DNA
Health Plus
(Health, Fitness & Nutrition)

XCODE
LIFE

Genet
precision medicine

INTRODUCTION

Understanding your report

Have you ever wondered why certain diseases run in families? And how some people could break that chain? When you learn about your predispositions, you have an opportunity to take preventive action.

In a study conducted by The New England Journal of Medicine, 50,000 adults who had a high genetic risk for developing heart disease were asked about 4 essential lifestyle factors, whether they a) exercised every week, b) ate a balanced diet, c) were obese and d) whether they smoked. When the participants met at least three of the four lifestyle factors, their lifestyle was considered favourable.

The study showed that people, even with a high genetic risk for heart disease, could lower their risk for heart disease by 45% if they lead a favourable lifestyle. In other words, even if you had 'bad' genes passed on to you, you could beat the odds of having the disease by leading a healthy lifestyle. So finding out about your genetic risk might just be what you need to structure a healthy lifestyle and improve your chances of a disease-free life.

Studies conducted on twins have shown that 50–70% of the body mass index (BMI) variance may be explained by genetics.

Lifestyle intervention reduced risk for type 2 diabetes by 58% in a Finnish population, 67.4% in a Japanese population and 28.5% in Indian population.

People carrying one copy of the FTO allele have a 30% increased risk of being obese compared to a person with no copies.

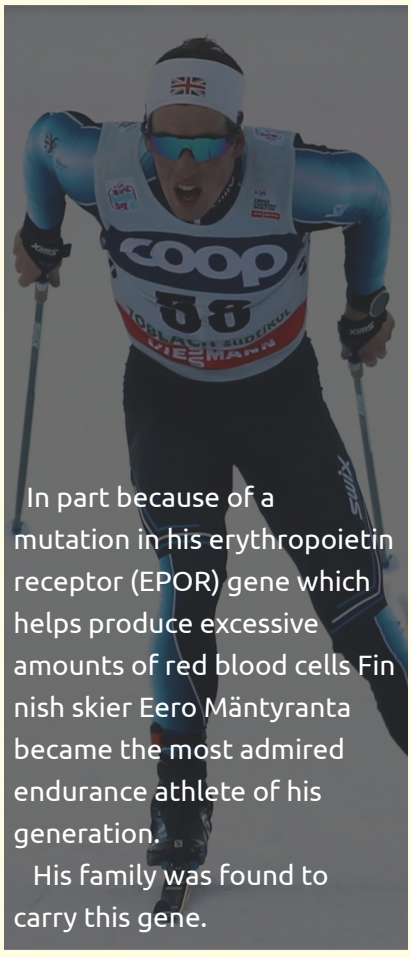
However, a person carrying two copies of the allele has a 70% increased risk of being obese, being on average 3 kg heavier than a similar person with no copies.

- One copy of the FTO allele increases the risk of developing type 2 diabetes by 25%, having two by 50%.
- However, a person carrying two copies of the allele has a 70% increased risk of being obese, being on average 3 kg heavier than a similar person with no copies.
- According to WHO, the global prevalence of diabetes among people over 18 years is 8.5% (422 million adults).
- One-third of people with diabetes do not know that they have diabetes.
- Heritability studies have shown 30-70% risk for type 2 diabetes among families.
- A large Nurses' Health Study concluded that around 30% of the new cases of obesity and 43% of type 2 diabetes could be prevented by the adoption of a relatively active lifestyle.

In this report, we profile genes that have been shown to influence risk of more than 45 health conditions.

We hope that this report will help you understand your body better and to align your lifestyle to your genetics to reduce risk for diseases and live a healthy life.

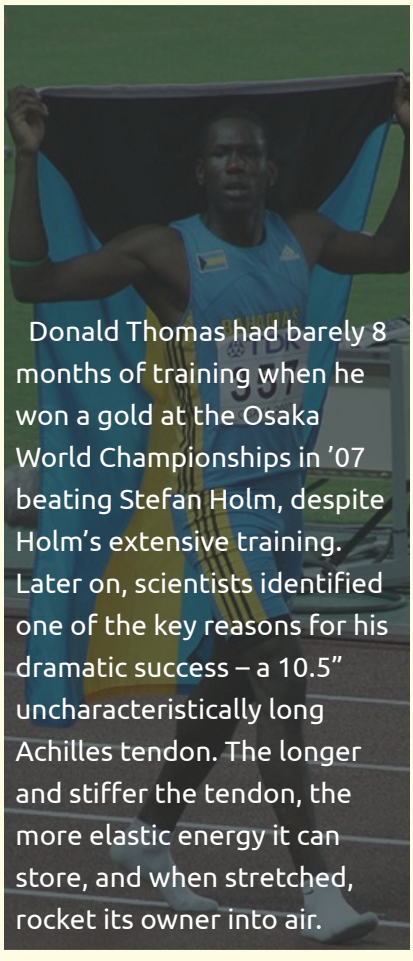
Have you ever wondered why many Olympics sprint winners are Jamaicans? And why the world's best marathon runners are from Kenya?
Do you want to know what sport you are ideally built for? The answer is in your genes.



In part because of a mutation in his erythropoietin receptor (EPOR) gene which helps produce excessive amounts of red blood cells Fin nish skier Eero Mäntyranta became the most admired endurance athlete of his generation.

His family was found to carry this gene.

The Kalenjin tribe of Kenya makes up about 12% of the African population. In 2011, 32 Kalenjin runners finished a marathon faster than 2 hours, 10 minutes, whereas only 17 Americans managed to do so historically.



Donald Thomas had barely 8 months of training when he won a gold at the Osaka World Championships in '07 beating Stefan Holm, despite Holm's extensive training. Later on, scientists identified one of the key reasons for his dramatic success – a 10.5" uncharacteristically long Achilles tendon. The longer and stiffer the tendon, the more elastic energy it can store, and when stretched, rocket its owner into air.

- The National Basketball Association (NBA), the Indian Cricket Team and other professional sports teams around the world are beginning to incorporate genetics as part of their training regimen.
- When the genotype matched with training, a study by Lancashire University showed that the likelihood of significant improvement was 21 times more for power-based activities and 28.5 times more for endurance-based activities when compared with mismatched training.

Recent research has confirmed that our efficiency of performing various physical activities is dependent on a number of genes.

Inheritance of favorable genetic type provides an advantage in athletic and sports performance. Genes play a key role in influencing your athletic ability, sports performance and physical fitness.

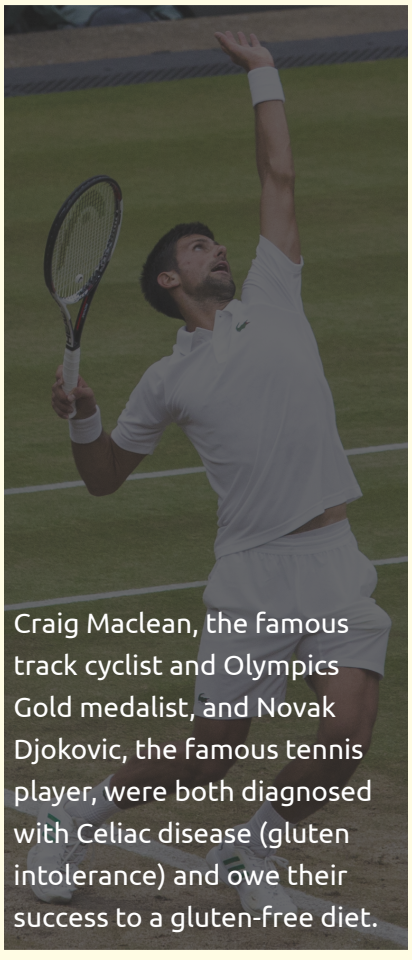
In this report we profile genes that have been shown to influence endurance performance, aerobic capacity, power/strength activity performance and several other attributes relevant to fitness.

We hope that this report will help you understand your body better and align your training with your genetic type to get the best performance enhancement.

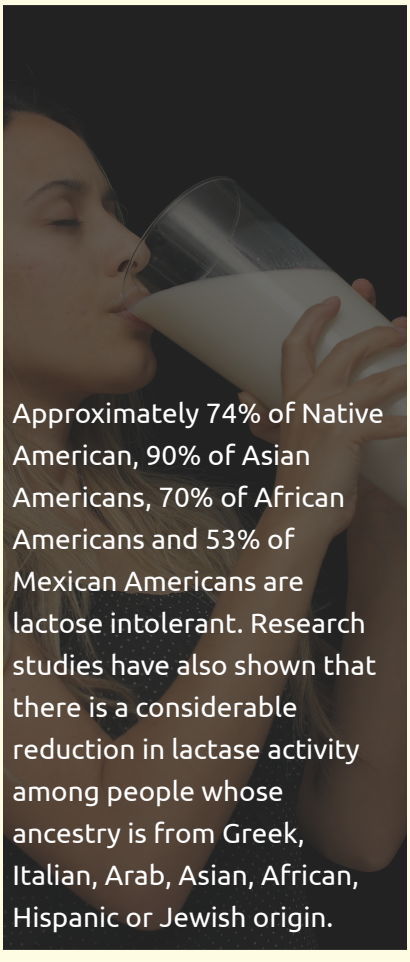
Have you ever wondered why certain people lose or gain more weight compared to others? And why some foods cause uneasiness in some people? Do you want to know which diet suits you best? The answer lies in your genes.

The way we fuel our bodies with the foods we eat is all impacted by our genetic make-up. The old adage “you are what you eat” plays a major role in determining our health and well-being. Food and its nutrients, directly and indirectly, influence our gene expressions.

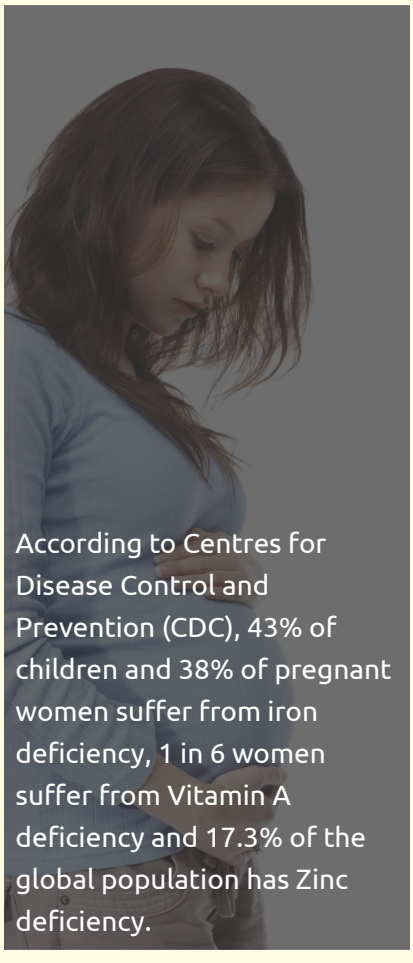
Genetic variations affecting certain metabolic traits in turn dictate dietary means and requirements. For instance, the response to food varies from individual to individual explaining why some people can eat as much as they want and not gain weight. These factors may be attributed to the large role that genes play in influencing eating behaviours and metabolism of different foods.



Craig Maclean, the famous track cyclist and Olympics Gold medalist, and Novak Djokovic, the famous tennis player, were both diagnosed with Celiac disease (gluten intolerance) and owe their success to a gluten-free diet.



Approximately 74% of Native American, 90% of Asian Americans, 70% of African Americans and 53% of Mexican Americans are lactose intolerant. Research studies have also shown that there is a considerable reduction in lactase activity among people whose ancestry is from Greek, Italian, Arab, Asian, African, Hispanic or Jewish origin.



According to Centres for Disease Control and Prevention (CDC), 43% of children and 38% of pregnant women suffer from iron deficiency, 1 in 6 women suffer from Vitamin A deficiency and 17.3% of the global population has Zinc deficiency.

- A study on weight management conducted by Stanford University found that people who eat and exercise according to their genetic predisposition tends to lose two-and-a-half times as much weight as compared to those who do not.
- Fast metabolizers of caffeine, who drank up to 3 cups of coffee per day, have almost 52% lower risk of heart attack as compared to slow metabolizers.

In this report, we profile genes that have been shown to influence nutritional traits like diet and weight management, micronutrient requirements, food intolerance and several other attributes relevant to nutritional well-being.

We hope that this report will help you understand your body better and to align your diet to your genetic type to get the best results.

Human health is a complex interplay between genetics and the environment (lifestyle, diet, activity, stress and other triggers). Your genes and environmental factors play a vital role in your health, fitness and well-being.

This is not a medical diagnostic report
Ancestry tests are not clinically certified and should not be used for medical purposes
The health outcomes presented in this report are determined by the number of markers present in your genome raw data, which differs significantly between companies. Genetic Research is an emerging field and the genetic basis of many health conditions is yet to be fully established.

This report is presented in a user friendly language and format. The following tips will help you get the best information value out of it.

"High genetic tendency"

What does it mean to have a high genetic tendency for a health condition?

It is generally know that high cholesterol can lead to heart conditions. However, there are individuals with high cholesterol who do not develop heart disease. Similarly, genetic factors may increase the risk for a particular condition but the individual may not always develop the condition during his/her lifetime. Though there are over 50 gene risk variations which have identified for heart disease, they only account for 10% of the heritable risk for heart disease. Moreover, genetic factors could increase the risk for certain health conditions but other factors may modify the risk, which is why the outcomes are termed as “likely” and not definitive.

"Gene markers & risk variants"

What does the gene markers and gene risk variants terms mean?

Gene markers analyzed: The number of gene markers that are being considered to evaluate the outcome for a specific condition.
Gene markers present in your genome raw data: This represents the number of gene markers from the gene markers analyzed that are present in your genome raw data.
Gene risk variants detected in your genome data: This represents the number of gene markers with the risk genotype that are present in your genome raw data

"Applicability"

How do I know which result is applicable to me?

Only a few human health conditions are dependent on a single gene marker. The vast majority of human traits are influenced by multiple gene markers. In addition, there is a significant interaction between your genes and your environmental factors such as dietary and lifestyle factors. The best way to consider the information presented in this genetic report or any other non-clinical genetic report is to look for corroborating evidence to the genetic report outcome. If symptoms or family history or blood report data confirm the outcome of the genetic report, then you may consult your physician for further diagnosis of the condition.

"Scientific studies"

Where did the information contained in the report come from?

The genetic markers that are used in this report are based on scientific studies published in international journals. A list of references is available for you to read on our web blog.

"Outcome estimation"

How was my outcome estimated?

Your outcome is a subjective measure and not a clinial measure. It is the percentage of risk markers present in your genome data among
the maximum possible risk markers in your genome data. Please bear in mind that this is a subjective measure and not a clinically
validated measure.

"Genetic Risk Score"

My risk for most health conditions is mild or moderately elevated, how do I interpret this?

We analyze a large number of risk variants and calculate a Genetic Risk Score (GRS). Unless you have several of these high-risk variants
present in your data, you will see mildly or moderately elevated as the outcome.

"Likely"

The word “likely” is used often in the report. What does it mean?

People generally know that high cholesterol can lead to heart conditions. However, there are individuals with high cholesterol who do not develop heart disease. Similarly, smoking can lead to lung disease, but not always. Hence, certain genetic parameters can lead to certain outcomes but other factors may modify the outcome. “Likely” means, it is more likely that one will see the outcome, but other factors may modify it.

"Average"

What does the term “average” mean in the report?

Average implies neither high nor low, rather an intermediate outcome. For example, average likelihood of injury is an intermediate level
between high and low likelihood. Average can also be understood in the context of “Normal” or “Typical” or “Moderate”

How do I know which result is applicable to me?

Only results with a checkmark ✓ are applicable to you, the others are not applicable. All possible outcomes are provided in the table to provide a context to your outcome.

Where did the information contained in the report come from?

The genetic markers that are used in this report are based on scientific studies published in international journals. A list of references is available for you to read on our Xcode web blog.

"Green or red or black"

Some sentences are colored in green and others in red, why?

Attributes that are advantageous in nutritional well-being are indicated in green and those that are not advantageous are in red.
Moderate or Neutral outcomes are indicated in black.

"Normal intake"

In the vitamins and Micro Nutrient section, what does normal intake indicate?

Normal intake refers to the Recommended Dietary Allowance (RDA) of the specific vitamin or mineral.

"Beneficial & Non - beneficial"

Some genes indicate beneficial and some non-beneficial for the same outcome, why?

It’s estimated that there are around 25,000 genes in the human body. Most of the functions are regulated by several genes, not one. Humans have a combination of favourable and unfavourable genes for the same trait. “Your Outcome” indicates an overall outcome from all of the genes. Please note that not all genes contribute equally towards the trait, hence, pay attention to individual gene outcomes as well and see which one is closely aligned to your own observations about yourself. Olympics athletes, for example, are likely to carry many more gene variants that are favourable, than unfavourable for their sport.

"Average"

Some sentences are colored in green and others in red, why?

Attributes that are advantageous for sports fitness are indicated in green and those that are not advantageous are in red. Neutral outcomes are indicated in black. But do remember, what is an advantage in one thing could be a disadvantage in another and vice versa.

For example, generally, being flexible is an advantage, but not so for sprint runners, where inflexibility favours superior performance.

Health Results

TRAIT NAME	YOUR RESULTS	POSSIBLE OUTCOMES
Obesity Obesity is a condition in which there is excessive body fat. People of certain genetic types are at a higher risk for obesity	✓	Mild: Likely low genetic risk for obesity
		Moderate: Likely moderate genetic risk for obesity
		High: Likely high genetic risk for obesity
Type 2 Diabetes Diabetes is a chronic condition that affects the way glucose is processed by the body. People of certain genetic types are at a higher risk for diabetes.	✓	Mild: Likely low genetic risk for type 2 diabetes
		Moderate: Likely moderate genetic risk for type 2 diabetes
		High: Likely high genetic risk for type 2 diabetes
Heart Disease Heart disease includes a range of diseases that affect the heart. People of certain genetic types are at a higher risk for heart disease	✓	Mild: Likely low genetic risk for heart disease
		Moderate: Likely moderate genetic risk for heart disease
		High: Likely high genetic risk for heart disease
Hypertension Hypertension is persistently elevated blood pressure in the arteries. People of certain genetic types are at a higher risk for hypertension.	✓	Mild: Likely low genetic risk for hypertension
		Moderate: Likely moderate genetic risk for hypertension
		High: Likely high genetic risk for hypertension
Stroke Stroke is a condition in which blood flow to regions of the brain is cut off resulting in cell death. People of certain genetic types are at a higher risk for stroke.	✓	Mild: Likely low genetic risk for stroke
		Moderate: Likely moderate genetic risk for stroke
		High: Likely high genetic risk for stroke
Thrombosis Thrombosis is the development of blood clots in a blood vessel. People of certain genetic types are at a higher risk for thrombosis.	✓	Mild: Likely low genetic risk for thrombosis
		Moderate: Likely moderate genetic risk for thrombosis
		High: Likely high genetic risk for thrombosis
Atrial Fibrillation Atrial fibrillation is a heart condition in which there is an irregular heartbeat. People of certain genetic types are at a higher risk for atrial fibrillation.	✓	Mild: Likely low genetic risk for atrial fibrillation
		Moderate: Likely moderate genetic risk for atrial fibrillation
		High: Likely high genetic risk for atrial fibrillation
Cardiomyopathy Cardiomyopathy is a disease of the heart muscles. People of certain genetic types are at a higher risk for cardiomyopathy.	✓	Mild: Likely low genetic risk for cardiomyopathy
		Moderate: Likely moderate genetic risk for cardiomyopathy
		High: Likely high genetic risk for cardiomyopathy
Hypertriglyceridemia Hypertriglyceridemia (HTG) is a condition in which there is elevated levels of triglycerides. People of certain genetic types have a higher risk for HTG.	✓	Mild: Likely low genetic risk for hypertriglyceridemia
		Moderate: Likely moderate genetic risk for hypertriglyceridemia
		High: Likely high genetic risk for hypertriglyceridemia

TRAIT NAME	YOUR RESULTS	POSSIBLE OUTCOMES
Familial Hypercholesterolemia Familial hypercholesterolemia (FH) is the body's inability to remove LDL. People of certain genetic types have a higher risk for FH.	✓	Mild: Likely low genetic risk for FH
		Moderate: Likely moderate genetic risk for FH
		High: Likely high genetic risk for FH
Non-Alcoholic Fatty Liver Disease Non-alcoholic fatty liver disease (NAFLD) is a type of fatty liver disease. People of certain genetic types are at a higher risk for NAFLD.	✓	Mild: Likely low genetic risk for NAFLD
		Moderate: Likely moderate genetic risk for NAFLD
		High: Likely high genetic risk for NAFLD
Hypothyroidism Hypothyroidism is an endocrine disorder. People of certain genetic types are at a higher risk for hypothyroidism	✓	Mild: Likely low genetic risk for hypothyroidism
		Moderate: Likely moderate genetic risk for hypothyroidism
		High: Likely high genetic risk for hypothyroidism
Migraine Migraine is recurrent headache that ranges from being mild to severe. People of certain genetic types are at a higher risk for migraine.	✓	Mild: Likely low genetic risk for migraine
		Moderate: Likely moderate genetic risk for migraine
		High: Likely high genetic risk for migraine
Osteoarthritis Osteoarthritis is characterised by breakdown of the joint cartilage and the bone. People of certain genetic types are at a higher risk for osteoarthritis.	✓	Mild: Likely low genetic risk for osteoarthritis
		Moderate: Likely moderate genetic risk for osteoarthritis
		High: Likely high genetic risk for osteoarthritis
Osteoporosis Osteoporosis is a condition in which bones become fragile and prone to fractures. People of certain genetic types are at a higher risk for osteoporosis.	✓	Mild: Likely low genetic risk for osteoporosis
		Moderate: Likely moderate genetic risk for osteoporosis
		High: Likely high genetic risk for osteoporosis
Bone Mineral Density Bone mineral density (BMD) is the amount of bone mineral in bone tissue. People of certain genetic types are at a higher risk for low BMD.	✓	Mild: Likely low genetic risk for low bone mineral density
		Moderate: Likely moderate genetic risk for low bone mineral density
		High: Likely high genetic risk for low bone mineral density
Gallstone Disease Gallstones are hardened deposits formed in the gallbladder. People of certain genetic types are at a higher risk for gallstones.	✓	Mild: Likely low genetic risk for gallstones
		Moderate: Likely moderate genetic risk for gallstones
		High: Likely high genetic risk for gallstones
Chronic Kidney Disease Chronic kidney disease (CKD) is a gradual loss of kidney function. People of certain genetic types have a higher risk for CKD.	✓	Mild: Likely low genetic risk for chronic kidney disease
		Moderate: Likely moderate genetic risk for chronic kidney disease
		High: Likely high genetic risk for chronic kidney disease
Age-Related Macular Degeneration Age related macular degeneration (AMD) causes blurring of sight or loss of central vision. People of certain genetic types are at a higher risk for AMD.	✓	Mild: Likely low genetic risk for AMD
		Moderate: Likely moderate genetic risk for AMD
		High: Likely high genetic risk for AMD

TRAIT NAME	YOUR RESULTS	POSSIBLE OUTCOMES
Glaucoma Glaucoma is a condition in which there is increased fluid pressure in the eye. People of certain genetic types have a higher risk for glaucoma	✓	Mild: Likely low genetic risk for glaucoma
		Moderate: Likely moderate genetic risk for glaucoma
		High: Likely high genetic risk for glaucoma
Cone-Rod Dystrophy Cone rod dystrophy(CRD) is an inherited disorder of the eye. People of certain genetic types are at a higher risk for CRD.	✓	Mild: Likely low genetic risk for cone rod dystrophy
		Moderate: Likely moderate genetic risk for cone rod dystrophy
		High: Likely high genetic risk for cone rod dystrophy
Chronic Obstructive Pulmonary Disease Chronic obstructive pulmonary disease (COPD) is a progressive lung disease. People of certain genetic types have a higher risk for COPD	✓	Mild: Likely low genetic risk for COPD
		Moderate: Likely moderate genetic risk for COPD.
		High: Likely high genetic risk for COPD
Asthma Asthma is a common chronic inflammatory condition of the airways of the lungs. People of certain genetic types are at a higher risk for asthma.	✓	Mild: Likely low genetic risk for asthma
		Moderate: Likely moderate genetic risk for asthma
		High: Likely high genetic risk for asthma
Alzheimer'S Disease Alzheimer's disease is a progressive neurodegenerative disorder. People of certain genetic types have a higher risk for Alzheimer's disease.	✓	Mild: Likely low genetic risk for alzheimer's disease
		Moderate: Likely moderate genetic risk for alzheimer's disease
		High: Likely high genetic risk for alzheimer's disease
Amyloidosis Amyloidosis is a condition in which there is an abnormal buildup of amyloid. People of certain genetic types are at a higher risk for amyloidosis.	✓	Mild: Likely low genetic risk for amyloidosis
		Moderate: Likely moderate genetic risk for amyloidosis
		High: Likely high genetic risk for amyloidosis
Anxiety Anxiety disorders are characterised by feelings of fear and anxiety. People of certain genetic types are at a higher risk of developing anxiety disorders.	✓	Mild: Likely low genetic risk for anxiety
		Moderate: Likely moderate genetic risk for anxiety
		High: Likely high genetic risk for anxiety
Autism Autism includes a range of disorders associated with social skills. People of certain genetic types have a higher risk for autism	✓	Mild: Likely low genetic risk for autism
		Moderate: Likely moderate genetic risk for autism
		High: Likely high genetic risk for autism
Parkinson'S Disease Parkinson's is a neurodegenerative disorder affecting the central nervous system. People of certain genetic types are at a higher risk for Parkinson's	✓	Mild: Likely low genetic risk for Parkinson's disease
		Moderate: Likely moderate genetic risk for Parkinson's disease
		High: Likely high genetic risk for Parkinson's disease
Schizophrenia Schizophrenia is a mental health related disorder. People of certain genetic types are at a higher risk for schizophrenia.	✓	Mild: Likely low genetic risk for schizophrenia
		Moderate: Likely moderate genetic risk for schizophrenia
		High: Likely high genetic risk for schizophrenia

TRAIT NAME	YOUR RESULTS	POSSIBLE OUTCOMES
Bloom Syndrome Bloom's syndrome (BS) is a condition characterised by an increased risk of genomic instability. People of certain genetic types are at a higher risk for BS.	✓	Mild: Likely low genetic risk for bloom's syndrome
		Moderate: Likely moderate genetic risk for bloom's syndrome
		High: Likely high genetic risk for bloom's syndrome
Cystic Fibrosis Cystic fibrosis (CF) is a condition that affects the lungs and the digestive system. People of certain genetic types have a higher risk for CF.	✓	Mild: Likely low genetic risk for cystic fibrosis
		Moderate: Likely moderate genetic risk for cystic fibrosis
		High: Likely high genetic risk for cystic fibrosis
Depression Depression is a serious yet common mood disorder. People of certain genetic types are at a higher risk of developing depression.	✓	Mild: Likely low genetic risk for depression
		Moderate: Likely moderate genetic risk for depression
		High: Likely high genetic risk for depression
Epilepsy Epilepsy constitutes a group of disorders which are characterised by epileptic seizures. People of certain genetic types are at a higher risk for epilepsy	✓	Mild: Likely low genetic risk for epilepsy
		Moderate: Likely moderate genetic risk for epilepsy
		High: Likely high genetic risk for epilepsy
Gout Gout is a severe form of inflammatory arthritis. People of certain genetic types are at a higher risk for gout.	✓	Mild: Likely low genetic risk for gout
		Moderate: Likely moderate genetic risk for gout
		High: Likely high genetic risk for gout
Hemochromatosis Hemochromatosis is the leading cause of iron overload disease. People of certain genetic types have a higher risk for hemochromatosis.	✓	Mild: Likely low genetic risk for hemochromatosis
		Moderate: Likely moderate genetic risk for hemochromatosis
		High: Likely high genetic risk for hemochromatosis
Anemia Anemia is a condition in which there is insufficient healthy red blood cells. People of certain genetic types are at an increased risk for anemia.	✓	Mild: Likely low genetic risk for anemia
		Moderate: Likely moderate genetic risk for anemia
		High: Likely high genetic risk for anemia
Beta Thalassemia Beta thalassemia results in reduced production of hemoglobin. People of certain genetic types are at a higher risk for beta thalassemia.	✓	Mild: Likely low genetic risk for beta thalassemia
		Moderate: Likely moderate genetic risk for beta thalassemia
		High: Likely high genetic risk for beta thalassemia
Hemophilia Hemophilia is a condition in which there is excessive bleeding. People of certain genetic types have a higher risk for hemophilia.	✓	Mild: Likely low genetic risk for hemophilia
		Moderate: Likely moderate genetic risk for hemophilia
		High: Likely high genetic risk for hemophilia
Glycogen Storage Disease Glycogen storage disease (GSD) is a condition characterised by poor glycogen metabolism. People of certain genetic types have a higher risk for GSD.	✓	Mild: Likely low genetic risk for glycogen storage disease
		Moderate: Likely moderate genetic risk for glycogen storage disease
		High: Likely high genetic risk for glycogen storage disease

TRAIT NAME	YOUR RESULTS	POSSIBLE OUTCOMES
Psoriasis Psoriasis is a non-contagious chronic skin condition. People of certain genetic types have a higher risk for psoriasis.	✓	Mild: Likely low genetic risk for psoriasis
		Moderate: Likely moderate genetic risk for psoriasis
		High: Likely high genetic risk for psoriasis
Rheumatoid Arthritis Rheumatoid arthritis is an autoimmune disorder affecting the joints. People of certain genetic types are at a higher risk for rheumatoid arthritis.	✓	Mild: Likely low genetic risk for rheumatoid arthritis
		Moderate: Likely moderate genetic risk for rheumatoid arthritis
		High: Likely high genetic risk for rheumatoid arthritis
Scoliosis Scoliosis is a condition in which the spinal cord is curved sideways. People of certain genetic types are at a higher risk for scoliosis.	✓	Mild: Likely low genetic risk for scoliosis
		Moderate: Likely moderate genetic risk for scoliosis
		High: Likely high genetic risk for scoliosis
Multiple Sclerosis Multiple sclerosis (MS) is an autoinflammatory debilitating disease. People of certain genetic types are at a higher risk for MS	✓	Mild: Likely low genetic risk for multiple sclerosis
		Moderate: Likely moderate genetic risk for multiple sclerosis
		High: Likely high genetic risk for multiple sclerosis
Ulcerative Colitis Ulcerative colitis is an inflammatory bowel disease. People of certain genetic types have a higher risk for ulcerative colitis.	✓	Mild: Likely low genetic risk for ulcerative colitis
		Moderate: Likely moderate genetic risk for ulcerative colitis
		High: Likely high genetic risk for ulcerative colitis
Crohn'S Disease Crohn's disease (CD) is a chronic inflammatory disease of the digestive tract. People of certain genetic types are at a higher risk for CD.	✓	Mild: Likely low genetic risk for crohn's disease
		Moderate: Likely moderate genetic risk for crohn's disease
		High: Likely high genetic risk for crohn's disease
Vitiligo Vitiligo is a skin condition which is characterised by white patches. People of certain genetic types are at a higher risk for vitiligo.	✓	Mild: Likely low genetic risk for vitiligo
		Moderate: Likely moderate genetic risk for vitiligo
		High: Likely high genetic risk for vitiligo
Alopecia Areata Alopecia areata (AA) is an autoimmune condition in which there is loss of hair. People of certain genetic types are at a higher risk for AA	✓	Mild: Likely low genetic risk for alopecia areata
		Moderate: Likely moderate genetic risk for alopecia areata
		High: Likely high genetic risk for alopecia areata
Anorexia Anorexia is a psychological eating disorder. People of certain genetic types are at a higher risk for anorexia	✓	Mild: Likely low genetic risk for anorexia
		Moderate: Likely moderate genetic risk for anorexia
		High: Likely high genetic risk for anorexia
ApoE Status ApoE is an FDA approved marker for Alzheimer's Disease (AD). Note: This outcome may differ from the AD outcome indicated above, which includes several other genes besides ApoE		E2/E2 - Lower than normal risk
	✓	E3/E3 - Normal Risk
		E3/E4 - Higher than normal risk

1. OBESITY

Mild: Likely low genetic risk for obesity

Obesity is a condition in which there is excessive body fat, increasing the risk for various metabolic conditions. Obesity is generally measured using the body mass index (BMI), which is obtained by dividing the weight of a person (in Kg) by the square of the person's height in meters. A person with a BMI over 30 kg/m^2 is considered obese while a BMI between 25–30 kg/m^2 is defined as being overweight. People of certain genetic types are at a higher risk of being obese and should watch out for symptoms like **breathlessness, inability to cope with physical activity, fatigue, joint and back pain and poor self-confidence.**

Gene markers analyzed: 460
Gene markers present in your genome data: 430
Gene risk variants detected in your genome data: 5
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult your physician for advice.
• **Exercise regularly**- 74% of people with a European ancestry have a variation in the FTO gene associated with an increased risk for obesity. Exercise can greatly lower the effect of this gene to about a third.
• **Eat a healthy breakfast**: A U.S Health and Nutrition Survey found that men who ate a good breakfast weighed 2.7 kilograms less than men who skipped their breakfast.
• **Eat high fibre foods**: High fibre foods have fewer calories, are low in fat and have plenty of roughage which can keep you feeling full longer.
• **Eat green leafy vegetables and plant based food**: Studies have shown that people who ate a vegetarian diet weighed 3 to 20% less than meat eaters.
• **Choose your diet wisely**: Studies have shown that people on a high protein diet which is also rich in slow burning carbohydrate food sources like fruits, vegetables, whole pasta and beans, feel more satiated and lose more weight than people on other diets.

Genes analyzed: *FTO, MC4R, UCP3, POMC, SDC3, LOC150935, NOX4, RLN3, TMEM18, SNRPN, ECE1, NIPSNAP3B, ZNF536, RHPN2, DMRT1, DPYSL5, MBOAT1, SORBS1, ANKAR, LOC101927460, DDX60L, KCNB1, MTUS2, ARHGEF10L, CD46, ECT2, FAM19A2, CDHR3, ANKRD16, PLEKHG1, LOC101928387, LOC101927284, UNC5C, NTM, RHOT1, IFNGR2, STON2, SPAG16, CA8, ACMSD, NXPH1, UNC13A, SLC29A3, RASEF, LPP, LINGO2, BICC1, ARMC4, TACC2, RSU1, ACBD7, BICD1, TENM4, METTL15, AUTS2, SMYD3, LOC101929755, LIPC, PBX4, MYO3A, TMOD1, DLC1, FLJ33534, LOC286238, SIPA1L1, CSMD1, ASIC2, TCFL5, TRAPPC9, MACROD2, GSG1L, NMNAT2, WDPCP, CADM1, ZBTB46, TPTE2P1, HDAC9, WDR11-AS1, PTPRD, PDE4D, ADSS, BTBD8, LHPP, GCH1, GMDS, NDUFA8, SLIT1, LINC01500, RBFOX1, CAMK2A, CUL9, COLEC12, DOCK8, RYR2, KCNN3, ALLC, LINC01299, PKNOX2, AATK, GPC5, PVALB, TUBGCP6, RGS7, ARHGAP24, PTPRN2, C8orf34, CTNNA3, FSIP1, MYO15A, JDP2, IFI16, KIF6, SPOCK3, SLC22A23, KLHL31, TM9SF2, EEPD1, CCDC33, LOC284395, TMEM45B, AK8, CDH2, SERPINA12, NPM2, DEFB128, ASTN2, EVA1A, LOC105376468, LINC00704, CYP2E1, RAB17, PPM1H, LOC284930, FAM209B, FAM110A, TRABD2B, FAM129A, PIP4K2A, RBBP6, LOC401164, VSIG10, LGALS17A, FARP1, FLJ45872, PLEKHG6, CELF2, DAPL1, NLRP8, DLG2, LOC101929492, EHF, SAMD13, S100P, ADCYAP1, SYT1, C2CD4C, TMEM229B, MIR99AHG, RASGEF1A, ZPR1, UGT2B7, COL4A1, KIRREL, ARHGAP11A, SOX6, CARTPT, ANO3, ITPR3, CCDC77, TCF4, FARS2, RMST, PRKCH, PACS1, LHFPL3, PCDH9, MDFIC, WWOX, BCDIN3D-AS1, TRIM66, NCAM2, ETV5, GNAT2, BDNF, POC5, NRXN3, LINC01122, RPTOR, HS6ST3, MAP2K5, BDNF-AS, TTC8, ARL14EP*

2. TYPE 2 DIABETES

Mild: Likely low genetic risk for type 2 diabetes

Diabetes is a chronic condition that affects the way glucose is processed by the body. 27 million people suffer from diabetes in the U.S, with more than 86 million in the pre-diabetes stage. The symptoms of this condition are normally very mild, in fact, 8 million people in the U.S are suspected to have diabetes but they don't know about it. People of certain genetic types are at a higher risk of developing diabetes and should watch out for symptoms like: **excessive thirst, blurry vision, fatigue, irritability and poor wound healing.**

Gene markers analyzed: 164
Gene markers present in your genome data: 148
Gene risk variants detected in your genome data: 1
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult your physician for advice.
• **Maintaining a healthy weight is essential**: Losing 5 to 7% of your starting weight will help prevent diabetes. Lose weight, if overweight: Every kilogram of weight loss reduced diabetes risk by 16% for people with pre-diabetes.
• **Get physically active**: Check with your doctor before beginning any physical activity. A study by researchers from The University of Bath showed that 10 minute exercise sessions over 6 weeks improved insulin sensitivity by 28%.
• **Exercise**: Moderate exercises increased insulin sensitivity by 58% while high intensity exercises increased insulin sensitivity by 81%.
• **Do not drink sugar sweetened beverages**: Drink water instead of sugar sweetened beverages- People who drank more than 2 cups of sugar sweetened beverage every day had a 20% increased risk of diabetes.
• **Avoid Diet Sodas** : Replacing diet sodas with water during a weight loss diet decreases insulin resistance and lowers fasting glucose levels.
• **Quit Smoking**: Smoking increases the risk for diabetes by 44% among average smokers and by 61% among heavy smokers. 5 years after quitting, the risk for diabetes is reduced by 13%.
• **Follow a low carb diet** :- In a 12 week study, pre-diabetic people on a low carb diet had 12% reduction in blood sugar and 50% in insulin.
• **Stay motivated about changing your lifestyle** : Lifestyle changes lowered diabetes risk by 46% when compared to people with no lifestyle change.

Genes analyzed: *LIMK2, SASH1, WFS1, CDKAL1, ACP7, TCF7L2, LINC00824, IGF2BP2, DNER, PTPRD, GPR45, PEX5L, MARCH1, RHOU, TGFBR3, SDHAF4, GLIS3, GRK5, FTO, ADCY5, FAM58A, ZMIZ1, VPS33B, SLC30A8, RPSAP52, ARAP1, KCNQ1, ST6GAL1, FAF1, MPHOSPH9, PPARG, VPS26A, SLC16A13, POU5F1, SRR, HNF1B, ZBED3-AS1, ADAMTS9-AS2, HNF4A, KCNJ11, MAEA, ARL15, HMG20A, RASGRP1, LOC646736, THADA, RBMS1, UBE2E2, ACHE, LOC101928423, OASL, LAMA1, JAZF1, ZFAND3, SGCG, MTNR1B, SLC2A2, GCK, GCGR, CAPN10, PAX4*

3. HEART DISEASE

Mild: Likely low genetic risk for heart disease

Heart disease includes coronary heart disease, congestive heart failure, myocardial infarction and heart attack. The different types of heart diseases are identified by a variety of signs and symptoms and only a cardiologist is qualified to diagnose these conditions, definitively. People of certain genetic types are at a higher risk for heart disease and should watch out for signs that include: **shortness of breath, dizziness, fatigue, sweating, palpitations, and an ache in the chest.**

Gene markers analyzed: 80
Gene markers present in your genome data: 68
Gene risk variants detected in your genome data: 1
Potential high risk variants detected in your genome data:
chr8:g.11606312T>C

Recommendation

If you recognise any symptoms of this condition, consult your physician for advice.
According to the American College of Cardiology, women who did not smoke, who had a BMI which was within the normal range, who exercised for 2 and a half hours every week, ate a healthy diet, did not drink alcohol and watched one hour less of TV every day, had a 92% lower risk of coronary heart disease.

- **Watch your Waist**: A waist size of higher than 35 for women and 40 for men increases the risk for coronary heart disease.
- **Include cocoa**: A study in Italy showed that people who ate three portions of chocolate a day cut myocardial disease risk by 77% when compared to people who ate less than one portion a day.
- **Eat healthy meals**: Replace ½ cup of cheese with ½ cup of beans in your wrap to cut down about 100 calories. Trimming your meals and including healthier options is good for your heart and waist.
- **Include Omega 3 fatty acids**: Omega 3 fatty acids are good for heart health. The American Heart Association recommends eating fish at least twice a week. The Mediterranean diet which includes fruits, whole grains, vegetables, fish, legumes and olive oil, is good for heart health.
- **Quit Smoking**: According to the Centre for Disease Control (CDC), smoking causes one of three deaths due to cardiovascular disease. So quit smoking or if you don't smoke, do not start.
- **Learn to Relax**: Working for 55 hours in a week for a period of 10 years increases the risk for heart disease by 16% while working for 60 hours per week can increase risk by 30%.

Genes analyzed: *GATA6, LPL, APOC3, DNAJC5B, CD36, PLPP3, CUX2, MIA3, ASIC2, PHACTR1, FMN2, PECAM1, TFPI, ASZ1, CDH13, CHRDL1, BTD, BCAP29, HECTD4, TTC41P, SMG6, CNNM2, CDKN2B-AS1, LIPA, ANKS1A, HNF1A, MRAS, KIAA1462, HHIPL1, LPA, UBE2Z, ALDH2, ATP2B1, STK32B, GATA4, STX18-AS1, PIGL, NKX2-5, JAG1*

4. HYPERTENSION

Mild: Likely low genetic risk for hypertension

Hypertension is a medical term for a condition that is characterized by a persistently elevated blood pressure in the arteries. 90% of hypertension incidences are due to poor lifestyle choices and genetic factors, while 5 to 10% may be due to an underlying medical condition. The normal blood pressure for adults at rest is between 100–140 millimeters mercury (mmHg) systolic and 60–90 mmHg diastolic. A blood pressure at or over 140/90 mmHg is considered high blood pressure. People of certain genetic types are at a higher risk of having hypertension and should watch out for symptoms like: **dizzy spells or headaches during spikes.**

Gene markers analyzed: 139
Gene markers present in your genome data: 131
Gene risk variants detected in your genome data: 3
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult a qualified physician for diagnosis and treatment of this condition.

- **Lose weight**: Maintaining a healthy weight can help control blood pressure. Losing even 10 pounds can lower blood pressure.
- **Watch how much caffeine your drink**: Some people metabolize caffeine slowly and this can increase their blood pressure. Such people would benefit from drinking caffeine in moderation.
- **Salt sensitivity**: Some people are highly sensitive to salt in their diet and could lower their blood pressure considerably on a low salt diet, such people would benefit from cutting down salt in their diet.
- **Include whole grains**: Include a lot of whole grains in the diet and cut down on processed food.
- **Exercise regularly**: Regular exercise of half an hour a day can reduce blood pressure by 4 to 9 points. Exercise is not restricted to time at the gym but can include physical activities like gardening or walking to work.
- **DASH diet**: The Dietary Approaches to Stop Hypertension (DASH) is one of the best diets to manage high blood pressure and it includes controlling alcohol consumptions, cutting down on caffeine and restricting high fat foods and including plenty of whole grains.
- **Get Sufficient Sleep**: Insomnia or lack of sleep could increase blood pressure. Try to create a bed time routine, switch of all electronic gadgets an hour before bed time, do not drink caffeinated beverages post dinner or wear ear plugs and eye pads to restrict noise and light for a peaceful sleep.

Genes analyzed: *PPARG, OGDH, LINC00670, ITPR1, CFDP1, ITGA11, GUCY1A3, CSK, MTHFR, ATP2B1, PLEKHA7, ARHGAP42, BAG6, PLCE1, CACNA1D, BMPR2, SMAD9, GBA, SARS2, AGTR1, AGT, XRCC4, MSRA, OPRM1, BMPR1B, GPR39, CAPZA1, UMOD, ZFAT, MACROD2, MYO6, SOX6, SLC12A9, ACVRL1, ENG, NGF, HIVEP2, CACNB2, BDNF, C10orf107, MOV10, TAP2, ULK4, DAPK1, MYO16, NT5C2, PLEKHG1, HIST1H1T, NOV, FES, CDH13, MAP4, MECOM, ZNF831, STK39, CASZ1, LOC101927697*

5. STROKE

Mild: Likely low genetic risk for stroke

Stroke is a medical condition in which blood flow to specific regions of the brain is cut off resulting in cell death. Stroke symptoms can be identified only by a qualified cardiologist. People of certain genetic types are at a higher risk for stroke and should watch out for signs that include: **face drooping, weakness in the arm and speech difficulty.**

Gene markers analyzed: 37
Gene markers present in your genome data: 32
Gene risk variants detected in your genome data: 0
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult a qualified physician for diagnosis and treatment of this condition

- **Mediterranean diet**: A mediterranean diet has been shown to lower the risk of stroke even among people with a high genetic risk. In another study conducted on 15,000 people, including healthy foods from a mediterranean diet was found to be more important in lowering risk of stroke than avoiding unhealthy food.
- **Antioxidant rich foods**: In a study conducted on 31,000 women, healthy women with highest antioxidant intake had a 17% reduction in stroke. While among women with a history of cardiovascular disease, there was a 57% reduction in hemorrhagic stroke among those with highest antioxidant intake.
- **Vitamin C intake**: In a study conducted on the benefits of vitamin C intake and stroke, it was found that on an average, people who had a stroke had depleted levels of vitamin C.
- **Chocolate and stroke**: In a study conducted on 37,000 Swedish men, chocolate consumption was found to be associated with reduction in risk of stroke.
- **Modify lifestyle factors**: Modifying lifestyle factors will help in lowering the risk for stroke and these include quitting smoking, heavy consumption of alcohol, high fat and high salt rich diet as well as lack of exercise.

Genes analyzed: *TRIM29, SPSB4, ZFHX3, HDAC9, IMPA2, AIM1, CACNB2, CTD-2151A2.1, NDUFS1, F2, FUT8, PTPRG, NAA25, TWIST1, EDNRA, WDR12, PHACTR1, F5, FBN1*

6. THROMBOSIS

Mild: Likely low genetic risk for thrombosis

Thrombosis is the development of blood clots in a blood vessel, resulting in obstruction in the flow of blood. The prevalence of thrombosis among adults is about 1 in 1000 people. People of certain genetic types are at a higher risk of developing thrombosis and may exhibit symptoms like: **pain, swelling in the affected region, tenderness or immobility.**

Gene markers analyzed: 4
Gene markers present in your genome data: 3
Gene risk variants detected in your genome data: 0
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult your physician for advice.
• **Avoid a sedentary lifestyle**: Don't sit still for too long, this is especially true for people who travel long distances. Exercising the extremities by stretching the feet or standing for a period of time will help. Try to get back on the feet as soon as possible after a surgery. Studies have shown that the risk of thrombosis is 10% to 40% for general surgical patients while it is 40% to 60% for major orthopedic patients.
• **Maintain a healthy weight**: Being overweight has been associated with an increased risk of thrombosis.
• **Menopause and changes in hormone**: Changes in hormone levels, even in the form of consumption of birth control pills or hormone replacement therapy are associated with an increased risk of blood clotting.
• **Quit Smoking**: Smoking is associated with an increased risk of blood clotting. Therefore quit smoking.

Genes analyzed: *F13B, F13A1*

7. ATRIAL FIBRILLATION

Mild: Likely low genetic risk for atrial fibrillation

Atrial fibrillation is a heart condition in which there is an irregular heartbeat with increased heart rate. The prevalence of this condition ranges between 0.2 to 0.4 per 1000 people. People of certain genetic types are at a higher risk of developing this condition and may exhibit symptoms like: **dizziness, increased heart rate, shortness of breath, palpitations and weakness.**

Gene markers analyzed: 59
Gene markers present in your genome data: 50
Gene risk variants detected in your genome data: 4
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult a qualified physician for diagnosis and treatment of this condition.

- **Maintain a healthy weight**: Maintaining a healthy weight is essential to lowering the risk for atrial fibrillation. People who are overweight are at 20 to 30% increased risk of developing the condition while people who are obese are at a 60% increased risk of developing atrial fibrillation.
- **Get sufficient exercise**: Exercise helps the body shed the extra weight and it also helps in lowering the risk for atrial fibrillation. Though exercise is a prerequisite, excessive exercise could increase risk.
- **Avoid binge drinking**: Studies have shown that drinking 5 to 6 cups of alcohol within a span of two hours could increase the risk for atrial fibrillation. Some recent studies have shown however, that drinking even as low as 2 cups per day could increase risk. Overconsuming alcohol is also known to increase risk of weight gain and blood pressure, therefore, moderation will help lower risk.
- **Increase intake of fish**: Some studies indicate that consuming fish twice or thrice a week can considerably lower the risk for atrial fibrillation.

Genes analyzed: *NEBL, KCNN3, PKP2, ZFHX3, LY96, MYBPC3, KCNA5, KCNE2, ABCC9, KCNQ1, SCN5A, KCNH2, KCNJ2, SCN3B, GJA5, ASAH1, WNT8A, CUX2, CAV1, C9orf3, HCN4*

8. CARDIOMYOPATHY

Mild: Likely low genetic risk for cardiomyopathy

Cardiomyopathy is a disease of the heart muscles. The prevalence of this condition is 1 in 500 people. People of certain genetic types are at an increased risk of developing cardiomyopathy and may exhibit symptoms like : **Chest pain, fatigue, dizziness, shortness of breath or weight gain.**

Gene markers analyzed: 1399
Gene markers present in your genome data: 1102
Gene risk variants detected in your genome data: 41
Potential high risk variants detected in your genome data:
chr11:g.47363639T>A, chr2:g.179621477C>T

Recommendation

If you recognise any symptoms of this condition, consult a qualified physician for diagnosis and treatment of this condition.

- **Follow a healthy diet**: Eat a diet that is rich in fruits, vegetables and whole grain. Choose lean meats and fish to improve health. Keep a tab on the amount of sodium that is consumed, as it could increase blood pressure. Stay away from foods that are rich in saturated fat.
- **Remain active**: Exercise is very important for heart health, but the type of exercise and duration should be determined on consultation with a physician. Over a period of time, exercise will help in lowering blood pressure.
- **Keep blood pressure undercheck**: Cardiomyopathy is accelerated due to underlying health conditions like elevated blood pressure and heart disease. Check blood pressure routinely using a sphygmomanometer.
- **Maintain a healthy weight**: Obesity increases the risk for cardiomyopathy. Make suitable changes to diet and exercise to maintain a healthy weight.
- **Get sufficient rest**: Sleep well during the night and avoid overexertion

Genes analyzed: *MYBPC3, TPM1, TNNI3, PRKAG2, MYH7, MYL2, ILK, TNNT2, MYL3, DSP, NEBL, CTNNA3, LMNA, TTN, FHL2, DES, VCL, TXNRD2, RAF1, LDB3, DTNA, PDLIM3, MYOM1, JPH2, NEXN, CALR3, MYOZ2, MYH6, TNNC1, CSRP3, MYLK2, SCN5A, FKTN, DNAAF3, TNNT1, RBM20, BAG3, ACTN2, PSEN2, PSEN1, ANKRD1, TMPO, DMD, TCAP, PRDM16, SGCD, MYPN, LAMA4, CRYAB, DNAJB6, ZBTB17, LAMP2, LOC101929515, TIAM1, AGK, RYR2, DSC2, GATAD1, XPC, TMEM43, JUP, PKP2, ABCC9, EMD, DSG2, ALMS1*

9. HYPERTRIGLYCERIDEMIA

Mild: Likely low genetic risk for hypertriglyceridemia

Hypertriglyceridemia is a medical condition in which there is elevated levels of triglycerides. The prevalence of severe hypertriglyceridemia is about 2 in 10,000 persons. People of certain genetic types are at a higher risk of developing hypertriglyceridemia and may exhibit symptoms like: **xanthomas, pancreatitis, lipemia retinalis.**

Gene markers analyzed: 10
Gene markers present in your genome data: 8
Gene risk variants detected in your genome data: 0
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult a qualified physician for diagnosis and treatment of this condition.

- **Include niacin rich foods**: Niacin has been found to lower triglycerides by 30 to 50 %, LDL by 5 to 25% and increase HDL by 20 to 30%. Niacin supplements may be advised for high risk patients, starting on a low dose with gradual increase.
- **Check for underlying disease conditions**: Fatty liver disease is associated with an increased risk for hypertriglyceridemia, especially among people who are obese and have insulin resistance.
- **Consume a diet low in saturated fats**: Foods that are rich in saturated fats should be restricted. Instead a diet rich in fruits, vegetables and whole grains should be consumed.
- **Exercise Regularly**: Regular exercise helps in lowering triglyceride levels
- **Restrict Alcohol consumption**: Alcohol is known to affect lipolysis and this could lead to increased plasma triglycerides.
- **Pregnancy**: Triglyceride levels are found to increase three-fold during the third trimester of pregnancy. Eat healthy foods and follow diet and exercise regimen as provided by a physician.

Genes analyzed: *APOA5, LIPI, PHYHIP, BAZ1B, TMEM241, APOE*

10. FAMILIAL HYPERCHOLESTEROLEMIA

Mild: Likely low genetic risk for FH

Familial hypercholesterolemia (FH) is characterised by an inability of the body to remove low density lipoprotein. The global prevalence of familial hypercholesterolemia is 10 million. People of certain genetic types have a higher risk of developing this condition and may exhibit symptoms that include: **fatty skin deposits called xanthomas present on hands, elbows, knees and in the cornea of the eye, deposits of cholesterol in the eyelids and signs of coronary artery disease like chest pain.**

Gene markers analyzed: 125
Gene markers present in your genome data: 80
Gene risk variants detected in your genome data: 4
Potential high risk variants detected in your genome data:
chr19:g.11213408T>G, chr19:g.11242044G>A

Recommendation

If you recognise any symptoms of this condition, consult your physician for advice.
People with familial hypercholesterolemia have a 5 times increased risk of heart disease.
• **Low fat diet**: A diet low in saturated fat and cholesterol is the first step to managing familial hypercholesterolemia.
• **Include plant sterols**: Studies indicate that plant sterols and stanols are associated with reducing blood cholesterol. Rice, corn and vegetable oil contain plant sterols and stanols.
• **Medications**: A qualified physician will prescribe medications to lower cholesterol levels in the body.
• **Quit Smoking**: Smoking makes cholesterol 'stick' to arterial walls, which can be avoided by quitting smoking.

Genes analyzed: *APOB, LDLR, LDLRAP1, PCSK9, STAP1, ABCA1*

11. NON-ALCOHOLIC FATTY LIVER DISEASE

Mild: Likely low genetic risk for NAFLD

Non alcoholic fatty liver disease is a type of fatty liver disease which is characterised by deposition of fat in the liver due to causes other than alcohol. The prevalence of non alcoholic fatty liver disease has risen in the United States from 18% in 1991 to 31% in 2012. People of certain genetic types are at a higher risk developing non alcoholic fatty liver and should watch out for symptoms that include: **enlarged blood vessels, abdominal swelling, enlarged liver, pain in the upper right abdomen and unexplained weight loss.**

Gene markers analyzed: 23
Gene markers present in your genome data: 23
Gene risk variants detected in your genome data: 0
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult your physician for advice.
• **Maintain a healthy weight**: The prevalence of non alcoholic fatty liver disease is much higher among obese individuals (80-90%) when compared to the general population. Therefore, maintain a healthy weight. Reduce intake of fructose rich food sources like sodas, fruit juices and soft drinks. Studies have shown that gradual weight reduction along with an increase in physical activity improve liver enzymes, insulin sensitivity and quality of life.
• **Increase intake of antioxidants**: Antioxidant rich foods, including vitamin E and betaine, have been associated with a decrease in risk for non alcoholic fatty liver disease in various pilot studies.
• **Restrict intake of high fatty foods**: The genetic variant associated with an increased risk for non alcoholic fatty liver disease is also associated with poor metabolism of triglycerides. Elevated blood triglyceride levels are associated with insulin resistance and fatty liver.

Genes analyzed: *SLC38A8, LOC643339, SLC9A9, MACROD2, SEL1L3, ST8SIA1, EHBP1L1, COL13A1, FARP1, DCLK1, PNPLA3*

12. HYPOTHYROIDISM

Mild: Likely low genetic risk for hypothyroidism

Hypothyroidism is an endocrine disorder in which the thyroid gland does not produce sufficient amount of thyroid hormone. In the U.S, the prevalence of hypothyroidism is 4.6%, with women being more commonly affected. People of certain genetic types are at a higher risk of developing hypothyroidism and may exhibit symptoms like: **weight gain, puffy face, dry skin, fatigue, lethargy or hair loss.**

Gene markers analyzed: 49
Gene markers present in your genome data: 43
Gene risk variants detected in your genome data: 2
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult a qualified physician for diagnosis and treatment of this condition.

- **Increase Iodine intake**: Low iodine intake is associated with increased risk of hypothyroidism, though this is not one of the common reasons in developed nations.
- **Lower risk of infection**: Studies have shown that microbial antigens could mimic thyroid autoantibody and lead to increased risk of hypothyroidism.
- **Quit Smoking**: Smoking is an important risk factor in the development of hypothyroidism. Quitting will help in lowering risk for the condition.
- **Learn to manage stress levels**: Stress can lead to inflammation and trigger autoimmune conditions like hypothyroidism. Learn to cope with stress by better time management and stay away from triggers.
- **Increase screening**: People who are at high risk of getting hypothyroidism should get tested to identify the condition at an early stage. Many people have subclinical condition, in which the symptoms do not show up. According to the American Thyroid Association, everyone over the age of 60 years should get tested for the condition.
- **Lower Homocysteine Levels**: People with hypothyroidism are associated with increased homocysteine levels. Sufficient intake of folate will help in lowering homocysteine levels and help lower the risk of hypothyroidism.

Genes analyzed: *TSHB, LINC00327, ZNF804B, MTF1, ZBTB10, VAV3, TSHR, RET, DUOX2, TPO, IYD, NKX2-5*

13. MIGRAINE

Mild: Likely low genetic risk for migraine

Migraine is recurrent headaches that range from being mild to severe. The global prevalence of migraine is 14.7%, which is 1 in 7 people. People of certain genetic types are at a higher risk of developing migraine and may exhibit symptoms including: **'drilling' headache, nausea, sensitivity to sound and light.**

Gene markers analyzed: 40
Gene markers present in your genome data: 37
Gene risk variants detected in your genome data: 0
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult your physician for advice.
- **Follow a sleep routine**: Sleep at the same time and wake up at the same time everyday, irrespective of whether it is at weekends or during weekdays. Too much sleep or insufficient sleep could trigger a migraine.
- **Exercise at moderate intensity**: Exercising at moderate intensity has been found to lower the intensity of migraine, however, high intensity exercise could trigger migraines.
- **Learn to relax:** Stress is one of the biggest triggers of migraine, so go for a walk, meditate, listen to music or do yoga to relax.
- **Eat at regular intervals**: Drop in blood sugar levels are known to trigger migraine, so eat at regular intervals.
- **Medications**: Your doctor may prescribe analgesics or specific drugs with vasoconstrictor properties.

Genes analyzed: *FHL5, HCG20, TRPM8, BPIFC, LIMCH1, NBEA, PTPRD, MEF2D, SUGCT, IGLL1, MMP17, ZDHHC6, TGFB1, MRVI1, HPSE2, NRP1, HJURP, MARCH4, LRP1, LOC101927066, PRDM16, ASTN2, ATP1A2*

14. OSTEOARTHRITIS

Mild: Likely low genetic risk for osteoarthritis

Osteoarthritis is a disorder which is characterised by breakdown of the joint cartilage and the underlying bone. According to the Global Burden of Disease 2010, the prevalence of hip osteoarthritis was 0.85% while that of knee osteoarthritis was 3.8%. People of certain genetic types are at a higher risk of developing osteoarthritis and may exhibit symptoms like: **joint stiffness, swelling, crackling, bony outgrowth or bump on the finger.**

Gene markers analyzed: 14
Gene markers present in your genome data: 14
Gene risk variants detected in your genome data: 2
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult your physician for advice.
• **Maintain a healthy weight**: Studies have shown that weight loss among overweight women could lower the risk for osteoarthritis. In the Framingham study, loss of 2 units or more of BMI was associated with 50% reduction in risk of osteoarthritis.
• **Hydrate well**: Joints need lubrication to move smoothly, therefore drinking at least 9 to 12 glasses of water everyday will help lower osteoarthritis pain.
• **Control blood sugar**: Diabetes is known to lead to generalised inflammation which could lead to the loss of cartilage. Studies show that nearly half of Americans who have been diagnosed with diabetes also have osteoarthritis.
• **Stretch**: Improve joint flexibility by carrying out stretching exercises every day, especially before exercise. This might not lower the risk for osteoarthritis but will help lower muscular spasms due to the condition.
• **Choose a flat, soft surface to exercise**: Exercising on a hard floor could be jarring for the joints. Therefore, choosing a grass surface to exercise is preferable.
• **Run moderately**: Running does not cause osteoarthritis, however, among people who are predisposed to it, running could contribute to the condition.

Genes analyzed: *FRZB, CRTC1, CSMD1, CAMK2B, ALDH1A2, FTO, MCF2L, GDF5*

15. OSTEOPOROSIS

Mild: Likely low genetic risk for osteoporosis

Osteoporosis is a condition in which bones become fragile and prone to fractures. Currently over 200 million people across the world suffer from osteoporosis, with over 30% of postmenopausal women in the United States and Europe with osteoporosis. People of certain genetic types are at a higher risk of developing osteoporosis with symptoms that include: **back pain, stooped posture or loss of height over time.**

Gene markers analyzed: 16
Gene markers present in your genome data: 13
Gene risk variants detected in your genome data: 0
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult your physician for advice.
• **Include calcium in combination with Vitamin D supplementation:** A minimum dose of 800 I.U of vitamin D and 1200 mg of Calcium are recommended as a preventive treatment for osteoporosis for people over 50 years of age.
• **Check homocysteine levels**: High homocysteine levels are associated with an increased risk for osteoporosis.
• **Cut down on alcohol consumption**: Studies have shown that chronic heavy alcohol consumption could increase the risk for osteoporosis.
• **Exercise**: Studies have shown that weight bearing exercises are effective in preventing bone mineral loss among postmenopausal women. Walking is effective for the hip, while weight bearing exercises are effective for the lumbar spine as well as the hip.
• **Vitamin K supplementation**: Supplementation with vitamin K, according to studies, has been associated with a reduction in the occurrence of fractures among people with osteoporosis.

Genes analyzed: *OSBPL1A, COLEC10, LRP5, ALDH7A1, FTCDNL1, MECOM, SLC9A3R1, SLC34A1, F12*

16. BONE MINERAL DENSITY

Mild: Likely low genetic risk for low bone mineral density

Bone mineral density (BMD) is the amount of bone mineral in bone tissue. The higher the bone mineral strength, the stronger the bones are. BMD is highly heritable according to many research studies. People of certain genetic types are at a higher risk of low bone mineral density and thereby at risk for osteoporosis or fractures.

Gene markers analyzed: 106
Gene markers present in your genome data: 97
Gene risk variants detected in your genome data: 0
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult your physician for advice.
Bones are the major support system for the body and finding out early if you need to provide them with extra nourishment will help you lower the risk of brittle bones as you age.

- **Include calcium**: Calcium is the most abundant mineral in the body with 99% of this mineral present in teeth and bones. Include sufficient amount of calcium in the diet.
- **Include Vitamin D and K**: Studies have shown that Vitamin D increases the absorption of calcium from the intestines while Vitamin K lowers secretion of calcium.
- **Exercise for better bone health**: A study conducted on college going students showed that athletes with low body weight had better bone mineral density than others. Weight bearing exercises are ideal for better bone health like walking, stair climbing, running and jumping rope.
- **Control caffeine intake**: Consuming more than 2 cups of coffee per day has been shown to be associated with increased bone loss among people who consumed low amounts of calcium.

Genes analyzed: *COL1A1, CALCR, COLEC10, C17orf53, ESR1, LOC102724957, C7orf76, CRHR1-IT1-CRHR1, XKR9, RBMS3, ADAMTS18, LOC100133286, LOC105376360, NME8, GPATCH1, MARK3, MEF2C, RPS6KA5, CPED1, DCDC5, CLDN14, MAPT, CCDC170, SP7, JAG1, LEKR1, LRP5, IDUA, WNT16, MPP7, SMG6, DNM3, FAM210A, CPN1, ABCF2, FUBP3, TNFRSF11A, FAM3C, FMN2*

17. GALLSTONE DISEASE

Mild: Likely low genetic risk for gallstones

Gallstones are hardened deposits of digestive fluid that are formed in the gallbladder. The prevalence of gallstones was 4.15%, more in females than in males. People of certain genetic types are at a higher risk of developing gallstones than others and may exhibit symptoms like: **Abdominal cramping or discomfort,nausea or vomiting.**

Gene markers analyzed: 2
Gene markers present in your genome data: 2
Gene risk variants detected in your genome data: 1
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult a qualified physician for diagnosis and treatment of this condition.

- **Maintain a healthy weight**: Obesity is one of the important factors that increase the risk for gallstones. Increased weight accelerates cholesterol secretion by the liver which increases the risk for gallstones. The presence of fat around the waist increases the risk of gallstones among women.
- **Lose weight gradually**: Rapid weight loss leads to the development of gallstones in about 10 to 25% of people on a slimming procedure.
- **Follow good dietary practices**: A diet rich in fibre and calcium lowers the risk for gallstones. Regular mealtimes are another important factor. Some studies claim that moderate alcohol intake lowers the risk for gallstones, however, alcohol can increase the risk for other metabolic diseases.
- **High risk environmental factors**: Pregnant women or people who undertake prolonged fasting are at an increased risk for gallstones. Women who undertake hormone therapy are also at an increased risk for gallstones.

Genes analyzed: *SULT2A1*

18. CHRONIC KIDNEY DISEASE

Mild: Likely low genetic risk for chronic kidney disease

Chronic kidney disease (CKD) is a gradual loss of kidney function. According to The National Kidney Foundation, 10% of the global population suffers from chronic kidney disease. People of certain genetic types have a higher risk of developing chronic kidney disease and may exhibit symptoms like : **fatigue, loss of appetite, malaise, weight loss, itching, insufficient urine production.**

Gene markers analyzed: 18
Gene markers present in your genome data: 17
Gene risk variants detected in your genome data: 0
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult your physician for advice.
• **Maintain a healthy weight**: Obesity is one of the major factors associated with chronic kidney disease. In a study conducted to identify the effect of obesity on chronic kidney disease, it was found that people with a BMI > 25 at age 20 years had a significant 3 fold increased risk of developing CKD.
• **Smoking**: In a study conducted on 7476 non diabetic individuals, it was found that smoking more than 20 cigarettes per day increased the risk for CKD. Another similar study showed that smoking more than 5 cigarettes per day increased serum creatinine by 31%.
• **Nephrotoxins**: The excessive use of analgesics have also been shown to increase the risk for chronic kidney disease. One study showed that people who consumed between 1000 to 4999 pills during their lifetime had a 2 fold increased risk of CKD while people who consumed more than 5000 pills during their lifetime had a 2.4 times increased risk of CKD. Alcohol consumption and the use of recreational drugs that contain mercury have also been associated with CKD.
• **Diabetes mellitus**: Diabetes is an independent risk factor for CKD due to advanced glycation end products, hyperfiltration injury and reactive oxygen species. Nearly 50% of people diagnosed with type 2 diabetes will develop diabetic nephropathy while 10% of these will develop progressive loss of renal function.
• **Acute Kidney Injury**: Studies have shown that acute kidney injury increases the risk for end stage kidney disease by 10 fold.
• **Control blood pressure**: Hypertension is an important risk factor for chronic kidney disease and it accounts for nearly 28% of all end stage renal disease patients in the U.S.

Genes analyzed: *ZNF343, UMOD, MADD, SLC22A2, TFDP2, SLC13A3, DACH1, SLC34A1, CST3*

19. AGE-RELATED MACULAR DEGENERATION

Mild: Likely low genetic risk for AMD

Age related macular degeneration is a condition in which there is blurring of sight or loss of central vision. According to the Centres of Disease Control and Prevention (CDC) , there are 1.8 million people with AMD. People of certain genetic types are at a higher risk of developing AMD and may exhibit the following symptoms: **sudden or a gradual change in the quality of vision, straight lines could appear distorted, difficulty or loss of vision in dim light and leading to drastic loss in central vision.**

Gene markers analyzed: 72
Gene markers present in your genome data: 66
Gene risk variants detected in your genome data: 1
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult your physician for advice.
• **Quit Smoking**: Smoking is an important risk factor for age related macular degeneration and if you do not smoke, don't start. According to a study published in the British Journal of Medicine, 53,900 residents of UK, below the age of 69, were shown to have AMD attributable to smoking, with 17800 amongst them going blind.
• **Eat fruits and Vegetables rich in Carotenoids**: The Nurses' health study that followed 63,443 women and 38,603 men found that there was a 40% reduction in AMD risk among individuals who consumed high amount of carotenoid rich food.
• **Take AREDS nutritional supplement**: The Age Related Eye Disease Study (AREDS) sponsored by the National Eye Institute found that specific doses of vitamin C, vitamin E, Zinc and Beta Carotene lowered the progression of AMD. The AREDS nutritional supplement includes: vitamin C - 500 mg, vitamin E - 400 IU, beta-carotene - 15 mg, zinc - 80 mg (as zinc oxide), copper - 2 mg (as cupric oxide).
• **Exercise Regularly**: A 15 year follow up study conducted by the University of Wisconsin showed that physical activity had a protective effect on AMD.
• **Eat a lot of fish**: A study by the researchers from The University of Sydney, on 2900 people over 49 years, showed that people who ate fish at least once a week had 40% lower risk of developing AMD.

Genes analyzed: *ABCA4, C9, FGD6, SLC44A4, CETP, C3, APOE, ARMS2, HTRA1, RAX2, CFH, FBLN5, CFB, CX3CR1, GLI3, CLIC5, COL8A1, REST, FRK, NOTCH4, TGFBR1, SKIV2L, MCUB, RAD51B, B3GLCT, SYN3, LIPC*

20. GLAUCOMA

Mild: Likely low genetic risk for glaucoma

Glaucoma is a condition in which the fluid pressure of the eye increases. Approximately 3 million Americans suffer from glaucoma, however, only about a half of them know that they have it. People of certain genetic types have a higher risk of developing glaucoma and may exhibit symptoms like : **Blurred or hazy vision, rainbow like circles around bright lights, severe pain in the eye, nausea or vomiting.**

Gene markers analyzed: 65
Gene markers present in your genome data: 56
Gene risk variants detected in your genome data: 4
Potential high risk variants detected in your genome data:
chr19:g.49564639G>A

Recommendation

If you recognise any symptoms of this condition, consult a qualified physician for diagnosis and treatment of this condition.

- **Drink hot tea every day**: A study published in the British Medical Journal found that drinking hot tea everyday lowered the risk for glaucoma. The risk lowering effect was not noticed on consumption of hot coffee, iced tea or drinking other beverages.
- **Eat a diet rich in fruits and vegetables**. Fruits that are rich in vitamin A and C like carrots, green beans, collard beans, spinach, Kale are known to lower the risk of glaucoma. Antioxidant rich foods like pomegranate, acai berry, cranberries, lycopene and flax seeds.
- **Maintain Homocysteine levels**: Ensure that homocysteine levels are low as high homocysteine levels have also been associated with an increased risk of glaucoma.
- **Control for other risk factors**: Risk factors for glaucoma also include high blood pressure, high myopia, injury during eye surgery and diabetes. Control for these risk factors.

Genes analyzed: *WDR36, LTBP2, CYP1B1, MYOC, NTF4, ASB10, CDKN2B-AS1, GMDS, AFAP1, TXNRD2, EPDR1, COL11A1, PLEKHA7, DERA, SRBD1, DNAJC24, TBC1D21, LOXL1, OPTN*

21. CONE-ROD DYSTROPHY

Mild: Likely low genetic risk for cone rod dystrophy

Cone rod dystrophy is an inherited disorder of the eye. The prevalence of this condition is 1 in 40,000 people. People of certain genetic types are at a higher risk of developing cone rod dystrophy and may exhibit symptoms like: poor clarity of vision, color vision problems, night blindness and loss of peripheral vision.

Gene markers analyzed: 89
Gene markers present in your genome data: 72
Gene risk variants detected in your genome data: 3
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult a qualified physician for diagnosis and treatment of this condition. There is no known treatment for this condition, but the following could help in delaying vision loss.

- **Avoid bright light**: People with this condition have an increased sensitivity to light and would benefit from avoiding bright light. Wearing sunglasses when stepping out into the sun may be comforting.
- **Use low Vision Devices**: Hand-held magnifying glasses could help in better vision and lower strain to the eyes.
- **Nutrition to support the photoreceptors:** Increased intake of carotenoids lutein and zeaxanthin, omega 3 fatty acids, taurine and vitamin C protect the photoreceptors. The antioxidant properties of bilberry extract is also known to protect against photooxidation of the retinal cells.
- **Microcurrent stimulation**: This procedure can be carried out to lower pain and to improve circulation in the retina.
- **Avoid drugs like viagra**: Men who are at a higher risk of developing this condition should avoid drugs like viagra as it prevents the synthesis of an enzyme associated with vision

Genes analyzed: *GUCA1B, GUCA1A, SEMA4A, CDHR1, ABCA4, RPGRIP1, ADAM9, PROM1, PITPNM3, RIMS1, CRX, CACNA1F, CNNM4, GUCY2D, DRAM2, POC1B, C8orf37, PDE6C*

22. CHRONIC OBSTRUCTIVE PULMONARY DISEASE

Mild: Likely low genetic risk for COPD

Chronic obstructive pulmonary disease is a progressive lung disease which is characterised by breathlessness. This includes, emphysema, bronchitis and asthma. According to WHO, 251 million cases of COPD existed in 2016. People of certain genetic types have a higher risk of developing chronic obstructive pulmonary disease and may exhibit the following symptoms: **Shortness of breath, wheezing, frequent respiratory infections, inability to exercise and chest tightness.**

Gene markers analyzed: 38
Gene markers present in your genome data: 36
Gene risk variants detected in your genome data: 0
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult your physician for advice.
• **Quit Smoking**: Smoking is the single most important factor which has been associated with an increased risk for chronic obstructive pulmonary diseases. People who smoke have 12 times higher risk of developing this condition when compared with people who do not smoke. If you are not a smoker, do not start and avoid second-hand smoke.
• **Avoid smoke**: Avoid smoke from unventilated wood houses or smoke from cooking over firewood. Smoke from biomass has also been known to increase the risk for chronic obstructive pulmonary disease.
• **Restrict Occupational Exposure**: Studies have shown that 20% of COPD cases are due to occupational exposure. Miners who work with Gold and Cadmium have been found to have the highest risk.
• **Watch out for allergens**: When there is an increase in outdoor air pollutants like smog, stay indoors. Keep indoors free from second hand smoke and other pollutants.

Genes analyzed: *P2RX7, KAZN, RNF150, ASRGL1, PSORS1C1, SCGB1A1, SFTPD, TMEM254, ATP2C2, RIN3, FAM13A, IREB2, ELOVL4, NUPL2, PPP4R4, HTR4, CYS1, HSPA12A*

23. ASTHMA

Mild: Likely low genetic risk for asthma

Asthma is a common chronic inflammatory condition of the airways of the lungs. According to CDC, 25.7 million people across the world suffered from asthma in 2010. People of certain genetic types are at a higher risk of developing asthma and may exhibit the following symptoms: **wheezing, chest pain, difficulty in breathing and coughing.**

Gene markers analyzed: 72
Gene markers present in your genome data: 67
Gene risk variants detected in your genome data: 2
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult your physician for advice.
• **Avoid allergens and triggers**: Allergens present in the air may trigger an asthma attack as they could lead to inflammation of the airways. Identify these allergens and avoid them.
• **Use room humidifiers**: Adding some moisture to the air can ease symptoms of asthma, but too much moisture could increase the risk of dust mite growth.
• **Use air filters**: Air filters, especially the ones that include high efficiency particulate air filter, have been found to remove 99.97% of allergens that are at least 0.37 microns.
• **Mediterranean diet**: A mediterranean diet has been found to be associated with a lower risk of asthma.

Genes analyzed: *IL13, MS4A2, HNMT, ADRB2, TLR1, CLEC16A, GSDMA, PLA2G7, DCLK1, TRPM8, HPSE2, CDHR3, IL33, RAD50, RORA, PTGES, SLC22A5, GAB1, IL1RL1, PYHIN1, GSDMB, PDE4D, PBX2, IL2RB, CRB1, IL18R1, NOTCH4, LOC101928947, HLA-DQB1-AS1*

24. ALZHEIMER'S DISEASE

Mild: Likely low genetic risk for alzheimer's disease

Alzheimer's disease is a progressive neurodegenerative disorder, constituting 60 to 70% of dementia incidences. Approximately 200,000 Americans younger than 65 years of age have early onset Alzheimer's disease. People of certain genetic types have a higher risk of developing Alzheimer's disease and may exhibit symptoms like: **difficulty in remembering, confusion, disorientation and speech difficulties.**

Gene markers analyzed: 94
Gene markers present in your genome data: 85
Gene risk variants detected in your genome data: 1
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult your physician for advice.
• **Ensure social engagement**: Staying socially active is found to be protective against alzheimer's disease. Older individuals tend to shy away from meeting people, which could increase their risk for the condition. Try to join volunteer groups and social clubs to improve social contact.
• **Exercise regularly**: Alzheimer's research and prevention foundation states that regular exercise can lower the risk of alzheimer's by 50%.
• **Engage in mentally stimulating activities**: An NIH Active study showed that older adults who were associated with at least 10 sessions of training showed improved cognitive function which was evident even 10 years later.
• **Enjoy good quality sleep:** Studies have shown that poor sleep could increase the risk of beta amyloid plaques and thereby increase the risk of alzheimer's.
• **Eat a diet rich in omega 3 fatty acids**: The docosahexaenoic acid (DHA) found in omega 3 fatty acids have been found to be associated with reduction in beta amyloid plaques and lowering the risk of alzheimer's disease and dementia.

Genes analyzed: *SYNGAP1, ZNF292, SLCO3A1, SUCLG2, PSEN1, PEX6, CR1, SH2D4B, CLU, GLIS3, TOMM40, ARHGAP20, PARVB, PRRC2C, ST18, SP6, MOBP, CSMD1, CAMK4, STK32B, AFF1, GABRG3, SPON1, LOC100289673, CLMN, CACNA1G, SAP30L, MYO16, TGM6, ANKRD55, BZW2, CRADD, CTNNA2, BCAS3, PPP1R3B, TREM2, CNTNAP2, POLN, RNF6, PCDH11X, STK24, PICALM, ABCA7, MS4A6A, NECTIN2, FRMD4A*

25. AMYLOIDOSIS

Mild: Likely low genetic risk for amyloidosis

Amyloidosis is a rare condition in which there is an abnormal buildup of a protein called amyloid. One study showed that the prevalence of this condition in the UK is 20 per million. People of certain genetic types are at a higher risk of developing amyloidosis and may exhibit symptoms like: **shortness of breath, weight loss, fatigue, bruising, swelling of the tongue, carpel tunnel syndrome and tingling feeling.**

Gene markers analyzed: 29
Gene markers present in your genome data: 21
Gene risk variants detected in your genome data: 2
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult a qualified physician for diagnosis and treatment of this condition.

- **Help break down the amyloid protein**: Amyloid proteins are fibrous and insoluble aggregates which could build up in tissues and organs. These amyloid deposits have been shown to be broken down by pineapple enzyme and bromelain.
- **Check for underlying disease**: Certain diseases like rheumatoid arthritis could increase the risk for amyloidosis.
- **Take a break and pace yourself**: When an activity is strenuous, learn to pace it out well. Check with a physician about the appropriate level of activity that can be carried out. In people with amyloidosis, organ systems may have to work additionally hard to cope with normal activities. Therefore sufficient rest is mandatory to manage the condition.
- **Low salt diet**: Low salt diet will help in delaying the spread of the disease and will help in reducing severity.

Genes analyzed: *CCND1, LYZ, TTR, GSN, FGA*

26. ANXIETY

Mild: Likely low genetic risk for anxiety

Anxiety disorders are characterised by feelings of fear and anxiety. This disorder affects more than 40 million people in the U.S every year. People of certain genetic types are at a higher risk of developing anxiety disorders and may exhibit symptoms like: **excessive worry, sweating, hypervigilance, nausea, poor concentration or trembling.**

Gene markers analyzed: 5
Gene markers present in your genome data: 5
Gene risk variants detected in your genome data: 0
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult your physician for advice.
• **Enrol for counselling sessions:** Counselling sessions will help develop coping strategies and help in addressing interpersonal problems and in stress management.
• **Cognitive behavioural therapy (CBT)**: This method of treatment is involved in addressing a specific incident that occured and developing new ways of coping with the issue. In the event that a traumatic life experience triggered the anxiety disorder, CBT will help in reframing the trauma that was experienced during the event.
• **Prolonged exposure therapy**: A qualified therapist will carefully re-introduce the 'traumatic incident' or the source of phobia, and help in understanding that the situations are no longer dangerous.
• **Caring family**: Family therapy is one the most effective methods as the family of the individual could help in creating positive feelings and removing negative thoughts through sustained and patient support.
• **Effective stress management**: Go for long walks, practice yoga or join a group exercise class, as these are known mood elevators and will help in lowering risk of anxiety disorder.

Genes analyzed: *PTPRD*

27. AUTISM

Mild: Likely low genetic risk for autism

Autism includes a range of disorders which are associated with challenges with speech, social skills, speech, repetitive behaviour and non-verbal communication. According to Centres for Disease Control and Prevention(CDC), in the U.S, 1 in 68 children surveyed were found to have autism spectrum disorder. Heritability of autism ranges from 40 to 80%. People of certain genetic types are associated with an increased risk of developing autism and may exhibit symptoms like: **learning disability, inability to focus, unaware of other's emotions, sensitivity to sound.**

Gene markers analyzed: 99
Gene markers present in your genome data: 90
Gene risk variants detected in your genome data: 1
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult a qualified physician for diagnosis and treatment of this condition.
The interaction between genes that are susceptible and environmental factors play an important role in the development of autism.

- **Lower prenatal risk**: Factors like advanced Parental age, pre-eclampsia, gestational diabetes and maternal anxiety and stress. A study conducted in 2010 showed that there was a 29% increased risk of autism for every 10 year increase in paternal age. There was an 81% increased risk of autism associated with maternal bleeding pregnancy. Paternal psychiatric illness like schizophrenia is associated with a three fold increased risk of autism.
- **Lower Natal Risk factors**: Natal risk factors like fetal distress, umbilical cord complications or even cesarean delivery are associated with a 26% increased risk of autism.
- **Lower postnatal risk**: Some of the significant postnatal risk factors include low birth weight, postnatal infection and jaundice. A birth weight of lower than 2500 grams is associated with a two fold increased risk of autism.
- **Increase maternal intake of omega 6 and linolenic acid**: Maternal intake of polyunsaturated fatty acids like omega 3, linolenic acid,omega 6 fatty acids in the first two months of pregnancy are associated with retinal and brain development. High maternal intake of omega 6 and linolenic acid is associated with 34% lower risk of autism while consuming low levels of omega 6 fatty acids is associated with an increased risk of autism.
- **Increase folic acid intake**: High intake of folic acid during pregnancy is associated with lower speech problems, behavioural problems and hyperactivity at 8 years of age.

Genes analyzed: *PTEN, MECP2, CHD8, TSC1, RBFOX1, WWOX, CSMD1, C2orf82, PPP2R2B, KMT2A, GRIN2A, NTRK3, ZMIZ1, ZNF804A, CACNA1C, ANK3, KIF21B, ITIH3, CACNB2, CNNM2, CNOT1, BTN2A1, TSNARE1, HCN1, GRM3, SHMT2, CTC-436P18.1, RGS6, CACNA1I, GIGYF2, TCF4, CNTNAP2, EN2, GLO1, PPP2R5C, TAF1C, TRIM33, MACROD2, AMPD1*

28. PARKINSON'S DISEASE

Mild: Likely low genetic risk for Parkinson's disease

Parkinson's is a neurodegenerative disorder that affects the central nervous system. This condition is found in 1% of adults over the age of 60 years. People of certain genetic types are at a higher risk of developing Parkinsons and may exhibit symptoms including: **tremor in one hand, stiffness, loss of balance, sleepiness during the day, incontinence.**

Gene markers analyzed: 78
Gene markers present in your genome data: 72
Gene risk variants detected in your genome data: 0
Potential high risk variants detected in your genome data:
chr16:g.31121793G>A

Recommendation

If you recognise any symptoms of this condition, consult your physician for advice.
• **Exercise regularly**: In a study that analyzed 43,000 adults, it was found that women who carried out at least 6 hours of activity every week had a 40% lower risk of developing Parkinson's.
• **Get help for depression**: In a study conducted on depression, it was found that there was a strong association between depression and subsequent development of Parkinson's.
• **Drink Caffeine**: Moderate consumption of caffeine- one to three cups a day- has been associated with a decrease in risk of Parkinson's.
• **Follow the right diet**: A diet high in fruits and vegetables, omega 3 fatty acids and low in red meat and dairy is shown to be associated with a lower risk of Parkinson's.

Genes analyzed: *RAB39B, CTC1, LHFPL2, ATF6, DSG3, STAP1, LINC00693, SH3GL2, GBA, LRRK2, DLG2, LOC728728, CNKSR3, LOC100287944, NUCKS1, MCCC1, SIPA1L2, CCDC62, GCH1, GAK, DGKQ, RIT2, SLC50A1, BCKDK, CNTN1, KANSL1, NSF, GPNMB, SLC2A13, WNT3, SNCA, HLA-DRA, RAB25, BST1, TMEM175*

29. SCHIZOPHRENIA

Mild: Likely low genetic risk for schizophrenia

Schizophrenia is a mental disorder that occurs during late adolescence or in the early twenties. The global prevalence of schizophrenia is 1% and approximately 3.2 million Americans are known to have this disease. People of certain genetic types are at a higher risk of developing this condition and may exhibit symptoms like: **aggression, poor social behaviour, hostility and compulsive behaviour.**

Gene markers analyzed: 265
Gene markers present in your genome data: 252
Gene risk variants detected in your genome data: 2
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult a qualified physician for diagnosis and treatment of this condition.

- **Family support**: People at high risk for schizophrenia were studied based on the extent of family support that they received. The study showed that there was a significant reduction in clinical manifestation among people who received stress reducing support from the family.
- **Aim for early detection**: When high risk individuals are screened early, they can be assigned the right therapy by the physician. Slow learners with poor social skills may be identified during schooling. A Harvard University study has shown that poor IQ is a risk factor for schizophrenia leading to false beliefs and perceptions associated with the condition.
- **Increase periods of socialising**: The condition is intensified due to social isolation, consciously improve relationship with family and friends.

Genes analyzed: *MAD1L1, CSMD1, SDCCAG8, PIK3C2A, ABCA13, COL25A1, PHACTR3, CENPM, ANK3, PTPRG, TCF4, PLCB2, HS3ST4, RUSC2, LIPC, DNAJA3, TMCO5B, CDH13, ADAMTSL3, ZFYVE28, BNIP3L, VRK2, KIF26B, PPARGC1A, HS6ST3, LINC00701, PPFIA2, CALN1, POM121L2, TMTC1, LOC101928882, TMEM182, MMP16, HLA-DOB, CPEB1, MPC2, CLCN3, GPM6A, NT5C2, GALNT10, NLGN4X, APOPT1, ZEB2, GRIA1, IMMP2L, ZNF804A, FHIT, HCN1, MIR137HG, MEF2C-AS1, LSM1, CNTN4, CACNB2, PLCL1, CACNA1C, TRIM26, ZNF536, PRKD1, RENBP, QPCT, BCL11B, C2orf47, MPHOSPH9, FTCDNL1, NOTCH4, DGKI, CYP26B1, SNAP91, ETF1, TSNARE1, COMT, ITIH3, ATP2A2, NRGN, CNNM2, PRRG2, SRPK2, SATB2, SLCO6A1, LINC01539, PTGIS, STAG1, IGSF9B, HHAT, BCL11A, ZSWIM6, GRAMD1B, NFATC3, GID4, FOXO3, GRIN2A, MTHFR, DRD3, HSPG2, RYR2, NLRP12, PDZRN3, RELA, GPR153, B3GNT6, GTF2IRD1, TTBK1, MEST, PTPRN2, COL4A2, PAQR5, NTM, COL28A1, SLC35F4, TTC39B, DMD, DOCK6, CELF5, CTNND2, PGPEP1, SPTLC1, NLRC5, LINC00598, GPC6, NCKAP5, FAM69A, MCC, EFNA5, COMMD10, VPS13C, NGF, BPI, RIN2, CNTNAP2*

30. BLOOM SYNDROME

Mild: Likely low genetic risk for bloom's syndrome

Bloom's syndrome is a condition characterised by an increased risk of genomic instability. Only about 265 people are believed to have this rare condition. People of certain genetic types have a higher risk of developing Bloom's syndrome and may exhibit symptoms like : **short stature, enlarged blood vessels(telangiectases) and rash on the face(cafe au lait spots) that develop during early childhood on exposure to the sun.**

Gene markers analyzed: 12
Gene markers present in your genome data: 8
Gene risk variants detected in your genome data: 0
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult a qualified physician for diagnosis and treatment of this condition.
• **Minimize exposure to the sun**: People with Bloom syndrome have increased risk for genomic instability. Therefore exposure to the sun should be minimized on identification of cafe au lait spots. Apply a good sunscreen with a high SPF.
• **Increased risk of cancer**: People with this condition often have increased genomic instability and should ensure increased screening.

Genes analyzed: *BLM*

31. CYSTIC FIBROSIS

Mild: Likely low genetic risk for cystic fibrosis

Cystic fibrosis is an inherited condition that affects the lungs and the digestive system. The prevalence of this condition is about 1 in 2500 among caucasians. People of certain genetic types are at a higher risk of developing this condition and may exhibit symptoms like: **Abdominal pain, chronic cough with blood or phlegm, diarrhoea, shortness of breath, delayed puberty, fatigue and acute bronchitis.**

Gene markers analyzed: 377
Gene markers present in your genome data: 266
Gene risk variants detected in your genome data: 52
Potential high risk variants detected in your genome data:
chr7:g.117175323G>A, chr7:g.117251725T>C, chr7:g.117120202G>T, chr7:g.117149093G>A, chr7:g.117149146C>T, chr7:g.117199525T>C, chr7:g.117199602C>T, chr7:g.117282648G>A, chr7:g.117243667T>A, chr7:g.117232574C>T, chr7:g.117235044C>T

Recommendation

If you recognise any symptoms of this condition, consult a qualified physician for diagnosis and treatment of this condition.
• **Increase calorie intake**: people with cystic fibrosis may not have sufficient digestive enzymes to break down food. Therefore, an increase in calorie intake is necessary.
• **Drink sufficient fluids**: Fluids help in thinning the mucus present in the lungs. Drinking plenty of water is recommended.
• **Physical therapy**: Physical therapy and lung rehabilitation may be necessary to loosen the mucus present in the lungs.
• **Exercise regularly**: Exercising regularly will help in loosening the mucus present in the lungs and also for strengthening the heart. Children should participate in sports or even simple exercises like walking and stair climbing wil help.
• **Quit smoking**: Breathing in smoke can be harmful for people with cystic fibrosis. Therefore quit smoking and avoid passive smoking too.
• **Take extra care to avoid infections**: People with cystic fibrosis should be extra careful about personal hygiene to avoid infections. Though cystic fibrosis does not affect the immune system, people with this condition, especially children, develop complications. Handwashing is a simple but effective practice which could limit the risk for infections. Following the vaccination chart is another important step.

Genes analyzed: *CFTR, SCNN1A, SLC8A3, AGTR2*

32. DEPRESSION

Mild: Likely low genetic risk for depression

Depression is a serious yet common mood disorder which affects the way an individual thinks, feels and handles daily activity. According to WHO, nearly 4.4% of the global population suffers from depression. People of certain genetic types are at a higher risk of developing depression and may exhibit symptoms including: **changes in sleep, energy level, activity, mood, self esteem and concentration.**

Gene markers analyzed: 11
Gene markers present in your genome data: 11
Gene risk variants detected in your genome data: 0
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult your physician for advice.
• **Handle stress well**: Find innovative ways to handle stress to lower the risk of depression. Enhancing stress resilience has been shown to decrease the risk of stress induced depression and stress can be handled effectively using psychological, spiritual, social and neurobiological ways.
• **Strain at work**: Job strain has been associated with an increased risk of depression. Alleviating this strain through re-organisation and training will help lower risk.
• **Include sufficient tryptophan**: In study subjects who had a strong family history of depression, a tryptophan deficient diet was found to lower mood. A diet rich in tryptophan will help lower the risk of depression.
• **Take care**: Get sufficient sleep, exercise well and eat well to feel good.

Genes analyzed: *TPH2, NPAS3, CAND1.11, GPHN, GRM8*

33. EPILEPSY

Mild: Likely low genetic risk for epilepsy

Epilepsy constitutes a group of disorders which are characterised by epileptic seizures. These seizures are associated with vigorous shaking, which can last from a short unnoticeable period to longer periods. According to WHO, approximately 50 million people across the world live with epilepsy.People of certain genetic types are at a higher risk of developing epilepsy and may exhibit symptoms like : **jerking movements that are uncontrollable, amnesia, anxiety, feeling of pins and needles and depression.**

Gene markers analyzed: 408
Gene markers present in your genome data: 341
Gene risk variants detected in your genome data: 7
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult a qualified physician for diagnosis and treatment of this condition.

- **Ketogenic diet**: This diet is rich in fats and low in carbohydrates. When the main source of energy is fats, ketones are produced as a byproduct. These are also produced when there is a period of fasting. People who have epilepsy are associated with a lower risk of developing seizures when they are in a period of fasting. Therefore, it is believed that a ketogenic diet may help people with epilepsy.
- **Manage stress**: Organize the day well and include time to relax. Stay away from stressful situations or try to remain calm. An increase in stress levels could exacerbate symptoms.
- **Avoid alcohol**: Avoid alcohol intake and consume a healthy diet
- **Maintain a regular sleep schedule**: Getting a good night's rest is very important to lower the risk of seizure. Go to bed at the same time everyday and ensure that the bedroom is used only for sleeping and not for finishing assignments from work.

Genes analyzed: *CPA6, SCN1A, ALDH7A1, PRICKLE1, GOSR2, SCARB2, PRICKLE2, KCTD7, EFHC1, TBC1D24, MEF2C, EPM2A, GABRA1, RBFOX1, PNPO, GABRG2, SCN1B, KCNMA1, CACNB4, SYN1, NHLRC1, CSTB, CHRNA2, CHRNA4, LGI1, SLC2A1, CASR, CACNA1H, SPATA5, GRIN2A, DEPDC5, GABRB3, CLCN2, COTL1, MAST4, CHRM3, LOC101927235, MMP8, CAMSAP2, SCN8A, KCNT1, CNTNAP2, SCN9A, POLG, KCNQ3, CHRNB2, ST3GAL5*

34. GOUT

Mild: Likely low genetic risk for gout

Gout is a severe form of inflammatory arthritis that is characterised by the deposition of monosodium urate crystals in and around the joints. The incidence of gout is 2 to 6 times higher among men than among women. People of certain genetic types are at a high risk of developing gout and may exhibit symptoms like: **Pain in joints like ankle, knee, toe or foot, swelling, stiffness, redness or physical deformity.**

Gene markers analyzed: 15
Gene markers present in your genome data: 15
Gene risk variants detected in your genome data: 0
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult a qualified physician for diagnosis and treatment of this condition.

- **Lower sugar intake**: People at high risk for the condition should lower intake of sugar sweetened beverages that are known to increase the risk of gout. Reduce intake of beer, meat like red meat or organ meat that are known to have high amounts of saturated fat and seafood like tuna, mackerel, trout and offal could lower risk of gout. Increase intake of coffee, cherries, omega 3 fatty acids and low fat milk which are known to marginally reduce risk.
- **Periodic screening**: The uric acid levels should be maintained at 5 to 6 mg/dl and people at high risk should get it routinely screened. Urate lowering therapy may be initiated by physicians if there are symptoms.

Genes analyzed: *FAM35A, ABCG2, MAP3K11, BCAS3, SLC2A9, KCNQ1, CYP2E1, CNIH2, SLC22A1*

35. HEMOCHROMATOSIS

Mild: Likely low genetic risk for hemochromatosis

Hemochromatosis is the leading cause of iron overload disease. The prevalence of this condition among people of Northern England origin is about 1 in 227 individuals. People of certain genetic types have a higher risk of developing hemochromatosis and may exhibit symptoms like: **lethargy, abdominal pain, reduced hormone function, arthritis, diabetes and abnormal heart rhythm.**

Gene markers analyzed: 15
Gene markers present in your genome data: 13
Gene risk variants detected in your genome data: 1
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult a qualified physician for diagnosis and treatment of this condition.

- **Monitor your iron levels**. People at high risk for hemochromatosis should increase screening to ensure that iron levels are within normal limits.
- **Modify diet**: There are two types of iron rich foods that are consumed. Heme iron from animal sources and non-heme iron from plant sources. Heme iron gets absorbed easily while non-heme iron takes a longer time to be absorbed. Reduce consumption of red meat as it is rich in heme iron.
- **Lower intake of fatty food**: Lipids can bind to iron that is unbound and result in the development of free radicals which are known to result in diseases.
- **Limit Vitamin C supplementation**: Vitamin C enhances absorption of iron, therefore, supplementation with vitamin C should be limited to 200mg.
- **Avoid foods that are sugar rich**: Sugar rich foods are known to increase iron absorption and intake of such foods should be restricted.
- **Increase intake of foods and vegetables**: Fruits and vegetables are rich in antioxidants and fibre, which are good for reducing DNA damage and also good for digestion. Spinach contains oxalates which is also known to lower absorption of non-heme iron.
- **Drink tea or coffee during mealtimes**: Tannins present in tea, coffee and chocolates along with eggs, oxalates and fibre lower absorption of non-heme iron. However, drinking coffee or tea along with a meal does not affect absorption of iron
- **Avoid consumption of raw shellfish**: Shellfish could contain a bacterium called *Vibrio vulnifius* which thrive in iron rich sources. An infection from this bacterium is associated could be fatal for someone with hemochromatosis. Therefore, avoid going barefoot on sandy beaches or eating raw shellfish.

Genes analyzed: *HFE2, TFR2, HFE, HAMP*

36. ANEMIA

Mild: Likely low genetic risk for anemia

Anemia is a condition in which there is insufficient healthy red blood cells. According to WHO, the highest prevalence of anemia is among pre-school children and the lowest is among men. People of certain genetic types are at a higher risk of developing anemia and may exhibit symptoms like: **fatigue, malaise, palpitations, brittle nails and shortness of breath.**

Gene markers analyzed: 341
Gene markers present in your genome data: 263
Gene risk variants detected in your genome data: 12
Potential high risk variants detected in your genome data:
chr14:g.103390126C>T

Recommendation

If you recognise any symptoms of this condition, consult a qualified physician for diagnosis and treatment of this condition.
• **Consume foods rich in iron**: Foods rich in iron include meat, seafood, iron fortified cereals, eggs, pulses beans, dried food and whole grains. Iron supplements should be taken to ensure that the level of hemoglobin is within normal limits. Some people develop side effects to these iron supplements like diarrhoea and abdominal pain, therefore, care should be taken in choosing the appropriate supplement.
• **Drug Interactions**: Consuming calcium supplements along with iron supplements could interfere with iron absorption. Therefore calcium supplements and iron supplements should be taken at different times of the day.
• **Improve stomach acid**: Low stomach acid can lead to malabsorption of iron and many types of vitamins. Apple cider vinegar is considered to be good at altering stomach acid levels. Taking 1Tbsp of apple cider vinegar in 4 to 6 ounces of water, half an hour prior to mealtime, will help in improving stomach acid level. This helps in increasing breakdown and absorption of nutrients.
• **Control gastrointestinal infections**: Treat infections due to H.pylori and other small bacterial infections as they could lead to the development of leaky gut syndrome or low stomach acid level. Both these are associated with poor absorption of iron from the diet.

Genes analyzed: *NT5C3A, ALAS2, ABCB7, BCL11A, ITPA, RHAG, SLC4A1, KLHL30, YARS2, PUS1, PAH, TMPRSS6, SLC19A2, CUBN, DHFR, AMN, SLC11A2, BAAT, SLC25A38, GPI, HBB, GSS, SLX4, FANCD2, FANCC, FANCI, FANCF, FANCA, FANCM, FANCL, FANCE, BRIP1, POLG, ERCC4, RAD51C, PALB2, COX4I2, RPS19, TSR2, RPS26, RPL11, CDAN1, SEC23B, G6PD, BRCA2, BRCA1, TF, TERT, FANCG, AK1*

37. BETA THALASSEMIA

Mild: Likely low genetic risk for beta thalassemia

Beta thalassemia is a condition in which there is a reduction in the production of hemoglobin. This condition is highly prevalent in the Mediterranean countries with an annual incidence of symptomatic individuals being 1 in 100,000 people. People of certain genetic types are at a higher risk of developing beta thalassemia and affected infants may exhibit symptoms like: **turning pale, feeding problem, recurrent fever, liver and abdominal enlargement.**

Gene markers analyzed: 47
Gene markers present in your genome data: 23
Gene risk variants detected in your genome data: 0
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult your physician for advice.
• **Regular Blood transfusions**: Beta thalassemia is characterised by lower hemoglobin levels, so regular blood transfusion will be carried out.
• **Safe marriages**: In order to lower the risk of an offspring from developing this condition, people who carry the high genetic risk variants for beta thalassemia are advised to marry an individual at low risk for the condition.

Genes analyzed: *HBB, HBBP1*

38. HEMOPHILIA

Mild: Likely low genetic risk for hemophilia

Hemophilia is a condition in which there is excessive bleeding because of poor blood clotting. The worldwide prevalence of hemophilia is around 400,000 people. People of certain genetic types have a higher risk of developing hemophilia and may exhibit symptoms like: **pain in the joints, internal bleeding, swollen joints and prolonged periods.**

Gene markers analyzed: 3
Gene markers present in your genome data: 3
Gene risk variants detected in your genome data: 0
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult a qualified physician for diagnosis and treatment of this condition.

- **First aid during minor injury**: Pressure and bandage may be applied to the site of injury to prevent bleeding. When minor internal bleeding beneath the skin is suspected, then placing an ice pack at the site of injury will help control bleeding.
- **Desmopressin**: This hormone helps in improving clotting of blood by stimulating clotting factors. This is usually injected by a physician or available as a nasal spray.
- **Fibrin sealants**: This sealant can be applied directly to the site of injury to promote wound healing and clotting. This is used particularly during dental procedures.
- **Physiotherapy**: Intense physiotherapy sessions may be required to manage pain in the joints due to internal bleeding. In extreme cases, surgical intervention may be required.
- **Maintain Iron levels**: For every 15ml loss of blood there is a loss of 0.75micrograms of iron. Ensure sufficient intake of iron rich foods that include broccoli, poultry, lean red meat, liver, green leafy vegetables and raisins. Increase intake of vitamin C rich foods too as they increase absorption of iron.
- **Include Vitamin K rich foods**: Vitamin K helps in the clotting of blood and intake of foods rich in this vitamin is beneficial. Kale, brussels sprouts, cabbage, parsley, eggs and fish contain vitamin K.

Genes analyzed: *F9, F8*

39. GLYCOGEN STORAGE DISEASE

Mild: Likely low genetic risk for glycogen storage disease

Glycogen storage disease is a condition characterised by deficiency in enzymes associated with glycogen synthesis and glycogen breakdown. The prevalence of this condition is 1 in 20,000 people. People of certain genetic types have a higher risk of developing glycogen storage disease and may exhibit symptoms like: **bruising easily, low blood sugar, abdominal bloating, slow growth and weak muscles and muscle cramping.**

Gene markers analyzed: 119
Gene markers present in your genome data: 98
Gene risk variants detected in your genome data: 7
Potential high risk variants detected in your genome data:
chr14:g.51376773C>T, chr7:g.44104839C>T, chr16:g.47730322G>T

Recommendation

If you recognise any symptoms of this condition, consult a qualified physician for diagnosis and treatment of this condition.

- **Maintain optimal blood sugar levels**: People with glycogen storage disease should be careful about the food consumed to prevent excess storage of glycogen in the liver. However, there is a risk of hypoglycemia. Raw corn starch powder is provided throughout the day as this is a complex carbohydrate and the body takes a longer time to break it down. This ensures that the blood glucose levels are maintained for a prolonged period.
- **Eat Frequent Meals**: An impaired enzyme could result in hypoglycemia among people with glycogen storage disease. Children and adults should eat every 1 to 3 hours during the day and 3 to 4 hours during the night. Extremely low blood sugar levels could lead to seizures.

Genes analyzed: *PFKM, PYGL, PYGM, GBE1, GAA, G6PC, GYG1, PGAM2, AGL, ENO3, PHKB, GYS1*

40. PSORIASIS

Mild: Likely low genetic risk for psoriasis

Psoriasis is a non-contagious chronic skin condition that produces plaques of thickened, scaling skin. It is one of the most baffling and persistent skin disorders. Generalized psoriasis is an inherited autoimmune disease. Men are generally more prone to the condition. Genetics play a major role in the development of psoriasis. People of certain genetic types have a higher risk of being susceptible to psoriasis and may experience the following symptoms: **red patches of skin with white or silvery scales, cracked and dry skin, thick nails which may be ridged or pitted, swollen and stiff joints.**

Gene markers analyzed: 68
Gene markers present in your genome data: 65
Gene risk variants detected in your genome data: 0
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult a qualified physician for diagnosis and treatment of this condition.

- **Use specially medicated soaps**: Specially medicated soaps and shampoos should be used to manage the symptoms of psoriasis. Some shampoos have corticosteroids to control inflammation while others may have salicylic acid to remove the white scales. A dermatologist may also suggest formulas that include vitamin D, tar or retinoids.
- **Include a diet that is rich in Vitamins D, E and B12**: Include a diet that is rich in Vitamins D, E and B12 and omega-3 fatty acids as they may reduce the symptoms and prevent the condition. Include sunflower oil, safflower oil (1 tbsp), almonds, hazelnuts (30g), walnuts, pink salmon, mackerel, sardines, fortified oils and breakfast cereals, mushrooms, egg yolk, hazelnuts (30g) mussels in your diet.
- **Use moisturising lotions**: Dry skin can aggravate psoriasis, therefore, a good moisturising lotion should be used. When there is excessively dry skin, cling film may be used to wrap the area after moisturiser is applied to retain more amount of moisture.
- **Use a humidifier**: A humidifier will help maintain the moisture in the skin and lower the risk of a flare up.

Genes analyzed: *IL36RN, TYK2, DDX58, KCNH7, UBE2L3, TNIP1, CAMK2G, IL23R, AP1S3, TSC1, LINC01185, QTRT1, IFIH1, FBXL19, KIAA0391, IL13, STAT2, REV3L, TP63, IL12B, COG6, SPATA2, TNFAIP3, ETS1, LOC152225, LOC285626, TRAF3IP2*

41. RHEUMATOID ARTHRITIS

Mild: Likely low genetic risk for rheumatoid arthritis

Rheumatoid arthritis is an autoimmune disorder that affects the joints. This chronic condition is found to affect 1% of the population. People of certain genetic types are at a higher risk of developing rheumatoid arthritis and should watch out for signs that include: **stiffness, tenderness or swelling in the joints, fatigue, feeling of pins and needles and lumps of redness on the skin.**

Gene markers analyzed: 149
Gene markers present in your genome data: 138
Gene risk variants detected in your genome data: 0
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult your physician for advice.

- **Quit Smoking**: Smoking is found to accelerate the condition and lead to greater joint damage. In a study conducted to identify how smoking increases risk for rheumatoid arthritis, it was found that smoking leads to citrullination of protein. Gene variations that predispose to rheumatoid arthritis have been associated with increasing immune defence against such proteins, leading to autoimmune disorders like rheumatoid arthritis.
- **Lose weight**: People who are overweight are at a higher risk of developing rheumatoid arthritis, especially among people younger than 55 years.
- **Breastfeeding and risk of rheumatoid arthritis**: In a study conducted on 121,700 women, it was found that breast feeding for longer than 12 months significantly reduced the risk for rheumatoid arthritis. Early menarche (earlier than age 10) was found to increase risk.
- **Include Vitamin D rich food in the diet**: In a study conducted on 29, 398 women, increased intake of vitamin D was associated with lower risk of rheumatoid arthritis.
- **Intake of antioxidant rich foods**: A diet high in antioxidant micronutrients, specifically beta cryptoxanthin and Zinc supplementation, along with a diet high in fruits and vegetables is found to have a protective effect against rheumatoid arthritis.

Genes analyzed: *ICAM3, TNPO3, GUCY1B2, LINC01104, ARHGEF3, ALS2CR12, TRHDE, UBASH3A, GMCL1P1, GATSL3, ARID5B, PHF19, CDK5RAP2, DPP4, REL, FAM107A, LINC00824, CCR6, SPRED2, RAD51B, AIRE, NFKBIE, PADI4, CD226, C5orf30, PLD4, TEC, WDFY4, MTF1, PTPN2, ANXA3, RTKN2, TRAF1, PDE2A, EOMES, CD40, CDK6, PLCL2, DKFZp667F0711, MECP2, JAZF1, ACOXL, ANKRD55, SFTPD, RABEP1, RPP14, RASGRP1, SYNGR1, PPIL4, LOC101929739, FADS2, STAG1, SLC6A11, ETFA, MDGA2, ZNF175, SPSB1, PSMA4, LOC100130458, ELMO1, CD247*

42. SCOLIOSIS

Mild: Likely low genetic risk for scoliosis

Scoliosis is a medical condition in which the spinal cord of an individual is curved sideways. This condition is prevalent among 2 to 3% of the general population.People of certain genetic types are at a higher risk of developing scoliosis and may exhibit symptoms like: **Back pain, muscle spasms, muscle deformity and an uneven waist.**

Gene markers analyzed: 13
Gene markers present in your genome data: 11
Gene risk variants detected in your genome data: 1
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult a qualified physician for diagnosis and treatment of this condition.

- **Screen at frequent intervals**: People at high risk should get screened frequently as early detection will help in preventing deterioration. Curves among skeletally immature can lead to highest risk of progression.
- **Maintain a good posture**: Always sit with your back straight and with the right support. The body weight should be spread evenly on the hips and the feet should be placed flat on the ground.

Genes analyzed: *EXT2, NF1, GDF3, NSD1, SH3TC2, FBN1, MAGI1*

43. MULTIPLE SCLEROSIS

Mild: Likely low genetic risk for multiple sclerosis

Multiple sclerosis is an autoinflammatory debilitating disease that affects the brain as well as the spinal cord. The prevalence of multiple sclerosis in the U.S is 90 per 100,000 population and it affects 2.5 million people worldwide. People of certain genetic types are at a higher risk of developing multiple sclerosis and may exhibit symptoms like: **cramping, inability to move, involuntary movements, muscle spasms, poor balance, weakness.**

Gene markers analyzed: 101
Gene markers present in your genome data: 93
Gene risk variants detected in your genome data: 1
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult a qualified physician for diagnosis and treatment of this condition.

- **Living in low latitudes may be better for MS**: The presence of low vitamin D or insufficient exposure to the sun's rays are independent risk factors for MS. Therefore the risk of MS is lower in low latitudes. A study found that people who had lower than 30 nanomoles of Vitamin D per litre were at an increased risk of MS.
- **Quit smoking**: Cigarette smoking is associated with an increased risk of MS. Moreover, smoking is found to progress the disease more rapidly, so people with MS who smoke, should quit immediately.
- **Maintain a healthy weight**: Studies have shown that being overweight at 20 years increases risk of MS by two fold. An increase in weight is also associated with lowered absorption of vitamin D, which could also contribute to the increased risk of MS.
- **Increase Omega 3 intake**: An increase in intake of omega 3 fatty acid rich sources is associated with a decrease in risk for MS, probably due to the anti-inflammatory properties. Fatty fish is a good source of omega 3. In a study conducted to identify the methods of preventing MS, it was found that eating fatty fish at least once a week lowered risk by 45%.
- **Watch out for infection from Herpes virus:** Epstein Barr virus (EBV), which belongs to the Herpes family of viruses is associated with an increased risk of MS. A study conducted showed that there was significantly higher levels of antibodies against the virus in people who eventually developed MS than among people who did not.

Genes analyzed: *SUMF1, LINC01551, LEKR1, MET, C1GALT1, CLSTN2, HLA-DRA, TNFRSF1A, BRINP1, RREB1, TLL1, NCKAP5, SYK, VAV2, DLEU1, RPS6KB1, ERG, ASAP1, CHST12, SP140, CLECL1, KIF1B, TNFSF14, AHI1, SLC30A7, EVI5, BACH2, AGAP2, IL2RA, CD58, MERTK, CD6, LOC101928791, CYP24A1, MAPK1, STAT3, BATF, DKKL1, NCOA5, LOC285626, ZNF767P, FCRL3, SLC15A2, PVT1, RNASEL, EGFL6, LOC100506047, IL7R, MALT1, C1orf106, MPV17L2, CD86, CBLB*

44. ULCERATIVE COLITIS

Mild: Likely low genetic risk for ulcerative colitis

Ulcerative colitis is an inflammatory bowel disease which is characterised by the inflammation of the rectal and the intestinal mucosa. According to The Centres for Disease Control and Prevention (CDC), there are between 37 to 246 new incidences per 100,000 persons every year in the U.S. People of certain genetic types have a higher risk of developing ulcerative colitis and may exhibit symptoms like: **abdominal pain, bloody stools, weight loss, rectal pain, joint pain, skin problem and increased abdominal sounds.**

Gene markers analyzed: 110
Gene markers present in your genome data: 103
Gene risk variants detected in your genome data: 0
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult your physician for advice.

- **Helicobacter pylori**: Children raised in a sanitised environment and with lower exposure to enteric microorganisms are found to have greater susceptibility to ulcerative colitis. *Helicobacter pylori* is an infection that is commonly acquired during childhood and is associated with poor sanitary facilities and overcrowding. A large meta analysis of 23 studies showed that infection with H.pylori was negatively associated with ulcerative colitis, suggesting a protective benefit.
- **Appendectomy:** A meta analysis has found that children who had an appendectomy below the age of 10 years had a lower risk of developing ulcerative colitis.
- **Diet**: Diet has been considered an important risk factor in the development of ulcerative colitis. A high intake of mono and polyunsaturated fatty acids has been associated with an increased risk of ulcerative colitis.
- **Breast Feeding**: Breast feeding has been shown to lower the risk of developing ulcerative colitis. Breastfeeding provides oral tolerance to microflora as well as for food antigens, which reduces the risk for ulcerative colitis.

Genes analyzed: *HDAC9, PTPRC, EPHB4, PLCL1, SATB2, CACNA2D1, LAMB1, IL23R, ITGAL, ETS1, PTGIR, MROH3P, GNA12, CCNY, RNF186, ZFP90, SMAD3, CCDC26, HLA-DRA, DENND1B, C5orf66, NR5A2, CHP1, C21orf33, IL7R, PARK7, GPR35, NFKB1, TRAF3IP2-AS1, CFB, OTUD3, MAML2, IL17REL, PROCR, NXPE1, HLA-DQA1, SLC39A11, CD226, LOC100996583, C1orf106, PUS10, GPR65, LSP1, APEH, SFMBT1, BSN, TCF4*

45. CROHN'S DISEASE

Mild: Likely low genetic risk for crohn's disease

Crohn's disease is a chronic inflammatory disease which is characterized by inflammation of the lining of the digestive tract. In the U.S 780,000 people live with Crohn's disease. People of certain genetic types have a high risk of developing crohn's disease and may exhibit symptoms like: **abdominal pain, abdominal bloating, diarrhoea, fatigue, cramping, loss of appetite and blood in the stool.**

Gene markers analyzed: 155
Gene markers present in your genome data: 145
Gene risk variants detected in your genome data: 0
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult a qualified physician for diagnosis and treatment of this condition.

- **Maintain a food journal**: Certain types of food may aggravate symptoms in people with Crohn's disease. Identify such foods and lower consumption. Complete elimination of food types like grains or sugar rich foods is not recommended. Moreover, eating six small meals may be better than eating three large meals.
- **Increase iron intake**: Chronic intestinal bleeding could result in iron deficiency. Supplementation with iron supplements may be necessary.
- **Calcium and Vitamin D**: People with Crohn's disease are at an increased risk of osteoporosis and should take sufficient amount of calcium and vitamin D rich foods.
- **Exercise regularly**: Even mild exercise is known to benefit people with Crohn's disease. Exercise could help normalize bowel function, lower stress and relieve symptoms of depression.
- **Reduce environmental triggers**: Environmental triggers like pollen and certain bacteria could trigger inflammation in the gastrointestinal tract. Wearing a mask and using special air filters at home could help lower exposure to such triggers.

Genes analyzed: *CLCA2, MAGI1, ADAM30, JAK2, PARK7, ANKRD55, RUNX3, KSR1, GAL3ST2, IL23R, PSMB10, TYK2, PUS10, ATG16L1, MAP3K8, SKAP2, BRD2, MUC19, LOC101927076, PTRF, CDC37, CCNY, C5orf56, SBSPON, IL2RA, BANK1, DNMT3A, SLC22A23, MYRF, CPEB4, BACH2, PTPN2, DENND1B, SBNO2, IL18RAP, NOD2, UBE2L3, ITLN1, IFNGR2, FGFR1OP, ERAP2, PER3, LACC1, TNFSF15, OSMR, ZGPAT, LOC285626, PLCL1, SLAIN2, CDKAL1, ZNF365, ZBTB38, C21orf33, MLN, KIAA1109, LINC00492, JAZF1, RSPO3, STAT3*

46. VITILIGO

Mild: Likely low genetic risk for vitiligo

The skin gets its colour from the pigment melanin. The immune system of individuals with vitiligo recognizes the body's own melanocytes as foreign entities and attacks these cells in some areas of the skin, which is evident as white patches. In a study conducted to identify genetic factors associated with vitiligo, the risk among related individuals was 18 times higher than in the general population, suggestive of genetic influence. There exists an inverse association between vitiligo and melanoma (skin cancer), with studies suggesting that an increased immune surveillance may exist against melanoma for people who are at high risk for vitiligo. People of certain genetic types have a higher risk of developing vitiligo and may exhibit symptoms that include: **white patches on the skin.**

Gene markers analyzed: 32
Gene markers present in your genome data: 29
Gene risk variants detected in your genome data: 1
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult your physician for advice.
• **Restrict exposure to the sun**: Avoid exposure to UV rays from the sun as well as from artificial sources. Since there is a loss of melanin, there is an increased risk of sunburn. Applying a good sunscreen is recommended before stepping out into the sun.
• **Avoid tattoos**: Any form of trauma to the skin is associated with an increased risk, which includes getting a tattoo.
• **Topical corticosteroid**s: Your dermatologist may recommend the use of topical corticosteroid creams to prevent spread of the white patches.
• **Skin camouflage cream**: Camouflage skin creams are present to cover up the white patches.
• **Skin grafting**: Skin from a healthy and unaffected region of the body is removed and is used to cover the affected region.
• **Depigmentation**: This is recommended if there is more than 50% of skin affected by vitiligo. A depigmentation lotion is applied to remove remaining pigment from normal skin and a hydroquinone based lotion applied to prevent re-pigmentation.

Genes analyzed: *RPGRIP1L, TICAM1, ZMIZ1, SMOC2, LPP, SLC1A2, IKZF4, HERC2, SLC44A4, RNASET2, C1QTNF6, BACH2, CASP7, HCG9, ATXN2, RERE, IL2RA, LOC101929163, GZMB, TG, FANCA*

47. ALOPECIA AREATA

Mild: Likely low genetic risk for alopecia areata

Alopecia areata is an autoimmune condition in which there is loss of hair in one particular part of the body or throughout. It is also known as spot baldness. The prevalence of this condition among the general population is 0.1-0.2%, with a lifetime risk of nearly 2%. People of certain genetic types are at a higher risk of developing alopecia areata and may exhibit symptoms like : **hair loss, itching, anxiety and broken nails.**

Gene markers analyzed: 6
Gene markers present in your genome data: 5
Gene risk variants detected in your genome data: 0
Potential high risk variants detected in your genome data: *None*

Recommendation

If you recognise any symptoms of this condition, consult a qualified physician for diagnosis and treatment of this condition.
• **Lower stress**: Stress is known to be an important trigger for this condition. Learn to manage stress levels and engage in stress relief therapies like yoga and group physical activity.
• **Eat a healthy diet**: A diet that is rich in calcium, iron and antioxidants is known to benefit and to lower risk of alopecia areata.
• **Foods rich in quercetin**: A study showed that quercetin, a bioflavonoid with anti-inflammatory properties was associated with lower risk of alopecia. Foods rich in quercetin include broccoli, kale, apples, cherry, bell pepper and red wine.
• **Control for other risk factors**: A diet high in sugar, alcohol consumption and smoking are associated with aggravating inflammation,which is one of the major factors for the development of this condition.

Genes analyzed: *IL2RA*

48. ANOREXIA

Mild: Likely low genetic risk for anorexia

Anorexia is a psychological eating disorder. The onset of this condition is during early adolescence or young adulthood, constituting 3% of all eating disorders. People of certain genetic types are at a higher risk of developing anorexia and may exhibit symptoms like: **dizziness, fatigue, low blood pressure, anxiety, extreme weight loss.**

Gene markers analyzed: 13
Gene markers present in your genome data: 12
Gene risk variants detected in your genome data: 0
Potential high risk variants detected in your genome data: *None*

Recommendation

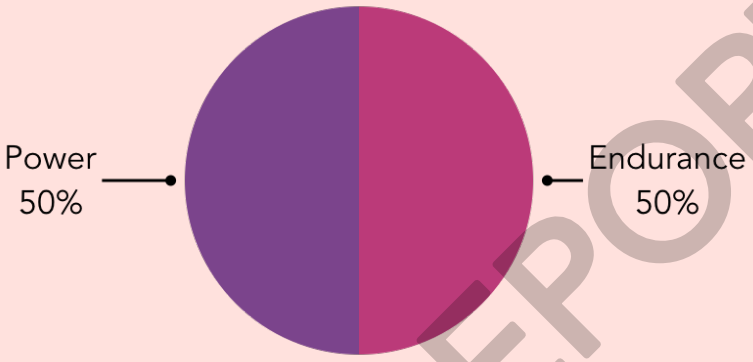
If you recognise any symptoms of this condition, consult a qualified physician for diagnosis and treatment of this condition.

- **Ensure a healthy body weight**: People with anorexia often are thin but they continue to work towards losing weight in order to cater to a 'specific' body image. Prolonged fasting and excessive exercising are some of the measures that are undertaken and which have shown to take a toll on health.
- **Avoid activities or images that trigger anorexia**: Fashion magazines and shows often are triggers for adolescence to lose excessive weight. Such triggers should be consciously avoided.
- **Seek counseling**: At the first sign of an eating disorder, seek professional help to overcome the condition.
- **Work on improving talent and qualification**: People with eating disorders are often associated with poor self-esteem which can be overcome by honing other talents for a sense of achievement.

Genes analyzed: *FAM155A, PPP3CA, ALDH4A1, CAMK1D, GRID1, WWOX, ZNF804B, SORCS2*

SUMMARY RESULTS

Your Endurance:Power Ratio



Your Exercise Plan

TRAINING TYPE	FREQUENCY	TIME	INTENSITY	TYPE
Cardiovascular exercise	3-4 days/week	20-40 minutes	5 on Borg's scale 70% of HR MAX. Talk test- Can talk with heavy breathing but not out of breath to stop exercising.	Medium Intensity with Cardio Training Method – Ex Brisk Walking, jogging, cycling, trekking, swimming
Strength Training	2-3 days/week	45-60 minutes	70-80% of IRM 8-12 reps x 2-3 sets	Interval Training- alternate explosive strength exercise with less intense strength exercise. Ex – burpees (8x1) and push ups with 30secs rest in between, likewise 10 – 15 exercises.
Flexibility	3-7 days/week	20-30 mins, 2 days a week or 5-10 mins everyday.	Full range of motion to the point of mild tightness.	Dynamic stretches for warm up should be (8x1) static stretches for warm down (hold for 15 secs) Yoga, Taichi etc., or with assistance, carry out stretching, passive stretches or simple single muscle static active stretch

Fitness Results

TRAIT NAME	YOUR RESULTS	POSSIBLE OUTCOMES
Endurance Genetic variations in endurance ability		Average: Likely to be average at endurance activities
		Excellent: Likely to be excellent at endurance activities
	✓	Good: Likely to be good at endurance activities
Aerobic Capacity Genetic variations in aerobic capacity		Average: Likely to have average aerobic capacity
		Excellent: Likely to have excellent aerobic capacity
	✓	Good: Likely to have good aerobic capacity
Heart Capacity Genetic variations in heart capacity		Average: Likely average heart capacity
		Excellent: Likely excellent heart capacity
	✓	Good: Likely good heart capacity
Lung Capacity Genetic variations in lung capacity	✓	Average: Likely average lung capacity
		Excellent: Likely excellent lung capacity
		Good: Likely good lung capacity
Power Genetic variations in power performance		Average: Likely to be average at power based activities
		Excellent: Likely to be excellent at power based activities
	✓	Good: Likely to be good at power based activities
Hand Grip Strength Genetic variations in hand grip strength		Average: Likely average hand grip strength
		Excellent: Likely excellent hand grip strength
	✓	Good: Likely good hand grip strength
Flexibility Genetic variations in flexibility	✓	Average: Likely to have moderate flexibility
		Decreased: Likely to have decreased flexibility
		Increased: Likely to have enhanced flexibility
Tendon Strength Genetic variations in tendon strength		Average: Likely average tendon strength
	✓	Excellent: Likely excellent tendon strength
		Good: Likely to have good tendon strength
Ligament Strength Genetic variations in ligament strength	✓	Average: Likely average ligament strength
		Excellent: Likely excellent ligament strength
		Good: Likely good ligament strength

TRAIT NAME	YOUR RESULTS	POSSIBLE OUTCOMES
Exercise Motivation Genetic variations in exercise motivation	✓	Average: Moderate inclination towards exercise
		Excellent: Highly inclined to exercise with positive mood changes
		Good: Inclined to exercise with positive mood changes
Likelihood Of Injury Genetic variations in the liklihood of injury		Average: Likely average risk for exercise related injuries
		Lower: Low likelihood of injury
	✓	Higher: Likely more exercise related injuries
Likelihood Of Fatigue Genetic variations in the likelihood of fatigue	✓	Average: Likely to sustain exercise for a moderate duration
		Lower: Likely to sustain exercise for longer durations
		Higher: Likely to sustain exercise for shorter durations
Exercise Recovery Genetic variations in exercise recovery		Average: Likely to have average period of recovery
	✓	Slower: Likely to experience prolonged recovery
		Faster: Likely to experience rapid recovery
HDL Cholesterol Levels With Exercise Genetic variations in HDL levels with exercise	✓	Average: Moderate increase in HDL levels with exercise
		Favorable: Significant increase in HDL levels with exercise
Insulin Sensitivity With Exercise Genetic variations in insulin sensitivity with exercise		Average: Moderately improved insulin sensitivity with exercise
	✓	Favorable: Enhanced insulin sensitivity with exercise
Weight Loss Or Weight Gain With Exercise Genetic variations in weight gain or loss with exercise	✓	Average: Likely to experience moderate weight loss
		Unfavorable: May not experience much weight loss
		Favorable: Likely to experience higher weight loss

1. ENDURANCE

Good: Likely to be good at endurance activities

Endurance is the body's capacity to utilize oxygen for energy production and sustain it for a prolonged duration of physical activity. A high endurance individual can sustain an activity for a prolonged duration, with minimal discomforts like breathlessness and fatigue. We have analyzed genes that influence endurance aspects such as the type of fuel used by the cells for energy production, percentage distribution of muscle fibers (slow twitch and fast twitch) and the adaptability of the blood vessels to carry more oxygen.People of certain genetic types are better at endurance based activities than others.

Recommendation:

• **ACTIVITIES** : Medium intensity workouts like jogging, running, strength training with moderate weights and more repetitions can be performed for longer durations.

• **NUTRIENTS**: Manganese (Mussels (Seafood), Hazelnuts, Pumpkin Seeds, Cloves, Whole Wheat Bread), Magnesium (Pumpkin seeds, Almonds, Mackerel, Spinach, Lima Beans), Zinc (Oyster, Beef/Lamb,Pumpkin seeds/Squash seeds, Cocoa powder, Cashew nuts), Iron (Spirulina,Oysters,Beef/Liver,Apricot, Spinach) and Potassium (dried apricots, salmon, potato/sweet potato, avocado, spinach).

Genes analyzed: *GNB3, HIF2A, PPARGC1A, HIF2A1, COL5A1, GALM, GABPB1, FMNL2, BDKRB, NFIA-AS2, CRP, COL6A1, TPK1, CKMM, PPARD, TSHR, TFAM, PPARA, IGF1R, IL15RA, ITPR1, ITPR11, HFE, KCNJ11, NALCN-AS1, NATD1, ZNF429, VEGFR2, UCP3, UCP2, L3MBTL4, CLSTN2, GRM3, HIF1A, PPC3B, NRF2, PPARGC1B1, PPARGC1B, ACOXL, CAMK1D, PPARGC1A1, NFATC4, PPARD1, NOS3, ADRB21, ACE, CPQ, GABPB11, SPOCK1, AGTR2, AQP1, ADRB2, ACTN3, VEGFA, ADRB3, RBFOX1, SGMS1, SLC2A4, ADRB1, SOD2*

2. AEROBIC CAPACITY

Good: Likely to have good aerobic capacity

Aerobic capacity (VO2 max) is the maximum capacity of our body to transport and utilize oxygen during exercise and is partially genetically influenced. During exercise, muscles work harder than at rest and, therefore, need more energy. The ATP energy required by the muscles is produced with the help of oxygen. This is the reason why there is progressive increase in breathing when the intensity of exercises increases. The body needs more oxygen to produce the necessary ATP energy for muscle movement. People of certain genetic types differ in the level of oxygen uptake during exercise.

Recommendation:

• **ACTIVITIES** : Aerobic exercises including skipping, running, cycling, skating, swimming, high intensity interval training, cross fit training.

• **NUTRIENTS** : Iron (spirulina, oysters, beef/liver, apricot, spinach), Magnesium (pumpkin seeds, almonds, mackerel, spinach, lima beans) and Ubiquinol (Coenzyme Q10-peanuts, chicken, spinach, avocado, broccoli))

Genes analyzed: *ADRB2, GABPB1, VEGFA, PPARGC1A, PPARA*

3. HEART CAPACITY

Good: Likely good heart capacity

Heart Capacity is the ability of the heart to increase cardiac output to meet increased needs for oxygen during physical activity or exercise. Cardiac capacity is a combination of the physical condition of the heart and aerobic fitness level. People of certain genetic types have better heart capacity than others.

Recommendation:
• **ACTIVITIES** : May require less time to adjust to exercises. Aerobic training can improve heart capacity over time.

Genes analyzed: *NPY, NOS3, KIF5B, CREB1*

4. LUNG CAPACITY

Average: Likely average lung capacity

Total lung capacity, or TLC, refers to the total amount of air in the lungs after taking the deepest breath possible. People of certain genetic types have higher lung capacity than others.

Recommendation:
• **ACTIVITIES** : May experience average lung capacity, so the intensity of exercises should be increased gradually. More likely to feel 'short of breath' easily. Aerobic training can increase lung capacity over time

Genes analyzed: *NRF1, ADRB1, NRF11, APOE1, APOE*

5. POWER

Good: Likely to be good at power based activities

Power is the rapid burst of energy observed during high intensity activities of shorter duration. Type II or fast twitch muscle fibers allow us to perform rapid, high intensity movements. The ability of blood vessels to constrict and make oxygen utilization more efficient is also important for power. We have analyzed genes that influence the percentage distribution of muscle fibers (slow twitch and fast twitch) and their ability to exert maximal power over a short period of time. People of certain genetic types are better at power based activities than others.

Recommendation:
• **ACTIVITIES** : High intensity exercises including sprinting, cycling, high intensity interval training, cross fit training, strength training with heavy weights and fewer repetitions can be performed.

• **NUTRIENTS**: Caffeine (maximum 400mg/day). Slow metabolizers of caffeine should not consume above 100mg/day

Genes analyzed: *MTRR, GALNT13, CLSTN2, ADRB21, CACNG11, HIF1A, VDR, EPAS11, ACTN3, ARHGEF28, AGTR2, COTL1, CALCR, TRHR, MTR, MTHFR, MPRIP, MED4, IP6K3, GPC5, GABRR1, FOCAD, DMD, CREM, ADRB2, AGT, EPAS1, SLC16A1, VDR1, IL6, ZNF423, WAPAL, VDR2, PPARG, AMPD1, SUCLA2, RC3H1, UCP2, NOS3, TPK1, IGF1R, PPARGC1B, CRP, NOS31, NRG1, CKM, PPARA, IGF1, HSD17B14*

6. HAND GRIP STRENGTH

Good: Likely good hand grip strength

Muscle strength, measured by hand grip strength, is an accessible and widely used proxy of muscular fitness. Hand grip strength is associated with frailty and risk of fracture. People of certain genetic types have a better hand grip strength than others.

Recommendation:
• **ACTIVITIES** : Expected to have good hand grip strength. Resistance training can increase muscle strength over time.

Genes analyzed: *LRPPRC, PEX14, HOXB3, MGMT, KANSL1, UCP3, SLC8A1, GLIS1, GBF1, ERP27, SYT1, TGFA, ACTG1*

7. FLEXIBILITY

Average: Likely to have moderate flexibility

Flexibility is the ability of your joints and muscles to move freely (Range of motion). It is important in fitness because it allows for better range of movement when playing sports or exercising. Flexibility is attributed to the protein collagen and the extracellular matrix that surrounds the cells. We have analyzed the genes that could potentially influence your flexibility and performance by influencing composition of ligaments and tendons. People of certain genetic types have better flexibility when compared to others.

Recommendation:
• **ACTIVITIES** : Stretching exercises and warmups are recommended before exercise sessions.

• **NUTRIENTS**: Ascorbic acid (guava, kiwi, black currant, red bell pepper, orange), Anthocyanidins (black raspberries, eggplant/brinjal, blackcurrant, blue berries, black berries), Methionine (brazil nuts, lean beef and lamb, turkey and chicken, fish and shell fish (tuna), soybeans), Cysteine (soya, beef/lamb, sunflower seeds, chicken/turkey, oats and oats bran) and Taurine (mackerel, chicken liver, crab, lamb, beef liver)

Genes analyzed: *COL5A1*

8. TENDON STRENGTH

Excellent: Likely excellent tendon strength

Tendons and ligaments are dense connective tissues made of collagen or elastin fibers that run parallel to each other, creating strong cords. A tendon is a band of fibrous connective tissue which connect muscle to tenocytes, increasing their tensile strength. People of certain genetic types have a better tendon strength than others.

Recommendation:
• **ACTIVITIES** Likely enhanced tendon strength and may be able to sustain higher reps

Genes analyzed: *GDF5, COL5A11, COL1A1, MMP3, MMP32, COL5A1, MMP31*

9. LIGAMENT STRENGTH

Average: Likely average ligament strength

Tendons and ligaments are dense connective tissues made of collagen or elastin fibers that run parallel to each other, creating strong cords. Ligaments connect bone to bone to form joints -- such as knees, elbows, hips and ankles. People of certain genetic types may have stronger ligaments than others.

Recommendation:
• **ACTIVITIES** : Resistance training helps in increasing ligament strength. Warming up before resistance training is recommended

Genes analyzed: *COL1A1, COL5A1, CILP*

10. EXERCISE MOTIVATION

Average: Moderate inclination towards exercise

Certain individuals readily take up physical activity, while others lack the motivation for it. Neuro chemicals produced by the body in response to exercise influence how much we get habituated to physical activity and hence are motivated to repeat it again and again. People of certain genetic types take to physical activity more readily than others.

Recommendation:
• **ACTIVITIES** : May find it hard to develop the habit of regular exercise. Group exercises, gym buddies, dancing, sports and other fun physical activities are some ways to overcome this.

Genes analyzed: *BDNF*

11. LIKELIHOOD OF INJURY

Higher: Likely more exercise related injuries

Sportsmen and runners who place stress on the Achilles tendon have the greatest likelihood of muscle injury and tendinopathy. The Achilles tendon connects your calf muscles to your heel bone. Tendinopathy refers to injury to the tendon. People of certain genotypes are more prone to injury than others and are at increased risk of tendinopathy and other related injuries.

Recommendation:
• **ACTIVITIES** : Use extensive rehabilitation, controlled motion and take extra care to avoid injuries.

• **NUTRIENTS**: Alpha linolenic acid, Eicosapentaenoic acid (flaxseed oil, fish oil (salmon), chia seeds, walnuts and walnut oil, caviar), Docosahexaenoic acid (salmon, sardines, mackerel, beef, flaxseed)

Genes analyzed: *COL5A1, MMP3, MCT1*

12. LIKELIHOOD OF FATIGUE

Average: Likely to sustain exercise for a moderate duration

Do you normally feel excessively tired after exercise? If yes, the answer to this may be in the expression of certain genes in your body. Lactate is the preferred source of fuel for energy production in the exercising muscle when there is a lack of oxygen (anaerobic metabolism). When muscles use up energy during physical activity, there is lactate build-up, which can lead to muscle fatigue. Apart from this, exercise-induced rise in inflammation and sub-optimal flexibility could also be contributing factors for muscle fatigue. People of certain genetic types have better flexibility than others.

Recommendation:

• **ACTIVITIES** : You are likely to sustain physical activity of your choice for moderate durations.

• **NUTRIENTS**: Hydroxy methyl butyrate (grapefruit, alpha alpha, cat fish, avocado), Manganese (mussels (seafood), hazelnuts, pumpkin seeds, cloves, whole wheat bread) and Ascorbic acid (Vitamin C- guava, kiwi, black currant, red bell pepper, orange)

Genes analyzed: *TNF, MCT1*

13. EXERCISE RECOVERY

Slower: Likely to experience prolonged recovery

The process of exercise causes inflammation and minor tissue damage. During rest periods, the body heals and recovers from this damage. People of certain genetic types recover quickly, while others require longer periods, which influences the frequency of exercise, rehab intensity and supplementation needs.

Recommendation:

• **ACTIVITIES** : Longer resting periods between sessions may be required.

• **NUTRIENTS**: Curcumin (turmeric), Polyunsaturated fatty acids (soybean oil, corn oil, walnuts, salmon, pine nuts), Glucosamine (shrimp with shell, lobster with shell, crab with shell, crawfish, bone broth)

Genes analyzed: *TNF, SOD2*

14. HDL CHOLESTEROL LEVELS WITH EXERCISE

Average: Moderate increase in HDL levels with exercise

Regular exercise helps in increasing your HDL cholesterol levels. People of certain genetic types experience a greater increase in HDL levels than others.

Recommendation:
• **ACTIVITIES** : Regular exercise may moderately improve your HDL levels.

• **NUTRIENTS**: Folate (beans, lentils, spinach, lettuce, broccoli), Omega 3-fatty acids (flaxseed oil (cold pressed), salmon fish oil, chia seeds, walnuts, mackerel), Niacin (tuna, chicken breast, peanuts, sunflower seeds, mushrooms), Fibre rich diet (one bran cereal, amaranth grain, white beans cooked, sesame seeds, fig dried)

Genes analyzed: *PPARD*

15. INSULIN SENSITIVITY WITH EXERCISE

Favorable: Enhanced insulin sensitivity with exercise

Exercise generally improves your insulin sensitivity. People of certain genetic types experience greater improvements than others.

Recommendation:
• **ACTIVITIES** : Regular exercise may significantly improve your insulin sensitivity.

• **NUTRIENTS**: Lipoic acid (chia seeds, flaxseeds, red meat, beets, spinach), Magnesium (pumpkin seeds, almonds, mackerel, spinach, lima beans), Polyunsaturated fatty acids (soybean oil, corn oil, walnuts, salmon, pine nuts), Resveratrol (red grapes, boiled peanuts, dark chocolate/ cocoa powder, berries, pistachios) and Vitamin D (crimini mushrooms, salmon, fortified breakfast cereal, fortified tofu, eggs)

Genes analyzed: *LIPC*

16. WEIGHT LOSS OR WEIGHT GAIN WITH EXERCISE

Average: Likely to experience moderate weight loss

Regular exercise aids in weight management via improved metabolism. People of certain genetic types may benefit more than others in terms of weight loss in response to exercise.

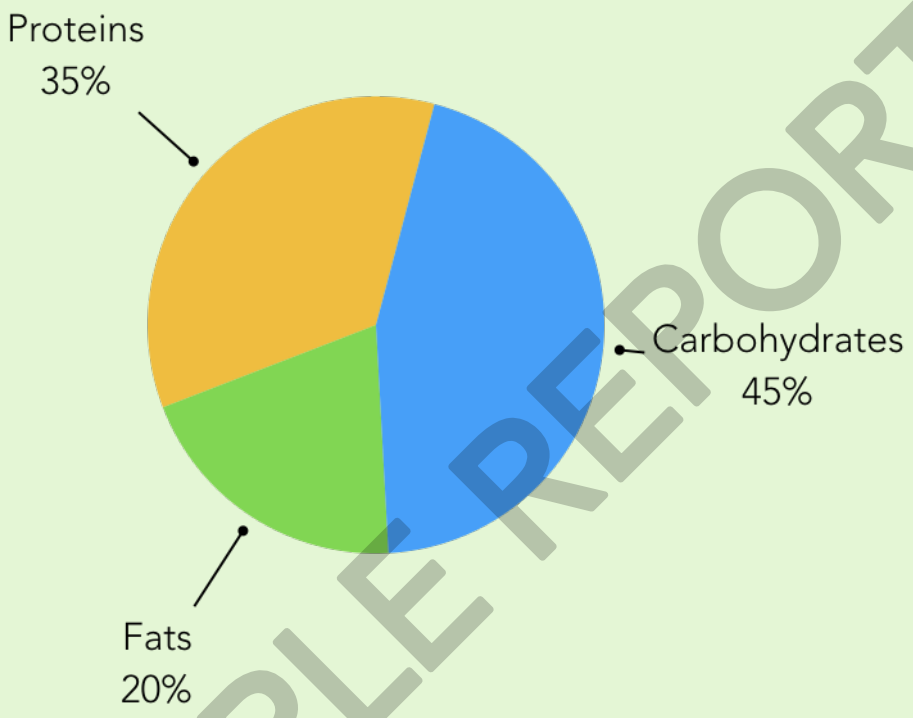
Recommendation:
• **ACTIVITIES** : Likely to lose moderate weight upon taking up regular exercise. Continue to exercise, additionally, focus on dietary means to further reduce weight.

• **NUTRIENTS**: Chitosan (outer shells of crab, outer shells of crayfish, outer shells of shrimp, outer shells of squid), Synephrine (Bitter Orange), Conjugated linolenic acids (Grass Fed Cow's Whole Milk, Grass Fed Cow's Cheese, Grass Fed Beef, Cheddar Cheese, Safflower Oil), Pyruvate (red apple, cheese, dark beer, red wine), Fucoxanthin (brown seaweed), Hydroxycitric acid (garcinia cambogia, lemon, grape fruit, orange), Glucomannan (konjac root, shirataki noodles, pasta)

Genes analyzed: *FTO, ADRB2, INSIG2*

SUMMARY RESULTS

Your diet plan



Key takeaways

Gluten Sensitivity	Gluten Sensitive: Increased risk of being gluten sensitive
Lactose Intolerance	Tolerant: Less likely to be lactose intolerant
Alcohol Flush	Low: Less likely to experience alcohol flush
Increase Intake of	Vitamin B6, Vitamin C, Calcium, Choline, Copper, Zinc

Nutrition Results

TRAIT NAME	YOUR RESULTS	POSSIBLE OUTCOMES
Tendency To Gain Weight A genetic tendency for higher weight gain due to increased energy storage	✓	Moderate: Moderately likely to gain weight
		Low: Less likely to gain weight
		High: Highly likely to gain weight
Tendency To Overeat A genetic tendency to over consume foods due to increased craving	✓	Moderate: Moderately likely to overeat
		Low: Less likely to overeat
		High: Highly likely to overeat
Tendency To Prefer Fatty Foods A genetic tendency for lower fat taste perception and overconsumption of fatty foods	✓	Moderate: Likely to overconsume high fat foods
		Low: Less likely to overconsume high fat foods
		High: Highly likely to overconsume high fat foods
Tendency To Prefer Sweet Foods A genetic tendency for lower sweet taste perception and overconsumption of sweet foods	✓	Moderate: Likely to overconsume sweet foods
		Low: Less likely to overconsume sweet foods
		High: Highly likely to overconsume sweet foods
Tendency To Prefer Bitter Foods A genetic tendency for high bitter taste perception and low intake of bitter vegetables	✓	Moderate: Normal bitter vegetable preference
		Low: Less likely to prefer bitter vegetables
		High: Likely to prefer bitter vegetables
Carbohydrate Intake And Weight Gain Tendency A genetic tendency for increased weight gain upon higher carb intake	✓	Moderate: Likely to gain weight on high carb intake
		Low: Less likely to gain weight on high carb
		High: Highly likely to gain weight on high carb intake
Saturated Fats Intake And Weight Gain Tendency A genetic tendency for higher weight gain upon higher sat fat intake		Moderate: Likely to gain weight on high SFA intake
	✓	Low: Less likely to gain weight on high SFA intake
		High: Highly likely to gain weight on high SFA intake
Mono Unsaturated Fats Intake And Weight Gain Tendency A genetic tendency for weight gain upon higher MUFA intake		Moderate: Likely to gain weight with high MUFA intake
		Low: Less likely to gain weight with high MUFA intake
	✓	High: Highly likely to gain weight with high MUFA intake
Poly Unsaturated Fats Intake And Weight Gain Tendency A genetic tendency for weight gain upon higher PUFA intake		Moderate: Likely to gain weight with high PUFA intake
	✓	Low: Less likely to gain weight with high PUFA intake
		High: Highly likely to gain weight with high PUFA intake

TRAIT NAME	YOUR RESULTS	POSSIBLE OUTCOMES
Protein Intake And Weight Loss Tendency A genetic tendency for increased weight loss upon higher protein intake		Moderate: Likely to lose weight on high protein intake
	✓	High: Highly likely to lose weight on high protein intake
Fibre Intake And Weight Loss Tendency A genetic tendency for increased weight loss upon higher fibre intake	✓	Moderate: Likely to lose weight on high fibre intake
		High: Highly likely to lose weight on high fibre intake
Tendency To Regain Weight A genetic tendency for rapid weight regain after a weight loss program	✓	Moderate: Likely to regain weight after weight loss
		Low: Less likely to regain weight after weight loss
		High: Highly likely to regain weight after weight loss
Vitamin A Needs A genetic tendency to require more Vitamin A due to inefficient metabolism of vitamin A	✓	Need more: Moderately increase vitamin A intake
		Normal: Maintain normal Vitamin A intake
		Need more: Significantly increase vitamin A intake
Vitamin B12 Needs A genetic tendency to require more Vitamin B12 due to inefficient metabolism of vitamin B12	✓	Need more: Moderately increase vitamin B12 intake
		Normal: Maintain normal Vitamin B12 intake
		Need more: Significantly increase vitamin B12 intake
Vitamin B6 Needs A genetic tendency to require more Vitamin B6 due to inefficient metabolism of vitamin B6		Need more: Moderately increase vitamin B6 intake
		Normal: Maintain normal Vitamin B6 intake
	✓	Need more: Significantly increase vitamin B6 intake
Vitamin B9 Needs A genetic tendency to require more Vitamin B9 due to inefficient metabolism of vitamin B9	✓	Need more: Moderately increase vitamin B9 intake
		Normal: Maintain normal Vitamin B9 intake
		Need more: Significantly increase vitamin B9 intake
Vitamin C Needs A genetic tendency to require more Vitamin C due to inefficient metabolism of vitamin C		Need more: Moderately increase vitamin C intake
		Normal: Maintain normal Vitamin C intake
	✓	Need more: Significantly increase vitamin C intake
Vitamin D Needs A genetic tendency to require more Vitamin D due to inefficient metabolism of vitamin D		Need more: Moderately increase vitamin D intake
	✓	Normal: Maintain normal Vitamin D intake
		Need more: Significantly increase vitamin D intake
Vitamin E Needs A genetic tendency to require more Vitamin E due to inefficient metabolism of vitamin E	✓	Need more: Moderately increase vitamin E intake
		Normal: Maintain normal Vitamin E intake
		Need more: Significantly increase vitamin E intake

TRAIT NAME	YOUR RESULTS	POSSIBLE OUTCOMES
Vitamin K Needs A genetic tendency to require more Vitamin K due to inefficient metabolism of vitamin K	✓	Need more: Moderately increase vitamin K intake
		Normal: Maintain normal Vitamin K intake
		Need more: Significantly increase vitamin K intake
Calcium Needs A genetic tendency to need more or less of Calcium due to differences in metabolism of Calcium		Need less: You may have higher calcium levels
		Normal: Maintain normal Calcium intake
	✓	Need more: Significantly increase Calcium intake
Choline Needs A genetic tendency to require more Choline due to inefficient metabolism of Choline		Need more: Moderately increase Choline intake
		Normal: Maintain normal Choline intake
	✓	Need more: Significantly increase Choline intake.
Copper Needs A genetic tendency to require more Copper due to inefficient metabolism of Copper		Need more: Moderately increase Copper intake
		Normal: Maintain normal Copper intake
	✓	Need more: Significantly increase Copper intake
Iron Needs A genetic tendency to require more Iron due to inefficient metabolism of Iron	✓	Need more: Moderately increase Iron intake
		Normal: Maintain normal Iron intake
		Need more: Significantly increase Iron intake
Magnesium Needs A genetic tendency to require more Magnesium due to inefficient metabolism of Magnesium	✓	Need more: Moderately increase Magnesium intake
		Normal: Maintain normal Magnesium intake
		Need more: Significantly increase Magnesium intake
Phosphate Needs A genetic tendency to require more Phosphate due to inefficient metabolism of Phosphate		Need more: Moderately increase Phosphate intake
	✓	Normal: Maintain normal Phosphate intake
		Need more: Significantly increase Phosphate intake
Zinc Needs A genetic tendency to require more Zinc due to inefficient metabolism of Zinc		Need more: Moderately increase Zinc intake
		Normal: Maintain normal Zinc intake
	✓	Need more: Significantly increase Zinc intake
Selenium Needs A genetic tendency to require more Selenium due to inefficient metabolism of Selenium		Need more: Moderately increase Selenium intake
	✓	Normal: Maintain normal Selenium intake
		Need more: Significantly increase Selenium intake
Antioxidant Needs A genetic tendency to require more Antioxidants due to inefficient metabolism of Antioxidants		Need more: Moderately increase antioxidants intake
	✓	Normal: Maintain normal antioxidants intake
		Need more: Significantly increase antioxidants intake

TRAIT NAME	YOUR RESULTS	POSSIBLE OUTCOMES
Caffeine Consumption A genetic tendency for variation in caffeine consumption due to difference in preference		High: Likely to consume more caffeine
		Low: Likely to consume less caffeine
	✔	Moderate: Likely to consume moderate amount of caffeine
Caffeine Metabolism A genetic tendency for variation in caffeine clearance due to varied metabolism	✔	Slow: Likely to be a slow metabolizer of caffeine
		Fast: Likely to be a fast metabolizer of caffeine
Gluten Sensitivity A genetic tendency for variation in response to due to varied sensitivity		Gluten insensitive: Unlikely to be gluten sensitive
	✔	Gluten Sensitive: Increased risk of being gluten sensitive
Lactose Intolerance A genetic tendency for difference in response to lactose due to varied tolerance	✔	Tolerant: Less likely to be lactose intolerant
		Intolerant: Likely to be lactose intolerant
Salt Intake And Blood Pressure Sensitivity A genetic tendency for lower blood pressure due to salt sensitivity		Moderate: Likely to have lower BP on low salt diet
		Normal: Likely to slightly reduce BP on low salt diet
	✔	High: Highly likely to have lower BP on low salt diet
Riboflavin And Blood Pressure Response A genetic tendency for lower blood pressure on increased riboflavin intake	✔	Insensitive: Less likely to have lower BP on high Riboflavin intake
		Sensitive: Highly likely to have lower BP with high Riboflavin Intake
Alcohol Flush A genetic tendency for variation in response to alcohol intake due to reduced clearance of acetaldehyde	✔	Low: Less likely to experience alcohol flush
		Moderate: Moderately likely to experience alcohol flush
		High: Highly likely to experience alcohol flush.

1. TENDENCY TO GAIN WEIGHT

Moderate: Moderately likely to gain weight

People of certain genetic type have more of a tendency to gain weight than others due to their genetic makeup. Genes that regulate metabolic rate, energy expenditure and energy storage influence the tendency to store calories versus expending calories. Certain genes that once offered a survival advantage to our ancestors by storing calories for leaner times have now become liabilities in the age of surplus food availability. Your genetic profile influences the tendency of your body to store or expend more calories.

Recommendation:
- You have a moderate genetic tendency to gain weight.
- Ensure a healthy balance between energy intake and physical activity to maintain a healthy weight.

Genes analyzed: *KCTD15, MC4R, NPC1, LEP, NEGR1, UCP3, PCSK1, ETV5, MTCH2, SH2B1, MAF, BDNF, ADRB21, STK33, TMEM18, ADRB2, FTO, ADIPOQ, ADRB1, UCP2, GNPDA2, SEC16B*

2. TENDENCY TO OVEREAT

Moderate: Moderately likely to overeat

People of certain genetic type have more of a tendency to over consume foods. We analyze genes that are known to influence various hunger and satiety hormones such as Leptin, Ghrelin and Neuropeptides, which influence neurological aspects of feeding, producing effects such as persistent hunger, excessive snacking, preference for high calorific food and emotional eating.

Recommendation:
- You may have a moderate genetic tendency to overeat.
- Practice mindful eating and eat high fibre or high protein snacks to increase feeling of fullness

Genes analyzed: *FTO, MC4R, TAS2R38, CLOCK, DRD2*

3. TENDENCY TO PREFER FATTY FOODS

Moderate: Likely to overconsume high fat foods

People of certain genetic type tend to over consume fatty foods due to a lower ability to perceive fats. In studies, people with lower fat perception ability were found to rate the fat content of food consistently lower than the actual fat content. Eating high quantities of fatty food can lead to weight gain and other health conditions.

Recommendation:
- You may have a moderate genetic ability to taste fats and are likely to consume more fatty foods.
- Consciously reduce intake of high fat food, especially fried and oily foods.
- Look for 0 g trans fat on the Nutrition Facts label and no hydrogenated oils in the ingredients list

Genes analyzed: *CD361, CD36*

4. TENDENCY TO PREFER SWEET FOODS

Moderate: Likely to overconsume sweet foods

People of certain genetic type tend to over consume sweet foods due to low sensitivity to sweet taste, either due to lesser number or reduced sensitivity of sweet taste receptors on their tongue. Sugary foods are rich in calories and can cause insulin resistance, leading to weight gain and other health conditions.

Recommendation:

- You may have a slightly decreased genetic sweet taste sensitivity and are likely to consume more sweet foods.
- Consciously reduce intake of sweets.
- High sugar intake increases risk for obesity and diabetes.
- Snack on dry fruits, fruits and green leafy vegetables to reduce sugar cravings.
- Drink plenty of water.

Genes analyzed: *TAS1R3, TAS1R31, TAS1R21, GLUT2, TAS1R2, TAS2R381, TAS2R38, TAS2R382*

5. TENDENCY TO PREFER BITTER FOODS

Moderate: Normal bitter vegetable preference

Bitter taste perception is due to genetic variations in taste receptors. When food is chewed in the mouth, molecules such as phenylthiocarbamide bind to the taste receptors present in the tongue, which gives rise to the bitter taste. People of certain genetic type tend to avoid bitter vegetables due to higher sensitivity to bitter taste. Vegetables are low calorie and high fibre foods, which help in weight management and have several health benefits.

Recommendation:

- You may have a genetic tendency to prefer bitter vegetables which could be due to moderate sensitivity to bitter taste.
- Add natural sweeteners, lemon juice or spices to flavor bitter tasting green leafy vegetables, be creative with vegetable preparations.
- Bitter foods help absorb nutrients,reduce sugar cravings and balance appetite.
- Eat vegetables and fruits of different colors

Genes analyzed: *TAS2R381, TAS2R38, TAS2R382*

6. CARBOHYDRATE INTAKE AND WEIGHT GAIN TENDENCY

Moderate: Likely to gain weight on high carb intake

Carbohydrates are the main sources of energy and they provide the kilocalories for weight maintenance. 45-65% of total calories are the recommended intake of carbohydrates with starch and sugars being the major carbohydrates. Corn, rice, potatoes, pasta and breads are sources of starch. Fruits and fruit juices have natural sugars while desserts, candies and soft drinks have added sugar. Carbs are considered as weight increasing foods, but that's not true for everyone. People of certain genetic type tend to gain more weight upon consuming carbohydrate rich foods than others. These individuals can better maintain weight by reducing the amount of carbs in their diet. Eat a balanced diet. Choose complex carbohydrates such as fruits, vegetables, legumes and whole grain.

Recommendation:
- You may have a moderate genetic risk for weight gain on a high carbohydrate diet.
- Eat a balanced diet.
- Choose complex carbohydrates such as fruits, vegetables, legumes and whole grains.

Genes analyzed: *SEC16B, FABP2, FAIM2, FTO, TCF7L2, AMY1, FTO1, RBJ, LRRN6C, FLJ35779*

7. SATURATED FATS INTAKE AND WEIGHT GAIN TENDENCY

Low: Less likely to gain weight on high SFA intake

Saturated fats are a type of fat that are largely solid at room temperature as they are saturated with hydrogen molecules. Meat and dairy products are rich sources of saturated fats. A high intake of saturated fats is associated with an increase in LDL cholesterol levels in the body. The American Heart Association recommends no more than 5-6% of calories from saturated fat from the daily diet. People of certain genetic type tend to gain more weight upon consuming saturated fat rich foods than others. These individuals can better maintain weight by reducing the amount of saturated fats in their diets

Recommendation:
- You may have a genetic tendency to have a lower BMI on a high fat diet.
- Limit the consumption of saturated fat sources in the diet (butter, ghee, lard, margarine) Choose low fat, non-fried dishes when dining out.
- Choose baked or steamed or grilled method of cooking

Genes analyzed: *FTO, APOA2*

8. MONO UNSATURATED FATS INTAKE AND WEIGHT GAIN TENDENCY

High: Highly likely to gain weight with high MUFA intake

Monounsaturated fatty acids include omega-7 and omega 9 fatty acids. They are associated with anti-inflammatory properties, lowering blood pressure, maintaining triglyceride levels. MUFAs are also found to benefit skin health as they balance water levels and provide ceramides for skin renewal. The Mediterranean diet is rich in MUFA. People of certain genetic type tend to gain weight upon consuming MUFA rich foods than others. These individuals can better maintain weight by balancing the amount of MUFA in their diets. Given that MUFA is beneficial for overall health and particularly heart health, individuals with the weight gain genotype can increase the amount of exercise to compensate for the increased risk of weight gain.

Recommendation:

- You may have a genetic tendency for higher BMI on a high MUFA diet.
- Include MUFA rich food sources in moderation.
- Olive oil, avocado, olives, almonds, peanuts are rich in MUFA.
- Though a diet rich in MUFA might not help in weight maintenance, it is recommended to include MUFA rich foods in the diet to improve heart health.
- Weight gain can be prevented by increasing physical activity

Genes analyzed: *PPARG, NR1D1, ADIPOQ*

9. POLY UNSATURATED FATS INTAKE AND WEIGHT GAIN TENDENCY

Low: Less likely to gain weight with high PUFA intake

Omega 3s are important for brain and heart health as they reduce blood pressure and triglyceride levels. They are also important for skin and vision health. Omega 6s help in bone health and in stimulating hair growth. People of certain genetic type tend to gain weight upon consuming PUFA rich foods than others. These individuals can better maintain weight by lowering the amount of PUFA in their diets or increasing physical activity. Importantly, targeting the Omega3: Omega6 ratio is recommended, with preference towards Omega 3.

Recommendation:

- You may be less likely to have a higher BMI on a high PUFA diet.
- Include PUFA-rich food in your diet.
- Grapeseed oil, canola oil, soybean oil, chia seeds, tuna and mackerel are rich in PUFA.

Genes analyzed: *BDNF*

10. PROTEIN INTAKE AND WEIGHT LOSS TENDENCY

High: Highly likely to lose weight on high protein intake

Protein is an important building block for bones, skin, blood, cartilage and muscles, and it is present in every cell in the body. Nails, hair, enzymes, hormones and other body chemicals consist of large amounts of protein. Moreover, our body utilises protein to build and repair tissues. People of certain genetic type tend to benefit more in terms of weight maintenance with high protein intake than others

Recommendation:
- You may have a genetic tendency to lose more weight on a high protein diet.
- Eat a diet rich in proteins.
- Include proteins in diet (eggs, chicken breast, tuna, cottage cheese, greek yogurt, almonds, oats, broccoli, quinoa) as they are highly satiating, leading to reduced hunger and appetite

Genes analyzed: *FTO*

11. FIBRE INTAKE AND WEIGHT LOSS TENDENCY

Moderate: Likely to lose weight on high fibre intake

Dietary fiber is found in whole grains, vegetables, fruits and legumes. It helps relieve constipation or prevent it while also helping in weight maintenance, reducing the risk for heart disease and diabetes. People of certain genetic type tend to benefit more in terms of weight loss with high fiber intake than others.

Recommendation:
- You may have a genetic tendency to lose less weight on a high fibre diet.
- Fibre rich food can result in weight loss by increasing the feeling of fullness thus leading to reduced calorie intake.
- Pear, apple, banana, carrot, beetroot, broccoli, lentils, chickpeas, oats and almonds are examples of fibre rich foods

Genes analyzed: *FTO*

12. TENDENCY TO REGAIN WEIGHT

Moderate: Likely to regain weight after weight loss

People of certain genetic type tend to quickly regain weight after having been on a weight loss program. These individuals need to continue adherence to exercise and diet program to maintain optimal weight.

Recommendation:
- You may have a genetic tendency for moderate weight regain after an interventional strategy.
- Follow healthy lifestyle and eating pattern to ensure better weight maintenance.
- Do not skip breakfast as a good breakfast curbs hunger, avoid processed food and sugar sweetened beverages.
- Engage in 30-60 minutes of physical activity.
- Maintain a balanced diet and include more of whole grains, nuts, fruits and vegetables to your diet.
- Have a food journal and record your daily food habits which will help you to monitor your food consumption

Genes analyzed: *TFAP2B, PPARG, BDNF, ADIPOQ*

13. VITAMIN A NEEDS

Need more: Moderately increase vitamin A intake

Vitamin A is required for clear vision, healthy skin and enhanced immunity. Animal sources provide Vitamin A in the form of retinol, while some plant sources provide the precursor of Vitamin A in the form of carotenes, which in turn must be converted to retinol. People of certain genetic type need more Vitamin A in their diet due to less efficient conversion of carotenoids to retinol.

Recommendation:
- You may have a genetic tendency to have moderately low vitamin A levels.
- Meet your daily requirements for Vitamin A.
- Measure serum Vitamin A level, if below normal even after meeting RDA requirements; consult a physician.
- Include carrots, sweet potato, pumpkin, green leafy vegetables, parsley, basil, coriander, milk, fish and bell peppers in daily diet

Genes analyzed: *BCMO11, BCMO1*

14. VITAMIN B12 NEEDS

Need more: Moderately increase vitamin B12 intake

Vitamin B12 is actively involved in red blood cell maturity and its deficiency can lead to pernicious anemia and general fatigue. It also helps in the removal of homocysteine from the cells. People of certain genetic type need more Vitamin B12 in their diet due to lower levels in the body.

Recommendation:
- You may have a genetic tendency for moderately low vitamin B12 levels.
- Meet your daily requirements for Vitamin B12.
- Measure serum Vitamin B12 level, if below normal even after meeting RDA requirements; consult a physician.
- Vitamin B12 rich foods include fish and seafood.
- Also seaweed, eggs, poultry, meat and dairy products provide this nutrient

Genes analyzed: *TCN1, FUT2, CUBN, RASIP1*

15. VITAMIN B6 NEEDS

Need more: Significantly increase vitamin B6 intake

Vitamin B6 is required for the proper utilization of sugars, fats and proteins in the body. It also protects the cells against glycation-induced damage. People of certain genetic type need more Vitamin B6 in their diet as they lack the ability to fully metabolize this vitamin leading to its low levels in the body.

Recommendation:
- You may have a genetic tendency for low vitamin B6 levels.
- Meet your daily requirements for Vitamin B6.
- Measure serum Vitamin B6 level, if below normal even after meeting RDA requirements; consult a physician.
- Vitamin B6 rich foods include whole grain products, nuts and seeds, fish, pork and meat.

Genes analyzed: *ALPL, NBPF3, NBPF31*

16. VITAMIN B9 NEEDS

Need more: Moderately increase vitamin B9 intake

Vitamin B9 or folate plays a major role in DNA synthesis and repair. It is also essential for the conversion of homocysteine to methionine. Excess accumulation of homocysteine can be harmful. People of certain genetic type need more Vitamin B9 in their diet due to lower folate levels and an inefficient enzymatic conversion of homocysteine to methionine.

Recommendation:
- You may have a genetic tendency for moderately low vitamin B9 levels.
- Meet your daily requirements for Vitamin B9.
- Measure serum Vitamin B9 level, if below normal even after meeting RDA requirements; consult a physician.
- Vitamin B9 rich foods include green leafy vegetables, dark coloured fruits (such as oranges, peaches, broccoli, papaya, grapefruit, strawberries, beans, peas, lentils, avocados, okra, sunflower seeds, peanuts, flaxseeds, almonds, cauliflower, corn, celery, carrots and fortified grains)

Genes analyzed: *MYT1L, MTHFR*

17. VITAMIN C NEEDS

Need more: Significantly increase vitamin C intake

Vitamin C is a potent antioxidant and is essential for enhanced immunity. People of certain genetic type need more Vitamin C in their diet due to lower levels in the body.

Recommendation:
- You may have a genetic tendency for low vitamin C levels.
- Meet your daily requirements for Vitamin C.
- Measure serum Vitamin C level, if below normal even after meeting RDA requirements; consult a physician.
- Vitamin C rich foods include agathi, cabbage, coriander leaves, drumstick leaves, capsicum, guava, green chillies, orange and broccoli.

Genes analyzed: *SLC23A1*

18. VITAMIN D NEEDS

Normal: Maintain normal Vitamin D intake

Vitamin D is essential for the absorption of calcium from the intestine and also for enhanced immunity. Our body can synthesize sufficient Vitamin D from cholesterol when the skin is exposed to adequate amounts of sunlight. People of certain genetic type need more Vitamin D in their diet due to its inefficient synthesis in our body.

Recommendation:

- You may have a genetic tendency for normal vitamin D levels.
- Meet your daily requirements for Vitamin D.
- Include calcium rich foods in the diet to improve absorption of vitamin D.
- Measure serum Vitamin D level, if below normal even after meeting RDA requirements; consult a physician.
- Calcium rich food sources are chia seeds, beans, lentils, almonds, spinach, tofu, milk & milk products, eggs and mushrooms and finger millets.

Genes analyzed: *GC1, CYP2R1, VDR, NADSYN1, GC2, GC, CYP27B1*

19. VITAMIN E NEEDS

Need more: Moderately increase vitamin E intake

Vitamin E is an antioxidant and it defends our body against free radical damage and protects polyunsaturated fatty acids from oxidation. People of certain genetic type need more Vitamin E in their diet due to inefficient transport and lower plasma levels of Vitamin E.

Recommendation:

- You may have a genetic tendency for moderately low vitamin E levels.
- Meet your daily requirements for Vitamin E.
- Measure serum Vitamin E level, if below normal even after meeting RDA requirements; consult a physician.
- Sunflower seeds, olive oil, wheat germ oil, spinach, avocados, almonds, broccoli and shrimps are rich in vitamin E

Genes analyzed: *CD362, SCARB1, intergenic, CD36, TTPA, CD361, CYP4F2, ZPR1*

20. VITAMIN K NEEDS

Need more: Moderately increase vitamin K intake

Vitamin K plays an important role in helping blood clotting process and in preventing excessive bleeding. People of certain genetic type need enhanced Vitamin K supplementation to maintain adequate levels in blood.

Recommendation:
- You may have a genetic tendency for moderately low vitamin K levels.
- Meet your daily requirements for vitamin K.
- Measure serum vitamin K level, if below normal even after meeting RDA requirements; consult a physician.
- Vitamin K rich foods include Brussels sprouts, cabbage, prunes, spring onions and green leafy vegetables.

Genes analyzed: *VKORC2, GGCX, CYP4F2, VKORC1*

21. CALCIUM NEEDS

Need more: Significantly increase Calcium intake

Calcium is the most abundant mineral in the body, essential for maintaining the strength and structure of bones and teeth and certain metabolic functions. Both higher and lower calcium levels can have important consequences for health. People of certain genetic type tend to have higher serum calcium levels and can restrict their calcium intake.

Recommendation:
- You may have a genetic tendency for low calcium levels.
- Meet your daily requirements for Calcium (1300mg per day)Measure serum calcium level, if below normal even after meeting RDA requirements; consult a physician.
- For adults between 19 and 50 years of age, calcium intake should not exceed 2500mg per day.
- For adults older than 50 years, calcium intake should not exceed 2000 mg per day.
- Include calcium rich foods such as amaranth leaves, almonds, mustard seeds, sunflower seeds, finger millets, sesame seeds, broccoli and dairy (subject to lactose tolerance recommendation)

Genes analyzed: *CARS, CASR, CASR1, CYP24A1, DGKD, TTC39B, WDR81, DGKD1, DGKH, GATA3, GCKR*

22. CHOLINE NEEDS

Need more: Significantly increase Choline intake.

Choline is a macronutrient which plays an important role in liver function, nerve function, normal brain development, muscle movement and in supporting a healthy metabolism. People with a genetic variant in the PEMT gene and other genes are likely to experience adverse health consequences when fed a low choline diet. Hence supplementation is recommended for such individuals.

Recommendation:
- You may have a genetic tendency for low choline levels.
- Meet your daily requirements for choline.
- Measure serum choline level, if below normal even after meeting RDA requirements; consult a physician.
- Choline rich foods include eggs, liver, meat, pasta and shellfish.

Genes analyzed: *MTHFD1, PEMT*

23. COPPER NEEDS

Need more: Significantly increase Copper intake

Copper is necessary for the absorption of iron, in the synthesis of haemoglobin and in the maintenance of connective tissue, brain, heart and other organs. People of certain genetic types need more copper.

Recommendation:
- You may have a genetic tendency for low copper levels.
- Meet your daily requirements for copper.
- Measure serum copper level, if below normal even after meeting RDA requirements; consult a physician.
- Copper rich foods include sunflower seeds, almonds, dried apricots, dark chocolates and lentils.

Genes analyzed: *SMIM1, SELENBP1*

24. IRON NEEDS

Need more: Moderately increase Iron intake

Iron is essential for oxygen transport through the blood. Its deficiency leads to anemia. People of certain genetic type need more iron in their diet as they have reduced ability to absorb iron from the diet.

Recommendation:
- You may have a genetic tendency for moderately low iron levels.
- Meet your daily requirements for iron.
- Men should consume 8 mg per day, women between 19 and 50 years should consume 18 mg per day and women over 50 years should consume 5 mg per day.
- Measure serum iron level, if below normal even after meeting RDA requirements; consult a physician.
- Iron rich foods include amaranth leaves, spinach, beans, lentils, chickpeas, peas, soybeans, liver, turkey, pumpkin seeds, broccoli, tofu and dark chocolate

Genes analyzed: *TF, SLC17A1, TMPRRS6, TFR2, TMPRRS61*

25. MAGNESIUM NEEDS

Need more: Moderately increase Magnesium intake

Magnesium helps in maintaining normal nerve and muscle function and helps maintain strong bones. It is also important for regulating blood glucose levels and in the production of energy and amino acids.

Recommendation:
- You may have a genetic tendency for moderately low magnesium levels.
- Meet your daily requirements for magnesium.
- Measure serum magnesium level, if below normal even after meeting RDA requirements; consult a physician.
- Magnesium rich foods include dark leafy greens, nuts, fish, whole grains, avocados and yogurt.

Genes analyzed: *SHROOM3, MUC1, DCDC5, HOXD9, LUZP2, MDS1, CASR, TRPM6*

26. PHOSPHATE NEEDS

Normal: Maintain normal Phosphate intake

Phosphate is necessary for the formation of bones and teeth and is also used as a building block for several important molecules including DNA. People of certain genetic type need more phosphate in their diet as they have decreased phosphate levels in blood.

Recommendation:
- You may have a genetic tendency for normal phosphate levels.
- Meet your daily requirements for phosphate.
- Measure serum phosphate level, if below normal even after meeting RDA requirements; consult a physician.
- Phosphate rich foods include pumpkin seeds, brazil nuts, salmons and shellfish

Genes analyzed: *CASR, TKT*

27. ZINC NEEDS

Need more: Significantly increase Zinc intake

Zinc plays an important role in the proper functioning of the immune system, cell division, cell growth and in the breakdown of carbohydrates. Zinc is also important for the senses of taste and smell.

Recommendation:
- You may have a genetic tendency for low zinc levels.
- Meet your daily requirements for zinc.
- Measure serum zinc level, if below normal even after meeting RDA requirements; consult a physician.
- Zinc rich foods include flax seeds, kidney beans, pumpkin seeds, watermelon seeds and beef

Genes analyzed: *MT1A, CA1, Il6, NBDY, MT2A*

28. SELENIUM NEEDS

Normal: Maintain normal Selenium intake

Selenium helps in the synthesis of antioxidant enzymes and in maintaining a healthy immune system. People of certain genetic type may benefit from selenium supplementation.

Recommendation:
- You may have a genetic tendency for normal selenium levels.
- Meet your daily requirements for selenium.
- Measure serum selenium level, if below normal even after meeting RDA requirements; consult a physician.
- Selenium rich foods brazil nuts, yellow fin tuna, turkey, chicken, white button mushrooms and brown rice.

Genes analyzed: *CBS*

29. ANTIOXIDANT NEEDS

Normal: Maintain normal antioxidants intake

Antioxidants play a key role in reducing the ill effects of 'free radicals' and thereby preventing premature aging, tissue damage and the onset of chronic diseases. They are present in many vegetables, fruits, cereals, green tea, etc. People of certain genetic type have lower efficiency to defend themselves against free radical damage and hence require more antioxidants in their diet.

Recommendation:
- You may have a genetic tendency to require moderate antioxidants.
- Include foods rich in antioxidants.
- Low antioxidant level increases the risk for cardiomyopathy.
- Foods rich in antioxidants are purple, red and blue grapes, blueberries, nuts, green leafy vegetables, sweet potato, carrots, whole grains and beans

Genes analyzed: *GPX1, NAT1, SOD21, XRCC1, SOD2, PON11, PON1, CAT*

30. CAFFEINE CONSUMPTION

Moderate: Likely to consume moderate amount of caffeine

People of certain genetic type tend to consume more cups of coffee (>625mg of caffeine) a day. Caffeine is a central nervous system stimulant and the most widely consumed psychoactive drug. Increased coffee consumption has been linked to improved health benefits for fast metabolizers of caffeine. Slow metabolizers are prone to increased risk of heart disease with higher caffeine intake.

Recommendation:
- You have a genetic tendency to consume moderate amount of coffee.

Genes analyzed: *ABCG2, GKCR, AHR, AHR1, MLXIPL, EFCAB5, BDNF, CYP1A2, CYP1A1*

31. CAFFEINE METABOLISM

Slow: Likely to be a slow metabolizer of caffeine

People of certain genetic type are slow metabolizers of caffeine and may experience symptoms such as palpitations and anxiety upon consuming more than 1 to 2 cups of coffee a day. These individuals may also be at a higher risk of heart disease with increased coffee intake.

Recommendation:
- You have a genetic tendency to be a slow metabolizer.
- Restrict coffee intake up to 2 cups a day.
- Choose decaffeinated coffee and other low caffeine beverages.
- May be at higher risk of heart attack when more than 2 cups of coffee are consumed everyday.
- Drink green tea instead.
- Caffeine is present in coffee, energy drinks, in colas and a variety of other foods and beverages.

Genes analyzed: *CYP1A2*

32. GLUTEN SENSITIVITY

Gluten Sensitive: Increased risk of being gluten sensitive

People of certain genetic type may have lower tolerance to gluten, a protein found in wheat, barley and rye. Some people experience symptoms like abdominal cramps, bloating, "foggy mind", depression, headaches, pain in the bone or joint, diarrhea or constipation and chronic fatigue when they have gluten in their diet but may not test positive for serological determination of celiac disease. When gluten is removed from their diet, these symptoms subside, this condition is known as gluten sensitivity. In some cases (~1% of western population), it may lead to celiac disease.

Recommendation:
- You carry genetic markers associated with increased risk of gluten sensitivity.
- However, not all individuals who carry these markers are found to have gluten sensitivity.
- Gluten sensitivity needs to be further confirmed by the presence of symptoms.
- please consult your physician or dietetician to confirm gluten sensitivity, before starting on a gluten free diet.

Genes analyzed: *HLA DQ 8, HLA-DQ 2.5, HLA DQ2.2 (M3), HLA DQ2.2 (M1), HLA DQ2.2 (M2)*

33. LACTOSE INTOLERANCE

Tolerant: Less likely to be lactose intolerant

People of certain genetic type stop producing the enzyme lactase in late childhood. Lactase is needed to breakdown the sugar lactose present in milk. These individuals may experience gastrointestinal symptoms upon consuming large quantities of milk as adults.

Recommendation:
- You are less likely to be lactose intolerant.
- Include dairy products in the diet.
- Include milk and other dairy products as sources of calcium, vitamin D and milk protein

Genes analyzed: *MCM6*

34. SALT INTAKE AND BLOOD PRESSURE SENSITIVITY

High: Highly likely to have lower BP on low salt diet

Sodium is an essential electrolyte present in the extra cellular fluid. It regulates osmosis and maintains fluid levels within the cell and it also plays an important role in enzyme functions and contraction of muscles. The American Heart Association (AHA) recommends not more than 2300 mg of salt per day; however, most people eat too much salt. On an average 3400 mg of salt is consumed with most of it coming from processed foods. People of certain genetic type will have higher blood pressure in response to high salt consumption. Nearly 50% of hypertensive people are salt-sensitive, which is associated with a rise in BP with salt intake. These individuals will tend to reduce BP with lower salt intake, which is recommended.

Recommendation:
- People with your genetic type show a greater reduction in blood pressure levels on a low salt diet.
- Reduce salt intake to about a teaspoon of salt per day.
- Limit high salt content food (canned, processed, baked, salt-dried and pickled foods).
- Even sweet tasting food can have high salt content, check the food labels carefully.
- Consider adding spices and herbs such as oregano, rosemary, mint, parsley, garlic and ginger for favour instead of salt.
- Potassium rich foods (banana, sweet potato, spinach, apple, orange, cabbage) help regulate blood pressure.

Genes analyzed: *ACE, CYP11B2, NPPA, AGT, SGK1*

35. RIBOFLAVIN AND BLOOD PRESSURE RESPONSE

Insensitive: Less likely to have lower BP on high Riboflavin intake

Riboflavin, also known as vitamin B2, is a water soluble vitamin. Nerves and brain need riboflavin to function properly. It is also required for healthy skin, hair, eyes and liver. people of certain genetic types will have lower blood pressure in response to high riboflavin intake.

Recommendation:
- You have a genetic tendency to have no effect on blood pressure on increased intake of riboflavin.
- Though blood pressure levels are not affected by increasing intake of riboflavin, its deficiency can lead to symptoms like burning mouth, angular cheilitis, anemia, and vision problem.
- Include foods rich in riboflavin like eggs, liver, dairy products and enriched flour in your diet to ensure optimum level of vitamin B2 in the body.

Genes analyzed: *MTHFR*

36. ALCOHOL FLUSH

Low: Less likely to experience alcohol flush

People of certain genetic type may experience symptoms like redness of the face and neck upon consuming alcohol due to reduced clearance of acetaldehyde which is produced in the body upon consuming alcohol. Though alcohol avoidance per limitation is recommended for all, people with the alcohol flush genotype may be at higher health risk upon alcohol consumption

Recommendation:
- You have a low genetic tendency to experience alcohol flush.
- However, do remember alcohol consumption is a risk factor for many health conditions.
- Consume alcohol in moderation.

Genes analyzed: *ALDH2*

REFERENCES

The information contained in the report is curated from peer-reviewed scientific research studies. Our scientific team reviews the nature and strength of association and allocates appropriate weightage to each marker. The genetic predisposition is then augmented with actionable insights, where applicable, to help the user adopt beneficial dietary and lifestyle interventions

Includes expert-curated references from SNPedia high scientific authority databases, UK biobank, Clinvar, OMIM, and leading scientific journals to name a few, to curate the variant annotations. Disease risk is indicated as an average of all variants the individual carries and not a single variant. In this methodology, unless the individual truly carries a combination of several high-risk variants, their result will not be indicated as high risk.

The information is then organized systematically into topical reports such as Nutrition, Health, Fitness, etc. Each report is further organized into traits, which provide actionable insights into your genetic type along with specific recommendations for you. The reports are easily readable, understandable and implementable.

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DISCLAIMER

Xcode provides genetic assessment services for research or investigational use and Xcode's reports should be interpreted or used exclusively by professional practitioners including but not limited to certified physicians, dietitians, nutritionists, sports therapists and others in the similar profession ("Professional Practitioners"). Xcode does not provide any direct medical advice to individual patients and this report is to be strictly interpreted by a qualified medical or health services professionals to provide relevant medical or healthcare advice, diagnosis or treatment. Genetic information must always be considered in conjunction with other information about your health such as lifestyle, family history, risk factors, biomedical data, diet, nutrition, and physical activity among other factors. A single gene mutation is not the only factor that influences the health conditions or outcomes and there are several factors other than your genes such as the environment and lifestyle that may influence the health outcome.

You are responsible to ascertain that your Professional Practitioner is qualified to consider the genetic information indicated in this report in conjunction with all other information made available to him/her about you including your family health history, lifestyle, bio-medical data and any other information that you may provide to the Professional Practitioner. Xcode shall not be held responsible for any misinterpretation by your Professional Practitioner of this Report or for any matter arising out of this report.

Only full genome sequences are exhaustive. All other forms of genetic tests only provide a limited subset of genetic information that has been found to be relevant to specific conditions. Since this report is not generated by conducting a whole-genome sequence test, the results reported are limited to a specific set of mutations known to be associated with specific conditions. Genetic information is also subject to revision based on the latest advances in scientific research. Therefore, it is possible that the interpretation of results reported herein may vary or be altered subject to ongoing research. Sometimes, the interpretations may vary from company to company based on which studies are being given a higher preference compared to others.

Xcode's role is limited to providing results of genetic test and providing a broad set of general recommendations. More detailed recommendations that may be specific to you are to be made by qualified Professional Practitioners only. General guidelines provided in our report are for information purpose only and are meant to aid your Professional Practitioner to render the relevant professional or medical advice and treatment. While assessing your genetic parameters and providing the report and recommendations, we do not consider your past or existing health conditions and or any medication taken by you (either in the past or currently), even if you may have provided us with such information. Our report and the recommendations therein are to be acted upon in consultation with a medical or other health and wellness professional practitioner.

Your reliance upon the report is solely at your own discretion. As with all health and medical-related matters, you should exercise adequate care in using the information provided in this report or on our website. Xcode disclaims any responsibility for any errors and/or omissions by you or other persons either during the collection of DNA samples or delivery of the DNA sample to Xcode. We make no warranties of any kind, either express or implied, including, without limitation, the implied warranties of merchantability, fitness for a particular purpose, accuracy and non- infringement. The information in this report is for Research Use Only (RUO) or Investigational Use Only (IUO), meant to assist in further clinical diagnosis or treatment by Professional Practitioners.

This is not a diagnostic report. This report is to be interpreted only by a Physician. Your physician will consider the genetic predispositions indicated in this report in the context of all other information available to him about you, including biomedical data, family history, lifestyle and other information. The conditions profiled in this report are mainly polygenic – meaning a single gene mutation does not determine the health outcome. Rather, several genes may be influencing the outcome. This report is not exhaustive. There are potentially other genes and other mutations within the same gene that influence the particular traits listed in this report. Outcomes are highly likely to be influenced by your ethnicity and environmental considerations such as lifestyle. Like any test, genotyping tests also carry the possibility of errors in testing and reporting. This genetic test is not yet considered as medically necessary and is undertaken at the discretion of the client who wishes to learn more about his/her genetic type. Ancestry test data is not considered suitable for medical purposes. This report is for information purposes only. This report is not fit for medical purposes. **Only your physician is qualified to interpret this report and incorporate this information in treatment and advice.**