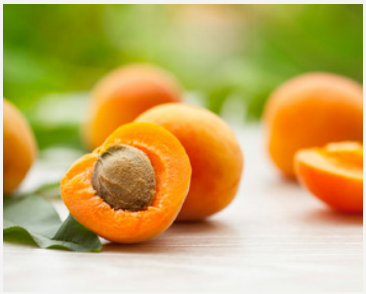
dnaPower

POWER OVER YOUR HEALTH



YOUR dietPower RESULTS

Your Personal DNA Results

Congratulations on making the decision to take Power over your Health!

Your personalized DNA results contain information unique to **your body**, giving you the power to make informed decisions about your health.

WHY DNA IS IMPORTANT

DNA is our personal biological roadmap. It guides the development and functioning of our bodies. DNA sequences, known as genes, contain genetic markers that differ among people. dnaPower's genetic testing zeros in on specific genes and genetic markers that have been scientifically proven to impact health, nutrition, fitness, and disease and that may vary between people.

HOW GENETIC VARIATIONS CAN IMPACT YOUR HEALTH

Hereditary and environmental factors can cause genetic variations or mutations in your DNA. Some mutations have minimal effects, while others may alter a gene in such a way that its function is changed or lost. When this occurs, there is a risk that your gene may not function at an optimum level.

HOW YOUR DNA RESULTS CAN HELP YOU

Your dnaPower results provide a snapshot of selected genetic variations that have been proven through scientific studies to impact your health. By knowing your genetic variations, you can learn where you may be predisposed to good or poor health related traits. By understanding this information, you can take proactive steps to enhance your wellbeing. The good news is that through healthy diet, nutrition and exercise, you can change or improve how your DNA functions.

RELIABLE RESULTS

dnaPower uses a state of the art Agena MassArray genotyping platform to provide greater than 99.7% accuracy in the genes and SNPs (Single Nucleotide Polymorphisms) that we test. We test genetic sites that identify the most common DNA markers scientifically studied and proven to be associated with certain conditions. We report on genes that have a high incidence relationship. It is important to note that DNA research is constantly evolving. There may be variations related to a condition that are yet to be discovered and may in future improve on the accuracy and thoroughness of the results.

MAXIMIZING YOUR RESULTS

Knowledge is power. We encourage you to use your dnaPower results to understand potential impacts to your health and to take positive action. We recommend consulting a qualified health practitioner to gain further insight and advice for a program specific to you.

How To Read Your Report

YOUR SUMMARY
A snapshot of each area tested and your genetic composition results.

PAGE 4

YOUR ACTION PLAN
Key suggested actions based on areas with higher variations.

PAGE 8

YOUR DETAILED TEST AREA DESCRIPTIONS
Detailed information on each test area along with further tips to take power over your health.

PAGE 11

YOUR GENETIC PROFILE
Your personal genotype results for each gene tested.

PAGE 70

READING YOUR GENETIC COMPOSITION GRAPH

Your personal results are represented in a genetic composition graph.

Green is Good. Indicates the percentage of gene(s) or SNPs tested that are normal. With good health decisions, your gene(s) should function properly.

Red is Poor. Indicates there are variations in the gene(s) or SNPs that have potential to impact your health. This is a possible area of risk. Take proactive action to look after your health.

In your report, focus on areas that are 50% red or more as this is where you are more likely to experience issues over time.

YOUR dietPower SUMMARY

Your personal report covers your genetic composition for results related to diet, nutrition, supplements and weight management. The results give you an indication of your predisposition to the health factors tested. Your genetics are your blueprint. You can enhance and improve your health outcomes through diet, fitness and environment.

AREA TESTED	TELLS YOU (Risk Potential)	YOUR GENETIC COMPOSITION RESULTS	PAGE
DIET MANAGEMENT			
Carbohydrate	*Your ability to process carbohydrates in your diet*	50% / 50%	12
Starch	*Your ability to produce salivary amylase to digest starch*	100%	13
Insulin	*Your ability to regulate blood sugar through insulin*	60% / 40%	14
HDL Cholesterol	*How well you regulate HDL cholesterol*	60% / 40%	15
LDL Cholesterol	*How well you regulate LDL cholesterol*	87% / 13%	16
Dietary Unsaturated Fat	*Your ability to metabolize unsaturated fats in your diet*	75% / 25%	17
Dietary Saturated Fat	*How well you metabolize saturated fats in your diet*	67% / 33%	18
Stored Body Fat	*How well your body burns stored fats*	75% / 25%	19
Protein Need	*Your need for a normal amount of dietary protein*	100%	20
Protein Weight Response	*Your weight response to a high protein diet*	100%	21
WEIGHT RESPONSE			
Body Mass Index	*Your ability to regulate your body mass index*	75% / 25%	23

Normal Genes Variations

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AREA TESTED	TELLS YOU (Risk Potential)	YOUR GENETIC COMPOSITION RESULTS	PAGE
FOOD TOLERANCES			
Alcohol	*How well your body metabolizes alcohol*	100%	25
Caffeine	*How well your body processes caffeine*	100%	26
Gluten	*Your normal risk for gluten sensitivity*	62% / 38%	27
Lactose	*How well your body digests lactose from dairy products*	50% / 50%	29
Peanut Sensitivity	*Your risk for peanut sensitivity*	50% / 50%	30
Salt	*How well you metabolize salt*	62% / 38%	31
Sugar Craving	*Your ability to resist sugar cravings and sweet foods*	75% / 25%	32
FOOD TASTE AND PREFERENCE			
Caffeine Preference	*Your preference to consume a normal amount of caffeine*	75% / 25%	34
Carbohydrate Preference	*Your preference to consume a normal amount of carbohydrates*	100%	35
Fat Preference	*Your preference to consume a normal amount of fats*	100%	36
Protein Preference	*Your preference to consume a normal amount of protein*	100%	37
Bitter Taste	*Your ability to taste bitter flavours and foods*	100%	38
Salt Taste	*Your ability to taste salt and salty foods*	50% / 50%	39
Sweet Taste	*Your ability to taste sweet flavours and foods*	100%	40

Normal Genes Variations

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AREA TESTED	TELLS YOU (Risk Potential)	YOUR GENETIC COMPOSITION RESULTS	PAGE
VITAMINS & SUPPLEMENTS			
Vitamin A	*How well you convert vitamin A for healthy growth and immune response*	62% / 38%	42
Vitamin B2 (Riboflavin)	*Your need for vitamin B2 for health, development, and management of cardiovascular risk*	50% / 50%	43
Vitamin B6	*How well you process vitamin B6 for macronutrient metabolism*	33% / 67%	44
Vitamin B9 (Folate)	*How well you process folate for cell growth and healthy red blood cells*	71% / 29%	45
Vitamin B12	*How well you process vitamin B12 for healthy nerve and blood cells*	50% / 50%	46
Vitamin C	*How well you process vitamin C for growth and development*	80% / 20%	47
Vitamin D	*How well you process vitamin D to support calcium absorption and cell growth*	70% / 30%	48
Vitamin E	*How well you convert vitamin E for antioxidant and anti-aging benefits*	67% / 33%	49
Vitamin K	*How well you process vitamin K for coagulation and neural protection*	100%	50
Calcium	*How well your body absorbs calcium for bones, teeth and muscles*	79% / 21%	51
Choline	*How much dietary choline your body requires for your brain and nervous system*	62% / 38%	52
Iodine	*How well your body transports iodine to support thyroid function*	50% / 50%	53

Normal Genes Variations

YOUR dietPower SUMMARY

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AREA TESTED	TELLS YOU (Risk Potential)	YOUR GENETIC COMPOSITION RESULTS	PAGE
Iron Deficiency	*How well your body absorbs iron for red blood cells to carry oxygen*	62% / 38%	54
Iron Overload	*How well your body regulates iron for red blood cells to carry oxygen*	100%	55
Magnesium	*How much dietary magnesium your body requires for health*	33% / 67%	56
Omega-3 Fatty Acid	*Your need for beneficial omega-3 fatty acid for metabolism, brain health and reducing disease*	30% / 70%	57
Zinc	*How well you process zinc for antiviral and inflammatory response*	75% / 25%	58

Normal Genes Variations

YOUR dietPower ACTION PLAN

Your personal DNA results provide valuable insights into your body based on your unique genetic code. This is a suggested dietPower Action Plan based on your personal DNA results. We have provided you with Action Tips that may help support your DNA and health.

The areas below are where you have higher genetic variations (>50% red in the Genetic Composition graphs). This increases your risk potential in that area over time. By taking action to support your health in these areas and managing lifestyle factors such as diet, exercise, sleep, stress and environmental factors, you increase the opportunity for your genes to function optimally.

AREA TESTED	ACTION TIPS	PAGE
DIET MANAGEMENT		
 Carbohydrate	*With higher variations in this area, consider a low glycemic or lower carb diet. Focus on whole fruits, vegetables, grains, beans, lentils and legumes. Reduce or eliminate processed carbohydrates as it is more likely to contribute to weight and health issues.*	12
 Protein Need	*Consume adequate protein based on your activity level, age, and genetics. Diversify protein sources such as fish, chicken, eggs, dairy, legumes, nuts, grains, and sea vegetables. For plant-based diets, combine complementary proteins (e.g., grains with legumes) and include options like soy, lentils, quinoa, spirulina, and protein powders to meet daily needs.*	20
FOOD TOLERANCES		
 Caffeine	*Lower your daily intake of caffeine to two or less cups a day as it may breakdown slowly for you and have a greater impact on your body.*	26
 Lactose	*Consider reducing or avoiding milk and dairy products and using dairy alternatives made from coconut, cashew, almonds, rice or soy. High variations can contribute to weight gain and inflammation over time.*	29
 Peanut Sensitivity	*If you experience symptoms of peanut allergy seek medical attention. If you have severe eczema, egg allergy, or both you may wish to seek out allergy testing for peanut allergy with a health care professional.*	30

» Additional Tips are available throughout the report. Focus on areas where you have high red variations.

» These Action Tips are based on your genetic predisposition only. They are intended to support better health. They are not an indication of a problem and do not take into account where your health may be today.

» Consult with a healthcare practitioner before embarking on any major lifestyle changes.

YOUR dietPower ACTION PLAN

AREA TESTED	ACTION TIPS	PAGE
VITAMINS & SUPPLEMENTS		
Vitamin B2 (Riboflavin)	*Increase your consumption of healthy dietary sources of vitamin B2 which include vegetables (especially mushrooms and spinach), brewer's yeast, cereal grains, cheese, eggs, fish and almonds. Consider taking vitamin B2 in a methylated vitamin B complex.*	43
Vitamin B6	*Increase your consumption of good dietary sources of vitamin B6 such as vegetables (especially spinach, bell peppers and cauliflower), bananas, walnuts, cereal grains, legumes, sweet potatoes, sunflower seeds, eggs, fish, fortified nutritional yeast and wheat germ.*	44
Vitamin B12	*Increase your consumption of foods high in vitamin B12 such as lean meat, fish, eggs, dairy, and fortified nutritional yeast. Consider supplementation with a methylated B12 vitamin.*	46
Iodine	*Include iodine rich foods in your diet such as sea vegetables like kelp, seafood, fish, eggs, yogurt and milk. Bread may also provide small quantities of iodine.*	53
Magnesium	*Include healthy dietary sources of magnesium. Dietary sources of magnesium include legumes (especially soy beans, black beans and peanuts), whole grains, vegetables (especially spinach and chard), seeds and nuts (especially pumpkin seeds and almonds).*	56
Omega-3 Fatty Acid	*Increase your intake of omega-3 rich food including sustainable, wild, salmon, herring, mackerel, sardines, avocado, walnuts, flax, hemp and chia seeds, and high-quality spirulina, free of contaminants. Consider taking an omega-3 fish oil or algae supplement.*	57

My personal action plan and notes:

DIET MANAGEMENT

Managing your diet is essential to feeling great and performing at your best. Ever wonder why some people can have bad eating habits and not gain weight while others starve themselves and struggle to lose weight? Like many medical conditions, excess weight is caused by a combination of genetic and environmental factors. While you can't control your genetic predisposition towards gaining weight, knowledge about your genes can help you make educated decisions about what foods are most suitable for you. Some of the gene variations produce a change in the amount of fat absorbed from a meal, change carbohydrate metabolism or even affect the body's ability to regulate blood sugar with insulin. Knowledge is power.

This section includes:

» Sensitivity to carbohydrates, fats and proteins.

» Ability to regulate insulin and good and bad cholesterols.

As a general rule eliminate refined sugars and trans fats from your diet. How do you accomplish this? Avoid fried foods prepared in hydrogenated oil, baked goods, candy, chips and other processed foods. These are all likely to contain refined sugar and trans-fat. Refined sugar is composed of simple carbohydrates, which are converted into glucose for energy. Any unused glucose is stored as fat cells in your body. Trans fat is solidified in a way that makes it harder for your body to break down. In this state, it helps preserve food - good for food manufacturers, but very bad for you. Replace trans fats with unsaturated fats. Eat undamaged mono and polyunsaturated fats rich in omega-3 fatty acids. Foods rich in unsaturated fats include avocados, nuts, fish, and unrefined plant-based oils.

Carbohydrate

YOUR ABILITY TO PROCESS CARBOHYDRATES IN YOUR DIET

Your body metabolizes dietary carbohydrates as its first source of fuel. They are the most important source of energy for your body. Your digestive system changes carbohydrates into glucose (blood sugar). Your body uses this sugar as energy for cells, tissues and organs. Carbohydrates are often considered simple (like sugars) or complex (fiber, vitamins and starches). Complex carbohydrates with a lower glycemic load help maintain a consistent, low blood glucose level and offer many health benefits.

Variations in this gene panel may result in increased sensitivity to dietary carbohydrates, which can lead to an increased tendency to weight gain, particularly abdominal fat, as well as lower success rates with weight loss regimens. Variations have also been linked to a greater risk of obesity, insulin resistance, metabolic syndrome, type 2 diabetes, and cardiovascular disease.

TIPS TO TAKE POWER OVER YOUR HEALTH

If you have variations in this panel, you may want to consider the following to improve your health:

» Quality matters: emphasize fiber rich whole fruits, vegetables, grains, lentils and legumes.

» Reduce or eliminate processed carbohydrates as it is more likely to contribute to weight and health issues.

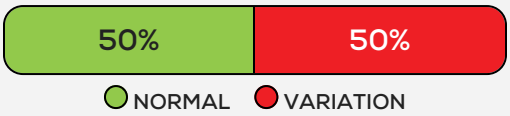
» Consider a low glycemic or lower carb diet.

» Avoid added sugar as it has low nutritional value and high calories.

» Increase strength activity and exercise to help regulate blood sugar levels and reduce the risk of diabetes.

» Use green tea and apple cider vinegar to help regulate the conversion of carbohydrates to glucose.

YOUR GENETIC COMPOSITION %



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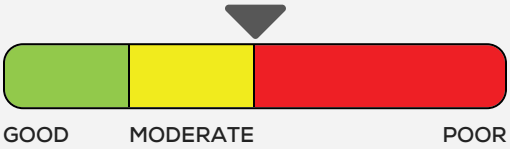


You have some variations in these genes. Studies have linked this to a decreased ability to metabolize glucose. This can increase your risk of insulin resistance, metabolic syndrome, type 2 diabetes, and obesity. You may wish to replace refined carbohydrates in your diet with whole foods, and eat foods with a lower glycemic load.

Starch

YOUR ABILITY TO PRODUCE SALIVARY AMYLASE TO DIGEST STARCH

Starch is a common and essential carbohydrate, serving as one of our primary sources of dietary energy. It is consumed regularly through staple foods such as wheat, rice, potatoes, and other crops cultivated worldwide. Along with fiber and sugar, starch forms one of the three main categories of carbohydrates.

Digestion of starch begins in the mouth, where the enzyme salivary amylase, present in saliva, breaks down starch into smaller carbohydrate molecules. This initial process accounts for up to 30% of starch digestion. However, salivary amylase becomes inactivated in the acidic environment of the stomach, leaving the remaining digestion to occur in the intestines. Beyond its role in digestion, salivary amylase influences metabolic signaling and glucose response to ingested starch, contributing to variations in how starch is metabolized.

Genetic variations in the AMY1 gene, which encodes salivary amylase, are associated with differences in starch digestion efficiency. Individuals with a lower copy number of the AMY1 gene often produce less salivary amylase, leading to reduced starch breakdown. This reduced capacity has been linked to an increased risk of metabolic conditions, including metabolic syndrome and type 2 diabetes.

TIPS TO TAKE POWER OVER YOUR HEALTH

If you have variation in this panel, you may want to consider the following to improve your health:

» Extend chewing time to optimize starch breakdown by salivary amylase.

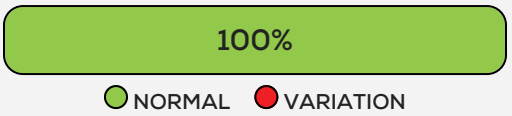
» Limit starch intake and focus on complex carbohydrates like whole grains.

» Eat fiber-rich foods (vegetables, fruits, legumes) to stabilize blood sugar levels.

» Exercise regularly to increase salivary amylase production and improve metabolism.

» Monitor blood sugar responses to adjust your diet and prevent spikes.

YOUR GENETIC COMPOSITION %



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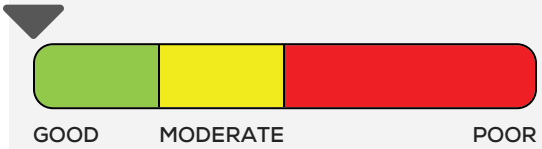


Associated with normal salivary amylase and a normal ability to digest starch.

Insulin

YOUR ABILITY TO REGULATE BLOOD SUGAR THROUGH INSULIN

Insulin production and regulation affect your blood glucose levels. Normally a small amount of insulin released from the pancreas absorbs glucose into the cells to create energy. When the genes that control this have variations, more insulin is needed to absorb glucose, also known as insulin resistance. Insulin resistance can lead to type 2 diabetes. Insulin resistance and insulin sensitivity are two sides of the same coin. If you are insulin resistant, then you have low insulin sensitivity. If you have a predisposition, there are lifestyle changes you can make to prevent issues with this disease.

Insulin resistance can lead to a variety of health problems. The body will attempt to compensate for having a low sensitivity to insulin by producing more insulin. However, the increased level of circulating insulin can damage blood vessels, increase blood pressure, and has been associated with heart disease, obesity, osteoporosis and even cancer.

While insulin resistance does not always have noticeable symptoms one of the earliest and most noticeable symptoms is weight gain, particularly around the midsection. Further symptoms include lethargy, hunger and thirst that persist after meals, difficulty concentrating, and high blood pressure.

TIPS TO TAKE POWER OVER YOUR HEALTH

If you have variations in this panel, you may want to consider the following to improve your health:

» Consult your healthcare professional and ask about testing fasting plasma glucose if you are over the age of 40, especially if you have family members with type 2 diabetes or are having symptoms of insulin resistance.

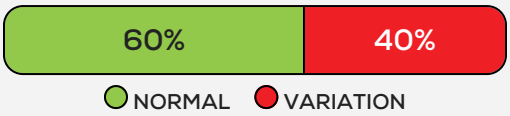
» Reduce blood glucose levels by increasing your physical activity.

» Eat whole foods with a low glycemic load including fresh vegetables, fruits, legumes, whole grains, nuts, seeds, and high-quality animal protein.

» Consider eating balanced meals and snacks every 3-4 hours.

» If lifestyle changes are not enough to normalize blood glucose, your health-care provider might recommend that you use oral medication.

YOUR GENETIC COMPOSITION %



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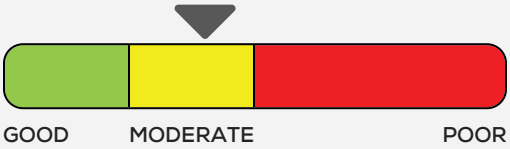


You have some variations in these genes. Studies have linked this to an increased risk of insulin resistance and impaired glucose metabolism. These increase your risk of type 2 diabetes, cardiovascular disease, and obesity.

HDL Cholesterol

HOW WELL YOU REGULATE HDL CHOLESTEROL

High-density lipoprotein (HDL) is a cholesterol carrier that transports excess fats and cholesterol from cells within the artery walls and peripheral tissues to the liver for excretion or re-utilization. HDL also regulates inflammation of blood vessels and has antioxidant properties. Having high levels of HDL cholesterol can help reduce the risk of stroke, heart attack and heart disease; low levels of HDL could increase your risk.

High cholesterol and HDL-LDL cholesterol imbalance often have no symptoms. The American Heart Association recommends that all adults aged 20 or older have their cholesterol and other traditional risk factors checked every four to six years. The National Institute of Health suggests that women should have their cholesterol checked regularly starting at age 45, and men beginning at 35. If you smoke, have diabetes, if heart disease runs in your family, or if you have genetic risk indicated by this report consider having your cholesterol checked earlier rather than later.

TIPS TO TAKE POWER OVER YOUR HEALTH

If you have variations in this panel, you may want to consider the following to improve your health:

» Include more of these foods in your diet that have been shown to increase healthy HDL levels: whole grains, nuts, seeds, vegetables, legumes, garlic, fish, olive oil and coconut oil.

» Consider omega 3 supplements or omega 3 rich foods to support the production of HDL cholesterol.

» Consider a lower carb diet, unless you have high fat variations.

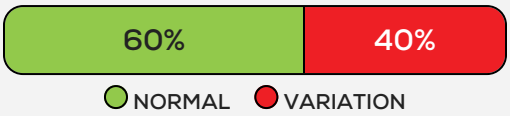
» Consume purple fruits and vegetables rich in anthocyanins such as eggplant, purple corn, red cabbage, blueberries, blackberries and black raspberries which may help increase HDL cholesterol levels.

» Consume fatty fish or fish oils such as herring, salmon, sardines, mackerel and anchovies.

» Engage in regular exercise and be sure not to smoke.

» Speak to your healthcare provider about regular cholesterol level tests.

YOUR GENETIC COMPOSITION %



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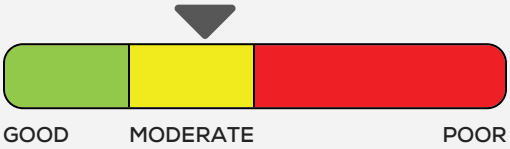


You carry some variations in your genes which are associated with lower levels of good HDL cholesterol. Ensure you maintain a balanced diet, proper exercise and healthy lifestyle choices to optimize your health and reduce risks.

LDL Cholesterol

HOW WELL YOU REGULATE LDL CHOLESTEROL

Cholesterol is carried in the blood attached to proteins called lipoproteins. There are two main forms, low-density lipoprotein (LDL) and high-density lipoprotein (HDL). Knowing your levels of these can help understand your risk of heart disease.

Too much LDL cholesterol is bad because it contributes to plaque, a thick, hard deposit that can clog arteries and make them less flexible. This condition is known as atherosclerosis. If a clot forms and blocks a narrowed artery, heart attack or stroke can result.

Many factors play a part in raised or unhealthy patterns of blood cholesterol, these include genes inherited from parents, diet, lifestyle, weight, gender, age, ethnicity and medical history. Having unhealthy cholesterol levels, together with other risk factors for heart and circulatory disease such as smoking or high blood pressure, can put you at high risk of early heart disease.

TIPS TO TAKE POWER OVER YOUR HEALTH

If you have variations in this panel, you may want to consider the following to improve your health:

» Reduce saturated fats and cholesterol-rich foods such as red meat and high-fat dairy products from your diet.

» Include more whole grains, vegetables, legumes, garlic, fish, nuts, seeds and olive oils.

» Eliminate trans fats from your diet such as partially hydrogenated vegetable oil which is often found in fried foods, margarines, packaged cookies, crackers and cakes, and frozen pizza.

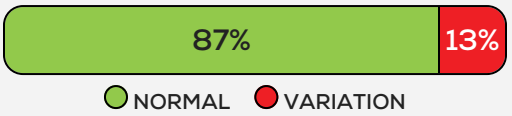
» Increase soluble fiber such as oatmeal, apples, pears, beans and vegetables.

» Engage in regular exercise.

» Be sure not to smoke.

» Speak to your healthcare provider about regular cholesterol level tests.

YOUR GENETIC COMPOSITION %



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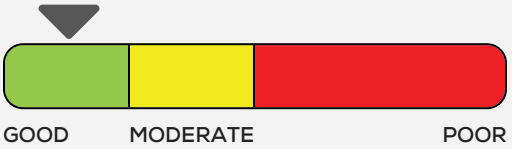


Your genes in this panel are normal or beneficial. You may have a decreased risk of developing various heart diseases, however many genetic functions and lifestyle factors impact cardiovascular function. A healthy, balanced diet, proper exercise and healthy lifestyle choices are the best methods for optimizing health and preventing diseases.

Dietary Unsaturated Fat

YOUR ABILITY TO METABOLIZE UNSATURATED FATS IN YOUR DIET

Fats are an essential part of our body's ability to function. They are involved in key functions ranging from body temperature to weight management. Maintaining a good level of healthy fats in our diet is important for long-term health. The genes in this panel are associated with processing beneficial unsaturated fats in your diet. There are two main types:

1. Monounsaturated fats (MUFA) are liquids at room temperature with a single bond, and semisolid or solid when refrigerated. MUFAs are omega 7 and 9. They are found in foods such as fish, whole milk products, nuts and high-fat fruits and vegetables such as olives and avocados, and oils such as olive, sunflower, canola, and cashew.

2. Polyunsaturated fats (PUFA) are also liquids at room temperature with a carbon double bond and turn solid when chilled. PUFAs are omega 3 and 6. They are found in foods such as walnuts, canola oil and seeds (sunflower, sesame, chia)

Diets with MUFA and PUFA correlate with healthy hearts, fewer strokes and less belly fat. Foods containing MUFA may reduce LDL cholesterol and increase HDL cholesterol thereby lowering the risk of heart disease and stroke.

Variations in these genes may indicate your body takes longer to metabolize/ breakdown dietary fats which would result in a lower metabolic rate.

TIPS TO TAKE POWER OVER YOUR HEALTH

If you have variations in this panel, you may want to consider the following to improve your health:

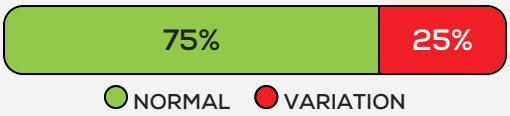
» Eat a balanced diet and exercise regularly.

» Monitor your fat consumption by decreasing your total fat intake

» Consider obtaining energy from other macro-nutrients such as carbohydrates and proteins

» Consider green tea, caffeine or capsinoids (a compound derived from chili peppers) as fat burning supplements.

YOUR GENETIC COMPOSITION %



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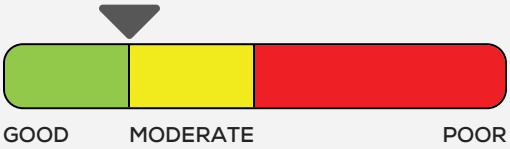


Your genes in this panel are functional. You have a normal genetic ability to metabolize fats in your diet. Normal total dietary fat intake is approximately 25% of your caloric intake. However, if you have a sedentary lifestyle and eat a diet high in saturated fats, you may increase your risk of obesity and other serious health conditions. Be sure to maintain a healthy diet and exercise regularly.

Dietary Saturated Fat

HOW WELL YOU METABOLIZE SATURATED FATS IN YOUR DIET

Dietary fat contains varying proportions of saturated fat. Examples of foods containing a high proportion of saturated fat include animal fat products such as cream, cheese, butter, other whole milk dairy products and fatty meats which also contain dietary cholesterol. Many prepared foods are high in saturated and trans-fat content such as pizza, dairy desserts, and sausage.

The genes in this panel are associated with the processing of fats in your diet. Variations in these genes may result in a lower resting metabolic rate, meaning that the body takes longer to metabolize dietary fats.

Depending on the amount of saturated fat consumed, this can result in difficulty losing body fat and lead to an increased risk of obesity, higher BMI, increased susceptibility to type 2 diabetes and cardiovascular disease. Health organizations encourage people to switch where possible from saturated to unsaturated and polyunsaturated fats.

Regardless of your genetic type, it can be beneficial to limit saturated fats from animal sources in your diet.

TIPS TO TAKE POWER OVER YOUR HEALTH

If you have variations in this panel, you may want to consider the following to improve your health:

» Lower your total dietary fat intake and avoid diets high in fat, particularly saturated and trans fats.

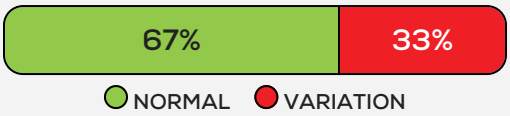
» Engage in regular, moderate physical exercise.

» Replace saturated fat in your diet with monounsaturated and polyunsaturated fat.

» Get beneficial fats from foods including flaxseed oil, hemp seeds, walnuts, fish oil, chia seeds, seafood and dark leafy greens.

» If you are experiencing weight issues, consult your health care practitioner to determine an appropriate calorie intake.

YOUR GENETIC COMPOSITION %



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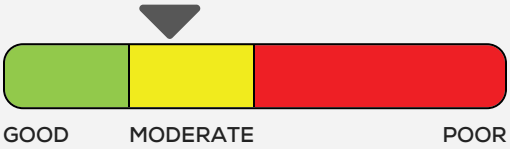


You have some variations in these genes, which could put you at risk if you have too much saturated fat in your diet. You may be prone to high cholesterol. A diet low in saturated fat may help to counteract this.

Stored Body Fat

HOW WELL YOUR BODY BURNS STORED FATS

Excess fat is stored in your body and is broken down and used as energy when carbohydrates are not available. The genes in this panel impact fat storage, the metabolism of stored fat, and BMI. They have an effect on health and body composition.

Variations in this panel can lead to excess energy from food to be stored as fat and difficulty in metabolizing or burning off the stored fats. This may lead to higher body mass and a greater likelihood of abdominal obesity and cardiovascular disease.

TIPS TO TAKE POWER OVER YOUR HEALTH

If you have variations in this panel, you may want to consider the following to improve your health:

» Maintain a consistent healthy diet and exercise program, as increased stored fat in your body may be harder to lose.

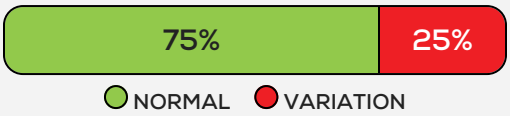
» A higher heart rate may be required when exercising in order to burn stored fats.

» Upon advice from a health care professional, engage in more cardio exercise to maintain or lose weight.

» Refrain from drastic caloric restriction, which has been linked to loss of lean body mass and rebound weight gain.

» Consider green tea, caffeine, or capsinoids (a compound derived from chili peppers) as fat burning supplements.

YOUR GENETIC COMPOSITION %



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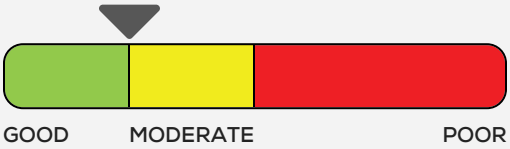


Your genes in this panel are functional and associated with normal metabolism of stored body fat. Your genes do not indicate an increased risk of obesity (particularly abdominal obesity) or various related conditions and diseases.

Protein Need

YOUR NEED FOR A NORMAL AMOUNT OF DIETARY PROTEIN

Protein is a vital macronutrient necessary for the growth, repair, and maintenance of all tissues in the body. Composed of up to 20 amino acids, nine of which are essential and must be obtained from food, protein is a critical building block for every cell. Animal-based foods, such as meat, poultry, fish, eggs, and dairy, provide complete proteins with all essential amino acids. Plant-based sources, like beans, lentils, soy, nuts, and grains, can be combined (e.g., beans with rice) to achieve a complete amino acid profile, making them suitable for vegetarian or vegan diets.

Protein requirements vary based on activity level, age, and genetics. High-intensity exercise increases protein demands to repair muscle micro-damage and support growth, while older adults may need more protein to prevent muscle loss. For most individuals, the recommended daily allowance (RDA) is 0.8 grams per kilogram of body weight, though active individuals may benefit from 1.2–2.0 grams per kilogram. Tailoring protein intake ensures optimal energy, recovery, and overall health.

Genetic variations can influence how the body metabolizes and utilizes protein.

TIPS TO TAKE POWER OVER YOUR HEALTH

If you have variations in this panel, you may want to consider the following to improve your health:

» Consume adequate protein to support muscle maintenance, repair, and health, adjusting intake based on activity, age, and genetics.

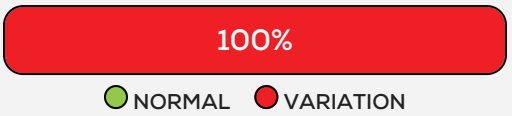
» Build a balanced diet with lean proteins, healthy fats, vegetables, and fruits for optimal nutrition.

» Include fish, chicken, eggs, dairy (if suitable), legumes, nuts, grains, and sea vegetables to ensure a balanced amino acid profile.

» If you follow a plant-based diets, combine complementary foods like grains with legumes or nuts and consume higher plant-based protein volumes to maintain muscle mass.

» Use protein-rich foods like soy, lentils, quinoa, and spirulina, and consider protein powders to meet daily needs.

YOUR GENETIC COMPOSITION %



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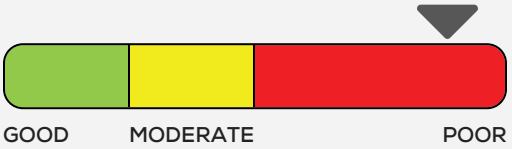


You have variations in these genes. You may benefit from a high dietary protein intake (30-35% caloric intake from protein).

Protein Weight Response

YOUR WEIGHT RESPONSE TO A HIGH PROTEIN DIET

An appropriate protein intake can promote the reduction of body fat stores because the thermic effect of protein is greater than that of carbohydrate or fat. Protein also exerts a greater satiety effect in combination with other macronutrients, although this effect is partly mediated by satiety hormones released from the small intestine.

During weight loss, higher protein diets preserve lean body tissue. This is the major determinant of resting and 24-hour energy expenditure, which in turn prevents an excessive reduction in energy expenditure. This is particularly significant when higher protein diets are used in combination with complex carbohydrates and physical training.

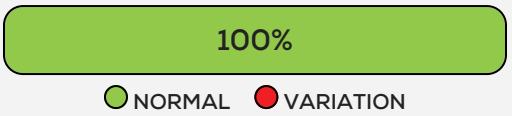
TIPS TO TAKE POWER OVER YOUR HEALTH

If you have variation in this panel, you may want to consider the following to improve your health:

» Avoid a high-fat, high protein diet if your goal is to maintain or reduce your weight and you have variation in this panel.

» Eat lower fat protein such as natural lean meat, isolated lactose-free whey, vegetarian or vegan protein supplements, or egg whites.

YOUR GENETIC COMPOSITION %



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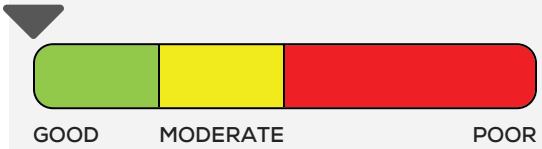


Your gene in this panel is functional. This genotype is associated with weight loss on a high protein diet.

WEIGHT RESPONSE

Your weight depends on the number of calories you consume, how many of those calories you store, and how many you burn up. But each of these factors is influenced by a combination of genes and environment. Both can affect your physiology (such as how fast you burn calories), as well as your behavior (the types of foods you choose to eat, for instance). The interplay between all these factors begins at the moment of your conception and continues throughout your life.

The balance of calories stored and burned depends on your genetic makeup, your level of physical activity, and your resting energy expenditure (the number of calories your body burns while at rest). If you consistently burn all of the calories that you consume in the course of a day, you will maintain your weight. If you consume more energy (calories) than you expend, you will gain weight.

Excess calories are stored throughout your body as fat. Your body stores this fat within specialized fat cells (adipose tissue) — either by enlarging fat cells, which are always present in the body, or by creating more of them. If you decrease your food intake and consume fewer calories than you burn up, or if you exercise more and burn up more calories, your body will reduce some of your fat stores. When this happens, fat cells shrink, along with your waistline.

Genes contribute to obesity in many ways, by affecting appetite, satiety (the sense of fullness), metabolism, food cravings, and body-fat distribution. Emotional eating can also play a large part in this. Some individuals are predisposed to eat more during emotional or stressful times and will need to factor that in when implementing healthy eating and exercise routines.

This section includes:

» Your propensity to carry weight.

Body Mass Index

YOUR ABILITY TO REGULATE YOUR BODY MASS INDEX

Body Mass Index (BMI) is commonly used to assess obesity. BMI has two components, weight and height, and can be influenced by body fat and body composition. BMI does not take into account body-fat percentage, muscle mass, bone thickness or genetic predisposition to a certain frame. Genetic factors account for around 40–70% of variability in BMI. As much as 21% of BMI variation is accounted for by common genetic variations.

BMI is one of many factors that you and your healthcare provider can use to help assess your health. The formula is BMI = kg/m2 where kg is a person's weight in kilograms and m2 is their height in meters squared. There are many tools available online to calculate your BMI. A BMI of 25 or more is considered to be overweight, while the healthy range is 18 to 25.

TIPS TO TAKE POWER OVER YOUR HEALTH

If you have variations in this panel, you may want to consider the following to improve your health:

» Eat smaller food portions and increase your activity level.

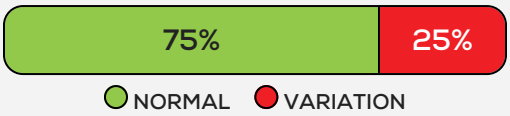
» Eliminate trans fats by avoiding fried foods, baked goods, mixes, candy and chips.

» Replace trans and saturated fats with unsaturated fats. Foods rich in unsaturated fats include avocados, nuts, fish, and plant-based oils.

» Increase your daily activity by taking the stairs, going for a walk, joining an exercise program or a gym.

» For more information on dietary changes, talk to your healthcare professional.

YOUR GENETIC COMPOSITION %



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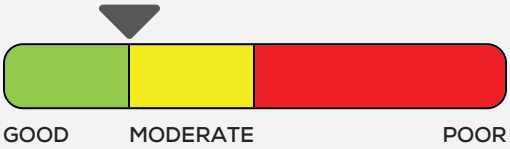


You do not carry genetic risk variants for increased body mass index. If you are overweight it is more likely due to environmental factors. You have control over these factors and can get help making healthy lifestyle choices to maintain a healthy BMI.

FOOD TOLERANCES

Identifying food intolerances and tailoring your diet to align with your genetic profile can enhance your body's efficiency and overall health. By avoiding foods that may disrupt your system, you can optimize energy levels, improve mental clarity, and support physical well-being. This personalized approach promotes long-term wellness and empowers you to fully enjoy the activities you love.

This section includes:

» Ability to process alcohol.

» Sensitivity to caffeine and salt.

» Gluten and lactose tolerance.

» Risk of peanut allergy.

Alcohol

HOW WELL YOUR BODY METABOLIZES ALCOHOL

Alcohol consumption is a common element of many social situations. However, for some people with variations in these genes, alcohol consumption can be very unpleasant. This is due to their inability to clear the acetaldehyde produced by the metabolism of alcohol. Symptoms include flushing of the skin, accelerated heart rate, shortness of breath, throbbing headache, mental confusion, and blurred vision. This is known as "alcohol flush" in which certain individuals, have their face, neck and sometimes shoulders turn red after drinking alcohol. The discomfort with drinking alcohol leads to very low rates of alcohol dependency. The variation appears in 8% of the global population and up to 40% of the Asian population.

Diseases associated with this genetic variation include: esophageal, colorectal, gastrointestinal, lung and liver cancer, coronary artery disease, hypertension and others.

Regardless of your genetic type, consuming too much alcohol can have serious side effects.

TIPS TO TAKE POWER OVER YOUR HEALTH

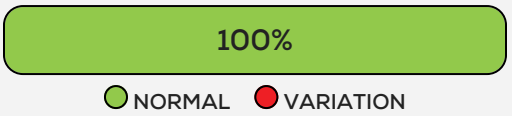
If you have a variation in this panel, you may want to consider the following to improve your health:

» Decrease or eliminate alcohol from your diet.

» If you drink, be sure to have someone watching out for you. Be aware that the alcohol will stay in your body much longer than others and leave you feeling much worse.

» Monitor your health for diseases related to this variation.

YOUR GENETIC COMPOSITION %



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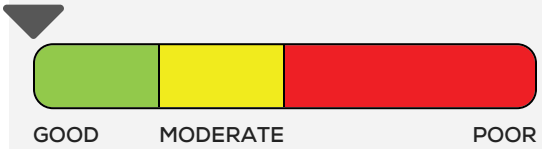


Your genes in this panel are functional, which studies have linked to a normal ability to metabolize alcohol and little to no flushing effect. Disulfiram may be effective to help treat alcoholism.

Caffeine

HOW WELL YOUR BODY PROCESSES CAFFEINE

Caffeine is a stimulant present in coffee and some teas, carbonated beverages and energy drinks. Caffeine is metabolized in the liver, and the resulting metabolites travel to other organs and affect their function. For example, caffeine metabolites bind to receptors in the brain, causing arousal and interacting with neurotransmitters. This leads to caffeine's signature effect of warding off drowsiness and increasing alertness.

Research into caffeine's impact on long-term health has provided both positive and negative results. These include an increased risk of bladder cancer with excessive coffee consumption (> 5 cups/day), and a decreased overall risk of cancer, cardiovascular disease, and type 2 diabetes with moderate consumption (2 cups/day).

Short term negative effects include dehydration, diarrhea, hypertension, sleep and anxiety disorders. Short term positive effects include improved cognitive function.

Carriers of variations in this panel metabolize caffeine at a slower rate and, as a result, may experience greater stimulation effects.

Regardless of your genetic type, consuming more than 400mg of caffeine a day can have detrimental side effects.

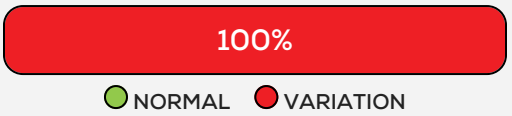
TIPS TO TAKE POWER OVER YOUR HEALTH

If you have variations in this panel, you may want to consider the following to improve your health:

» Lower caffeine intake to one serving per day.

» If experiencing stress and anxiety, cut caffeine out of your diet.

YOUR GENETIC COMPOSITION %



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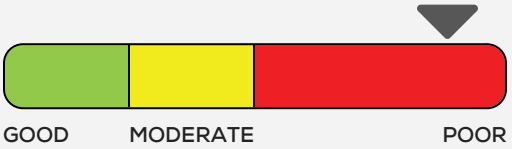


You have a variation that may decrease your ability to metabolize caffeine. This means caffeine may stay in your system longer and make you more sensitive to caffeine's stimulating effects. Consider limiting the amount of caffeine you consume if you are feeling over stimulated. You may have an increased heart attack risk from moderate (2 cups/day) caffeine consumption.

Gluten

YOUR NORMAL RISK FOR GLUTEN SENSITIVITY

Gluten is a protein found in wheat, barley, and rye. Individuals who suffer from gluten sensitivity in the gut may experience symptoms of malabsorption including chronic fatigue, neurological disorders, depression, nutrient deficiencies, anemia, nausea, skin rashes, acne, bloating, diarrhea, constipation, muscular issues, headaches, dental decay, bone/joint pain and more.

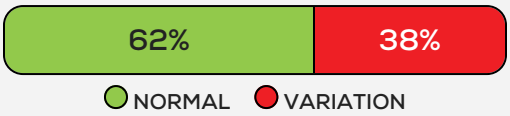
Celiac disease occurs when gluten is treated by the body like a foreign invader, it irritates the gut and flattens the microvilli along the small intestine wall. Without those microvilli, there is less surface area to absorb the nutrients from food. The systems by which celiac disease is triggered is not fully understood. It has been suggested that sugar, alcohol, antibiotics, environmental toxins, and other allergens can contribute to imbalanced intestinal flora. Western dietary practices (i.e., lack of breast feeding, early weaning, and a relatively greater amount of gluten intake) may be added environmental risks for celiac disease.

It is common to have variations in this panel. If you have variations in these genes, you may be at higher risk of celiac or non-celiac gluten sensitivity. While many individuals have genetic predisposition to gluten sensitivity the clinical presentation only occurs when there is gluten in the diet and an autoimmune trigger is presented. Not everyone with genetic risk at these markers has gluten sensitivity or celiac disease. However, if you do not have these risk alleles it is unlikely that you have flattened microvilli associated with celiac disease. Please check your genetic profile, on page 64, and compare it with the risk alleles presented in table 1 to better understand your genetic risk for gluten sensitivity.

Prevalence: Celiac disease is one of the most common genetic disorders in the West with 1% prevalence. Interestingly, there is increased prevalence of celiac disease amongst women compared to men with a 3:1 ratio. Individuals with diabetes, autoimmune disorder, or relatives with celiac disease have even higher risk for developing celiac disease.

Symptoms: Bloating, diarrhea, constipation, muscular issues, headaches, dental decay, fatigue, bone and joint pain, acne or rash can be symptoms of celiac disease.

YOUR GENETIC COMPOSITION %



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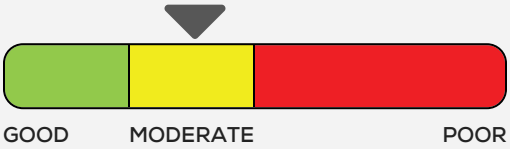


You have some variations in these genes. You have some increased genetic risk for dietary gluten sensitivity. Consider moving to a gluten free or reduced gluten diet, and/or meeting with your health care professional to undergo gluten sensitivity testing if you display symptoms.

Diagnosis: Celiac disease is diagnosed by blood tests and an endoscopy. If you have symptoms you may wish to visit your health care professional for testing.

Table 1. Use your genetic profile found at the back of this report to determine if you have genetic risk for celiac or non-celiac gluten sensitivity.

Description	Risk Allele
Greatest Gluten Sensitivity Risk HLA-DQ 2.5	T
Gluten Sensitivity Risk HLA-DQ 8	C
Gluten Sensitivity Risk HLA-DQ 2.2 part 1	T (Only risk if C at HLA-DQ 2.2 part 2)
Gluten Sensitivity Risk HLA-DQ 2.2 part 2	C (Only risk if T at HLA-DQ 2.2 part 1)

HLA-DQ2.5: Approximately 90-95% of individuals with celiac have HLA-DQ 2.5. 15% of the general population has a copy of HLA-DQ 2.5, however only 1% of the population has celiac disease. Risk alleles are compounding. If you have two risk alleles (TT) at this marker you have a 13.1 times increased risk of gluten sensitivity, whereas if you have only one risk allele (TC) you have a 1.3-10.1 times increased risk.

HLA DQ8 and HLA-DQ2.2: Approximately 5-10% individuals with celiac have HLA DQ8 or HLA-DQ 2.2. To have risk at HLA-DQ 2.2 you must have both HLA-DQ 2.2 part 1 (T) and HLA-DQ 2.2 part 2 (C).

TIPS TO TAKE POWER OVER YOUR HEALTH

If you have variations in this panel, you may want to consider the following to improve your health:

» Reduce or eliminate gluten from your diet if you are experiencing digestive issues.

» Avoid foods made from wheat, rye, bran, enriched flour, bulgur, and barley. This includes some cereals, breads, pastas, croutons, crackers, cakes, cookies, beer, and other grain-based alcohol.

» Avoid excess sugar, refined flour, alcohol, antibiotics, environmental toxins, and other allergens which have been suggested to contribute to imbalanced intestinal flora and lead to gluten-sensitivity.

» If you have symptoms of celiac disease, talk to your healthcare professional about being tested.

Lactose

HOW WELL YOUR BODY DIGESTS LACTOSE FROM DAIRY PRODUCTS

Lactose intolerance means the body does not easily digest lactose, a type of natural sugar found in milk and dairy products. Individuals need lactase, an enzyme that is produced in the small intestine, to break down lactose. Individuals with variations of this gene should watch for bloating, cramping, nausea, and diarrhea when consuming dairy products.

This gene's lactase-regulating mechanism is naturally turned off by the age of four. The test cannot tell you if you have an allergy to milk which is caused by an allergic reaction to the protein in milk. Non-genetic factors such as the composition of your gut bacteria can also determine your level of lactose tolerance. The "on" allele is rare in Asian and African populations. However, there may be other genetic factors that allow lactose to be digested for these groups.

TIPS TO TAKE POWER OVER YOUR HEALTH

If you have variations in this panel, you may want to consider the following to improve your health:

» If you are experiencing symptoms of lactose intolerance aim for remission of symptoms by avoiding milk and dairy products.

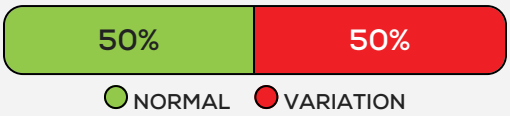
» Consider dairy alternatives such as rice, soy, coconut, and almond milk products.

» Read food labels to avoid ingredients such as whey, casein, curds, milk by-products, dry milk solids and non-fat dry milk powder. Vegan products are dairy free.

» Increase alternative calcium-rich foods in your diet such as spinach, salmon, sardines, dark green leafy vegetables and almonds.

» Talk to your healthcare professional about calcium supplements.

YOUR GENETIC COMPOSITION %



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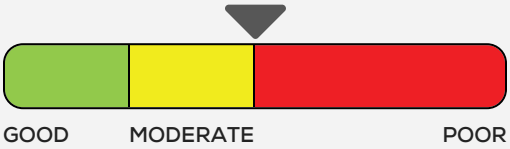


Your genes are moderately associated with the ability to digest lactose into adulthood. You may retain the ability to digest milk products into adulthood however that can shift as you age.

Peanut Sensitivity

YOUR RISK FOR PEANUT SENSITIVITY

Food allergy, an IgE-mediated hypersensitivity, affects 2–10% of children, posing a public health challenge due to its rising prevalence, severity, and economic impact. Common allergens like peanuts, eggs, and cow's milk are ubiquitous in processed foods, making avoidance difficult.

Peanut allergy affects 1.6–2.0% of the population, often starting in childhood and persisting into adulthood. It is a leading cause of food-induced anaphylaxis, with a high risk of accidental exposure and severe reactions.

Management involves strict avoidance, emergency treatment with adrenaline auto-injectors, and growing access to oral immunotherapy (OIT), which helps desensitize individuals to peanuts and reduce the severity of reactions. With proper education, allergen-free diets, and new therapies, many individuals can effectively manage peanut allergies and lead normal, fulfilling lives.

Risk factors include genetic predisposition, severe eczema, and egg allergy, highlighting the complex interplay of genetics and environment in its development.

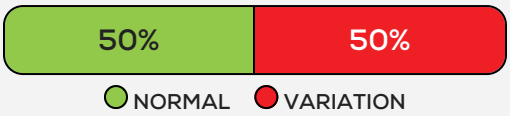
TIPS TO TAKE POWER OVER YOUR HEALTH

If you have variations in this panel, you may want to consider the following to improve your health:

» If you experience symptoms of peanut allergy seek medical attention.

» If you have severe eczema, egg allergy, or both you may wish to seek out allergy testing for peanut allergy with a health care professional.

YOUR GENETIC COMPOSITION %



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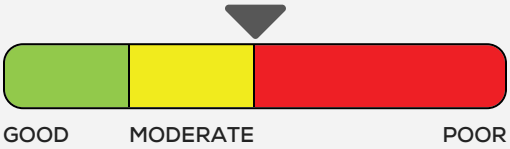


You have some variations in these genes associated with peanut allergy.

Salt

HOW WELL YOU METABOLIZE SALT

Salt is made up of sodium and chloride and found in high quantities in pre-packaged and fast foods. An increased intake of sodium can lead to high blood pressure which has many negative health effects.

Left untreated, high blood pressure can lead to damage to the heart and coronary arteries, including heart attack, heart disease, congestive heart failure, aortic dissection and atherosclerosis (fatty buildups in the arteries that cause them to harden), stroke, kidney damage, vision loss, erectile dysfunction, memory loss, fluid in the lungs, angina, and peripheral artery disease.

The salt sensitivity of blood pressure differs between individuals. Individuals with variations in this panel are prone to blood pressure that is more sensitive to salt intake.

TIPS TO TAKE POWER OVER YOUR HEALTH

If you have variations in this panel, you may want to consider the following to improve your health:

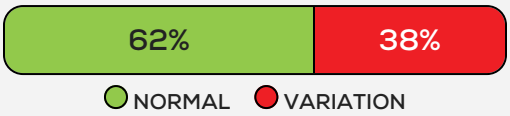
» If you have high blood pressure, consider limiting your salt intake to a maximum of 1 teaspoon total per day, which is equivalent to 2.2 grams of sodium per day. Depending on your level of athletic activity this recommendation can vary.

» Exercise regularly to decrease the effect that sodium has on your blood pressure.

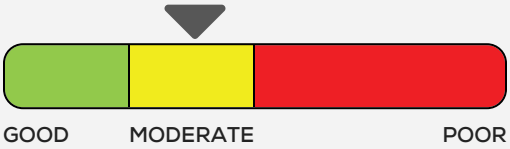
» Avoid table salt and processed foods high in salt, and use high quality mineral salts such as celtic, sea, and himalayan which also include trace minerals.

» Consult your healthcare professional to take preventative measures.

YOUR GENETIC COMPOSITION %



YOUR GENE FUNCTION



Your variations in these genes are moderate. You may be predisposed to high blood pressure. Consider decreasing your salt intake to one teaspoon or 6 grams per day and monitoring your blood pressure regularly.

Sugar Craving

YOUR ABILITY TO RESIST SUGAR CRAVINGS AND SWEET FOODS

Sugar cravings can be intense. While it may not be harmful to give in once in a while, persistently elevated sugar levels in the blood can lead to type 2 diabetes and cardiovascular diseases.

Variations in these genes have been linked to increased sugar cravings and a higher consumption of sweet products. If you have a predisposition to crave sweet foods, you should be careful when giving into these tendencies. They can lead to addictive type behaviors, with potentially cascading health effects, including increased weight.

TIPS TO TAKE POWER OVER YOUR HEALTH

If you have variation in this panel, you may want to consider the following to improve your health:

» Regulate your simple sugar and caloric intake to ensure a proper macronutrient balance.

» Replace high sugar foods and drinks with healthier options such as fruit.

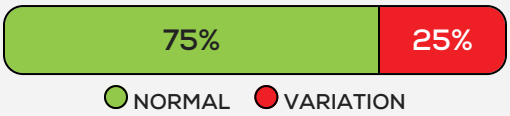
» Increase your fibre intake to help balance your blood sugar with foods such as nuts, beans and legumes.

» Maintain adequate magnesium intake with pumpkin seeds, spinach and chard, avocado, banana, yogurt or kefir.

» Ensure you drink enough water as sugar cravings often arise from dehydration.

» Participate in relaxing exercises to regulate cortisol levels and decrease stress.

YOUR GENETIC COMPOSITION %



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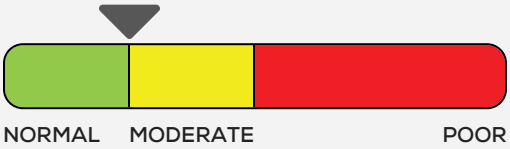


Your genes in this panel are functional. If you tend to crave sugar, it may be the result of other genetic and lifestyle factors.

FOOD TASTE AND PREFERENCE

Our genetics can influence our preference for certain foods and our ability to taste foods. Food and taste preferences are encoded in our genetic makeup. By finding out which tastes and preferences you are predisposed to, you can better understand why you are attracted to certain foods and make better decisions about your diet that are suited for your genetic type.

This section includes:

» Preference to consume normal amounts of caffeine.

» Preference for carbohydrates, proteins and fats.

» Ability to taste bitter, salty and sweet foods.

A variation in any of the above tests might make it more or less likely for you to consume a specific type of food. By being aware of possible eating patterns, you can be more proactive in weight management, disease prevention and greater overall health and energy. If you have a predisposition to crave sweet foods, avoid them or eat healthier options such as fruit. If you are unable to detect certain flavors, use that knowledge to ensure you do not unknowingly consume them in excess.

Caffeine Preference

YOUR PREFERENCE TO CONSUME A NORMAL AMOUNT OF CAFFEINE

Caffeine is a stimulant present in coffee, some teas, carbonated beverages and energy drinks. Caffeine is metabolized in the liver. The resulting metabolites travel to other organs, affecting their function. For example, caffeine metabolites bind to receptors in the brain, causing arousal and interaction with neurotransmitters. This leads to caffeine's signature effect of warding off drowsiness and increasing alertness.

Individuals with variations in this panel are likely to consume more caffeine per day than those who do not have variations in this panel. Research into caffeine's impact on long-term health has provided both positive and negative results. These include an increased risk of bladder cancer with excessive coffee consumption (> 5 cups/day), and a decreased overall risk of cancer, cardiovascular disease, and type 2 diabetes with moderate consumption (2 cups/day).

Short term negative effects include dehydration, diarrhea, hypertension, sleep and anxiety disorders. Short term positive effects include improved cognitive function.

Regardless of your genetic type, consuming more than 400mg of caffeine a day can have detrimental side effects.

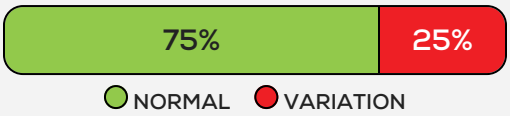
TIPS TO TAKE POWER OVER YOUR HEALTH

If you have variations in this panel, you may want to consider the following to improve your health:

» Be conscious about the amount of caffeine you are consuming in a day.

» Try coffee alternatives such a green tea, black tea or matcha which contain less caffeine.

YOUR GENETIC COMPOSITION %



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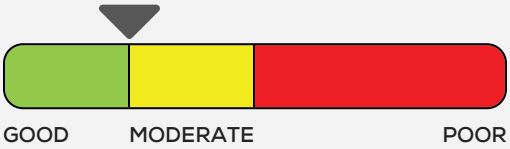


Your genes in this category are normal. If you drink caffeine, it is likely to be an average amount.

Carbohydrate Preference

YOUR PREFERENCE TO CONSUME A NORMAL AMOUNT OF CARBOHYDRATES

Carbohydrates are an essential part of our diet. Variations in this gene panel may be associated with increased intake of dietary carbohydrates, which can lead to an increased tendency to gain weight, particularly abdominal fat, and lower success rates with weight loss regimens. Genetic variations have been associated with both higher body composition and macronutrient intake, suggesting that it may influence eating behavior. It was also associated with increased energy intake from carbohydrates, mainly because of a higher consumption of mono and disaccharides and a higher glycemic load in the diet.

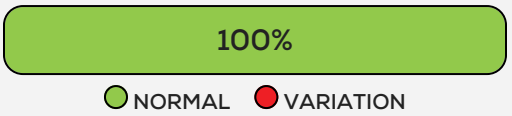
TIPS TO TAKE POWER OVER YOUR HEALTH

If you have variations in this panel, you may want to consider the following to improve your health:

» Monitor your carbohydrate intake to ensure you are not overconsuming.

» Increase strength activity to better metabolize carbohydrates, help regulate blood sugar levels, and reduce the risk of diabetes.

YOUR GENETIC COMPOSITION %



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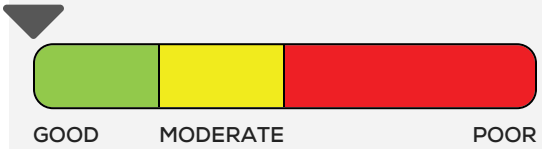


Your genes in this panel are functional. They are not associated with increased consumption of carbohydrates.

Fat Preference

YOUR PREFERENCE TO CONSUME A NORMAL AMOUNT OF FATS

Variations in this gene panel may be associated with increased snacking and intake of dietary fats including total fat, saturated fat, and monounsaturated fat. This can lead to an increased tendency to gain weight, particularly abdominal fat, and lower success rates with weight loss regimens. Variations can cause an increased drive to eat, resistance to the effects of circulating insulin and weight gain from a young age. It is associated with regulation of weight and could be important for weight problems and diabetes.

TIPS TO TAKE POWER OVER YOUR HEALTH

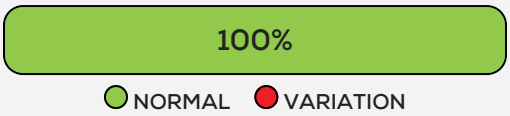
If you have variations in this panel, you may want to consider the following to improve your health:

» Monitor your fat intake.

» Watch your tendency for snacking and what foods you select.

» Consult a health care professional to help develop a health program right for you, especially if you are experiencing weight problems.

YOUR GENETIC COMPOSITION %



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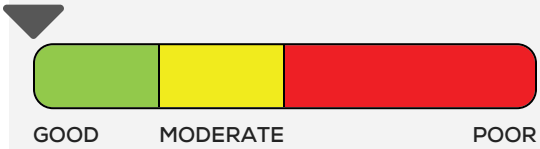


Your genes in this panel are functional. Your genotype is not associated with increased snacking and preference for fats.

Protein Preference

YOUR PREFERENCE TO CONSUME A NORMAL AMOUNT OF PROTEIN

Variations in this gene panel may be associated with increased intake of dietary protein, an increased tendency to gain weight, and lower success rates with weight loss regimens. People with variations show a high energy intake and preferences for proteins and lipids including fatty acids and cholesterol, they eat more fish and meat.

TIPS TO TAKE POWER OVER YOUR HEALTH

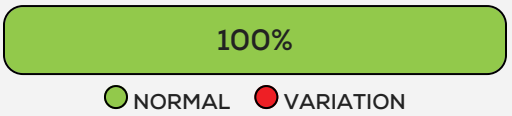
If you have variations in this panel, you may want to consider the following to improve your health:

» Monitor your protein intake.

» If you are trying to increase muscle growth and repair, consider proteins such as lean beef, skinless chicken, fish, cottage cheese, protein powders, tofu, dark leafy greens, legumes, nuts and seeds.

» If you are trying to lose weight decrease your animal protein consumption, or be conscious of choosing only recommended, healthy protein sources. Increase vegetarian protein consumption.

YOUR GENETIC COMPOSITION %



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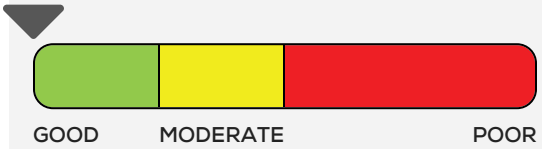


Your genes in this panel are functional. This is not associated with increased energy consumption from proteins.

Bitter Taste

YOUR ABILITY TO TASTE BITTER FLAVOURS AND FOODS

People have varied abilities to perceive the bitter taste of both 6-n-propylthiouracil (PROP) and phenylthiocarbamide (PTC) present in foods such as dark beer, coffee, dark chocolate, cabbage and broccoli. The genes in this panel facilitate signals to the bitter taste receptors.

Variations in these genes contribute to decreased sensitivity to bitter-tasting foods and drinks. Studies indicate that variations may also lead to decreased sensitivity to compounds in tobacco. If you are unable to detect certain flavors you may be more likely to unknowingly consume them in excess or to not be as interested in them.

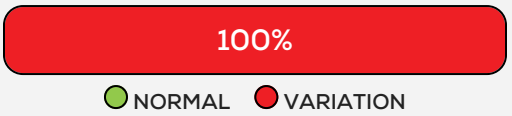
TIPS TO TAKE POWER OVER YOUR HEALTH

If you have variations in this panel, you may want to consider the following to improve your health:

» Monitor your intake of bitter foods such as bitter chocolate, dark beer and salts as you may be inclined to eat more to satisfy cravings.

» Avoid smoking, as you may not be as sensitive to the taste which could contribute to excessive smoking and addiction.

YOUR GENETIC COMPOSITION %



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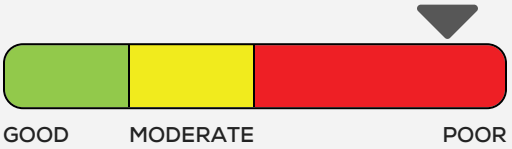


Your variations in these genes are high. You may have decreased ability to taste bitter foods. Monitor your consumption of less healthy bitter foods. If you are a smoker, try to reduce your smoking or to quit.

Salt Taste

YOUR ABILITY TO TASTE SALT AND SALTY FOODS

Table salt, made up of sodium and chloride, is found in high quantities in pre-packaged and fast foods. We respond favorably to its taste and it is useful in the preservation of food. However, an increased intake of sodium can lead to high blood pressure which has many negative health effects.

Taste is one of the primary determinants of food intake. Variation in an individual's ability to taste salt might partially explain the variation observed in sodium intake.

Salty taste is unique in that increasing salt concentration transforms an appetitive stimulus into a powerfully aversive one. If you ingest too much salt, your body recruits the sour and bitter aversive taste sensors, thus preventing its potentially detrimental effects on health.

TIPS TO TAKE POWER OVER YOUR HEALTH

If you have variations in this panel, you may want to consider the following to improve your health:

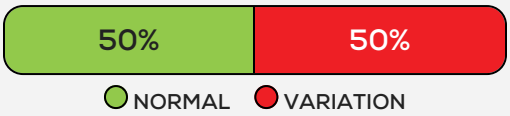
» Moderate your salt intake if you have high blood pressure.

» Rather than adding salt, introduce alternative flavoring techniques and fresh ingredients.

» Avoid processed foods, which tend to be high in salt.

» Exercise regularly to decrease the effect that sodium has on blood pressure.

YOUR GENETIC COMPOSITION %



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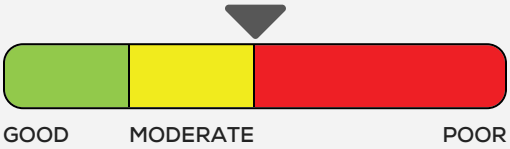


Your variations in these genes are moderate. You may have decreased ability to taste salty foods.

Sweet Taste

YOUR ABILITY TO TASTE SWEET FLAVOURS AND FOODS

Sweet taste sensitivity is facilitated by taste receptors found in the taste buds, situated near the back of the tongue and the roof of the mouth. When we eat and drink, these receptors initiate a cascade of signaling reactions in the body's cells. The message is relayed to the hypothalamus of the brain, where sweet taste is recognized, and cellular responses are activated.

The receptors recognize natural sugars more easily than artificial substitutes.

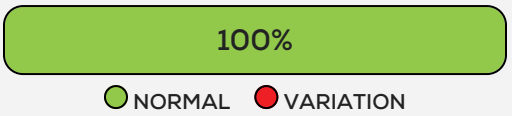
Variations in these genes can result in impacts on taste receptors that may decrease your ability to taste sweetness. This can lead to an increase in sugar consumption to satisfy a sugar craving or lack of interest in sweet foods as they are less rewarding.

TIPS TO TAKE POWER OVER YOUR HEALTH

If you have a variation in this panel, you may want to consider the following to improve your health:

» Be aware of your consumption of sweet foods and desserts as you may be inclined to eat more to satisfy sweet cravings.

YOUR GENETIC COMPOSITION %



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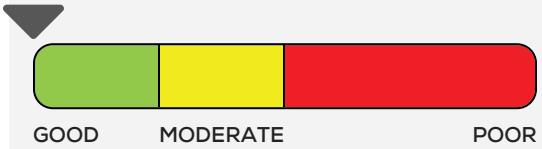


Your genes in this panel are functional and your sweet taste perception is normal.

VITAMINS & SUPPLEMENTS

Vitamins and supplements are essential for maintaining health by supporting critical bodily functions such as energy production, immune defense, cell repair, and hormone regulation. While a balanced diet is the primary source of these nutrients, supplements can help fill gaps caused by dietary restrictions, genetic variations, or specific health needs. They play a key role in preventing deficiencies, optimizing health, and addressing unique nutritional requirements.

Micronutrients are categorized into water-soluble vitamins (e.g., B2, B6, B9, B12, and C), which are not stored in the body and require regular intake, and fat-soluble vitamins (e.g., A, D, E, and K), which are stored in fat tissues and the liver. Minerals such as calcium, magnesium, iron, zinc, and iodine are crucial for bone health, oxygen transport, immune support, and thyroid function. Essential fatty acids like omega-3s and nutrients such as choline further support brain, cardiovascular, and liver health.

Below are the recommended daily intakes for adult females and males (31–50 years):

Nutrient	Females (31–50 years)	Males (31–50 years)
Vitamin A	700 µg	900 µg
Vitamin B2	1.1 mg	1.3 mg
Vitamin B6	1.3 mg	1.3 mg
Vitamin B9	400 µg	400 µg
Vitamin B12	2.4 µg	2.4 µg
Vitamin C	75 mg	90 mg
Vitamin D	600 IU	600 IU
Vitamin E	15 mg	15 mg
Vitamin K	90 µg	120 µg
Calcium	1000 mg	1000 mg
Choline	425 mg	550 mg
Iodine	150 µg	150 µg
Iron	18 mg	8 mg
Magnesium	320 mg	420 mg
Omega-3	1.1 g	1.6 g
Zinc	8 mg	11 mg

Vitamin A

HOW WELL YOU CONVERT VITAMIN A FOR HEALTHY GROWTH AND IMMUNE RESPONSE

Vitamin A is found in two principal forms of food retinol from animal food sources and carotene from plant food sources. Vitamin A has various functions in the body. Its main functions are the support of healthy growth and immune function. It also promotes good vision, transcribes genes, aids in bone metabolism and formation of blood components, and has antioxidant activity. The genes in this panel are linked to vitamin A conversion from dietary sources into a form that your body can utilize.

Variations in this panel may result in decreased conversion of vitamin A from dietary sources in the body. This may result in deficiency of vitamin A, which can impair sight, growth and the immune system.

TIPS TO TAKE POWER OVER YOUR HEALTH

If you have variations in this panel, you may want to consider the following to improve your health:

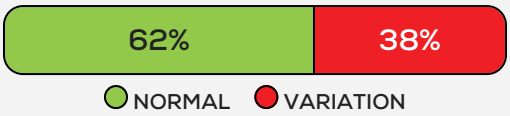
» Tailor your consumption of foods high in vitamin A. Consider including retinol forms of vitamin A from animal food sources, which your body may absorb better. Vitamin A is available in eggs, dairy products, fish, and liver.

» Beta-carotene is abundant in dark green and yellow, orange and red vegetables such as sweet potatoes, carrots, dark leafy greens, winter squashes, lettuce, apricots, cantaloupe, bell peppers and tropical fruits.

» Sea vegetables are also an excellent source. Look for sea vegetables such as arame (a type of brown algae), dulse (a red algae), wakame (an edible seaweed has a mild sweet flavor), and nori (probably the most well-known sea vegetable in the west).

» Consult your healthcare professional before supplementing with preformed vitamin A.

YOUR GENETIC COMPOSITION %



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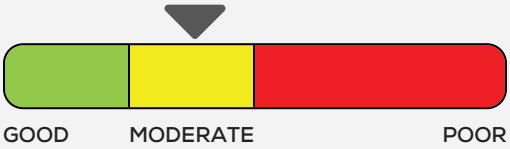


You have some variations in these genes. Your body may have trouble metabolizing beta-carotene from plant sources in your diet into useable vitamin A.

Vitamin B2 (Riboflavin)

YOUR NEED FOR VITAMIN B2 FOR HEALTH, DEVELOPMENT, AND MANAGEMENT OF CARDIOVASCULAR RISK

Vitamin B2, also known as riboflavin, is required for the proper development and function of the skin, lining of the digestive tract and blood cells. It helps your body cells use fat, protein and carbohydrates from foods to produce energy and aids in the production of niacin (vitamin B3) and pyridoxine (vitamin B6). Riboflavin is water-soluble, it is not stored in the body, therefore you should eat foods rich in riboflavin daily.

This variation has been associated with elevated homocysteine, coronary artery disease, cancer and hypertension. However, these genetic risks can be managed with diet. Vitamin B2 (riboflavin) supplementation has been shown to reduce blood pressure by 6 mmHg systolic in hypertensive patients with this risk genotype.

Individuals with variation in this panel should maintain a healthy B2 (riboflavin) intake. An adequate supply of riboflavin is important for making FAD, a coenzyme to MTHFR. A healthy MTHFR system may prevent hypertension and decrease cardiovascular risk.

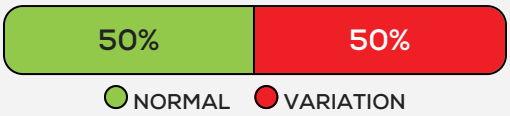
TIPS TO TAKE POWER OVER YOUR HEALTH

If you have variations in this panel, you may want to consider the following to improve your health:

» Increase your consumption of healthy dietary sources of vitamin B2 which include: vegetables (especially mushrooms and spinach), brewer's yeast, cereal grains, cheese, eggs, fish and almonds.

» Consider taking vitamin B2 in a methylated vitamin B complex.

YOUR GENETIC COMPOSITION %



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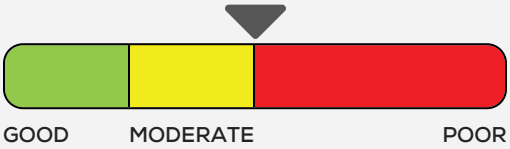


You have some variation in this gene. You may benefit from increasing your consumption of foods rich in vitamin B2 (riboflavin).

Vitamin B6

HOW WELL YOU PROCESS VITAMIN B6 FOR MACRONUTRIENT METABOLISM

Vitamin B6, also known as pyridoxine, is a water-soluble nutrient that is part of the B-vitamin family. B vitamins, including vitamin B6, help support adrenal function, help calm and maintain a healthy nervous system, and are necessary for key metabolic processes. Vitamin B6 acts as a coenzyme in the breakdown and utilization of carbohydrates, fats and proteins. It is involved in many aspects of macronutrient metabolism; neurotransmitter, histamine, hemoglobin synthesis; and ger expression.

Vitamin B6 is often used with other B vitamins in vitamin B complex formulas.

TIPS TO TAKE POWER OVER YOUR HEALTH

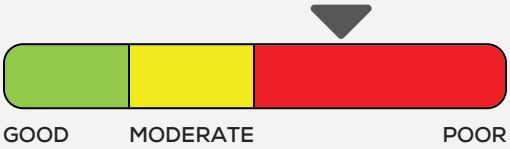
If you have a variation in this gene, you may want to consider the following to improve your health:

» Increase your consumption of good dietary sources of vitamin B6 which include: vegetables (especially spinach, bell peppers and cauliflower), fortified nutritional yeast, bananas, cereal grains, legumes, sweet potatoes, cheese, eggs, fish and sunflower seeds.

» Consider taking vitamin B6 supplements in a vitamin B complex.

YOUR GENETIC COMPOSITION %

YOUR GENE FUNCTION



Your are likely to have a decreased vitamin B6 concentration. You may wish to supplement with a vitamin B complex, or foods that are rich in vitamin B6. Your body may require more than the recommended average of vitamin B6 daily.

Vitamin B9 (Folate)

HOW WELL YOU PROCESS FOLATE FOR CELL GROWTH AND HEALTHY RED BLOOD CELLS

Vitamin B9 is also known as folate or folic acid (the synthetic version). Folate must be supplied in the diet in order to synthesize, repair and methylate DNA. It is needed to make the building blocks of DNA and protein and is important in reactions that tell the cell which genes to switch on and off. Folate helps to produce healthy red blood cells, preventing anemia. It is critical during pregnancy and infancy, increases fertility in both males and females, and may decrease the risk of depression and stroke. Folate is water soluble; it cannot be stored in the body's tissues, so levels must be consistently maintained.

About 85% of the general population carries one or more variants in the main folate metabolism MTHFR gene associated with higher blood homocysteine, a risk factor for cardiovascular disease.

TIPS TO TAKE POWER OVER YOUR HEALTH

If you have a variation in this panel, you may want to consider the following to improve your health:

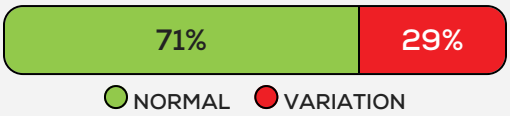
» Include dark leafy greens, mushrooms, oranges, whole grains and cereals in your diet. Naturally occurring folate in these foods is destroyed by heat so it is best not to overcook them. Consider eating them raw.

» Consider taking a methylated vitamin B complex and vitamin C supplements as these vitamins are cofactors for folate metabolism.

» Reduce consumption of alcohol and try to reduce stress as it can interfere with your body's ability to absorb folic acid.

» Consult with your healthcare professional to ensure that you maintain sufficient folate levels, particularly if you have Crohn's, Celiac, anemia or other diseases.

YOUR GENETIC COMPOSITION %



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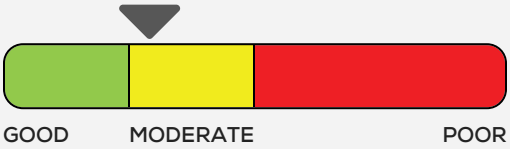


You have some variations in these genes, which could lead to a vitamin B9 (folate) deficiency. Your body may require more than the recommended 400 µg of vitamin B9 daily. You may benefit from a vitamin B complex and foods that are rich in vitamin B9, particularly if you are over the age of 50, have chronic fatigue, or you are pregnant.

Vitamin B12

HOW WELL YOU PROCESS VITAMIN B12 FOR HEALTHY NERVE AND BLOOD CELLS

Vitamin B12 (also called cobalamin) plays an important role in the functioning of the nervous system, the brain, formation of blood cells, and DNA synthesis and regulation. Most people who eat animal products are at lower risk of developing a vitamin B12 deficiency.

The health of the intestinal tract plays a key role in the uptake of vitamin B12. Conditions such as Helicobacter pylori infection, bacterial overgrowth, and inflammatory bowel disease can lead to malabsorption of vitamin B12.

Variations in this gene panel are associated with lower vitamin B12 levels in the blood. Vitamin B12 deficiency is associated with pernicious anemia, cardiovascular disease, cancer, fatigue, depression and neurodegenerative disorders.

TIPS TO TAKE POWER OVER YOUR HEALTH

If you have variations in this panel, you may want to consider the following to improve your health:

» Increase your consumption of foods high in vitamin B12 such as meat, fish, eggs and dairy.

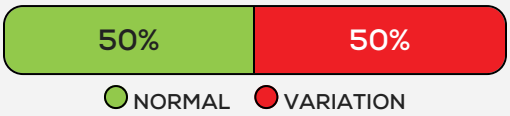
» If you follow a vegan diet consider a vitamin B12 fortified nutritional yeast, almond milk, or cereal.

» Work on improving digestion to facilitate absorption of the vitamin.

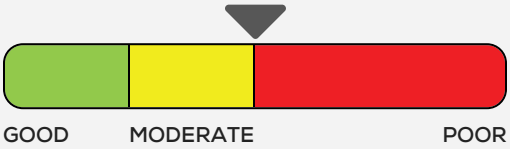
» People over the age of 50 tend to have lower levels and may wish to supplement regardless of their genetics.

» Talk to your healthcare professional about monitoring your vitamin B12 levels. If low, consider supplementation.

YOUR GENETIC COMPOSITION %



YOUR GENE FUNCTION



You have some variations in these genes which may result in a vitamin B12 deficiency. You may benefit from foods that are rich in vitamin B12, or a vitamin B complex supplement, particularly if you are over the age of 50 or have chronic fatigue.

Vitamin C

HOW WELL YOU PROCESS VITAMIN C FOR GROWTH AND DEVELOPMENT

Vitamin C, also known as L-ascorbic acid, is a water-soluble vitamin that is naturally present in many fruits and vegetables. Humans are unable to synthesize vitamin C, making it an essential dietary component. Vitamin C improves the absorption of nonheme iron, the form of iron present in plant-based foods.

Although required for the biosynthesis of collagen, and the metabolism of protein, it is best known for its important role in immune function and its potent antioxidant properties. It's also been shown to prevent or delay the development of certain cancers, cardiovascular disease, and other diseases in which oxidative stress plays a causal role.

Symptoms of vitamin C deficiency include fatigue, dry skin, splitting hair, swelling or bleeding gums, nosebleeds, poor wound healing, problems fighting infection, and severe joint pain.

TIPS TO TAKE POWER OVER YOUR HEALTH

If you have variations in this panel, you may want to consider the following to improve your health:

» Add citrus fruits like oranges, grapefruit, limes and lemons to your diet.

» Consume berries such as blackcurrants, strawberries, blueberries and cranberries.

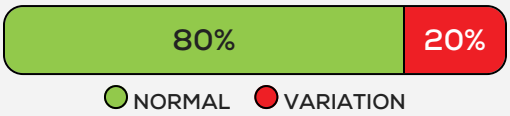
» Increase vegetable consumption of bell peppers, broccoli, dark leafy greens, and parsley.

» Eat fresh food as the vitamin C contents of most foods decrease dramatically during storage and cooking.

» Consider supplementing with vitamin C.

» If you smoke, are exposed to environmental/physical stress, have chronic disease or diabetes you may benefit from increased consumption of vitamin C.

YOUR GENETIC COMPOSITION %



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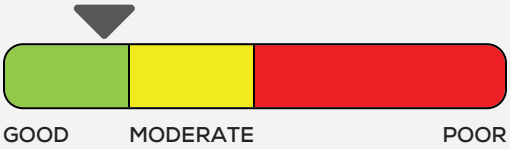


Your genes in this panel are functional. But depending on your age and health status, you may benefit from additional vitamin C in your diet.

Vitamin D

HOW WELL YOU PROCESS VITAMIN D TO SUPPORT CALCIUM ABSORPTION AND CELL GROWTH

Vitamin D is a fat-soluble vitamin that is naturally present in very few foods, added to others, and available as a dietary supplement. Your body produces it when ultraviolet rays from sunlight strike the skin and trigger vitamin D synthesis.

Vitamin D is involved in maintaining the proper balance of several minerals in the body, including calcium and phosphate, which are essential for the normal formation of bones and teeth. One of vitamin D's major roles is to control the absorption of calcium and phosphate from the intestines into the bloodstream. Vitamin D is also involved in several processes unrelated to bone formation, such as modulation of cell growth, neuromuscular and immune function, and reduction of inflammation. It is recommended that you aim to consume 600, and stay below 4000, IU of vitamin D per day.

TIPS TO TAKE POWER OVER YOUR HEALTH

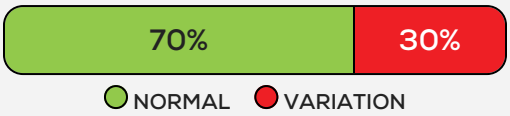
If you have variations in this panel, you may want to consider the following to improve your health:

» Increase your intake of dietary vitamin D found in salmon, sardines, and eggs.

» Check the level of vitamin D fortification in your foods. In Canada, milk and margarine are fortified by law.

» Consider vitamin D supplements.

YOUR GENETIC COMPOSITION %



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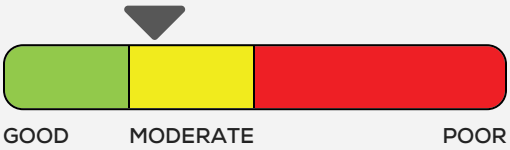


You have some variations in these genes, which may result in an increased need for vitamin D. You may benefit from foods that are rich in vitamin D or vitamin D supplementation.

Vitamin E

HOW WELL YOU CONVERT VITAMIN E FOR ANTIOXIDANT AND ANTI-AGING BENEFITS

Vitamin E is an essential fat-soluble micronutrient with important antioxidant with anti-inflammatory properties. It protects cells from oxidative damage caused by free radicals that are formed in the body during fat metabolism, exposure to environmental toxins, ultraviolet light from the sun and chemicals.

a-Tocopherol is the most abundant form of vitamin E in humans. It boosts the immune system to fight off invading bacterial and viral infections and plays a vital role in cell signaling, gene regulation and other metabolic processes.

Vitamin E deficiency can lead to the destruction of blood cells, impaired immune function, anemia, and neuromuscular diseases.

TIPS TO TAKE POWER OVER YOUR HEALTH

If you have variations in this panel, you may want to consider the following to improve your health:

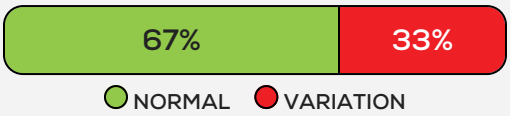
» Consider adding sunflower, wheat germ, and safflower oils to your diet.

» Include leafy vegetables, nuts, avocados, kiwi, broccoli and fortified cereals in your diet.

» Avoid exposure to environmental toxins, ultraviolet light from the sun and chemicals.

» Consider vitamin E supplements.

YOUR GENETIC COMPOSITION %



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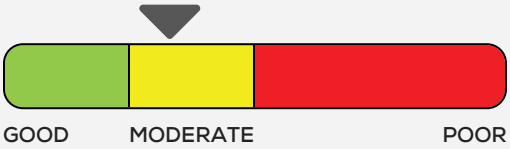


You have some variations in these genes, which may result in an increased need for vitamin E. You may benefit from foods that are rich in vitamin E.

Vitamin K

HOW WELL YOU PROCESS VITAMIN K FOR COAGULATION AND NEURAL PROTECTION

Vitamin K, a fat-soluble vitamin, is essential for critical biological functions. Vitamin K1 (phylloquinone), derived from green leafy vegetables, is the primary circulating form in the body. Vitamin K2 (menaquinones), found in animal products, fermented foods, and produced by intestinal microflora, can also be converted from K1. Vitamin K is best known for its role in blood clotting, enabling the body to stop bleeding, and research suggests additional benefits for neural health and development, with potential implications for conditions like autism.

Vitamin K levels are influenced by factors such as age, gender, diet, plasma triglycerides, body mass index, and smoking. However, even with these factors accounted for, genetic differences significantly impact vitamin K status. Variations in vitamin K-related genes are particularly relevant for individuals taking blood-thinning medications, as foods rich in vitamin K can interfere with these treatments and require careful management.

Genetic variations may increase the risk of vitamin K insufficiency, which is linked to chronic conditions like low bone mineral density, fractures, osteoarthritis, insulin resistance, and coronary artery calcification.

TIPS TO TAKE POWER OVER YOUR HEALTH

If you have variations in this panel, consider these steps to improve your health:

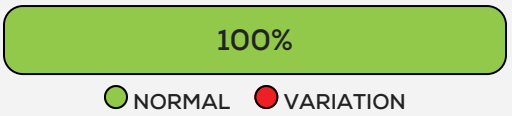
» Prioritize leafy greens like spinach, kale, and broccoli for vitamin K1, and include fermented foods, cheese, and eggs for vitamin K2.

» Support a healthy gut microbiome by consuming probiotic-rich foods (yogurt, kefir) and prebiotics (fiber-rich vegetables) to boost natural production of vitamin K2 by gut bacteria.

» Enhance absorption of this fat-soluble vitamin by pairing vitamin K-rich foods with healthy fats like olive oil, avocado, or nuts.

» Limit alcohol consumption and smoking, as they can hinder vitamin K utilization, and manage blood-thinning medications under medical supervision.

YOUR GENETIC COMPOSITION %



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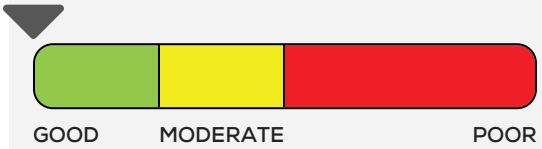


Your genes in this panel are functional. You have normal vitamin K processing.

Calcium

HOW WELL YOUR BODY ABSORBS CALCIUM FOR BONES, TEETH AND MUSCLES

Calcium is the most abundant mineral in the body. It is found in some foods, added to others, available as a dietary supplement and present in some medicines (such as antacids). Calcium is required for blood pressure, muscle function, nerve transmission, intracellular signaling and hormonal secretion, though less than 1% of total body calcium is needed to support these critical metabolic functions. Calcium is very tightly regulated and does not fluctuate with changes in dietary intakes; the body uses bone tissue as a reservoir for, and source of calcium, to maintain constant concentrations of calcium in blood, muscle, and intercellular fluids.

Your body uses calcium to stabilize blood pressure and build strong bones and teeth. When you don't get enough calcium, you increase your risk of developing diseases like osteoporosis and calcium deficiency disease.

TIPS TO TAKE POWER OVER YOUR HEALTH

If you have variations in this panel, you may want to consider the following to improve your health:

» Eat foods high in calcium such as sesame, chia, or poppy seeds, sardines, salmon and tofu, white beans and lentils.

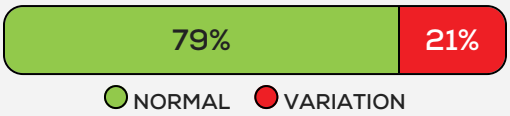
» Increase your fruit and vegetable intake. Metabolic acids produced by diets high in protein and cereal grains increase calcium excretion.

» Consider supplementing with calcium, magnesium, vitamin D and K to support bone health.

» Reduce alcohol intake: alcohol intake can affect calcium status by reducing its absorption and by inhibiting enzymes in the liver that help convert vitamin D to its active form.

» Consult your health professional if you are concerned about calcium deficiency.

YOUR GENETIC COMPOSITION %



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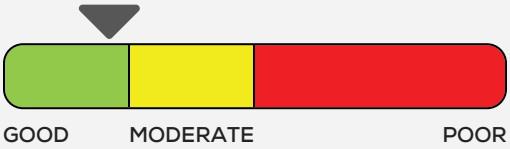


Your genes in this panel are functional which is associated with normal calcium absorption and optimal bone mineral density.

Choline

HOW MUCH DIETARY CHOLINE YOUR BODY REQUIRES FOR YOUR BRAIN AND NERVOUS SYSTEM

Choline is an essential nutrient that your brain and nervous system need to regulate memory, mood and muscle control. Choline plays an important role in modulating gene expression, the formation of cell membranes, lipid transport, metabolism, and early brain development. Your body produces choline in the liver, but the amount that your body makes is not sufficient to meet all of your needs. As a result, you must obtain some choline from the diet.

Premenopausal women tend to require less choline than other adults (men and postmenopausal women) because they have higher levels of estrogen which induces the biosynthesis of choline. If your diet is deficient in folate (vitamin B9) necessary for the methylation process, your need for dietary choline will increase because choline will become the primary methyl donor.

If you have variations in this panel your body may produce less choline, meaning that you require a higher amount of choline in your diet than people without this variant.

TIPS TO TAKE POWER OVER YOUR HEALTH

If you have a variation in this panel, you may want to consider the following to improve your health:

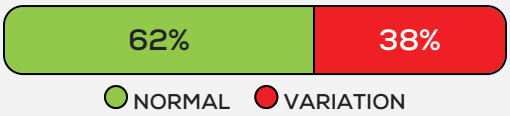
» Include healthy dietary sources of choline which is found primarily in animal-based products such as meat, poultry, fish, dairy products, and eggs.

» If you follow a vegetarian diet some cruciferous vegetables including brussels sprouts, broccoli, and cauliflower and some beans including soybean and kidney bean are also rich in choline.

» Other dietary sources of choline include nuts, seeds, and whole grains.

» Consider supplementing with bioavailable alpha GPC choline.

YOUR GENETIC COMPOSITION %



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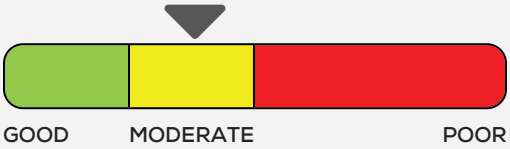


Your genotype is associated with intermediate choline production, essential for health and development.

Iodine

HOW WELL YOUR BODY TRANSPORTS IODINE TO SUPPORT THYROID FUNCTION

Iodine is naturally present in some foods, added to others, and available as a dietary supplement. Good sources of iodine include sea vegetables, seafood, dairy products and eggs. Iodine is also present in human breast milk and infant formulas. Thyroid cells are the only cells in the body which can absorb iodine. These cells use iodine to make thyroid hormones which are then released into the blood stream where they control metabolism (conversion of oxygen and calories to energy).

In the absence of sufficient iodine, thyroid stimulating hormone levels remain elevated, leading to a goiter, an enlargement of the thyroid gland that reflects the body's attempt to trap more iodine from the circulation to produce thyroid hormones. Iodine deficiency can have multiple adverse effects on growth and development and is the most common cause of preventable mental retardation in the world. Iodine deficiency disorders result from inadequate thyroid hormone production secondary to insufficient iodine. During pregnancy and early infancy, iodine deficiency can cause irreversible effects.

TIPS TO TAKE POWER OVER YOUR HEALTH

If you have a variation in this panel, you may want to consider the following to improve your health:

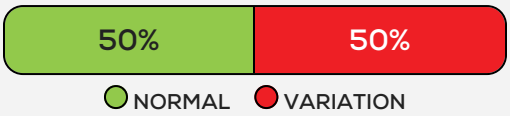
» Include iodine rich foods in your diet such as sea vegetables, seafood, fish, eggs, yogurt and cow's milk. Bread may also provide small quantities of iodine.

» Limit saturated and trans fats, added sugars, and sodium.

» Avoid radiation.

» Speak to your healthcare professional about having your iodine levels tested, taking iodine supplements, and watch for signs of thyroid cancer.

YOUR GENETIC COMPOSITION %



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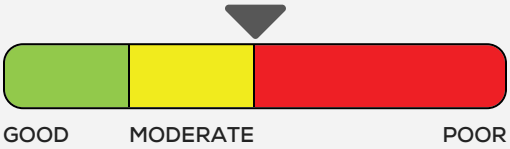


You have some variations in these genes. You may have a decreased ability to transport iodine. Increase iodine rich foods in your diet. Speak to your health care practitioner about iodine testing and supplements.

Iron Deficiency

HOW WELL YOUR BODY ABSORBS IRON FOR RED BLOOD CELLS TO CARRY OXYGEN

Iron is needed for red blood cells to form. Red blood cells carry oxygen to all parts of the body. Iron works as the oxygen-carrying component of our hemoglobin. It is also needed for myoglobin which supplies oxygen to muscle cells and plays a role in muscle contraction.

Iron is involved in several essential metabolic pathways. Balancing body iron levels is crucial for human health. Imbalance of iron acquisition at the cellular and systemic level can lead to either to iron-overload disease due to excessive iron absorption, or iron deficiency (anemia) due to the inability to maintain normal plasma levels. Imbalanced iron levels are also associated with disorders that include diabetes, inflammation, neurological and cardiovascular diseases.

Studies on iron status report heritability estimates ranging from of 20% to 30%. Iron status is also influenced by a combination of environmental factors such as diet, blood loss, pregnancy, alcohol intake and infections. Variation in this panel is linked to iron deficiency.

TIPS TO TAKE POWER OVER YOUR HEALTH

If you have variations in this panel, you may want to consider the following to improve your health:

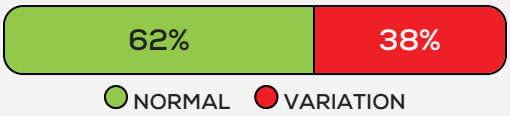
» If you are prone to iron deficiency include good sources of dietary iron in your diet such as: meat, fish and poultry, dried beans, peas and lentils. If you are prone to iron overload limit these iron sources.

» The goal is to maintain adequate but not excessive iron stores.

» Consult with your healthcare professional before taking an iron supplement.

» Consuming iron supplements with a glass of orange juice can aid absorption.

YOUR GENETIC COMPOSITION %



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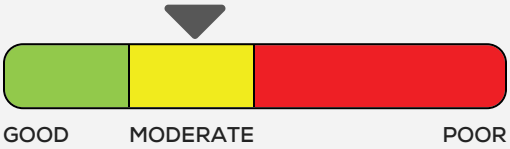


You have some variations in these genes. You have slightly increased risk of iron deficiency. Consult with your health care professional to have your iron levels tested if you display symptoms of iron deficiency.

Iron Overload

HOW WELL YOUR BODY REGULATES IRON FOR RED BLOOD CELLS TO CARRY OXYGEN

Healthy individuals with an abundant supply of iron usually absorb about 1 mg of iron from a varied diet. Some individuals tend to absorb much more of the available iron in foods, largely due to a genetic predisposition. The extra iron accumulates slowly and can eventually cause harm.

Hemochromatosis is an inherited condition in which control of iron excess is greatly relaxed. Individuals with hemochromatosis tend to retain excess iron in storage with more than 45% of the iron-binding capacity of their circulating transferrin saturated compared to 25% to 30% in people without the condition. Blood concentration of free iron (not bound to transferrin) is increased above average in people living with hemochromatosis.

TIPS TO TAKE POWER OVER YOUR HEALTH

If you have variations in this panel, you may want to consider the following to improve your health:

» Donating blood several times a year may be helpful, particularly if you have one or more of the iron-retaining HFE alleles.

» Avoid eating or handling raw seafood or shellfish due to increased vulnerability to Vibrio vulnificus or other gram-negative bacteria.

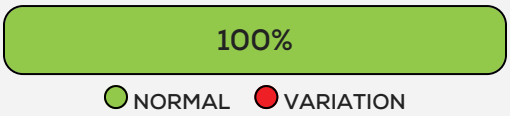
» Consumption of black tea with foods can help limit the absorption of unwanted non-heme iron but not of heme iron (in fish, meats, and poultry).

» Dietary supplements with high doses of vitamin A or C should be avoided. These nutrients should come mainly from vegetables.

» The goal is to maintain adequate but not excessive iron stores.

» If you have a variant in this panel consult with your healthcare professional.

YOUR GENETIC COMPOSITION %



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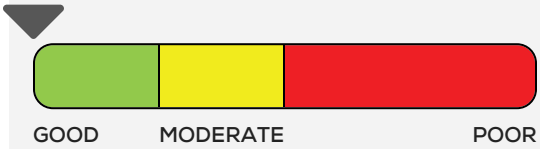


Your genes in this panel are functional. You are not genetically predisposed to iron overload.

Magnesium

HOW MUCH DIETARY MAGNESIUM YOUR BODY REQUIRES FOR HEALTH

Magnesium is required for the proper growth and maintenance of bones and function of muscles. Magnesium is involved in over 600 reactions in the body. It plays a role in energy creation, protein formation, gene maintenance, and nervous system regulation. In the stomach, magnesium helps neutralize stomach acid and moves stools through the intestine.

Studies suggest that about 50% of people get less than the recommended daily amount of magnesium. Low magnesium levels in the body have been linked to health issues including osteoporosis, high blood pressure, clogged arteries, hereditary heart disease, diabetes, and stroke.

If you have variations in this panel you may require more magnesium in your diet. Alcohol use and advanced age increase the risk for magnesium deficiency.

TIPS TO TAKE POWER OVER YOUR HEALTH

If you have a variation in this panel, you may want to consider the following to improve your health:

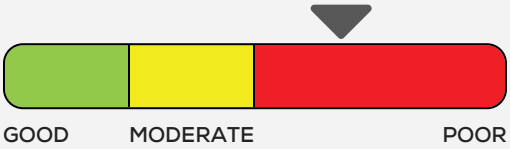
» Include healthy dietary sources of magnesium. Dietary sources of magnesium include legumes (especially soy beans, black beans and peanuts), whole grains, vegetables (especially spinach and chard), seeds and nuts (especially pumpkin seeds and almonds).

» Consider supplementing with bioavailable magnesium.

» Foods that are high in fiber are generally high in magnesium.

YOUR GENETIC COMPOSITION %

YOUR GENE FUNCTION



Your genotype is associated with a decreased magnesium level. Take action to maintain an optimal magnesium level as it is essential for health.

Omega-3 Fatty Acid

YOUR NEED FOR BENEFICIAL OMEGA-3 FATTY ACID FOR METABOLISM, BRAIN HEALTH AND REDUCING DISEASE

Polyunsaturated fatty acids, omega-3 and omega-6 are essential for normal growth and development. They are fats that our bodies need but cannot produce on their own. They participate in the regulation of lipid metabolism, blood pressure, the immune system, inflammatory processes and psychological well-being. They prevent disease and improve sight and brain function. They are critical in the formation of cell membranes, help stimulate skin and hair growth and maintain bone and reproductive system health.

A healthy diet contains a balance of omega-3 and omega-6 fatty acids. Omega-3 can reduce inflammation whereas excess omega-6 can promote inflammation. Despite the importance of consuming both omega-3 and omega-6, too much of either essential fatty acid can impair how the other functions. Most experts agree that the omega 3:6 ratio should range from 1:1 to 1:3. However, the typical American diet contains 15 to 45 times more omega-6 than omega-3. Focus on consuming omega-3 and plant-based forms of omega 6 to restore a healthy, anti-inflammatory fatty acid balance.

TIPS TO TAKE POWER OVER YOUR HEALTH

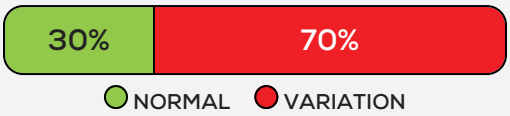
If you have variations in this panel, you may want to consider the following to improve your health:

» Increase your intake of omega-3 rich food including sustainable, wild, salmon, herring, mackerel, sardines, avocado, walnuts, flax, hemp and chia seeds, and high-quality spirulina, free of contaminants.

» Consider taking an omega-3 fish oil or algae supplement, in triglyceride form for superior absorption. The recommended dose for an adult is 2000 mg per day.

» For acute inflammatory conditions, consider taking 2000-5000 mg of omega-3 supplement. Please consult your health care provider as fish oil has a blood thinning effect.

YOUR GENETIC COMPOSITION %



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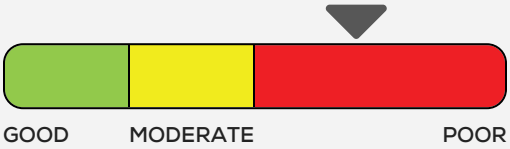


You have variations in these genes. You may benefit from increasing your consumption of beneficial omega-3 fatty acid.

Zinc

HOW WELL YOU PROCESS ZINC FOR ANTIVIRAL AND INFLAMMATORY RESPONSE

Zinc can modulate antiviral and antibacterial immunity and regulate inflammatory response. Zinc acts to preserve natural tissue barriers, attenuate the risk of hyper-inflammation and support anti-oxidative effects.

Zinc status is associated with ageing, immune deficiency, obesity, diabetes, and atherosclerosis. Individuals with environmental risk for zinc deficiency can focus on maintaining adequate zinc intake. Zinc is also important to wound healing, eye health and your sense of taste and smell. Taking zinc may help to decrease the length of the common colds.

Dietary zinc is required as part of your daily intake because the body has no specialized zinc storage system. Food sources of zinc include beans, nuts, cashews, pumpkin seeds, whole grains, oysters, crab, lobster, grass-fed beef and dairy. Phytates which are present in plant sources bind zinc and inhibit its absorption. Thus, the bioavailability of zinc from grains and plant foods is lower than that from animal foods. If you have variation in this panel you may have an increased need for zinc in your diet.

TIPS TO TAKE POWER OVER YOUR HEALTH

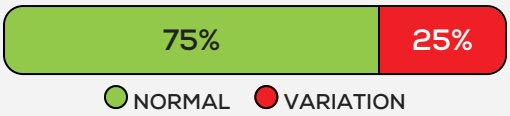
If you have variations in this panel, you may want to consider the following to improve your health:

» Consume beans, nuts, cashews, pumpkin seeds, whole grains and/or dairy.

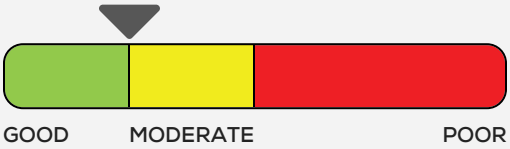
» Include oysters, crab, lobster or grass-fed beef in your diet.

» Consider supplementing with zinc especially if you follow a vegetarian or vegan diet or if you are at risk of zinc deficiency.

YOUR GENETIC COMPOSITION %



YOUR GENE FUNCTION



Your genes in this panel are functional. But depending on your age and health status, you may benefit from additional zinc in your diet.

DIETPOWER KEY GENE INDEX

Diet Management

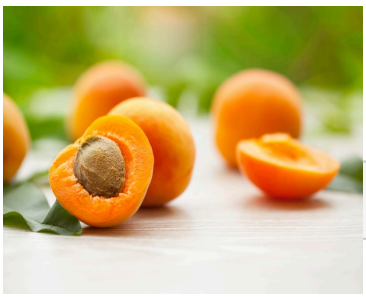
Carbohydrate

ABCC9: Variation in this gene is associated with poor insulin sensitivity and weight gain around your waist.

LRP1: Participates in the movement of glucose transporters to the cell surface where they can internalize glucose. Directly regulates the insulin signaling pathway. It is the link between lipoprotein and glucose metabolism.

MC4R: Linked to dominant obesity, increased BMI, problematic eating behaviour, insulin resistance, and type 2 diabetes.

PLIN1: Encodes a protein that coats fat droplets and prevents their breakdown. Variations in this gene impact glucose tolerance, insulin sensitivity, BMI and the amount of complex carbohydrates tolerated.



PPARG: Influences the regulation of genes involved in carbohydrate and fat metabolism and insulin production—factors that moderate the risk of obesity and type 2 diabetes. Plays a key role in fat cell formation and metabolism.

Starch

AMY1: Encodes salivary amylase, shows copy number variations linked to dietary starch intake, with higher copy numbers correlating to increased amylase production and improved starch digestion.

Insulin

AGER: Interacts with molecules implicated in homeostasis, development, inflammation, and certain diseases, such as diabetes and Alzheimer's disease. Variation is associated with increased risk of insulin resistance.

CEBPA: Modulates the expression of genes involved in cell cycle regulation as well as in body weight. Involved in the creation of fat cells and energy. Caloric restriction reduces CEBPA expression in patients with metabolic syndrome. Variation is associated with increased risk of insulin resistance and lower insulin production.

IGF1: Promotes growth, this variation is associated with decreased IGF1 levels. Low levels of IGF1 are associated with increased insulin resistance, metabolic syndrome, and predict development of glucose intolerance and type 2 diabetes.

LRP1: Encodes a member of the low-density lipoprotein receptor family of proteins. Participates in the movement of glucose transporters to the cell surface where they can internalize glucose. Directly regulates the insulin signaling pathway. It is the link between lipoprotein and glucose metabolism.

PPARG: Influences the regulation of genes involved in carbohydrate metabolism and insulin production—two factors that moderate the risk of obesity and type 2 diabetes. Variations in this gene are associated with insulin resistance. Plays a key role in fat cell formation and metabolism.

SH2B1: Expressed in the hypothalamus, a crucial center for energy balance and regulation of food intake. Variations can disrupt hormonal signaling and are associated with obesity, increased snacking and fat intake, type 2 diabetes, insulin dependence, and BMI.

TCF7L2: Regulates blood glucose through insulin. Variations are related to insulin resistance, risk for type 2 diabetes, and increased fat.

HDL Cholesterol

CEBPA: Modulates the expression of genes involved in cell cycle regulation as well as in body weight. Involved in the creation of fat cells and energy. Caloric restriction reduces CEBPA expression in patients with metabolic syndrome. Variation is associated with increased risk of insulin resistance and lower insulin production.

CETP: A key determinant in lipid metabolism, mainly for high-density lipoprotein but also for triglycerides. Each copy of the protective A allele is associated with a 3.1 mg/dL increase in HDL cholesterol levels and a 24% decreased risk of heart attack.

FADS1: Encodes fatty acid desaturase 1, a key enzyme in the synthesis of long-chain polyunsaturated fatty acids. Associated with HDL cholesterol, triglycerides, and risk of coronary heart disease.

LIPC: Regulates HDL levels and is associated with lowering 'high hepatic lipase' activity, which is linked to abdominal fat accumulation. Also associated with lower risk for coronary artery disease. The protective T/T genotype is associated with an increase of HDL (good) cholesterol levels by 3.5 mg/dL, and a greater increase in HDL cholesterol following vigorous physical activity.

SCARB1: Facilitates the uptake of HDL cholesterol in the liver. This movement of cholesterol is a protective mechanism against the development of atherosclerosis, which is the principal cause of heart disease and stroke.

LDL Cholesterol

APOB: Involved in the metabolism of lipids, it is the main protein constituent of LDL lipoproteins. Associated with insulin resistance, metabolic syndrome and cardiovascular disease.

APOE: Transports lipoproteins, fat-soluble vitamins, and cholesterol into the lymph system and then into the blood. It mediates cholesterol metabolism and is involved in cardiovascular disease.

LPA: Increased LPA in blood is a risk factor for coronary heart disease, cerebrovascular disease, atherosclerosis, thrombosis, and stroke. LPA concentrations may be affected by disease, and are only slightly affected by diet, exercise, and other environmental factors.

Dietary Unsaturated Fat

APOA5: Associated with metabolic syndrome and risk of coronary heart disease due to its role in regulating plasma triglycerides.

FABP2: Involved in absorption and metabolism of dietary fats.

PPARG: Influences the regulation of genes involved in carbohydrate and fat metabolism and insulin production—factors that moderate the risk of obesity and type 2 diabetes. Plays a key role in fat cell formation and metabolism.

TCF7L2: Regulates blood glucose through insulin. Variations are related to insulin resistance, risk for type 2 diabetes, and increased body fat. Suggested that macronutrients may modify these effects.

Dietary Saturated Fat

ACSL1: Plays an important role in triacylglycerol production and breaking down of fatty acid. Variations in this may influence risk of metabolic syndrome via disturbances in fatty acid metabolism.

APOA2: Critical part of the fat-burning process. Variation can lead to craving foods with higher carbohydrates, proteins, and saturated fats. Variation leads to risk of obesity if saturated fat intake is greater than 22 grams per day.

APOB: Involved in the metabolism of lipids, it is the main protein constituent of LDL lipoproteins. Associated with insulin resistance, metabolic syndrome and cardiovascular disease. Variation influences triacylglyceride response to monounsaturated fatty acid rich diet.

APOE: Transports lipoproteins, fat-soluble vitamins, and cholesterol into the lymph system and then into the blood. Mediates cholesterol metabolism and is involved in cardiovascular disease.

FTO: Fat mass and obesity-associated. Affects the hypothalamus region of the brain which regulates appetite, energy intake and satiety.

LPL: Found in the blood vessels of fatty tissue and muscles. It plays a critical role in breaking down triglycerides and the partitioning of fatty acids towards storage or oxidation, involved in obesity.

Stored Body Fat

ADRB1: Increases cardiac output by increasing heart rate. Plays a vital role in lipolysis, the breakdown of fats and other lipids, which provides the body with energy and affects body mass. Individuals with variation at this marker may have trouble breaking down stored fat.

ADRB2: Binds epinephrine and is involved in the fight or flight response. Plays a key role in weight balance as determined by gaining and burning stored fat. This variant is associated with difficulty burning stored fat once it has been gained.

ADRB3: Breaks down stored fats for energy consumption. Dissipates excess energy through heat production in adipose tissue, where the majority of body fat is stored. Variation is associated with onset of type 2 diabetes, visceral fat accumulation, and insulin resistance.

TNFA: Involved in the inflammatory state of the body, having pro- and anti-inflammatory components. Variations in this gene are associated with efficient fat storage.

Protein Need

IGF1: Has growth-promoting effects on almost every cell in the body. The IGF1 variant tested in this panel is associated with decreased IGF1 levels. Low levels of IGF1 are associated with increased insulin resistance, metabolic syndrome, and predict development of glucose intolerance and type 2 diabetes. Dietary protein intake can increase IGF1 levels.

NADSYN1: Variation is associated with greater positive changes in insulin regulation (fasting insulin and insulin resistance) in response to a high protein diet.

PPARGC1A: Regulates mitochondrial biogenesis, fatty acid oxidation, glucose utilization and thermogenesis. The variant tested here has been associated with greater reduction of cholesterol on a high-protein diet than on a low-fat diet.

Protein Weight Response

TFAP2B: Expressed mainly in adipose tissue, encodes for the transcription factor activating enhancer binding protein 2b which has been associated with obesity and insulin resistance. Individuals with variation in this gene may gain weight on a high-protein diet.

Weight Response

Body Mass Index

FAIM2: Produces a protein which protects cells from apoptosis (death of cell). Variation in this gene is associated with an increase of 0.82 kg/m2 in BMI, 2.12 cm in waist circumference, and 2.82 kg weight.

FTO: Encodes the fat mass and obesity-associated protein. Affects the hypothalamus region of the brain which regulates appetite, energy intake, and satiety. Associated with difficulty feeling full, and risk of obesity. Each variant is associated with an increase of 0.33-1.12 kg/m2 BMI.

MC4R: Plays an important role in eating behaviour and obesity. Variations in this gene are linked to dominant obesity, increased BMI, problematic eating behaviour, insulin resistance, and type 2 diabetes. Each variant allele is associated with a 0.20-1.00 kg/m2 increase in BMI.

MTCH2: Associated with increased BMI and obesity. Individuals with variation in this gene have an increased risk of gaining fat tissue following short-term dieting, including yo-yo/starvation dieting.

SH2B1: Expressed in the hypothalamus, a crucial center for energy balance and regulation of food intake. Variations can disrupt hormonal signaling and are associated with obesity, increased snacking, increased fat intake, and type 2 diabetes independently of BMI.

TMEM18: Associated with insulin and blood sugar levels. This gene affects energy levels through insulin and glycogen signaling. Carriers of the variant are expected to have 0.26 kg/m2 lower BMI per T allele.

Food Tolerances

Alcohol

ALDH2: The aldehyde dehydrogenase (ALDH) gene family, mediates acetaldehyde clearance, a step in alcohol metabolism. Variations in this gene lead to high alcohol sensitivity, facial flushing and severe hangovers.

Caffeine

CYP1A2: Involved in the metabolism and clearance of caffeine. Impacts the rate of caffeine metabolism.

Gluten

HLA: Most relevant genetic factor for non-celiac gluten sensitivity and celiac disease, accounting for 40 to 50% of the genetic variance occurring in people with the disease. Variations in this gene are associated with an increased risk for autoimmune destruction of the small intestine resulting in gluten sensitivity.

Lactose

MCM6: Helps control the activity of a nearby lactase gene. It determines whether the lactase gene is turned on or off. This gene provides instructions for making the enzyme lactase, which is responsible for breaking down lactose.

Peanut Allergy

HLA: plays a critical role in immune system regulation, have been associated with an increased risk of peanut allergy due to their influence on antigen presentation and immune response.

Salt

ACE: Produces the angiotensin I converting enzyme that balances electrolytes and regulates blood pressure. Variations in this gene are associated with hypertension, salt sensitivity, and cardiovascular risk due to a decrease in excretion of lithium, sodium, and uric acid and an enhanced rate of sodium reabsorption.

AGT: Involved in constriction of blood vessels and increased blood pressure in response to exercise. Variations in this gene are associated with susceptibility to hypertension.

Sugar Craving

ADRA2A: Plays a critical role in regulating neurotransmitter release in the central and sympathetic nervous systems. Variations in this gene are related to an increase in cortisol, a stress hormone that stimulates individuals to eat foods high in sugar.

SLC2A2: Encodes GLUT2, a high capacity glucose transporter. Variation is associated with the tendency to increase consumption of sugars and food intake regulation.

Food Taste and Preference

Caffeine Preference

AHR: Is involved in the detection of xenobiotics found in roasted coffee and the regulation of caffeine metabolism. Variation has been associated with habitual caffeine consumption.

CYP1A1: Involved in the metabolic activation of aromatic hydrocarbons.

Carbohydrate Preference

TUB: Encodes a protein highly expressed in the hypothalamus. Linked to increased BMI, obesity, insulin-resistance and neurosensory deficits. Also associated with glycemic load, total macronutrient and carbohydrate intake.

Fat Preference

ADRB3: Breaks down stored fats for energy consumption. Dissipates excess energy through heat production in adipose tissue, where the majority of body fat is stored. Variation is associated with onset of type 2 diabetes, visceral fat accumulation, insulin resistance, increased energy intake and preference for protein and fat.

SH2B1: Expressed particularly in the hypothalamus, a crucial center for energy balance and regulation of food intake. Variations can disrupt hormonal signaling and are associated with obesity, increased snacking and fat intake. This variation is also associated with type 2 diabetes independently of BMI.

Protein Preference

ADRB3: Breaks down stored fats for energy consumption. Dissipates excess energy through heat production in adipose tissue, where the majority of body fat is stored. Variation is associated with onset of type 2 diabetes, visceral fat accumulation, insulin resistance, increased energy intake and preference for protein and fat.

Bitter Taste

TAS2R38: Facilitates sensitivity to bitter taste through 6-n-propylthiouracil (PROP) and phenylthiocarbamide (PTC).

Salt Taste

SCNN1B: Plays an essential role in electrolyte and blood pressure homeostasis, but also in airway surface liquid homeostasis, which is important for proper clearance of mucus. It controls the reabsorption of sodium in kidney, colon, lung and sweat glands. Also plays a role in taste perception.

TRPV1: Activated by a wide variety of physical and chemical stimuli. Best known for providing detection and regulation of body temperature, as well as a sensation of scalding heat and pain. Variations play a role in a person's ability to taste salt.

Sweet Taste

TAS1R2: Facilitates the ability to taste sugars.

Vitamins and Minerals

Vitamin A

BCMO1: Involved in the conversion of beta-carotene, an organic compound found in plants and fruits, to a form of vitamin A that can be used in the body.

Vitamin B6

ALPL: Regulates the clearance of vitamin B6 which effects the concentration of vitamin B6 in your body.

Vitamin B9 (Folate)

MTHFD1: Encodes a protein that possesses three distinct enzymatic activities. Plays a key role in folate metabolism.

MTHFR: Produces an enzyme that adds a methyl group to folate to make it usable by the body. A key player in folate metabolism. Methyl donors are vital for detoxification, DNA repair and synthesis, neurotransmitter and hormone metabolism.

Vitamin B12

FUT2: Produces an enzyme found in epithelial tissues, gastrointestinal mucosa and salivary glands. Strongly influences the concentration of circulating vitamin B12.

TCN1: Encodes the binding protein, transcobalamin 1, that has a critical role in vitamin B12 transportation and cellular uptake. This variant reduces transport of cobalamin, resulting in lower plasma vitamin B12 levels.

TCN2: Facilitates the absorption of cobalamin into circulation and thereafter, supports proper cell delivery. Variation is associated with less efficient plasma to cell transport of vitamin B12, and an age-related increase in homocysteine.

Vitamin C

HP: Binds to free hemoglobin molecules formed after hemolysis, to prevent iron-mediated generation of free radicals. Risk variants are linked to vitamin C deficiency. Whereas the rare "G" allele is associated with increased serum vitamin C concentrations.

MTHFR: Produces an enzyme that adds a methyl group to folate to make it usable by the body. A key player in folate metabolism. Methyl donors are vital for detoxification, DNA repair and synthesis, neurotransmitter and hormone metabolism.

SLC23A1 and **SLC23A2**: Responsible for tissue-specific absorption of vitamin C.

Vitamin D

CYP2R1 and CYP27B1: To become active, vitamins D2 and D3 need to be sequentially hydroxylated by two mitochondrial enzymes. The first enzyme, CYP2R1, acts in the liver and the second, CYP27B1, in the kidneys, forming the active version of vitamin D (1a,25(OH)2D). Variations can result in lower vitamin D levels and increased risk for vitamin D insufficiency.

DHCR7: Governs availability of 7-dehydrocholesterol for conversion to vitamin D3 by the action of sunlight on the skin. It has been suggested that genetic variations in DHCR7 affected vitamin D metabolism in evolutionary history which helped early humans to avoid severe vitamin D deficiency and enabled them to inhabit areas further from the equator.

GC: Active vitamin D (25-OHD) is bound and transported in the blood by globulin protein (GC) a vitamin D binding protein. GC is established as a strong determinant of 25-OHD levels. 25-OHD is a prehormone that is produced in the liver by the hydroxylation of vitamin D3.

NADSYN1: Encodes nicotinamide adenine dinucleotide synthetase 1 (NADSYN1), has a role in regulation of vitamin D. Variation is associated with an increased risk of vitamin D insufficiency and an abnormal amount of lipids in the blood.

Vitamin E

F5: Coagulation factor 5 plays an important role in blood clotting. Vitamin E can help to reduce the effect of factor 5 variation.

Vitamin K

VKORC1: Encodes an enzyme essential for the recycling of vitamin K, which is crucial for blood clotting, and genetic variations in VKORC1 can affect vitamin K metabolism and warfarin sensitivity.

Calcium

CASR: Regulates the amount of calcium in the blood. The "T" is rare and it is associated with a slight increase in calcium.

MCM6: Helps control the LCT gene which is responsible for breaking down lactose. Individuals with this variation tend to eat less dairy products, limiting a major source of dietary calcium and increasing their risk of calcium deficiency.

VDR: Variation in the vitamin D receptor is linked to an increased risk of low bone mineral density, osteoporosis, and shorter stature.

Choline

MTHFD1: Encodes a protein that possesses three distinct enzymatic activities. Plays a key role in choline production.

Iodine

SLC5A: The sodium iodide transporter family mediates the active transport of iodine into thyroid follicular cells.

Iron Deficiency

G6PD: Increases the vulnerability of red blood cells to oxidative stress when there are variations. Issues include anemia.

TMPRSS6: Encodes the serine protease matriptase-2, required to sense iron deficiency. Associated with iron and hemoglobin levels.

Iron Overload

HFE: Regulates the production of hepcidin, the "master" iron regulator, determines how much iron is absorbed from the diet and released from storage sites in the body.

SLC17A1: A gene involved in sodium-phosphate co-transport system in the kidney. Associated with the HFE gene.

TF: An iron-binding plasma protein that delivers iron to cells via the transferrin receptor pathway.

Magnesium

ATP2B1: Involved in cellular energy creation and transport of calcium. Plays a role in blood pressure regulation, bone mineralization and insulin sensitivity.

DCDC5: Variants in this gene are association with magnesium levels and bone mineral density.

MUC1: Binds pathogens and functions in cell signaling. Variation is associated with lower magnesium levels and bone mineral density.

Omega 3 Fatty Acid

ACSL1: Plays an important role in triacylglycerol production and breaking down of fatty acid. Variations in this may influence risk of metabolic syndrome via disturbances in fatty acid metabolism.

COX2: Important in multiple functions including fatty acid degradation, inflammation, pain and temperature regulation. Some over the counter pain killers block the COX2 pathway. Variations in this may lead to accumulation of fat and clotting in the blood vessels.

FADS1: Involved in the absorption of omega 3 and omega 6 fatty acids. Variation is associated with altered cholesterol and triglycerides, leading to risk of coronary heart disease.

LPL: Found in the blood vessels of fatty tissue and muscles. It plays a critical role in breaking down triglycerides and the partitioning of fatty acids towards storage or oxidation, involved in obesity.

NOS3: An inflammatory agent and oxidant in free radical-mediated lipid breakdown. It is associated with responsiveness to fatty acids, and beneficial effect of omega 3 supplementation. Variations results in decreased protection following damage causing injury to cells.

Zinc

ARMS2: Strongly associated to macular degeneration.

PPCDC: Involved in the last step of conversion of coenzyme A from vitamin B5. Associated with zinc deficiency.

SLC30A8: Encodes a zinc transporter involved in the accumulation of zinc. Variants confer susceptibility to diabetes.

YOUR GENETIC PROFILE

Your genetic profile provides you with your individual gene and SNP details. It provides further insight into your overall results. *Good* is a functional gene with two normal copies, *Moderate* is one normal copy and one variant copy, *Poor* is two variant copies.

DIET MANAGEMENT

TEST	GENE	DESCRIPTION	GENOTYPE	RESULT
Carbohydrate	ABCC9	Carbohydrate Metabolizer	TT	Poor
	LRP1	Impaired Glucose Metabolism 1	CA	Moderate
	MC4R	Obesity and Insulin Resistance 2	TT	Good
	PLIN1	Glucose Intolerance 1	TA	Moderate
	PPARG	Carbohydrate/Insulin Resistance 2	CG	Moderate
Starch	AMY1	Decreased Starch Digestion 1	GG	Good
	AMY1	Decreased Starch Digestion 3	CC	Good
	AMY1	Decreased Starch Digestion 4	AA	Good
Insulin	CDKAL1	Decreased Insulin Response	GA	Moderate
	CEBPA	Insulin Resistance and Production 1	GG	Good
	FTO	Obesity and Diabetes 2	AT	Moderate
	IGF1	Insulin Like Growth Factor 1	GG	Poor
	MTNR1B	Insulin Resistance	GC	Moderate
	PPARG	Diabetes Risk Reduced w Exercise 2	CG	Moderate
	SH2B1	Insulin Resistance and Type 2 Diabetes Risk 1	AA	Good
	TCF7L2	Type 2 Diabetes Risk 1	GG	Good
	TCF7L2	Poor Insulin Production Risk 2	CC	Good
	TCF7L2	Type 2 Diabetes	TT	Poor
HDL Cholesterol	CEBPA	HDL Cholesterol Regulation 1	GG	Good
	CETP	Protective Increased Good Cholesterol 1	GG	Good
	FADS1	Heart Disease Risk 1	CC	Poor
	LIPC	Protective Good Cholesterol and Exercise 1	CC	Good
	SCARB1	Coronary Artery Disease Risk	AA	Poor
LDL Cholesterol	APOB	Elevated Bad Cholesterol 1	GG	Good
	APOE	Bad Cholesterol Risk 1	TT	Good
	APOE	Bad Cholesterol Risk 2	CC	Moderate
	LPA	Heart Disease Risk 1	AA	Good

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Dietary Unsaturated Fat	APOA5	Metabolic Syndrome Risk 1	AA	Good
	FABP2	Dietary Fat Obesity Risk 1	TC	Moderate
	PPARG	Fat Obesity Risk 1	CC	Good
	PPM1K	Low Fat Weight Loss	TC	Good
	TCF7L2	Fat Intake/Glycemic Control 1	GG	Good
	TCF7L2	Low Fat Weight Loss 5	TT	Poor
Dietary Saturated Fat	ACSL1	Dietary Saturated Fat Consumption	GG	Poor
	APOA2	Saturated Fat Obesity Risk 1	AG	Moderate
	APOB	Fat Metabolism 2	CT	Good
	APOE	Saturated Fat Intake and Cholesterol Risk 1	TT	Good
	FTO	Satiety and Food Choice 2	AT	Moderate
	LPL	Fat partitioning	TT	Good
Stored Body Fat	ADRB1	Body Fat Break Down	AG	Moderate
	ADRB2	Burning Stored Body Fat 2	GC	Moderate
	ADRB3	Impaired Fat Burning Ability 1	AA	Good
	TNFA	Increased Obesity Risk 1	GG	Good
Protein Need	IGF1	Low IGF1 Risk 1	GG	Poor
	NADSYN1	Dietary Protein and Insulin Levels 1	TT	Poor
	PPARGC1A	Dietary Protein and Cholesterol 1	TT	Poor
Protein Weight Response	TFAP2B	High Protein Diet Weight Gain Risk	AA	Good

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WEIGHT RESPONSE

TEST	GENE	DESCRIPTION	GENOTYPE	RESULT
Body Mass Index	FAIM2	Obesity Risk	AG	Moderate
	FTO	Exercise to Mediate Obesity Risk 1	AG	Moderate
	FTO	Obesity Associated 5	GT	Moderate
	FTO	Risk of Overeating 2	AT	Moderate
	MC4R	Obesity Risk 3	AA	Good
	MC4R	Obesity and Body Fat Increase Risk 1	GG	Good
	MC4R	Obesity/Insulin Resistance Risk 2	TT	Good
	MTCH2	Regain Following Short-term Diet 1	GA	Moderate
	SH2B1	Early Obesity and Insulin Resistance 1	AA	Good
	TMEM18	Protective Lower BMI Potential	CC	Good

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FOOD TOLERANCES

TEST	GENE	DESCRIPTION	GENOTYPE	RESULT
Alcohol	ALDH2	Alcohol Metabolism	GG	Good
Caffeine	CYP1A2	Stimulating Effect of Caffeine 1	CC	Poor
Gluten	HLA	Greatest Gluten Sensitivity Risk HLA-DQ 2.5	CC	Good
	HLA	Gluten Sensitivity Risk HLA-DQ 8	TT	Good
	HLA-DQ	Gluten Sensitivity Risk HLA-DQ 2.2 part 1	TT	Poor
	HLA-DQ	Gluten Sensitivity Risk HLA-DQ 2.2 part 2	CT	Moderate
Lactose	MCM6	Lactose Tolerance 1	CT	Moderate
	MCM6	Lactose Tolerance 2	GA	Moderate
Peanut Sensitivity	HLA-DQB1	Peanut Allergy	CC	Poor
	HLADRA	Peanut Allergy	GG	Good
Salt	ACE	Salt Sensitive High Blood Pressure Risk 1	GA	Moderate
	AGT	High Blood Pressure Risk 1	AA	Good
	SLC4A5	Salt Sensitive Blood Pressure 1	CA	Moderate
	SLC4A5	Salt Sensitive Blood Pressure 2	AG	Moderate
Sugar Craving	ADRA2A	Consumption of Sweets	CG	Moderate
	SLC2A2	Sugar Sensor	GG	Good

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FOOD TASTE AND PREFERENCE

TEST	GENE	DESCRIPTION	GENOTYPE	RESULT
Caffeine Preference	AHR	Caffeine Detector	CT	Moderate
	CYP1A1	Metabolic Activator 1	CC	Good
Carbohydrate Preference	TUB	Risk for Increased Carbohydrate Consumption	TT	Good
Fat Preference	ADRB3	High Fat Intake Risk 1	AA	Good
	SH2B1	Increased Fat Consumption Risk 1	AA	Good
Protein Preference	ADRB3	High Protein Consumption Risk 1	AA	Good
Bitter Taste	TAS2R38	Bitter Taste Ability 1	TT	Poor
	TAS2R38	Bitter Taste Ability 2	AA	Poor
Salt Taste	SCNN1B	Perception of Salt Taste 1	AT	Moderate
	SCNN1B	Perception of Salt Taste 2	AG	Moderate
	TRPV1	Sensitivity to Salt Taste	CT	Moderate
Sweet Taste	TAS1R3	Sweet Taste Ability	CC	Good

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VITAMINS & SUPPLEMENTS

TEST	GENE	DESCRIPTION	GENOTYPE	RESULT
Vitamin A	BCMO1	Beta-Carotene Converter 1	TT	Poor
	BCMO1	Beta-Carotene Converter 3	GG	Good
	BCMO1	Beta-Carotene Converter 2	CC	Good
	FFAR4	Increased Retinol	CT	Moderate
Vitamin B2 (Riboflavin)	MTHFR	Increased Riboflavin Need 2	AG	Moderate
Vitamin B6	ADCYAP1R1	Decreased Vitamin B6	GG	Poor
	ALPL	Vitamin B6 Clearance 2	AA	Good
	ALPL	Vitamin B6 Clearance 1	CC	Poor
Vitamin B9 (Folate)	FOLH1	Increased Folate Requirement	AA	Good
	MTHFD1	Folate Metabolism and Choline	GA	Moderate
	MTHFR	Increased Folate Need 1	TT	Good
	MTHFR	Increased Folate Need 2	AG	Moderate
	MTHFR	Increased Folate Need 3	GG	Good
	SHMT1	Bioavailability of 5-MTHF	GG	Good
	SLC19A1	Folic Acid Transport	CC	Poor
Vitamin B12	FUT2	Vitamin B12 Absorption 1	GA	Moderate
	TCN1	Vitamin B12 Transporter 1	GA	Moderate
	TCN2	Vitamin B12 Transporter 2	GC	Moderate
Vitamin C	HP	Optimal Vitamin C 2	AA	Good
	MTHFR	Vitamin C Need 1	TT	Good
	MTHFR	Vitamin C Need 2	AG	Moderate
	SLC23A1	Circulating Vitamin C	CT	Moderate
	SLC23A2	Optimal Vitamin C	AA	Good
Vitamin D	CYP24A1	Bioavailability of Vitamin D	AA	Poor
	CYP27B1	Vitamin D Activator	TT	Good

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VITAMINS & SUPPLEMENTS (continued)

TEST	GENE	DESCRIPTION	GENOTYPE	RESULT
Vitamin D	CYP2R1	Decreased Vitamin D	AA	Poor
	DHCR7	Vitamin D Regulator 1	GG	Good
	DHCR7	Vitamin D Regulator 2	GG	Good
	GC	Circulating Vitamin D 1	TT	Good
	GC	Circulating Vitamin D 2	GT	Moderate
	GC	Circulating Vitamin D 3	CA	Moderate
	NADSYN1	Vitamin D Insufficiency 1	TT	Good
	VDR	Increased Vitamin D Requirement 2	AA	Good
Vitamin E	APOE	Altered Lipid Metabolism	TT	Good
	CD36	Vitamin E Metabolism	CC	Poor
	F5	Thrombosis and Embolism	CC	Good
Vitamin K	VKORC1	Decreased Vitamin K1	CC	Good
Calcium	CARS	Decreased Serum Calcium	GG	Good
	CASR	Decreased Serum Calcium	AA	Good
	CYP24A1	Calcium Balance Disorder	AA	Poor
	DGKH	Calcium Signalling 2	GG	Good
	MCM6	Dietary Calcium Intake 2	GA	Moderate
	VDR	Bone Mineral Density 1	CC	Good
	VDR	Osteoporosis Risk 2	AA	Good
Choline	MTHFD1	Folate Metabolism and Choline	GA	Good
	MTRR	Increased Choline Requirement	GG	Poor
	PEMT	Increased Dietary Choline Need 1	GG	Good
	PEMT	Increased Dietary Choline Need 2	TC	Moderate
Iodine	SLC5A	Iodine Anion Transport	CT	Moderate
Iron Deficiency	G6PD	Increased Iron Need	GG	Good
	TFR2	Decreased Iron 1	CA	Moderate

YOUR GENETIC PROFILE

Your genetic profile provides you with your individual gene and SNP details. It provides further insight into your overall results. *Good* is a functional gene with two normal copies, *Moderate* is one normal copy and one variant copy, *Poor* is two variant copies.

VITAMINS & SUPPLEMENTS (continued)

TEST	GENE	DESCRIPTION	GENOTYPE	RESULT
Iron Deficiency	TMPRSS6	Increased Iron Need 1	GA	Moderate
	TMPRSS6	Increased Iron Need 2	AG	Moderate
Iron Overload	HFE	Rare Iron Overload 1	CC	Good
	HFE	Rare Mild Iron Overload 2	GG	Good
	SLC17A1	Rare Iron Metabolism Disorder	CC	Good
	TF	Increased Transferrin Concentration	GG	Good
Magnesium	ATP2B1	Decreased Serum Magnesium	GG	Poor
	DCDC5	Decreased Serum Magnesium	CC	Poor
	MUC1	Decreased Serum Magnesium	TT	Good
Omega-3 Fatty Acid	ACSL1	Fatty Acid Metabolism	GG	Poor
	COX2	Rare Fatty Acid Degradation	TT	Good
	FADS1	Increased Omega 3 Requirement 1	CC	Poor
	LPL	PUFA Intake and BMI 1	TT	Poor
	NOS3	Coronary Disease Risk 1	GT	Moderate
Zinc	ARMS2	Zinc Eye Health	GG	Good
	PPCDC	Zinc Deficiency	CT	Moderate

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Important: The information in this report is for informational and research purposes only. Nothing contained in this report is intended to be instruction for medical diagnosis or treatment and should neither be considered complete nor relied on to indicate a certain course of treatment for any individual. Please be aware that you may learn information that you did not anticipate. You should not rely on the information in this report to make personal, medical, legal, technical or financial decisions or use it in place of consultation or advice from a physician or other qualified health care provider. Please promptly consult your physician with all health care related questions.