

Quitting smoking may require moderate support, including behavioral therapy and pharmacotherapy, to increase your chances of success.

Support for Quitting

From behavioral therapies to pharmacological aids, this section provides practical recommendations and resources tailored to different genetic profiles and personal needs to help you quit smoking.

You may require a standard Nicotine Replacement Therapy, and discussing pharmaceutical intervention (bupropion) with your physician to quit smoking.

How Do You Learn Best?

Effective learning strategies are crucial for individuals of all ages to reach their full academic and personal potential. By understanding each person's unique cognitive strengths and challenges, parents, educators, and learners themselves can tailor educational approaches to enhance the learning experience. This section provides a comprehensive overview of personalized learning strategies, with a particular focus on children but also relevant for adults. Drawing on insights from cognitive psychology, educational research, and genetic factors, these strategies aim to develop effective study habits, improve memory retention, and foster a love for learning. Whether supporting a child struggling with schoolwork or enriching an adult's educational journey, these strategies offer valuable tools to optimize the learning process and achieve academic goals.

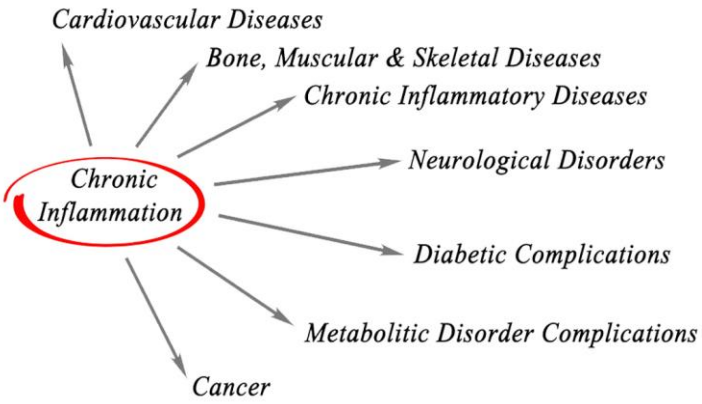
Strategic Games and Puzzles: Engaging in strategic games, puzzles, and activities that require planning and decision-making can enhance executive functions.
Reward-Based Learning: Incorporate rewards and incentives to enhance motivation and reinforce learning.
Interactive Activities: Engaging in interactive learning activities can help reinforce concepts and improve retention.

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. Certain genes can make you more susceptible to inflammation. Maintaining low levels of inflammation is the key to health.

An anti-inflammatory diet focuses on incorporating foods that help reduce inflammation in the body, which is linked to a variety of chronic diseases, including heart disease, diabetes, and certain types of cancer.

By choosing nutrient-dense, anti-inflammatory foods, you can help manage inflammation, improve overall health, and potentially reduce the risk of chronic illness. This diet emphasizes whole, unprocessed foods rich in antioxidants, omega-3 fatty acids, and other essential nutrients that support the body's natural defenses. By reducing the intake of pro-inflammatory foods such as processed foods, sugary beverages, and trans fats, and instead opting for anti-inflammatory options, you can promote better health and well-being.



Anti-Inflammatory Foods

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

Anti-Inflammatory Supplements

Tumeric	Quercetin
Omega 3s / SPMs	Bromelain
Boswellia	Green Tea Extract
Resveratrol	Alpha-Lipoic Acid

Pro-Inflammatory Foods

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

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

Assess your body's overall inflammation and understand the factors contributing to elevated levels, helping you manage and reduce chronic inflammation effectively.

You are at a regular risk of inflammation, consistent with the general population.

Fish Oil

Determine your genetic predisposition for needing fish oil supplements, which are known to help reduce inflammation and support neurological health. This section is very important for nursing mothers.

You have a mild increased need for omega-3s (fish oils) for neurological health. Consider eating a diet containing fish.

Omega 6 / Arachidonic Acid

Learn about the role of arachidonic acid in your diet and its impact on inflammation, along with guidance on managing its intake for better health.

You are at normal risk of Omega 6 sensitivity. It is still advisable to avoid excessive omega 6 containing foods.

Saturated Fats

Understand how saturated fats affect inflammation and receive recommendations on dietary adjustments to minimize inflammatory responses.

Your genotype indicates you have the ε3/ε4 variant. Limit intake of saturated fats and focus on healthy fats to manage cardiovascular risk.

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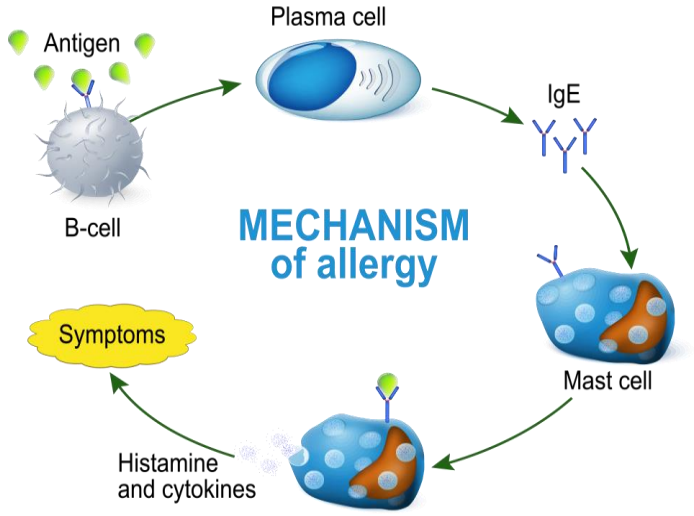
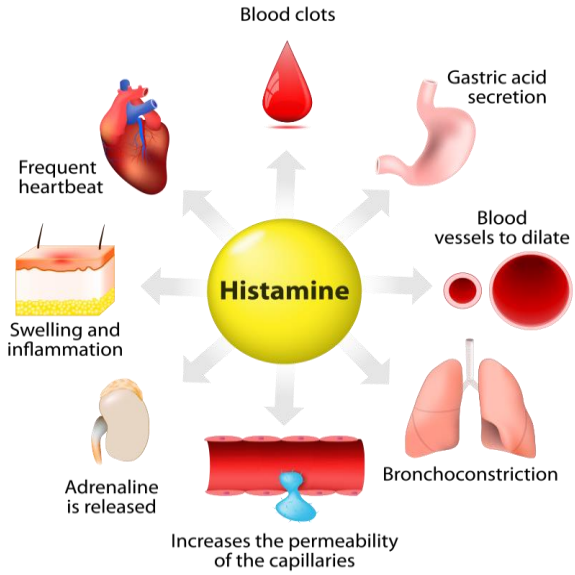
Histamine Sensitivity

Histamine is a crucial chemical in the body, playing key roles in both the immune system and as a neurotransmitter. During allergic reactions or mast cell degranulation, histamine is released, leading to common allergy symptoms. Beyond its immune functions, histamine significantly impacts brain activities such as sleep-wake cycles, appetite, and cognitive function. In the digestive system, it stimulates gastric acid secretion, which is essential for food digestion.

The body primarily breaks down histamine using two enzymes: Histamine N-Methyltransferase (HNMT) and Diamine Oxidase (DAO/AOC1). When histamine levels become excessive, due to either dietary intake, environmental factors, or genetic predispositions, symptoms such as headaches, gastrointestinal distress, skin reactions, and respiratory issues can arise. Understanding how genetic variations influence histamine metabolism is vital for managing sensitivity and improving overall well-being.





High Histamine Foods

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

High Histamine Symptoms

Headaches	Nasal Congestion
Migraines	Fatigue/Adrenal Fatigue
Digestive Issues	Irregular Menstrual Cycles
Irritable Bowl	Blood Pressure Issues
Anxiety	Nasal Congestion
Eczema	Fibromyalgia
Other Skin conditions	Adrenal Fatigue

Female Histamine Levels

Pregnancy: Decreased
Luteal Phase: Decreased
Follicular Phase: Increased
Ovulation: Increased
Menopause: Increased
Perimenopause: Variable
Increased Estrogen: Increased

DAO Enzyme Activity

Diamine oxidase (DAO) is crucial for breaking down histamine, a compound involved in immune responses and digestion. Reduced DAO activity can lead to histamine buildup, causing symptoms like headaches and digestive issues.

You have minimal to no reduction in DAO enzyme activity. (%0 reduction)

DAO Enzyme Levels

DAO production, controlled by the AOC1 gene, is essential for managing histamine levels in the body. Genetic variations can reduce DAO production, leading to insufficient enzyme levels and increased histamine-related symptoms.

Normal DAO production. Genetic profile indicates effective histamine degradation with low risk for histamine intolerance symptoms.

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.

You may have mild decreased HNMT activity. If symptomatic, support DAO, and avoid histamine containing foods.

MAO

MAO is downstream in the histamine breakdown pathway and can become overwhelmed if there are genetic variations in the MAO enzyme.

You are unlikely to have downstream histamine issues

Foods & Food Additives

Understanding the intricate relationship between our genetics and the foods we consume is essential for optimizing health and well-being. The Foods & Food Additives page explores how various dietary components such as fermented foods, tyramine-rich foods, green tea, smoked meats, and food dyes can impact our health. From the probiotics in fermented foods that boost beneficial gut bacteria to the potential migraine triggers in tyramine-rich foods, and from the antioxidant power of green tea to the health implications of smoked meats and artificial food dyes, this guide provides insights into making informed dietary decisions.

Examples of Common Food Dyes

Dye Name	Common Foods	Potential Risks
Red 40	Candy, Soda	Hyperactivity, Allergies
Red 3	Candy, Cocktail Cherries	Thyroid issues
Yellow 5	Snacks, Cereals	Allergic reactions, Hyperactivity
Yellow 6	Chips, Cheese, Beverages	Allergic reactions, potential carcinogen
Blue 1	Ice Cream, Drinks	Allergic reactions, potential cancer risk
Blue 2	Candy, Beverages	Hyperactivity, potential carcinogen
Green 3	Beverages, Candy, Ice Cream	Allergic Reactions, Potential carcinogen

Fermented Foods

Fermented foods are rich in probiotics that promote gut health and aid digestion. However, individuals with genetic variations affecting histamine metabolism, such as mutations in the DAO or HNMT genes, may experience adverse reactions like headaches, digestive issues, and allergic responses.

You may be able to tolerate fermented containing foods. These can be very beneficial for gut flora diversity.

Tyramine Foods

Tyramine, found in aged cheeses, cured meats, and other fermented foods, can trigger headaches and other symptoms in individuals with genetic variations affecting monoamine oxidase (MAO) activity. Variants in the MAO-A gene can lead to reduced enzyme activity, resulting in higher tyramine sensitivity.

You may be able to tolerate tyramine containing foods well.

Green Tea

Green tea contains catechins, such as epigallocatechin gallate (EGCG), which have numerous health benefits, including antioxidant and anti-inflammatory properties. Individuals with certain COMT variants may experience different effects from green tea consumption that influence mood and cognitive function.

You are likely to benefit from green tea consumption. Cheers!

Smoked Meats

Smoked meats often contain polycyclic aromatic hydrocarbons (PAHs) and other harmful compounds that can pose health risks. Genetic variations in detoxification pathways, such as those involving the CYP1A1 and CYP1B1 genes, can influence your sensitivity to these compounds.

You may have a slight increased risk from consuming smoked meats. Limit your consumption of smoked meats.

Food Dyes

Artificial food dyes are widespread in processed foods and can cause hyperactivity, allergic reactions, and other adverse effects in susceptible individuals. Genetic variations in detoxification and metabolic pathways, such as those involving the CYP450 enzymes, can affect your sensitivity to these additives.

You may have a slight increased risk of sensitivity to food dyes and preservatives.

Sulfur Containing Foods

Sulfur-containing foods like garlic, onions, and cruciferous vegetables provide essential nutrients and health benefits. However, for individuals with genetic variations affecting sulfur metabolism, such as mutations in the CBS or SUOX genes, these foods can lead to digestive discomfort and other symptoms.

You have average need for cruciferous vegetables in your diet. Feel free to eat as many as you like!

Toxic Exposures

Understanding your genetic susceptibility to environmental toxins is crucial for making informed lifestyle choices that can protect your health. Various genes influence how your body detoxifies harmful substances, such as pesticides, heavy metals, and industrial chemicals. Genetic variations can affect the efficiency of these detoxification pathways, leading to increased sensitivity and risk of adverse health effects. By identifying your genetic predispositions, you can take proactive steps to minimize exposure to these toxins, choose safer alternatives, and support your body's natural detoxification processes. It is advisable to avoid these exposures even if there is no identified genetic susceptibility

Aromatic Hydrocarbons

Aromatic hydrocarbons and dioxins are common environmental pollutants found in industrial emissions, tobacco smoke, and certain food products. These compounds can be highly toxic and carcinogenic, and genetic variations can affect your body's ability to detoxify and eliminate them.

You have an average risk of toxicity from PAH, PHAH, PCBs, & Dioxin.

Insecticide Sensitivity

Insecticides are widely used in agriculture and home pest control. While effective for managing pests, they can pose health risks, especially for individuals with genetic variations affecting detoxification pathways. Consider choosing organic produce and minimizing the use of chemical pest control methods to reduce exposure.

You have a normal sensitivity to insecticides. Its's still probably a good idea to avoid exposures.

Glyphosate Sensitivity

Glyphosate is a widely used herbicide found in many genetically modified crops. Genetic variations can influence how your body handles glyphosate exposure, potentially increasing your risk of adverse health effects. Consider choosing organic produce and minimizing exposure to glyphosate whenever possible.

You have a normal sensitivity to Glyphosate. Its's still probably a good idea to avoid exposures.

Phthalates & Parabens

Phthalates and parabens are common in many consumer products, from plastics to cosmetics. While useful, these chemicals can disrupt endocrine function, potentially causing hormonal imbalances and health issues. To reduce exposure, consider using products labeled as phthalate-free and paraben-free.

You have an increased risk of sensitivity to parabens. To minimize exposure, avoid personal care products and cosmetics labeled with methylparaben, ethylparaben, propylparaben, or butylparaben, and look for "paraben-free" alternatives.

BPA & Plastics

Bisphenol A (BPA) and other plastic-related chemicals are pervasive in food packaging, containers, and household items. These substances can disrupt endocrine function and lead to various health issues. It's essential to use non-plastic alternatives and be mindful of your exposure to plastic products.

You have a significant increased risk of toxicity from BPA and plastics. Consider using non-plastic containers for food and drinks.

Butadiene & Benzene

Butadiene, benzene, styrene, and ethylene oxide are industrial chemicals found in products like synthetic rubber (play ground floors), plastics, and solvents. These substances are known carcinogens and can cause significant health issues, especially for individuals with genetic susceptibilities.

You have a mild increased sensitivity to these chemicals Avoid tire rubber playgrounds, synthetic rubbers, Styrofoam, car exhaust, paints, and glues. It is also advisable to let hot cars air out before entering.

Iron Sensitivity

Iron is an essential nutrient, but excessive iron intake can be harmful, particularly for individuals with genetic variations affecting iron metabolism. Elevated iron levels can lead to conditions like hemochromatosis, causing fatigue and even organ damage.

You have a normal risk of iron sensitivity. Monitor your yearly labs for low iron.

Acetaminophen

Acetaminophen, commonly used for pain relief and fever reduction, can pose risks for individuals with certain genetic variations. These genetic differences can affect how your body metabolizes and detoxifies acetaminophen, potentially leading to adverse effects on the liver.

You have an increased risk of adverse effects from acetaminophen. Consider alternative forms of pain relief. Additionally, taking N-acetylcysteine (NAC) may help minimize potential adverse effects.

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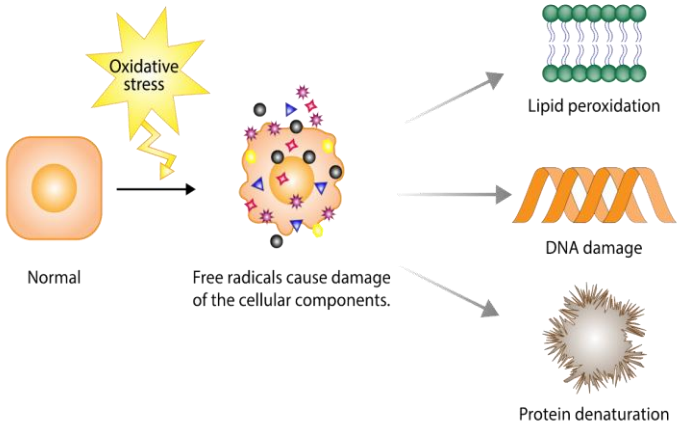
Oxidative Stress

Oxidative stress occurs when there is an imbalance between free radicals and antioxidants in your body, leading to cellular damage and contributing to various health issues, including chronic diseases and aging. While oxidative stress is necessary for your immune system to fight off invaders, it is the imbalance between oxidative stress and antioxidants that is important. Your genetic profile can influence how well your body manages oxidative stress. This section provides insights into your genetic predispositions related to oxidative stress and offers personalized recommendations to enhance your antioxidant defenses. By understanding and addressing these genetic factors, you can take proactive steps to protect your cells from oxidative damage and support overall health and longevity.

Glutathione & Antioxidant Defense

Glutathione is a critical antioxidant that helps protect your cells from oxidative damage and supports your body's detoxification processes. The genes involved in glutathione synthesis and recycling play essential roles in maintaining the balance of oxidative stress and antioxidant defense. Variations in these genes can affect your body's ability to produce and utilize glutathione effectively, influencing your overall oxidative stress levels and susceptibility to damage from free radicals.

You have mild decreased glutathione production, very mild reduction in peroxide degradation. Consider taking selenium (or eating brazil nuts).



Causes of Oxidative Stress

Pollution
UV Radiation
Processed Foods
Trans/Bad Fats
Alcohol & Smoking
Low intake of fruits & Vegas
Physical & Emotional Stress
Medications
Infections

Oxidative Stress Symptoms

Fatigue
Muscle & Joint Pain
Memory Loss & Brain Fog
Premature Aging
Frequent Infections
Headaches
Cardiovascular problems
Skin Disorders
Respiratory issues & Coughing

Superoxide Dismutase (SOD) Pathways

The Superoxide Dismutase (SOD) pathway is a crucial part of your body's defense against oxidative stress. SOD enzymes help convert superoxide radicals, harmful byproducts of cellular metabolism, into less damaging molecules like hydrogen peroxide. However, elevated Nitric Oxide Synthase (NOS) activity can lead to increased levels of nitric oxide (NO), which can react with superoxide to form peroxynitrite (ONOO-), a potent oxidant that contributes to the formation of nitrotyrosine. Variations in the genes responsible for SOD and NOS production can impact the efficiency of these processes, affecting your ability to manage oxidative stress and maintain cellular health.

You may have some trouble with removing peroxides. Ensure a diet containing adequate antioxidants and follow any directions in the above section.

Foods

Blueberries - anthocyanins
Dark Chocolate - Flavonoids
Artichokes - Fiber, Vit. C, Antioxidants
Pecans - Antioxidants & Healthy Fats
Spinach- Vit A & C, & Antioxidants
Strawberries - Vit C & Antioxidants
Goji Berries - Antioxidants
Raspberries - Antioxidants
Cruciferous Vegetables - Sulfur
Brazil Nuts - Selenium

Supplements

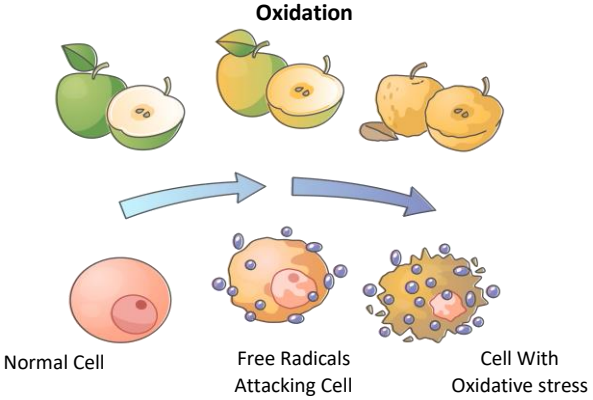
Vitamin C
Vitamin E
Zinc / Copper
Selenium
Co Q10
N acetylcysteine (NAC)
S-Acetyl-Glutathione
Sulforaphane
Methylene Blue

Glutathione S-Transferases (GST) in Detoxification

The Glutathione S-Transferase (GST) pathway plays a vital role in detoxifying harmful substances and protecting your cells from oxidative damage. GST enzymes facilitate the conjugation of glutathione to various toxins, making them more water-soluble and easier for the body to excrete. Genetic variations in the GST genes can influence the efficiency of this detoxification process, potentially affecting your susceptibility to oxidative stress and toxin exposure.

You are homozygous for a variant in the GSTP1 gene, which can impair antioxidant defense. It is crucial to support your body's detoxification processes with a diet high in antioxidants and supplements like N-acetylcysteine (NAC) and milk thistle.

Oxidation



CORE

Core Nutrients

Essential nutrients play vital roles in maintaining overall health and well-being. Phosphatidylcholine, derived from choline and influenced by PEMT variants, is important for liver function, brain health, and cell membrane integrity. Additionally, fat-soluble vitamins such as A, D, and E are crucial for vision, immune function, bone health, and antioxidant protection. Adequate intake through diet or supplementation is key, but managing intake is essential to avoid potential toxicity. Always discuss any changes with your physician or dietician.

Vitamin A

The Beta-Carotene Monooxygenase 1 (BCMO1) gene plays a significant role in the conversion of beta-carotene from plant-based foods into active Vitamin A, which is vital for vision, immune function, and skin health. Genetic variations in BCMO1 can influence how effectively your body performs this conversion, impacting your overall Vitamin A status.

Your BCMO1 gene variants suggest that you have a moderately efficient conversion of beta-carotene to retinol. Ensure you consume adequate amounts of retinol-rich foods.

Low Vitamin A Symptoms

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

High Vitamin A Symptoms

- Hair loss, Brittle nails
- Liver damage
- Mental confusion
- Dry, rough skin
- Cracked lips
- Bone pain or tenderness
- Fatigue

Dietary Sources Of Retinoids

- Free range eggs
- Organic Heavy Cream
- Cod-liver oil
- Grass fed butter
- Grass fed beef & beef liver
- Wild caught fatty fish & shrimp

Vitamin D

Vitamin D plays a vital role in bone health, immune function, and overall well-being by helping the body absorb calcium and supporting immune responses. It must be converted in the liver and kidneys, with limited dietary sources making sunlight exposure or supplementation necessary for preventing deficiency. Ideally, UV exposure from 10 am to 3 pm for 10-30 minutes at least twice a week is recommended. For therapeutic dosing, D3 between 5,000 and 10,000 IU daily is advised. General wellness can be maintained with 1,000-2,000 IU daily.

Your VDR gene variants suggest normal function. Maintain adequate vitamin D intake through regular exposure to sunlight and possibly supplements. With normal CYP27B1 function, regular vitamin D testing will ensure optimal vitamin D activity and calcium ba

Vitamin D Foods

- Cod Liver Oil
- Swordfish
- Salmon
- Beef Liver
- Egg Yolks
- Cheese

Health Conditions

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

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 dihydroxy vitamin D (Active Vitamin D)

Vitamin E

Vitamin E is a powerful antioxidant that protects cells from oxidative damage, supports immune function, and promotes skin health. It plays a crucial role in numerous bodily processes, including gene expression and cell signaling. While we are not focusing on specific genes for vitamin E, it interacts with multiple pathways in the body that are essential for maintaining optimal health.

We anticipate that you may have a slightly elevated need for Vitamin E. In addition to maintaining a balanced diet and healthy lifestyle, you might benefit from taking a multivitamin to ensure adequate Vitamin E intake.

Vitamin E Foods

- Nuts & Seeds
- Green Leafy Vegetables
- Fruits
- Seafood
- Eggs

Health Conditions

- Oxidative Stress
- Fatigue
- Peripheral Neuropathy
- Muscle Weakness
- Immune Dysfunctions
- Cognitive Decline
- Anemia

Phosphatidylcholine

Phosphatidylcholine is a vital nutrient derived from choline, essential for various bodily functions including liver health, methylation, brain function, and maintaining the structural integrity of cell membranes. Genetic variations in the PEMT gene can influence choline requirements, making it important to ensure adequate intake through diet.

We expect your need for phosphatidylcholine to align with standard recommendations. A balanced diet with choline-rich foods should suffice.

Choline Foods

- Free Ranged Egg Yolks
- Beef Liver
- Chicken Breast
- Fish

Health Conditions

- Liver Damage
- Non-Alcoholic Fatty Liver
- Memory Problems
- Difficulty Concentrating
- Anxiety & Depression
- Cardiovascular issues
- Developmental Problems
- Elevated Liver Enzymes

The Phosphatidylcholine & MTHFR Connection

By providing supplemental Phosphatidylcholine (PC), PC can help lower the demand on the methylation cycle. This is particularly important for individuals with MTHFR gene variants, which can impair the body's ability to process folate and support methylation. Ensuring adequate intake of phosphatidylcholine can help alleviate some of the metabolic strain on the methylation pathway, thereby supporting better health and reducing the risk of complications associated with MTHFR mutations.

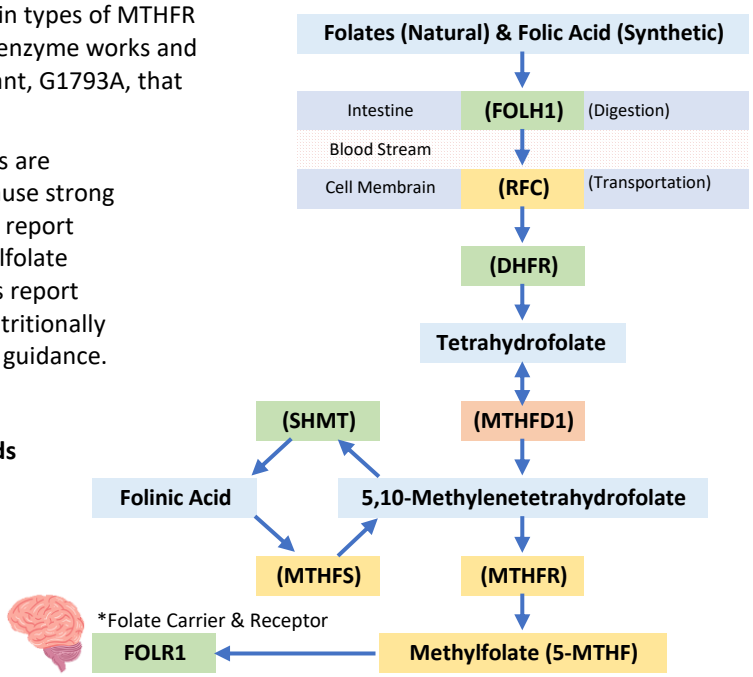
Methylation - MTHFR / Folate

CORE

Folate, also known as Vitamin B9, is very important for many body functions like making DNA, producing and breaking down neurotransmitters, detoxifying the body, and preventing heart disease. The MTHFR enzyme helps turn the folate we eat into Methylfolate, which is needed for over 200 different processes in our bodies, especially in the methylation cycle. Low levels of Methylfolate can cause many health problems. There are two main types of MTHFR gene variants: C677T and A1298C, which can affect how well the enzyme works and how much Methylfolate is produced. We also include a third variant, G1793A, that is less researched but still potentially influential.

CORE

Many people experience improved health when their folate levels are optimized. However, methylfolate is a potent nutrient and can cause strong reactions, such as anger and aggression, in some individuals. This report addresses other important health issues before discussing methylfolate supplementation. It is essential to read the earlier sections of this report before considering methylfolate supplements. Working with a nutritionally trained practitioner or dietitian is highly advised for personalized guidance.



CORE

Associated Symptoms & Conditions

Depression
Anxiety
ADD/ADHD
Miscarriage
Infertility
Bipolar
Schizophrenia
Autism
Migraines
Cardiovascular Disease
Blood Clots
Detoxification Issues
Estrogen Issues
Cancer
Midline defects
Elevated Homocysteine
And More

MTHFR Friendly Foods

Green Leafy Vegetables
Liver
Asparagus
Broccoli
Free Range Eggs
Beans & Lentils
Beets

MTHFR Results

MTHFR C677T	Wild Type	Normal Activity
MTHFR A1298C	Homozygous	Decreased Activity
MTHFR G1793A	Wild Type	Normal Activity

You are homozygous for the A1298C variant. This results in a 30% reduction in MTHFR enzyme activity. You may benefit from the recommendations on this page.

Methylfolate Sensitivity & Recommendations

When using methylfolate supplements, start with a low dose and increase gradually. Adults typically start with 400 mcg. Research shows benefits from 400 mcg to 15 mg, but many people do well with less than 2 mg. There are other forms of folate like, Folinic Acid that may be less stimulating to some. Methylfolate and Folinic acid are more bioavailable forms than the synthetic form, Folic Acid. If you are symptomatic consider these recommendations.

You may benefit from taking methylfolate. Consider starting with 400 mcg of methylfolate and gradually increase to 1,000 - 4,000 mcg daily.

CORE

Methyl Donor Sensitivity

Methyl donors like folate, vitamin B12, and betaine are vital for DNA methylation, neurotransmitter synthesis, and detoxification. Symptoms may include, anger, agitation, fatigue, mood changes, and difficulty concentrating.

You are likely tolerant to methyl donating nutrients. Take as needed.

Folate Absorption & Compounding Genes

Other genetic factors can further compound MTHFR-related issues (MTHFD1) and even reduce folate absorption (FOLH1), making it harder for the body to maintain optimal folate levels.

You have a variant in MTHFD1, this can increase MTHFR risks.

Cellular Utilization

Understanding folate cellular uptake is crucial for assessing how efficiently your body utilizes this essential nutrient. Even if blood levels of folate appear normal, genetic variations can impact the transport of folate into the cell, producing symptoms.

You have a mild reduction in cellular uptake of folate, consider annual RBC folate and homocysteine testing and high quality folate intake.

Follow Up Labs

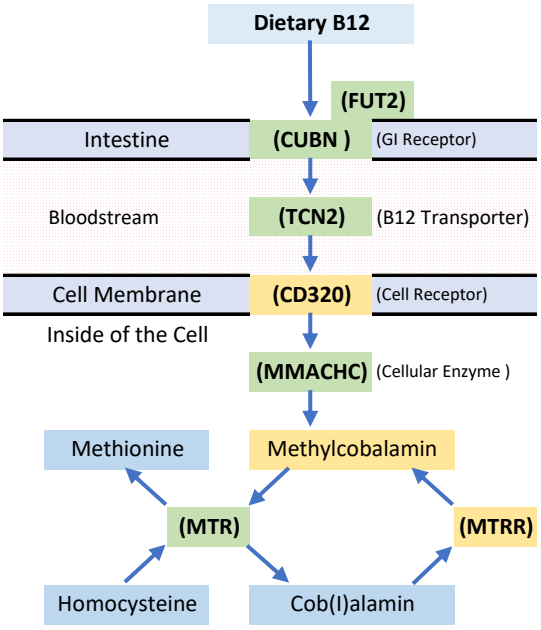
Regular monitoring and follow-up laboratory tests are essential for individuals with variations in the MTHFR gene. These follow-up labs can help assess the effectiveness of dietary and lifestyle interventions, and ensure adequate nutrient levels.

Consider adding serum folate, RBC folate, and homocysteine tests to your yearly labs. Most people feel better when their serum folate levels are above 15 ng/mL.

CORE CORE CORE CORE CORE CORE CORE CORE

B12

Are you getting enough Vitamin B12 (Cobalamin) in the right form? Since your body cannot produce B12, it's crucial to ensure you obtain adequate amounts from your diet or supplements. Vitamin B12 is vital for numerous bodily functions, including neurotransmitter production, energy metabolism, and red blood cell formation. Many people experience significant improvements in well-being by switching to the correct form of B12 based on their genetics or by increasing their intake. Consider incorporating yearly micronutrient testing into your health routine to monitor your B12 levels. Always opt for methylcobalamin, hydroxocobalamin, or adenosylcobalamin supplements, and avoid cyanocobalamin when possible.



Low B12 Symptoms

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

Foods High in B12

Liver
Fish
Meat
Dairy Products
Eggs
Clams
(Animal Products)

Common B12 Labs

B12, Serum
Urinary MMA
Homocysteine
B12 Binding Capacity

B12 Intestinal Absorption

Vitamin B12 absorption occurs in the small intestine and is essential for DNA synthesis, red blood cell formation, and neurological health. Key proteins like intrinsic factor and cubilin facilitate this process. Genetic variations, such as those in the CUBN gene, can impact absorption efficiency, influencing dietary and supplementation needs.

You have a normal CUBN gene, indicating typical Vitamin B12 absorption. Maintain a diet rich in B12 sources like meat, fish, dairy, and fortified foods to ensure adequate intake. Regular monitoring is recommended to maintain optimal B12 levels.

B12 Cellular Uptake

Cellular uptake of Vitamin B12 is crucial for its utilization in various bodily functions. Even if blood levels of Vitamin B12 appear normal, genetic variations in the CD320 gene, can impair the transport of B12 into cells, potentially leading to functional deficiencies. Lithium Orotate in low doses has been said to help improve this transport.

You have a variant in the CD320 gene that may slightly reduce cellular uptake of Vitamin B12. Consider increasing your dietary intake of B12 and possibly taking a daily B12 supplement. Regular monitoring of your B12 levels is advised to ensure adequate ce

B12 Labs & Lab Ranges

The FUT2 variant can cause a false elevation in serum B12 levels. This can result in a 20% false elevation in labs. Normal ranges are 200 to 1080pg/ml. Optimal ranges tend to be 500 to 1080pg/ml. Someone with the FUT2 Variant may require a level close to 600 to feel improvements in mood and energy.

PubMed Research: PMID29040465

You do not carry the FUT2 variant. Aim for standard optimal B12 levels of 500-700 pg/mL. Regular monitoring and maintaining a balanced diet can help ensure your B12 levels remain within the optimal range. PMID: 29040465

Methylcobalamin

Methylcobalamin is a naturally occurring, bioactive form of Vitamin B12. It is readily utilized by the body and supports brain health, nerve function, and the methylation cycle. This form is especially beneficial for individuals with MTHFR mutations and/or haved elevated homocysteine levels.

You have increased need for methylcobalamin.

Adenosylcobalamin

Adenosylcobalamin is another bioactive form of Vitamin B12 that is crucial for mitochondrial health. It supports energy production at the cellular level and is essential for the proper function of the Krebs cycle. This form is particularly useful for individuals experiencing fatigue and issues with energy metabolism.

If you suffer from fatigue, adenosylcobalamin might be useful.

Hydroxocobalamin

Hydroxocobalamin is a naturally occurring form of Vitamin B12 that can be converted into both methylcobalamin and adenosylcobalamin in the body. It has a longer half-life in the bloodstream compared to other forms, making it effective for B12 injections. It is less stimulating than Methylcobalamin.

You have no increased need for Hydroxocobalamin, however it is still a great form of B12 to consider taking.

Cyanocobalamin

Cyanocobalamin is a synthetic form of Vitamin B12 often found in low-cost supplements and fortified foods. It contains a cyanide molecule, which the body must detoxify and remove. This form is less efficiently converted to active forms (methylcobalamin and adenosylcobalamin) in the body. cyanocobalamin is not recommended.

You have an average ability to use cyanocobalamin. You should still consider using other forms of vitamin B12 when possible.

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Hormones

Hormones play a pivotal role in numerous bodily functions, from metabolism and energy levels to mood and reproductive health. The conversion of T4 to T3, total hormone production by CYP17A1, and the regulation of hormone availability by SHBG are essential processes that ensure your body functions optimally. Genetic variations can significantly impact these processes, influencing your overall hormonal health.

Regular testing and monitoring of hormone levels, alongside a personalized approach to diet and supplementation, can lead to significant improvements in well-being. Consider incorporating regular hormone level testing into your health routine to keep track of your hormonal balance and ensure optimal health.

Thyroid T4 to T3 Conversion

Thyroid T4 to T3 conversion is a critical process in maintaining metabolic balance and overall energy levels. This conversion transforms inactive thyroxine (T4) into the active triiodothyronine (T3). Genetic variations, particularly in the DIO1 gene, can affect the efficiency of this conversion, thereby influencing thyroid function and metabolic rate.

You likely have normal T4 to T3 conversion. However, T3 testing may still be recommended and ordered by your physician for a comprehensive evaluation.

Nutrients That Help with T4 to T3 Conversion

Selenium: Brazil nuts, seafood, meat, eggs
Zinc: Oysters, red meat, poultry, beans, nuts, dairy
Iodine: Iodized salt, seaweed, shrimp, fish
Iron: Red meat, poultry, fish, lentils, beans
Vitamin A: Carrots, sweet potatoes, dark leafy greens

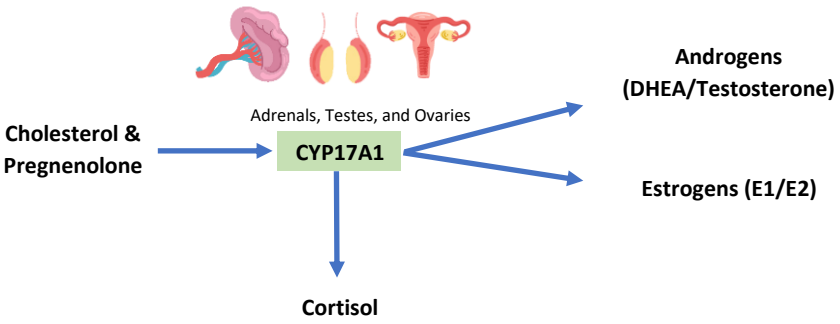
Low Thyroid Symptoms

Fatigue
Weight Gain
Cold Intolerance
Dry Skin & Hair
Hair Loss
Constipation
Depression
Memory Issues
Goiter

Total Hormone Levels

Hormone levels are regulated by a complex interplay of genetic factors and lifestyle choices. The CYP17A1 gene plays an integral role in converting cholesterol into DHEA and subsequent hormones. Some individuals naturally have higher hormone levels than others. This difference can be genetic and influence the need for different supporting nutrients.

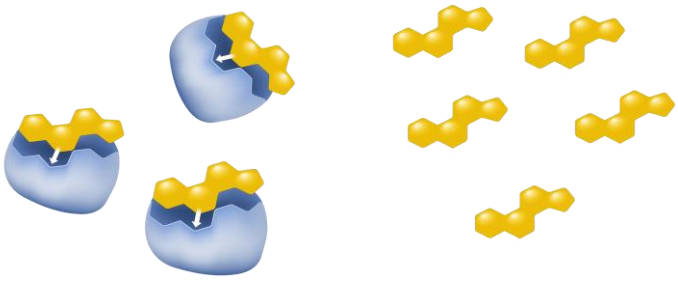
You should have normal levels of hormones. DHEA-S might be a beneficial lab marker to evaluate any causes of decreased hormones. DHEA supplementation might support healthy hormone production if it is low. Discuss this with your



SHBG and Free Hormones

Sex Hormone Binding Globulin (SHBG) regulates the availability of free hormones in the body. Free hormones are those that are not bound to proteins like SHBG and are biologically active, whereas bound hormones are attached to proteins and are not readily available for use by the body.

You likely have normal SHBG levels, which help maintain a balanced level of free hormones in your body.



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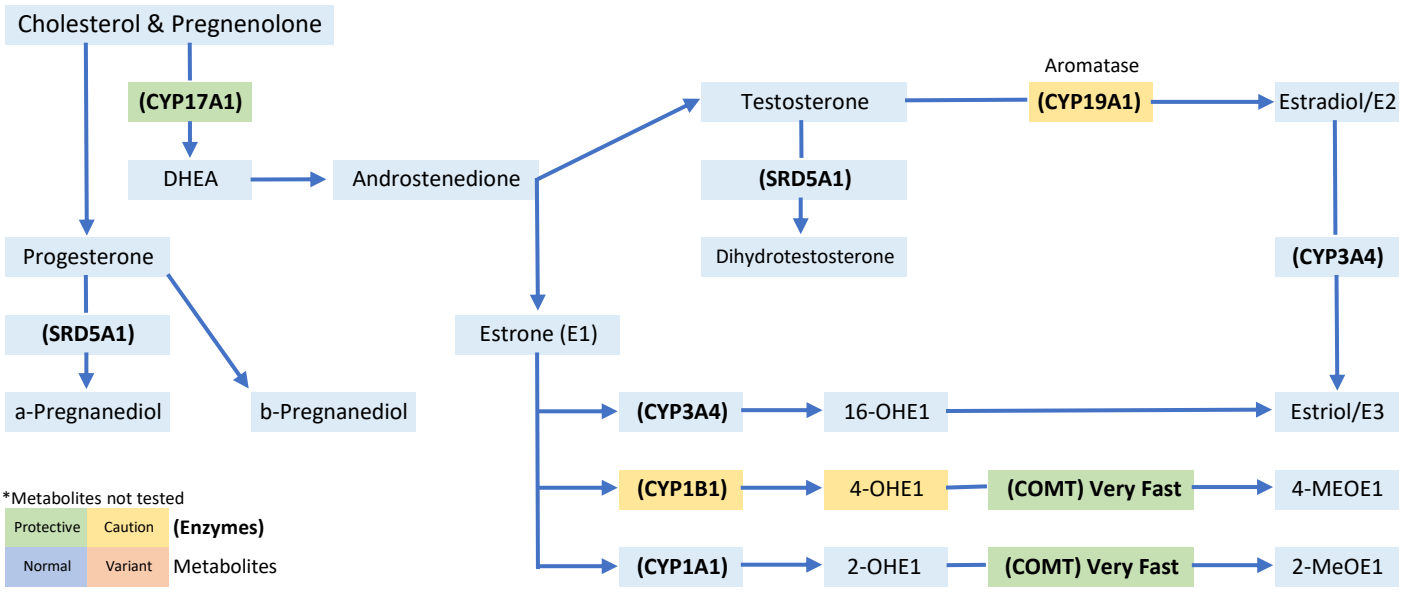
Hormones - Male

Hormones play a critical role in maintaining various physiological functions in men's health, including metabolism, muscle growth, energy levels, and reproductive health. Understanding how genetic variations influence hormone production and metabolism can provide valuable insights into optimizing health through personalized nutrition. This report delves into key hormones relevant to men, such as testosterone and dihydrotestosterone (DHT), and explores how specific genetic variations impact their levels and activity. By integrating genetic information with nutritional guidance, this report aims to offer practical strategies for managing hormone balance and promoting overall well-being in men.



Aromatase & Estrogen

Aromatase plays a key role in the conversion of androgens to estrogens, which is essential for maintaining hormonal balance in men. It impacts various aspects of male health, including fertility, bone density, cognitive function, and cardiovascular health.

You may have a slight increase in estrogen conversion from androgens.

Dihydrotestosterone (DHT)

The enzyme 5α-reductase(SRD5A1), which is involved in the production of dihydrotestosterone & α-Pregnanediol. Elevated activity of this enzyme can lead to symptoms such as polycystic ovary syndrome (PCOS), thinning hair, acne, and facial hair growth.

You likely have a mild increase in SRD5A1 activity, leading to slightly elevated DHT levels. DHT and Insulin levels should be monitored and optimized. Saw Palmetto supplements may be beneficial.

2-Hydroxyestrogen

2-Hydroxyestrogens (2-OHE1) is considered protective due to their less estrogenic activity compared to other estrogen metabolites,(16-OHE1 & 4-OHE1). Higher levels of 2-OHE1 are associated with a reduced risk of hormone-related conditions.

You likely have normal CYP1A1/2 activity, resulting in typical 2-OHE1 levels. Continue a balanced diet to maintain healthy estrogen metabolism.

4-Hydroxyestrogen

4-hydroxyestrogens are potentially harmful estrogen metabolites produced by the CYP1B1 enzyme. They play significant roles in cell proliferation and DNA integrity.

You likely have a slight increase in CYP1B1 activity. Consider incorporating cruciferous vegetables into your diet to support healthy estrogen metabolism.

16-Hydroxyestrogen

16-hydroxyestrogens are estrogen metabolites produced by the CYP3A4 and CYP3A5 enzymes. These metabolites play crucial roles in cellular processes and hormone metabolism.

You likely have slightly elevated CYP3A4 activity, leading to mildly increased 16-OHE1 levels. Include cruciferous vegetables to help balance estrogen metabolism.

Catechol Estrogen Detox

The COMT enzyme is crucial for the methylation and inactivation of catecholamines and catechol estrogens. This can potentially lead to increased accumulation of harmful catechol estrogens.

You likely have normal COMT activity, resulting in typical catechol estrogen metabolism. Maintain a balanced diet for overall health.

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Neurological - Dopamine

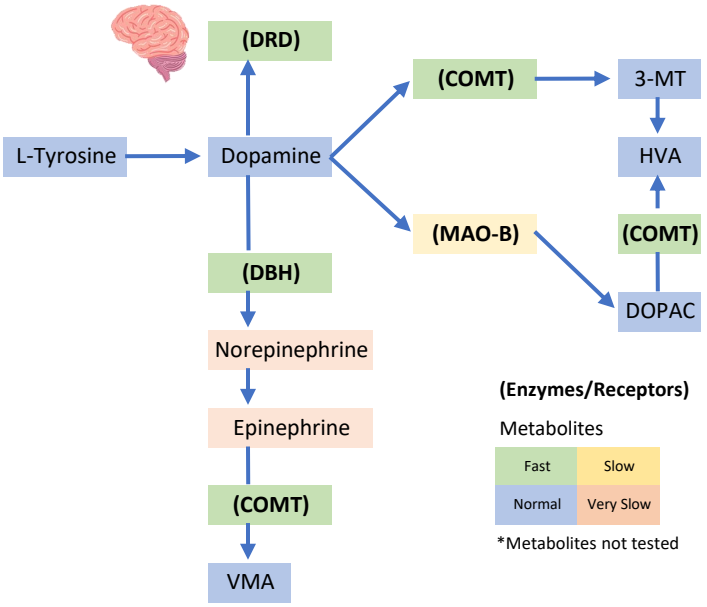
The regulation of dopamine and other catecholamines, such as norepinephrine and epinephrine, is critical for maintaining optimal neurological function and emotional well-being. Several key genes play essential roles in the synthesis, metabolism, and receptor activity of these neurotransmitters. This section focuses on the genetic variations in the COMT, VDR, DBH, and MAO genes, which collectively influence dopamine and catecholamine levels. Understanding these genetic factors can provide insights into individual differences in mood regulation, stress response, cognitive function, and susceptibility to mental health disorders.

COMT (Catechol-O-Methyltransferase)

The COMT gene encodes an enzyme responsible for breaking down dopamine, epinephrine, and norepinephrine. COMT variants affect the enzyme's activity, influencing neurotransmitter levels and impacting mood, cognition, pain tolerance and stress resilience. We use three COMT variants to determine the activity of COMT.

COMT H62H	Wild Type	Slightly Faster
COMT L136L	Homozygous	Slightly Faster
COMT V158M	Wild Type	Faster (Main COMT)

Very Fast COMT Activity: This is the highest level of activity and lowest levels of catecholamines. Consider the Fast COMT section recommendations below.



Very Fast COMT Activity

Very fast COMT (Catechol-O-Methyltransferase) activity is characterized by a highly efficient breakdown of catecholamines, such as dopamine, epinephrine, and norepinephrine. Individuals with very fast COMT activity may experience lower baseline levels of these neurotransmitters, potentially impacting mood stability, stress resilience, and cognitive performance.

Low Dopamine	Low Epinephrine	Low Norepinephrine
Depression Lack of Motivation Fatigue/Brain Fog Focus Issues Urges/Cravings Low libido Movement Issues	Fatigue Depression Migraines Sleep Issues Restless Leg	Fatigue/Brain Fog Lack of Motivation Focus Issues Sleep Issues Low Blood Pressure Depression Headaches
Support:	**Support:**	**Support:**
L-Tyrosine Bacopa	L-Methionine L-Tyrosine	L-Tyrosine Vit. C Copper Balancing

Advanced Neurotransmitter Assessment

Neurotransmitter	Level	Possible Support if Symptomatic
Dopamine:	Normal	No Support Needed
Dopamine Sensitivity:	Normal	N/A
DOPAC:	Low	SAMe,MG
Norepinephrine:	Very Low	L-Tyrosine, L-Tyrosine
Epinephrine	Very Low	Methylation, L-Tyrosine

*These are estimated levels based on genetic tendencies, not actual levels. These results are for educational purposes only.

DBH (Dopamine Beta-Hydroxylase)

The DBH gene is involved in converting dopamine to norepinephrine. Variations in DBH can affect the balance of these neurotransmitters, impacting mood and autonomic functions.

You have normal conversion of dopamine to norepinephrine, which supports typical stress response, mood regulation, and cardiovascular function. There is no increased risk for symptoms associated with reduced DBH activity.

DRD2 (Dopamine Receptor D2)

The DRD2 gene encodes the D2 subtype of the dopamine receptor, which is involved in mediating the effects of dopamine in the brain. Variations in this gene can impact reward pathways, motivation, and the risk of addiction.

You have normal dopamine receptor D2 density, which supports typical dopamine signaling and is not associated with increased risk for symptoms related to reduced DRD2 density.

VDR (Vitamin D Receptor)

The VDR gene, particularly the rs731236 (Taq1) polymorphism, affects the body's response to vitamin D, which in turn influences dopamine production and regulation.

You have normal vitamin D receptor (VDR) function, which supports typical dopamine regulation, calcium absorption, bone health, and immune function. There is no increased risk for conditions related to altered VDR function.

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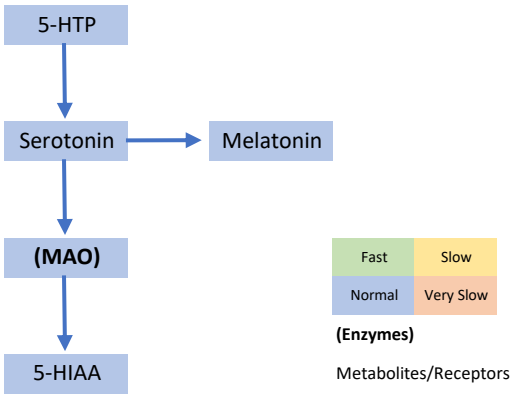
Neurological - Continued

MAO (Catechol-O-Methyltransferase)

Monoamine oxidase (MAO) is a crucial enzyme in the metabolism of neurotransmitters, maintaining the balance of chemical signals in the brain. There are two main types: MAO-A, which primarily breaks down serotonin, norepinephrine, and epinephrine, and MAO-B, which primarily breaks down phenylethylamine and plays a significant role in dopamine metabolism. MAO-A is found in the liver, gastrointestinal tract, and brain, while MAO-B is predominantly in the brain.

MAOA R297R	Heterozygous	Intermediate
MAOA T1410C	Heterozygous	Intermediate
MAOB	Heterozygous	Intermediate

Based on multiple variants, we expect an Intermediate MAO Activity. This is considered ideal by many.



Low Serotonin

Anxiety / Depression
Insomnia
Loss of pleasure
Paranoia
Weight Issues
Inner rage

Low PEA

Brain Fog
Depression
Difficulty Paying Attention
Incomplete Thoughts

Advanced Neurotransmitter Assessment

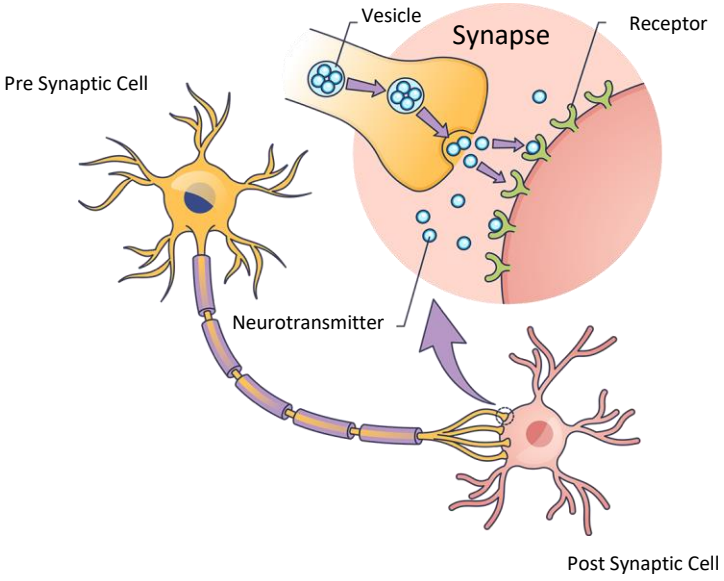
Neurotransmitter	Level	Support if Symptomatic
Serotonin:	Normal	No Support Needed
PEA:	Normal	Methylation & L-Theonine

*These are estimated levels based on genetic tendencies, not actual levels.
*Please see a physician if severe symptoms are present.

Oxytocin

Oxytocin, often referred to as the "love hormone" or "social bonding hormone," is a peptide hormone and neuropeptide that plays a significant role in social behaviors, emotional regulation, and interpersonal bonding. Oxytocin influences a wide range of social interactions, including trust, empathy, and bonding between individuals, particularly in parent-child relationships and romantic partnerships. It also helps modulate stress responses and emotional well-being.

You likely have a mildly reduced oxytocin receptor function, which may impact your ability to bond socially and regulate emotions. Prioritizing supportive relationships and seeking social support can help improve your emotional and social well-being.



BDNF

Brain-Derived Neurotrophic Factor (BDNF) supports the survival, growth, and differentiation of neurons during development and throughout adulthood. It is essential for neuroplasticity, which allows the brain to adapt and reorganize itself in response to new experiences, learning, and memory formation. Variations in BDNF levels and activity have been linked to various neurological and psychiatric conditions, including depression, anxiety, and neurodegenerative diseases.

You likely have mildly reduced BDNF levels, slightly impacting neuroplasticity. Engage in high-intensity exercise, consume antioxidant-rich foods like berries and leafy greens, and consider lithium orotate supplementation to support brain health.

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Prevention & Optimal Health

Apolipoprotein E (APOE) is a critical protein involved in lipid metabolism, cholesterol transport, and neuronal repair. It plays a vital role in maintaining the health and function of the brain. The APOE gene exists in three major isoforms: APOE2, APOE3, and APOE4, each associated with different risks for neurodegenerative conditions. APOE4, in particular, is linked to an increased risk of developing Alzheimer's disease and other cognitive impairments. Variations in APOE influence the clearance of amyloid-beta plaques, a hallmark of Alzheimer's disease, as well as neuronal repair mechanisms and synaptic plasticity. Understanding the genetic variations in APOE and their impact on brain function can provide crucial insights into personalized approaches for preventing and managing neurodegenerative diseases, enhancing cognitive resilience, and promoting overall brain health.

APOE

ε3/ε4 - Your genotype indicates you have the ε3/ε4 variant, which may increase your risk for Alzheimer's disease.

Additional Genes

BDNF	Heterozygous	No Additional Information
SOD1	Wild Type	Potentially Protective
MTHFR C677T	Wild Type	No Additional Information
CYP17A1	Wild Type	No Additional Information
TNF	Wild Type	No Additional Information
IL6	Wild Type	No Additional Information

E4 Risk Factors

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

E4 Diet Recommendations

Lowered Carbohydrate intake
Limit Saturated Fat Intake
Eliminate Sugar
Increase Omega 3 (Fish) Intake
Limit Seafood that is high in mercury

E4 Friendly Diets

Mediterranean
Ketogenic
Paleo
Carnivore

E4 Lifestyle Recommendations

Avoid Alcohol & Smoking
Intermittent Fasting
Monitor Homocysteine Levels
Consider Regular Sauna Visits

E4 Supplement Recommendations

DHA >2g/day
Quercetin 1-2g/day
Resveratrol 2g/day
Vit. D3, up to 5,000 Iu/day
Vit. K2 MK7 45-180 ug/day
Lithium Orotate 5mg/day
Extra Virgin Olive Oil
Activated B-vitamins

For more research
PubMed: PMC8073598

Additional Heart and Circulatory Health

Maintaining cardiovascular health is essential for overall well-being and quality of life. Various genetic factors can influence how our bodies manage cholesterol, blood pressure, and inflammation, all of which play roles in heart and blood vessel function. Understanding these genetic factors can provide valuable insights into personalized approaches for supporting cardiovascular wellness through lifestyle and dietary choices. This section highlights key genetic markers associated with cardiovascular health to help you make informed decisions for maintaining a healthy heart and circulatory system. It is important to discuss these findings with a qualified healthcare practitioner before making any significant changes to your diet, lifestyle, or treatment plan.

ACE	Wild Type	No Additional Information
PAI-1 4G/5G	Heterozygous	No Additional Information
Factor 5	Wild Type	No Additional Information
Prothrombin (F2)	Wild Type	No Additional Information

The ACE gene is involved in the regulation of blood pressure and cardiovascular function. The PAI-1 4G/5G polymorphism can influence the body's ability to regulate blood clot breakdown. Factor V and Prothrombin are essential components of the blood coagulation system. While these genetic markers offer useful information about potential predispositions, it is important to remember that they are only part of a broader picture, and individual health outcomes are influenced by a combination of genetic, environmental, and lifestyle factors.

Consider limiting your salt intake, monitoring your blood pressure, eating an anti-inflammatory diet, and supplementing with Lumbrokinase or Nattokinase to support healthy clotting. Discuss this with your physician & dietician.

Regular Physical Activity: At least 2 days of exercise per week
Weight Management: Healthy weight will reduce your cardiovascular burden
Smoking Cessation: Quitting smoking significantly decreases cardiovascular risks
Regular Health Check Ups: Monitor your blood pressure and glucose levels
Discuss Your Options: Maintain a good relationship with a medical professional

Consultation with Healthcare Provider

Before starting any supplementation, it is important to consult with a healthcare provider to ensure safety, especially for individuals on anticoagulant or antiplatelet medications.

Your Genetic Summary

SUMMARY

Pesticides:	You have a normal sensitivity to insecticides. Its's still probably a good idea to avoid exposures.
Inflammation:	You are at a regular risk of inflammation, consistent with the general population.
Fish Oil:	You have a mild increased need for omega-3s (fish oils) for neurological health. Consider eating a diet containing fish.
Sat. Fats (ApoE):	Your genotype indicates you have the ε3/ε4 variant. Limit intake of saturated fats and focus on healthy fats to manage cardiovascular risk.
Dietary Histamine:	You have minimal to no reduction in DAO enzyme activity. (%0 reduction)
Cellular Histamine:	You may have mild decreased HNMT activity. If symptomatic, support DAO, and avoid histamine containing foods.
GSH & Antioxidants:	You have mild decreased glutathione production, very mild reduction in peroxide degradation. Consider taking selenium (or eating brazil nuts).
SOD:	You may have some trouble with removing peroxides. Ensure a diet containing adequate antioxidants and follow any directions in the above section.
Vitamin A:	Your BCMO1 gene variants suggest that you have a moderately efficient conversion of beta-carotene to retinol. Ensure you consume adequate amounts of retinol-rich foods.
Vitamin D:	Your VDR gene variants suggest normal function. Maintain adequate vitamin D intake through regular exposure to sunlight and possibly supplements. With normal CYP27B1 function, regular vitamin D testing will ensure optimal vitamin D activity and calcium balance.
Vitamin E:	We anticipate that you may have a slightly elevated need for Vitamin E. In addition to maintaining a balanced diet and healthy lifestyle, you might benefit from taking a multivitamin to ensure adequate Vitamin E intake.
Iron:	You have a normal risk of iron sensitivity. Monitor your yearly labs for low iron.
Phosphatidylcholine:	We expect your need for phosphatidylcholine to align with standard recommendations. A balanced diet with choline-rich foods should suffice.
Methylfolate:	You are homozygous for the A1298C variant. This results in a 30% reduction in MTHFR enzyme activity. You may benefit from the recommendations on this page.
Methyl Sensitivity:	You are likely tolerant to methyl donating nutrients. Take as needed.
Methyl B12:	You have increased need for methylcobalamin.
COMT:	Very Fast COMT Activity: This is the highest level of activity and lowest levels of catecholamines. Consider the Fast COMT section recommendations below.
MAO:	Based on multiple variants, we expect an Intermediate MAO Activity. This is considered ideal by many.
Bad Estrogen:	You likely have a slight increase in CYP1B1 activity. Consider incorporating cruciferous vegetables into your diet to support healthy estrogen metabolism.
Probiotics:	There are no probiotic recommendations based on your results. See the box below if there are additional recommendations.
Secreter Status:	FUT2 Secretor. There are no probiotic recommendations associated with this variant.

MaxGen LABS

MaxFunction

Client Name: John Doe | DOB: 1/1/2023 | Sample ID: Sample Report | Sample Received: Not Provided

Practitioner: MaxGen Labs | Sex: Male | MGPTID#: C311 | Report Date: 3/4/2025

MaxFunction SNP Report

Gene	RS#	Result	Minor	Associations
ACE	rs4343	Wild Type (AA)	G-42%	Associated with elite atheletes.
AHCY-01	rs819147	Heterozygous (CT)	C-32%	Mild association with low homocysteine and glutathione.
APOE	rs429358	Heterozygous (CT)	C-7%	ε3/ε4 - Your genotype indicates you have the ε3/ε4 variant, which may increase your risk for Alzheimer's disease.
APOE	rs7412	Wild Type (CC)	T-8%	
BCMO1	rs12934922	Heterozygous (AT)	T-23%	Mild association with Vitamin A conversion into retinol.
BCMO1	rs7501331	Heterozygous (CT)	T-22%	Mild association with Vitamin A conversion into retinol.
BDNF	rs6265	Heterozygous (CT)	T-19%	Mild association with decreased BDNF secretion.
BHMT c.742G>A	rs3733890	Wild Type (GG)	A-29%	No variant found. No predicted impact on Methylation.
CBS	rs4920037	Wild Type (GG)	A-13%	No variant found. No predicted impact on Sulfation.
CBS A360A	rs1801181	Homozygous (AA)	A-30%	Mild upregulated CBS enzyme activity and elevated ammonia.
CBS C699T	rs234706	Heterozygous (GA)	A-20%	Mild association with upregulated CBS enzyme activity and elevated ammonia.
CD320 (TCblR)	rs2336573	Heterozygous (TC)	T-5%	Associated with lowered cellular B12 uptake and elevated serum b12.
CLOCK	rs1801260	Wild Type (AA)	G-27%	Higher activity in the mornings vs night.
COMT H62H	rs4633	Wild Type (CC)	T-37%	Faster COMT activity.
COMT L136L	rs4818	Homozygous (GG)	G-30%	Faster COMT activity and lowered pain sensation.
COMT V158M	rs4680	Wild Type (GG)	A-37%	(Main COMT) Fast COMT gene. Lower dopamine and lower estrogen issues. (Val/Val)
CUBN	rs1801222	Wild Type (GG)	A-31%	No variant found. No predicted impact on B12 intestinal absorption.
CYP17A1	rs743572	Wild Type (AA)	G-39%	Possible lowered estrogens and testosterone levels. DHEA might help bypass.
CYP19A1	Rs10046	Heterozygous (AG)	C-31%	(Aromatase) Better response to Aromatase inhibitors.
CYP19A1	rs4646	Heterozygous (CA)	C-69%	(Aromatase) Better response to Aromatase inhibitors.
CYP1A1	rs1048943	Wild Type (TT)	C-8%	No variant found. Considered the Slower form of CYP1A1
CYP1B1 A119S	rs1056827	Heterozygous (CA)	A-30%	Mild association with elevated 4-OH estradiol.
CYP1B1 L432V	rs1056836	Heterozygous (CG)	C-42%	Mild association with elevated 4-OH estradiol.
CYP27B1	rs10877012	Heterozygous (GT)	T-29%	Mild decreased in 1,25(OH)2D3. (Active Vitamin D)
CYP2C19*17	rs12248560	Wild Type (CC)	T-22%	Normal Metabolizer
CYP2C19*2	rs4244285	Homozygous (AA)	A-15%	Severely decreased enzymatic activity. Potential pharmaceutical interactions. Discuss w/ physician.
CYP2D6 S486T	rs1135840	Wild Type (CC)	C-43%	Normal Metabolizer
CYP2D6 T2850C	rs16947	Wild Type (GG)	A-32%	Normal Metabolizer
CYP2D6*10	rs1065852	Wild Type (GG)	A-21%	Normal Metabolizer
CYP2E1 *6	rs6413432	Wild Type (TT)	A-16%	Normal Metabolizer
CYP3A4*1B	rs2740574	Heterozygous (CT)	C-23%	Possible altered function in CYP3A4 activity.
CYP3A5	rs776746	Heterozygous (TC)	T-11%	Normal Functioning.
DAO(AOC1)	rs1049793	Wild Type (CC)	G-32%	No variant found.
DAO(AOC1)	rs10156191	Wild Type (CC)	T-31%	No variant found.
DAO(AOC1)	rs1049742	Wild Type (CC)	T-7%	No variant found.
DAOA/DAAO	rs2391191	Wild Type (GG)	A-37%	No variant found.
DBH	rs1611115	Wild Type (CC)	T-21%	No variant found.
DHFR	rs1643649	Wild Type (TT)	C-23%	No variant found.
DIO1	rs2235544	Wild Type (CC)	A-50%	Normal T4 to T3 conversion
DRD2	rs1800497	Wild Type (GG)	A-26%	No variant found.
EPHX1	rs1051740	Heterozygous (TC)	C-30%	Mild decreased detoxification of butadiene, benzene, styrene, ethelene oxide and other epoxides.

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MaxFunction SNP Report

Gene	RS#	Result	Minor	Associations
Factor 5	rs6025	Wild Type (CC)	T-1%	No variant found.
FADS1 (D5D)	rs174537	Heterozygous (GT)	T-30%	mild reduction in arachadonic acid, LDL cholesterol & cardiac risks.
FADS2 (D6D)	rs1535	Heterozygous (AG)	G-32%	Mild association with decreased DHA production. Use fish oil high in DHA.
FOLR1	rs2071010	Wild Type (GG)	A-7%	No variant found.
FUT2 W143X	rs601338	Wild Type (GG)	A-32%	Norovirus susceptibility. Secretor status.
G6PD	rs1050829	Wild Type (TT)	C-9%	No variant found.
GCLM	rs41303970	Heterozygous (GA)	A-18%	Mild decrease in glutathione.
GPX1	rs1050450	Heterozygous (GA)	A-22%	Mild decrease in glutathione.
GPX4	rs713041	Wild Type (CC)	T-40%	No variant found.
GSTM1	rs366631	Wild Type (AA)	G-30%	GSTM1 Deletion. Very Common in Caucasians. Increased risks from toxic exposures.
GSTP1	rs1695	Homozygous (GG)	G-35%	Impaired detoxification & oxidative stress. Avoid toxic exposures. Consider S-acetyl Glutathione.
GSTP1	rs1138272	Wild Type (CC)	T-3%	No variant found. (Secondary)
HFE (C282Y)	rs1800562	Wild Type (GG)	A-1%	Most influential HFE gene. No variant found.
HFE (H63D)	rs1799945	Wild Type (CC)	G-7%	Seccond most influential HFE gene. No variant found.
HFE (S65C)	rs1800730	Wild Type (AA)	T-1%	Third most influential HFE gene. No variant found.
HNMT	rs11558538	Heterozygous (CT)	T-6%	Mild decrease in cellular histamine degradation and asthma risks.
IL-17	rs2275913	Wild Type (GG)	A-25%	No variant found.
IL-1-β	rs16944	Homozygous (AA)	A-36%	Increased pro-inflammatory IL1-Beta. Numerous Inflammatory conditions, including febrile seizure.
IL6	rs1800795	Wild Type (GG)	C-36%	Lower IL6 levles.
IL-6R	rs2228145	Wild Type (AA)	C-39%	No variant found.
IL-8	rs4073	Wild Type (TT)	A-55%	Lower IL8 Levels
MAOA R297R	rs6323	Heterozygous (GT)	G-38%	Intermediate activity.
MAOA T1410C	rs1137070	Heterozygous (CT)	T-45%	Intermediate activity.
MAOB	rs1799836	Heterozygous (TC)	C-46%	Associated with mild decrease in MAO-B activity.
MAT1A	rs3851059	Heterozygous (AG)	A-30%	Research is inconclusive.
MMACHC	rs12272669	Wild Type (GG)	A-10%	No variant found. Normal cellular utilization of B12.
MTHFD1	rs2236225	Homozygous (AA)	A-34%	5,10 methylenetetrahydrofolate deficiency. (Makes MTHFR Worse)
MTHFR C677T	rs1801133	Wild Type (CC)	T-25%	No variant found.
MTHFR A1298C	rs1801131	Homozygous (CC)	C-30%	Mild reduction in MTHFR activity.
MTHFR G1793A	rs2274976	Wild Type (CC)	T-5%	No variant found.
MTHFS	rs6495446	Heterozygous (CT)	T-30%	Mild folinic acid utilization. Not clinically relevant.
MTR	rs1805087	Wild Type (AA)	G-22%	No variant found.
MTRR A66G	rs1801394	Wild Type (AA)	G-36%	No variant found.
MTRR	rs1532268	Homozygous (TT)	T-27%	Methylation risk. Methyl-B12 might benefit. Follow B12 Page and support Oxidative Stress.
NAT2	rs1801280	Heterozygous (CT)	C-37%	Mild decreased acetylation (Phase 2 liver detoxification)
NOS3	rs1799983	Heterozygous (GT)	T-18%	Decrease in nitric oxide production.
NOS3	rs2070744	Heterozygous (TC)	C-23%	Decrease in nitric oxide production.
NQO1	rs1800566	Wild Type (GG)	A-29%	No variant found
OXTR	rs53576	Heterozygous (AG)	A-32%	Mild lack of empathy.
PAI-1 4G/5G	rs1799889	Heterozygous (GA)	A-36%	Potentially, mild increased cardiovascular risks.
PEMT	rs12325817	Wild Type (CC)	G-16%	No varirant found.
PEMT	rs7946	Heterozygous (TC)	C-31%	Mild phosphatidylcholine need.

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PON1 Q192R	rs662	Wild Type (TT)	T-46%	No varirant found.
Prothrombin (F2)	rs1799963	Wild Type (GG)	A-0%	No varirant found.
SCN1a	rs6432860	Wild Type (GG)	A-21%	No varirant found.
SHBG	rs1799941	Wild Type (GG)	A-24%	No varirant found.
SHMT1	rs1979277	Wild Type (GG)	A-23%	No varirant found.
SLC19A1 (RFC1)	rs1051266	Heterozygous (TC)	C-49%	Mild reduction in folate transport.
SOD1	rs2070424	Wild Type (AA)	G-25%	Possible lowered SOD1 activity.
SOD1	rs1041740	Wild Type (CC)	T-24%	Possible increase in SOD1 activity.
SOD2	rs4880	Heterozygous (GA)	G-41%	Conflicting research.
SRD5A1	rs1691053	Heterozygous (CT)	G-16%	Mild increased DHT levels.
SULT1A1	rs1042028	Heterozygous (TC)	T-22%	Reduced activity.
SUOX(S370S)	rs773115	Heterozygous (CG)	G-25%	Possible mild sulfite oxidase deficiency.
TCN2 C776G	rs1801198	Wild Type (CC)	G-42%	No variant found. (B12 Transport Protein)
TNF	rs1800629	Wild Type (GG)	A-9%	No variant found. (Inflammation SNP)
TNF alpha C857T	rs1799724	Wild Type (CC)	T-10%	No variant found. (Inflammation SNP)
UGT2B17 DEL	rs10025771	Heterozygous (TC)	C-21%	Possible decrease in urinary testosterone markers.
VDR TAQ	rs731236	Wild Type (AA)	G-39%	Possible methyl sensitive if COMT is slow. (Risk allele per other reports)
VDR-BSM	rs1544410	Wild Type (CC)	T-30%	More active Vit D receptor. Lower Vitamin D related risks.
VDR-FOK	rs2228570	Heterozygous (GA)	A-33%	Mild decreased VDR activation by Vitamin D.