



**Rebel Health  
Alliance**

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# Comprehensive Lifestyle Report

Client

Rebel Health Alliance

File

Sample Client

# Ideal Sleep Window

The Ideal Sleep Window is the optimal period of time to get the most restful and rejuvenating sleep based on circadian rhythm. Circadian rhythm refers to the internal clock that regulates various biological processes in the body, including sleep-wake cycles. Every person has a unique circadian propensity, and it determines levels of alertness and restfulness throughout the day.

There are three categories of individuals associated with varying sleep windows: morning larks, intermediate, and night owls. Morning larks are early risers who feel most alert during the first half of the day, with the earliest sleep window. On the other hand, night owls tend to feel more alert in the evening and night hours and have a later sleep window. Intermediate types fall somewhere in between morning larks and night owls.

When individuals regularly sleep outside of their ideal sleep window, performance can diminish significantly. Understanding one's ideal sleep window can provide valuable insights into how the body responds to different sleep patterns, and provide the opportunity to create the optimal sleep schedule.



## Ideal Sleep Window



**Intermediate**

## Understanding what this may mean

Individuals with this result have a typical genetic propensity for sleep timing and may not strongly prefer morning or evening wake times. They are likely to fall asleep and wake up at reasonable times and feel alert and productive during the day. To optimize sleep, individuals with this result may benefit from establishing a consistent sleep schedule that aligns with their preferred wake times. Typical bedtimes and wake-times include 9pm-12am and 5-8am.

## Genetic Summary

SNP	Marker	Genotype
AANAT G385A	rs28936679	GG
CLOCK A*213G	rs1801260	AA
CRY1 T1657+3G	rs184039278	TT
CRY1 G636A	rs8192440	AG
CSNK1D T130C	rs104894561	TT
PER2 T1984C	rs121908635	TT

SNP	Marker	Genotype
PER3 T1916G	rs10462020	TT
PER3 A3473G	rs10462021	AA
PER3 C2566G	rs228697	CC
PER3 A1247G	rs139315125	AA
PER3 C1240G	rs150812083	CC

Module 2

# Time in Bed

Getting the right amount of sleep is essential for overall health and well-being. There are many different aspects to time in bed; there's the time it takes to fall asleep, our actual sleep length, the micro-awakenings that occur each night, and are forgotten, and the true disruptions in sleep which wake us up.

Sleep length refers to the total amount of time spent sleeping, not including the time it takes to fall asleep or any awakenings during the night. Most people tend to focus on recommendations for sleep length as recommendations for time in bed, which can result in consistently low sleep length and quality.

Micro-awakenings are brief interruptions in sleep that can occur throughout the night. While they are normal, they can affect the overall quality of sleep. Some individuals may experience more frequent or longer micro-awakenings, which can play a role in determining ideal time in bed.

This page provides genetic propensities for the most ideal sleep length and time in bed, as well as the expected amount of micro-awakenings.



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## Ideal Total Time in Bed



**Longer - 9 to 9.5 hours**

### Understanding what this may mean

Individuals with this result may have a genetic propensity for requiring more time in bed than the average person due to higher latency, more frequent awakenings or other factors. It is recommended that individuals with this result assess their sleep quality and ensure they are getting sufficient restorative sleep. A biometric tracker can assist in monitoring sleep quality.

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## Sleep Length Propensity



**Longer Sleep**

### Understanding what this may mean

Individuals with this result may have a genetic propensity for requiring more sleep than the average person. It is recommended that individuals with this result assess their sleep quality and ensure they are getting sufficient restorative sleep. A biometric tracker can assist in measuring sleep quality and quantity.

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## Micro-Awakening Propensity



**Reduced**

### Understanding what this may mean

Individuals with this result may experience fewer micro-awakenings during the night, typically up to 30-45 minutes. This may indicate a genetic propensity for more consolidated and restful sleep. To optimize sleep, individuals with this result may benefit from practicing good sleep hygiene, such as establishing a consistent sleep schedule and creating a relaxing sleep environment.

### Genetic Summary

SNP	Marker	Genotype
ABCC9 G3474-1222A	rs11046205	GG
CLOCK A793-1130G	rs11932595	AA
CLOCK A*213G	rs1801260	AA
CLOCK G-446-4252A	rs12649507	GG
COMT G472A	rs4680	GG

SNP	Marker	Genotype
DEC2 G1151C	rs121912617	GG
BTBD9 G1154+104406A	rs3923809	AG
MEIS1 T965+6302G	rs2300478	TT
PTPRD G103-113009A	rs1975197	GG

Module 3

# Sleep Deprivation Sensitivity

Sleep deprivation can have significant impacts on physical and mental well-being, affecting cognitive function, mood, performance, and overall health. However, not everyone experiences the same effects of sleep deprivation, in fact, there are individuals who seem to function relatively well even with less sleep.

It is important to note that while genetics play a role, other factors such as lifestyle, stress levels, and sleep hygiene practices also influence sleep deprivation sensitivity. Maintaining a healthy sleep routine, creating a conducive sleep environment, and managing stress can all contribute to better sleep quality and minimize the impact of sleep deprivation.

This page explores the genetic predisposition for sleep deprivation sensitivity, suggesting how different individuals may respond to sleep loss.



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## Sleep Deprivation Sensitivity



**Typical**

### Understanding what this may mean

Individuals with this result have a typical sensitivity to sleep deprivation, which means that they may experience some of the negative consequences associated with sleep loss, such as impaired cognitive function and mood changes. It's important to prioritize getting enough sleep for overall health and wellbeing.

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### Genetic Summary

SNP	Marker	Genotype
DEC2 G1151C	rs121912617	GG
COMT G472A	rs4680	GG

SNP	Marker	Genotype
ADA C22T	rs73598374	CC

# Sleep Sensitivity to Caffeine

Many people rely on caffeine to wake up and stay alert during the day. However, the effects of caffeine on sleep, and on long-term health can vary significantly from person to person.

Caffeine Effects on Sleep refers to an individual's unique response to the stimulating effects of caffeine on sleep. Some individuals are more sensitive to caffeine and may experience difficulties falling asleep, staying asleep, or experience restless and disrupted sleep patterns even with relatively small amounts of caffeine intake. On the other hand, some individuals may be less sensitive to the sleep-disrupting effects of caffeine and can consume it without significant impact on their sleep quality.

Measured effects and self-reported effects on sleep quality can vary, so using a biometric tracker can assist in ensuring an accurate reading of effects.

Caffeine metabolism is the speed at which caffeine is broken down in the body. In general, caffeine has an average half-life of 5 hours. This means that for the average individual, half of the caffeine has been removed after 5 hours, and 75% of it after 10 hours. However, metabolism is vary between 1.5 and 9.5 hours depending on a number of factors including genetics. Slow metabolizers of caffeine can have lingering effects for longer periods of time.

This page provides information on caffeine metabolism and likely effects on sleep, suggesting how different individuals may respond to caffeine.



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## Caffeine Effects on Sleep



**Typical**

### Understanding what this may mean

Individuals with this result are likely to experience typical effects of caffeine on sleep. Caffeine can increase alertness and delay the onset of sleep, so it is important to monitor caffeine intake and avoid consuming caffeine close to bedtime to optimize sleep quality.

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## Caffeine Metabolism (CYP1A2)



**Fast Metabolism**

### Understanding what this may mean

Individuals with this result are considered to have rapid caffeine metabolism. Studies have shown potential for beneficial effects and faster breakdown of caffeine when consumed as coffee. Standard dosing and timing of coffee is likely to affect sleep quality minimally.

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## Genetic Summary

SNP	Marker	Genotype
CYP1A2 C1291T	rs28399424	CC
CYP1A2 C-729T	rs12720461	CC

SNP	Marker	Genotype
ADORA2A C-274-2427T	rs3761422	TC
ADORA2A G3088-4992A	rs5751862	AG

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CYP1A2 T739G	rs2069526	TG
CYP1A2 G-3860A	rs2069514	GG
PRIMA1 A230-1629G	rs6575353	AA
CYP1A2 C-163A	rs762551	AA
ADORA2A C333-527T	rs2236624	CC

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ADORA2A-AS1 (C>G)	rs4822492	CG
ADORA2A C-275+1797T	rs2298383	TC
ADORA2A T1083C	rs5751876	TC
ADA C22T	rs73598374	CC

# Deep Sleep Quality

Getting a good night's sleep is essential for overall health and well-being. Poor sleep quality can lead to fatigue, decreased productivity, and a host of other health problems. Practicing good sleep hygiene can improve deep sleep quality and promote restfulness and rejuvenation.

However, some individuals may benefit from additional support when it comes to deep sleep quality, while others may have a natural advantage. Genetics provide a blueprint for the length and quality of deep sleep.

Additionally, deep sleep length and quality as measured by specialized equipment can be different from reported sleep quality. Some individuals may have high quality sleep, and yet be genetically inclined to report otherwise. Understanding genetic propensities can assist in providing more awareness of sleep quality and additional ways to improve it.

Some examples of good sleep hygiene which can support deep sleep quality include: creating a bedtime routine, avoiding caffeine or alcohol before bed, using sleep aids, and creating an effective sleep environment.

This page will provide you with personalized insights into your genetic predisposition for sleep quality and offer practical recommendations for improving your sleep habits.



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## Deep Sleep Quality



**Below Average**

### Understanding what this may mean

Studies have shown that individuals with this result may have a tendency towards lower levels of deep sleep during an average night of sleep. Deep sleep is important for physical restoration and memory consolidation, so individuals with this profile may experience more difficulties with physical recovery and retaining new information. Improving sleep hygiene, such as maintaining a regular sleep schedule and creating a relaxing sleep environment, may help offset some of these effects. Additionally, exercise and BDNF boosters may assist in enhancing deep sleep. Consider a biometric tracker to measure and manage deep sleep.

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## Reported Sleep Quality



**Typical**

### Understanding what this may mean

Individuals with this result are likely to have typical subjective sleep quality, which is essential for overall wellbeing and cognitive function. Maintaining good sleep hygiene and establishing healthy sleep habits can help optimize these effects.

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## Genetic Summary

SNP	Marker	Genotype
ADA C22T	rs73598374	CC
FABP7 C182T	rs2279381	CC
CLOCK A793-1130G	rs11932595	AA
COMT G472A	rs4680	GG

SNP	Marker	Genotype
MEIS1 T965+6302G	rs2300478	TT
BTBD9 G1154+104406A	rs3923809	AG
PTPRD G103-113009A	rs1975197	GG
BDNF C196T	rs6265	TC

# Sleeplessness Risk

Sleeplessness can be caused by a variety of factors, including environmental factors such as mood, stress, emotional fatigue, caffeine, or poor sleep hygiene. This page provides insights into the genetic predisposition for sleeplessness caused by environmental factors.

Stress-induced sleeplessness is common, and can be caused by a variety of stressors, such as work, family, or financial worries. This can make it difficult to fall asleep, stay asleep, or get restful sleep, leading to fatigue, irritability, and other negative consequences.

Mood-induced sleeplessness is another common difficulty among individuals with emotional fatigue or low mood. Depression can also interfere with the ability to fall asleep or stay asleep, leading to sleep deprivation and other negative effects on physical and mental health. In those cases, it may be most effective to work with a medical provider to assist.

This page provides personalized insights into your genetic risk for environmentally-induced sleeplessness and offers practical recommendations based on the results.



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## Mood-induced Sleeplessness Risk



**Increased**

### Understanding what this may mean

Individuals with this result may be at an increased risk of developing sleeplessness as a result of mood or emotional fatigue. In general, low mood and emotional fatigue can interfere with sleep quality and lead to difficulties falling or staying asleep, and individuals with this result may be particularly susceptible to these effects. Depending on the severity, consultation with a healthcare provider or sleep specialist may be desirable. In milder cases, other interventions such as psychotherapy, meditation, and/or behavioral sleep interventions, may be recommended to address these issues.

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## Stress-Induced Sleeplessness Risk



**Typical**

### Understanding what this may mean

Individuals with this result are likely to have typical susceptibility to sleeplessness induced by stress. Sleeplessness can be caused by a range of factors, including emotional stress, environmental factors, and lifestyle habits. While individuals with this profile do not have any additional risk, they may benefit from stress management techniques, such as mindfulness, relaxation, and cognitive-behavioral therapy, to reduce stress and improve sleep quality.

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## Genetic Summary

SNP	Marker	Genotype
GSK3B A-1001G	rs334558	AG
TPH2 A1125T	rs4290270	AA
CLOCK A*213G	rs1801260	AA
GABRA6 C*135T	rs3219151	TC
ADA C22T	rs73598374	CC
ADORA2A T1083C	rs5751876	TC
ADORA2A C-275+1797T	rs2298383	TC

SNP	Marker	Genotype
ADORA2A-AS1 (C>G)	rs4822492	CG
CYP1A2 C-163A	rs762551	AA
PRIMA1 A230-1629G	rs6575353	AA
ADORA2A G3088-4992A	rs5751862	AG
ADORA2A C-274-2427T	rs3761422	TC
ADORA2A C333-527T	rs2236624	CC

Module 7

# Excessive Sleepiness

Excessive sleepiness is a condition where the brain struggles to keep a regular sleep-awake pattern. This can lead to feeling sleepy during the day, falling asleep unexpectedly, and having vivid dreams.

This kind of sleepiness can be caused by a combination of genetic and environmental factors, and certain variants are known to increase the risk of developing the issue. Yet these genetic results are not deterministic or diagnostic

There are many ways to support excessive sleepiness with lifestyle change such as improving sleep hygiene, managing micronutrient levels, and avoiding caffeine. In extreme cases, it is advisable to work with a medical provider for support.



## Excessive Sleepiness Risk



**Low**

### Understanding what this may mean

Individuals with this result have a low genetic risk for excessive daytime sleepiness. However, it is important to note that environmental and lifestyle factors can also contribute to the development of excessive sleepiness. Maintaining good sleep hygiene and establishing healthy sleep habits can help optimize overall sleep health and reduce the risk of developing excessive sleepiness.

### Genetic Summary

SNP	Marker	Genotype
HLA-DRB1*15:01 (G>A)	rs3135388	GG
TRCA/TRA (T>G)	rs1154155	TT
HLA/TPMT (A>C)	rs2858884	AA

SNP	Marker	Genotype
P2RY11 G*638A	rs2305795	AG
GDNF-AS (C>A)	rs62360233	CC

# Sleep Movement

Excessive sleep movement and jittery legs are two different sleep conditions that can significantly impact sleep quality. Excessive sleep movement relates to having a high number of general movements throughout the night, usually at least 15/hour on average. This level of movement reduces sleep quality, and can contribute to sleep awakenings and ultimately reduced recovery.

Having jittery legs, on the other hand, is more associated with an irresistible urge to move the legs, typically accompanied by unpleasant sensations, such as crawling, creeping, or tingling in the legs. This can also make it difficult to fall asleep and stay asleep, leading to fatigue and daytime sleepiness.

Both of these sleep movement issues have genetic components in addition to environmental factors. There are many ways to support sleep movement such as practicing relaxation techniques, managing micronutrient levels, and improving sleep hygiene. In extreme cases, it is advisable to work with a medical provider for support.



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## Jittery Legs Risk



**Typical**

### Understanding what this may mean

Individuals with this result have a typical genetic risk for jittery legs. Although jittery legs can be caused by environmental factors, such as certain medications or lifestyle habits, individuals with this result may have an average likelihood of developing it due to genetic factors.

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## Sleep Movement Risk



**Typical**

### Understanding what this may mean

Individuals with this result are likely to have a typical number of movements during sleep, which is generally considered healthy. However, some individuals may experience movements during sleep that disrupt sleep quality or lead to excessive daytime sleepiness. Maintaining good sleep hygiene, such as avoiding caffeine and creating a relaxing sleep environment, can help optimize sleep quality and reduce the risk of excessive movements during sleep.

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## Genetic Summary

SNP	Marker	Genotype
BTBD9 G1154+104406A	rs3923809	AG

SNP	Marker	Genotype
MAP2K5 T1242+6985G	rs4489954	TG

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MEIS1 T965+6302G	rs2300478	TT
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PTPRD G103-113009A	rs1975197	GG
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BTBD9 T1155-53004C	rs9357271	TC
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BTBD9 T1155-52972C	rs9296249	TC
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MAP2K5 A1075-3717G	rs12593813	AG
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PTPRD G202-78374A	rs4626664	AG
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ADH1B T143C	rs1229984	CC
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VDR taq A1056G	rs731236	AG
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# Hunger and Fullness Sensing

Understanding the body's hunger and fullness signals is crucial for maintaining a healthy relationship with food and managing appetite effectively.

Hunger and fullness sensing refers to the body's ability to detect and respond to its nutritional needs. Some individuals may have a genetic propensity for heightened hunger sensitivity, experiencing more intense feelings of hunger and a stronger drive to eat. Others may have a genetic predisposition for reduced appetite sensing, meaning they may be more prone to .

Additionally, emotional eating, which is the tendency to turn to food for comfort or as a response to emotional triggers, can also be influenced by genetic factors. Some individuals may have a higher genetic predisposition for emotional eating, making them more susceptible to using food as a coping mechanism for emotional stressors.

By understanding genetic tendencies related to hunger and fullness sensing, as well as emotional eating patterns, strategies can be developed to manage appetite, make informed food choices, and develop healthier relationships with food.

It's important to note that while genetics play a role in hunger and fullness sensing, other factors such as lifestyle, stress levels, and eating habits also contribute to appetite control. By adopting a balanced and nourishing diet, practicing mindful eating, and seeking support from healthcare professionals or coaches, it is possible to develop healthier habits and achieve more balanced relationships with food.



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## Appetite/Fullness Sensing



**Typical**

### Understanding what this may mean

Individuals with this genetic result have typical levels of appetite sensing. They can rely on their natural hunger and fullness cues to guide their eating patterns. Maintaining a balanced diet and listening to the body's signals of hunger and satiety are key to promoting healthy eating habits and overall well-being.

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## Snacking/Emotional Eating Risk



**Low**

### Understanding what this may mean

Individuals with this genetic result have a lower risk of snacking or engaging in emotional eating behaviors. They are less likely to turn to food as a coping mechanism in response to emotions or stress. This genetic profile suggests a stronger ability to regulate and manage cravings, reducing the likelihood of excessive snacking. Maintaining a balanced diet and implementing healthy coping strategies, such as practicing mindfulness or engaging in physical activity, can further support overall well-being.

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## Genetic Summary

SNP

Marker

Genotype

SNP

Marker

Genotype

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COMT G472A	rs4680	GG
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ANKK1 G2137A	rs1800497	GG
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FTO T46-23525A	rs9939609	AT
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MC4R (T>C)	rs17782313	CC
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APOA2 A-265G	rs5082	AG
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ARNTL T671-305G	rs11022778	TT
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CLOCK A*213G	rs1801260	AA
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## Protein Benefit



**Improved**

### Understanding what this may mean

Strong benefit from higher protein intake. Studies have shown improved appetite control, BMI, and waist circumference from  $\geq 20\%$  protein intake up to 1g/lb (2.2g/kg) of ideal bodyweight.

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## Genetic Summary

SNP	Marker	Genotype
LPIN1 G-10+5393A	rs4315495	GG
TFAP2B A602-724G	rs987237	AA

SNP	Marker	Genotype
FTO T46-40478A	rs1558902	TA
FTO T46-23525A	rs9939609	AT

# Fats

Dietary fat plays a significant role in overall health and well-being, and individuals may have varying responses to different fat intake levels and different types of fat. This page explores the genetic predispositions for processing dietary fat in general, providing insights into how the body may respond to high or low-fat diets.

Some individuals may have a genetic propensity for effective fat response, allowing them to thrive on higher fat diets without experiencing adverse effects on body composition or bloodwork. These individuals may benefit from diets that include healthy sources of fats such as avocados, nuts, and olive oil. See other pages regarding fat intake for more specific insights.

On the other hand, some individuals may have a genetic predisposition for a less effective fat response, making them more sensitive to high-fat diets. For these individuals, a lower fat intake may be more suitable for maintaining optimal weight and bloodwork. Choosing lower-fat options, adjusting the type of fat intake, and incorporating a higher percentage of protein and vegetables may be beneficial.

Understanding the genetic tendencies related to dietary fat processing allows for informed decisions about diet composition and precise adjustments to the unique genetic profile. Although, it's important to note that while genetics play a role in dietary fat processing, other factors such as overall calorie intake, nutrient balance, and individual health considerations should also be taken into account. Consulting with a healthcare professional or registered dietitian can provide further guidance on designing a balanced and personalized diet plan.



## Dietary Fat Response



**Typical**

### Understanding what this may mean

Individuals with this genetic result have a typical response to dietary fats. They can generally tolerate and process fats without significant complications. However, it is still important to review additional fat sections for more context and precise recommendations.

### Genetic Summary

SNP	Marker	Genotype
CETP G1264A	rs5882	AA
PPARG C34G	rs1801282	CG
ApoB A7545G	rs693	GG
ApoC3 C*40G	rs5128	CC

SNP	Marker	Genotype
APOE G-219T	rs405509	GG
PPARG2 C-76-681G	rs10865710	CG
AGT A803G	rs699	AA
LIPC C-40-517T	rs1800588	CC

# Saturated Fat

Saturated fat is a type of dietary fat that is commonly found in animal products and some plant-based oils. It has been a topic of debate in nutrition due to its potential effects on cardiovascular health. This section explores genetic predispositions for processing saturated fat and provides insights into how the body may respond to different levels of intake.

Some individuals may have a genetic propensity for efficient saturated fat metabolism, allowing them to handle higher intake without significant adverse effects on cholesterol levels or cardiovascular health. These individuals may have a higher tolerance for saturated fat in their diet. However, it's important to note that even with this genetic advantage, moderation and balance in overall dietary choices are still key for overall health.

On the other hand, some individuals may have a genetic predisposition for a less effective response to saturated fat. For these individuals, consuming high amounts of saturated fat may lead to unfavorable changes in cholesterol levels and an increased risk of other issues. These individuals may benefit from limiting their saturated fat intake and focusing on healthier sources of fats, such as unsaturated fats.

Understanding genetic tendencies related to saturated fat response can help guide dietary choices and optimize overall health. It's important to consider that genetics is just one piece of the puzzle, and factors such as overall diet quality, lifestyle, and individual health conditions should also be taken into account.



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## Saturated Fat Response



**Undesirable**

### Understanding what this may mean

Individuals with this genetic result may have an undesirable response to saturated fats. Their bodies may be less effective at processing and metabolizing saturated fats, increasing the risk of negative health impacts. It is advisable for individuals with this result to minimize their consumption of foods high in saturated fats such as red meat, high-fat dairy, and coconut oil, and choose alternative options.

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## APOe Status



**APOe 2/3 status**

### Understanding what this may mean

Individuals with this APOe status have one copy of the APOe2 allele and one copy of the more common APOe3 allele. This genetic combination is relatively common and considered to be the lowest risk in terms of its association with age-related conditions.. It is important to maintain a healthy lifestyle, including a balanced diet and regular exercise, to promote overall health and well-being.

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## Genetic Summary

SNP	Marker	Genotype
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SNP	Marker	Genotype
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TCF7L2 C450+33966T	rs7903146	CC
ACE G2328A	rs4343	AG
APOA2 A-265G	rs5082	AG
IL6/IL6-AS1 (G>C)	rs1800795	GC
TNF G-308A	rs1800629	AG
ApoB A7545G	rs693	GG
ABCA1 C656T	rs2230806	CC
APOA1 C-113T	rs670	CC

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ApoC3 C*40G	rs5128	CC
APOE C388T	rs429358	TT
APOE C526T	rs7412	TC
APOE G-219T	rs405509	GG
PPARG C34G	rs1801282	CG
PPARG2 C-76-681G	rs10865710	CG
AGT A803G	rs699	AA
LIPC C-40-517T	rs1800588	CC

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# Omega Fatty Acids

Omega fatty acids, including omega-6 and omega-3, are essential polyunsaturated fats that play vital roles in the body's overall health. This section explores genetic propensities for omega-6 risk and omega-3 need, providing insights into how your body may respond to these fatty acids.

Omega-6 fatty acids are important for many biological processes, but an imbalance between omega-6 and omega-3 intake may have implications for health. Some individuals may have a genetic predisposition for a higher risk of imbalanced omega-6 levels, which may lead to inflammation and other health concerns. These individuals may benefit from a dietary approach that focuses on achieving a balanced ratio of omega-6 to omega-3 fatty acids. Incorporating more sources of omega-3 such as fatty fish can help restore the balance.

Omega-3 fatty acids are known for their anti-inflammatory properties and various health benefits. Some individuals may have a genetic propensity for increased omega-3 needs, indicating a higher requirement to maintain optimal health. These individuals may benefit from consuming higher amounts of omega-3-rich foods or considering omega-3 supplementation, especially if dietary intake is limited.

Understanding your genetic tendencies related to omega-6 risk and omega-3 need can provide valuable insights for tailoring dietary choices to optimize overall health. It's important to note that genetics is just one aspect, and a well-rounded approach to nutrition, including a diverse and balanced diet, regular physical activity, and other healthy lifestyle habits, is crucial for overall well-being.

Examples of Omega-6 food sources include: various vegetable oils, nuts, and seeds.

Examples of DHA and EPA (Omega-3) food sources include: mackerel, salmon, cod liver, herring, oysters, and sardines.



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## Omega-6 Risk



**Increased**

### Understanding what this may mean

Individuals with this genetic result may have an increased risk associated with omega-6 fatty acids. Genetic variations associated with this result suggest a reduced ability to regulate or process omega-6 fatty acids effectively. It is important for individuals with this result to be mindful of their omega-6 intake and strive for a balanced ratio of omega-3 to omega-6 fatty acids. Incorporating food sources rich in omega-3 fatty acids, such as fatty fish can help balance the ratio and support overall health. Blood testing can assist in measuring and managing omega levels.

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## Omega-3 Need



**Much Increased**

### Understanding what this may mean

Individuals with this genetic result may have a much higher need for omega-3 fatty acids. Genetic variations associated with this result suggest a significant requirement for omega-3s to support overall health and reduced conversion of plant-based omega-3s to the beneficial EPA and DHA. It is crucial for individuals with this result to prioritize food sources rich in omega-3s such as fatty fish. Omega-3 supplements may also be considered under the guidance of healthcare professionals.

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## Genetic Summary

SNP	Marker	Genotype
BDNF C196T	rs6265	TC
ELOVL2 G505+225C	rs2236212	CC
ELOVL2 T*1041C	rs3734398	CC
ELOVL2 G-649A	rs953413	AA

SNP	Marker	Genotype
FADS1 C1054-109G	rs174548	GC
NOS3 T894G	rs1799983	TG
TNF G-308A	rs1800629	AG

# Carbohydrates

The role of carbohydrates in weight management has been a topic of interest and discussion in the field of nutrition. This section explores genetic variations that may influence individual responses to low-carbohydrate diets, specifically in terms of weight loss.

Low-carbohydrate diets restrict the intake of carbohydrates, typically focusing on higher protein and fat consumption. While these diets have shown promise for weight loss in some individuals, it's important to understand that individual responses can vary based on genetic factors.

Some individuals may have a genetic predisposition that makes them more responsive to low-carbohydrate diets, leading to more significant weight loss. These individuals may experience improved body composition and metabolic markers when following a low-carb approach.

On the other hand, some individuals may have a genetic profile that makes them less responsive to low-carbohydrate diets for weight loss. They may not experience the same level of success or may even find it challenging to adhere to these dietary restrictions.

Understanding genetic tendencies related to carbohydrate metabolism and weight loss can provide valuable insights into the potential effectiveness of a low-carbohydrate diet. However, it's essential to note that individual responses to any diet can be influenced by multiple factors, including overall calorie intake, nutrient balance, lifestyle factors, and personal preferences.



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## Weight Loss from Low-Carb Diet



**Typical**

### Understanding what this may mean

Individuals with this genetic result can generally expect a typical response to weight loss from a low-carb diet. Following a low-carb diet may help them achieve weight loss results similar to those observed in the general population. It is still important to approach any weight loss plan, including a low-carb diet, with a focus on overall balance, nutrition, and portion control to support long-term success.

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## Insulin Resistance Propensity



**Increased**

### Understanding what this may mean

Individuals with this genetic result have an increased risk of insulin resistance. Genetic variations associated with this result suggest a higher likelihood of developing insulin resistance compared to the average population. It is crucial for individuals with this result to pay extra attention to their lifestyle habits. Adopting a well-balanced diet with emphasis on whole foods, managing carbohydrate intake, engaging in regular physical activity, and maintaining a healthy weight can help mitigate the risk of insulin resistance and promote better metabolic health. Additionally, blood testing and biometric tracking can assist with measurement and management of blood sugar and insulin.

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## Genetic Summary

SNP	Marker	Genotype
BDNF C196T	rs6265	TC
CETP C861T	rs5883	CC
FTO T46-23525A	rs9939609	AT
GCK C-30T	rs1799884	CC

SNP	Marker	Genotype
GCKR T1423-418C	rs780094	CC
IRS1 (T>C)	rs2943641	CC
PLIN1 C772-799T	rs894160	TC
PPARG C34G	rs1801282	CG

# Food Sensitivities

Food sensitivities can significantly impact our digestive health and overall well-being. This section explores genetic variations related to specific food sensitivities, including lactose intolerance, weight gain from dairy fat, and gluten risk.

Lactose intolerance is a common food sensitivity characterized by the inability to fully digest lactose, the sugar found in milk and dairy products. Some individuals may have a genetic predisposition for lactose intolerance, which can lead to digestive symptoms such as bloating, gas, and diarrhea when consuming lactose-containing foods. Understanding genetic risk for lactose intolerance can help guide dietary choices and determine if lactose-free or dairy-free alternatives may be beneficial.

Weight gain from dairy fat is another area of interest when it comes to food sensitivities. Some individuals may have a genetic propensity for weight gain when consuming high amounts of dairy fat. This may be due to variations in how their bodies process and metabolize these fats. Being aware of genetic risk for weight gain from dairy fat can assist in making informed decisions about dairy consumption and overall dietary patterns.

Celiac disease and gluten sensitivity are conditions related to an adverse immune response to gluten, a protein found in wheat, barley, and rye. Genetic factors play a significant role in determining an individual's risk for developing celiac disease or gluten sensitivity. Genetic predispositions for gluten risk can help guide dietary choices and determine if a gluten-free diet is necessary for overall health.

By exploring genetic variations related to food sensitivities, it is possible to gain insights into how the body may respond to certain foods and make informed decisions about dietary choices. It's important to note that genetics is just one piece of the puzzle, and factors such as personal symptoms, medical history, and professional guidance should also be considered.



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## GAD1 Activity



**Increased Activity**

### Understanding what this may mean

Individuals with this result are likely to have improved conversion of glutamate to GABA in the brain compared to the general population. This can provide support with sleep and reduce risks for anxiety. Some anecdotal reports have linked low GAD1 activity to various food sensitivities including MSG, grains, and glutamic acid, yet there are currently no scientific studies to support this assertion.

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## Gluten Risk



**Typical**

### Understanding what this may mean

Individuals with this genetic result have a typical risk of gluten sensitivity. Their genetic profile suggests an average likelihood of experiencing gluten-related symptoms or intolerance, if present. It is important for individuals with this result to be aware of their body's response to gluten-containing foods and seek medical advice if they suspect gluten sensitivity. Healthcare professionals or registered dietitians can provide appropriate guidance and support to manage symptoms and optimize dietary choices.

---

## Lactose Intolerance Risk



**Possible**

### Understanding what this may mean

Individuals with this result are likely to have a typical risk of developing an intolerance to dairy. Reduced production of the enzyme responsible for dairy sugar breakdown is predicted, which results in a possibility of intolerance development.

## Weight Gain from Dairy Fat



**Typical**

### Understanding what this may mean

Individuals with this genetic result can generally expect a typical response to weight gain from consuming dairy fat. This means that their bodies respond to dairy fat intake in a manner similar to the average population. While dairy fat can contribute to overall calorie intake, it is important to maintain a balanced diet and monitor portion sizes to support weight management.

## Genetic Summary

SNP	Marker	Genotype
GAD1 G-151A	rs3749034	AA

SNP	Marker	Genotype
CCR3 g.T1184C	rs6441961	CC

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GAD1 C-64+894A	rs12185692	CC
GAD1 G-64+2259T	rs3791878	GG
GAD1 C146-3245T	rs3828275	CC
MCM6 G1917+326A	rs4988235	AG
APOA2 A-265G	rs5082	AG
TAGAP T-492C	rs1738074	CC
IL18RAP (T>C)	rs917997	CC
RGS1 (C>A)	rs2816316	AA
IL12A-AS1 (A>G)	rs17810546	AA

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ATXN2 C732-14033T	rs653178	TC
IL21 (A>G)	rs13119723	AA
IL21 (G>T)	rs6822844	GG
HLA g.G2032A	rs4639334	GG
HLA (A>G)	rs4713586	AA
HLA-DQB1 (T>C)	rs7775228	TT
HLA-DRA (G>T)	rs2395182	TT
HLA C82+567T	rs2187668	TC

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# Insulin Resistance

Insulin resistance is a condition characterized by the body's reduced response to the hormone insulin, leading to impaired glucose metabolism and an increased risk of developing type 2 diabetes. This section explores genetic predispositions for insulin resistance and provides insights into risk factors.

Insulin resistance can be influenced by a combination of genetic and lifestyle factors. Understanding the genetic risk for insulin resistance can help make informed decisions about diet, exercise, and overall lifestyle to reduce risk.

Genetic variations can affect how your body processes and responds to insulin. Some individuals may have a genetic predisposition for increased insulin resistance, meaning they may be more prone to developing insulin resistance even with normal or moderate levels of body fat. Others may have a lower genetic risk for insulin resistance, but lifestyle factors such as poor diet and lack of physical activity can still contribute to the development of this condition.

By knowing genetic predispositions for insulin resistance, proactive steps can be taken to reduce risk. Adopting a healthy lifestyle that includes a balanced diet, regular exercise, stress management, and adequate sleep can help improve insulin sensitivity and reduce the likelihood of developing insulin resistance.

It's important to note that genetics is just one aspect of insulin resistance, and lifestyle factors play a significant role in its development. By combining genetic insights with other clinical assessments and professional guidance, a comprehensive plan can be created to manage insulin resistance risk and promote overall health and well-being.



## Insulin Resistance Propensity



**Increased**

### Understanding what this may mean

Individuals with this genetic result have an increased risk of insulin resistance. Genetic variations associated with this result suggest a higher likelihood of developing insulin resistance compared to the average population. It is crucial for individuals with this result to pay extra attention to their lifestyle habits. Adopting a well-balanced diet with emphasis on whole foods, managing carbohydrate intake, engaging in regular physical activity, and maintaining a healthy weight can help mitigate the risk of insulin resistance and promote better metabolic health. Additionally, blood testing and biometric tracking can assist with measurement and management of blood sugar and insulin.

### Genetic Summary

SNP	Marker	Genotype
PPARG C34G	rs1801282	CG
GCK C-30T	rs1799884	CC

SNP	Marker	Genotype
GCKR T1423-418C	rs780094	CC

## Interesting Nutrition SNPs

Plant sterols, also known as phytosterols, are natural compounds found in various plant-based foods. They have gained attention for their potential to lower cholesterol levels and reduce the risk of heart disease. This section explores the genetic propensities for responding to plant sterol consumption, providing insights into how the body may benefit from including these compounds in your diet.

Plant sterols have a structural similarity to cholesterol and compete with cholesterol for absorption in the digestive tract. This competition can lead to reduced cholesterol absorption, resulting in lower blood cholesterol levels. As a result, plant sterols have been incorporated into various functional foods and dietary supplements for their potential heart health benefits.

Genetic variations can influence how effectively the body responds to plant sterol consumption. Some individuals may have a genetic predisposition for a higher benefit from plant sterols, experiencing a more significant reduction in cholesterol levels in response to their consumption. For these individuals, adding plant sterol-rich foods to their diet may result in a more pronounced improvement in heart health markers.

On the other hand, some individuals may have a genetic propensity for a increased absorption of plant sterols. In these cases, bloodwork may be desirable to confirm findings and determine the ideal recommendations.

However, it's essential to note that plant sterols are just one component of a heart-healthy diet, and lifestyle factors like overall dietary quality, physical activity, and weight management also contribute to cardiovascular health.



---

## Plant Sterol Risk



**Typical**

### Understanding what this may mean

Individuals with this genetic result have a typical risk associated with plant sterol supplementation. Plant sterols can help lower cholesterol absorption in the intestines, which may reduce the risk of coronary artery disease (CAD) in individuals with elevated cholesterol levels. However, it is essential for individuals with this result to use plant sterol supplements as part of a comprehensive approach to heart health, including a balanced diet, regular physical activity, and other lifestyle practices that support cardiovascular well-being.

---

## Plant Sterol Benefit



**Increased**

### Understanding what this may mean

Individuals with this genetic result may experience an increased benefit from plant sterol supplementation in reducing triglycerides and cholesterol levels. As a result, they are more likely to experience significant reductions in blood triglycerides and cholesterol levels when using plant sterol supplements. One study showed a 4x greater decrease in LDL cholesterol from consuming plant sterols compared to controls. However, it is essential for individuals with this result to use plant sterol supplements as part of a well-rounded heart health plan, and not solely rely on supplementation.

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## Genetic Summary

SNP	Marker	Genotype
HDC T1932G	rs2073440	TT
HNMT A*60G	rs1050891	AA
HNMT C314T	rs11558538	CC
AOC1 C47T	rs10156191	CC
AOC1 G-92-231T	rs2052129	GG
AOC1 C995T	rs1049742	CC
AOC1 C1990G	rs1049793	CC
AOC1 G1329A	rs2071514	GG
ABCG8 T322+206C	rs41360247	TT

SNP	Marker	Genotype
ABCG8 C322+981T	rs4245791	TT
ABCG5 G1810C	rs6720173	CG
ABCG8 G55C	rs11887534	GG
ABCG8 G166-718T	rs4299376	TT
ABCG8 C1199A	rs4148217	CC
CETP G1264A	rs5882	AA
CYP7A1 g.G2020T	rs3808607	TG
TAS2R38 C145G	rs713598	CG
TAS2R38 G785A	rs1726866	AG

# Vitamin A

Vitamin A is an essential nutrient that plays a critical role in many aspects of health, including vision, immune function, and skin health. This module provides insights into your genetic predisposition for processing and converting two important forms of Vitamin A: Alpha Carotene and Beta Carotene.

Alpha Carotene and Beta Carotene are provitamin A carotenoids that are converted into the active form of Vitamin A, retinol, in the body. However, some people are more efficient at converting these provitamin carotenoids into retinol than others.

Retinol is essential for healthy vision, skin, and immune function. It also plays a crucial role in cell growth and differentiation, making it vital for maintaining healthy tissues and organs.

By understanding your genetic predisposition for processing and converting Alpha Carotene and Beta Carotene, you can take steps to ensure you're getting enough Vitamin A to support optimal health. This module will help you understand how your genetics may affect your ability to convert these provitamin carotenoids into retinol and provide personalized recommendations for optimizing your Vitamin A intake.



---

## Alpha Carotene Level Propensity



**Typical**

### Understanding what this may mean

Individuals with this result have a typical genetic propensity for alpha carotene levels. They are likely to have levels that fall within the normal range for the general population. To maintain optimal health, individuals with this result may benefit from consuming a balanced and varied diet that includes a variety of fruits and vegetables.

---

## Beta Carotene Level Propensity



**Typical**

### Understanding what this may mean

Individuals with this result have a typical genetic propensity for beta carotene levels. They are likely to have average levels of beta carotene and do not have a strong tendency towards either lower or higher levels.

---

## Vitamin A Conversion



**Reduced**

### Understanding what this may mean

Individuals with this result may have a genetic propensity for reduced conversion of beta-carotene to the active form of vitamin A. To optimize their vitamin A levels, you may benefit from consuming foods that are high in preformed vitamin A, such as liver and eggs, or consider supplementation which includes palmitate or retinoic acid.

### Genetic Summary

SNP	Marker	Genotype
BCO1 C1136T	rs7501331	CC
BCO1 A801T	rs12934922	TA
PKD1L2-BCMO1 (T>G)	rs6564851	GG
PKD1L2-BCMO1 G754A	rs6420424	AA
LPL C1421G	rs328	CC

SNP	Marker	Genotype
APOA4 T1099A	rs675	TA
FABP2 C163T	rs1799883	TT
SCARB-1 A1050G	rs5888	AG
LIPC C-40-517T	rs1800588	CC

# Non-Vitamin A Carotenoids

Non-Vitamin A carotenoids such as lutein, lycopene, beta-cryptoxanthin, and zeaxanthin are powerful antioxidants that play an essential role in maintaining overall health. This module provides insights into your genetic predisposition for absorbing and metabolizing these carotenoids, enabling you to make informed decisions about your diet and supplementation to ensure optimal health outcomes.

Lutein and zeaxanthin are carotenoids that are found primarily in green leafy vegetables and are essential for maintaining healthy vision. They help protect the eyes from harmful UV radiation and blue light and may reduce the risk of age-related macular degeneration and cataracts.

Lycopene is a carotenoid that is found in high concentrations in tomatoes and other red fruits and vegetables. It has been shown to have powerful antioxidant properties and may reduce the risk of certain types of cancer and cardiovascular disease.

Beta-cryptoxanthin is a carotenoid that is found in many fruits and vegetables, including red peppers, oranges, and peaches. It has been shown to have anti-inflammatory properties and may reduce the risk of lung cancer and other chronic diseases.

By understanding your genetic predisposition for absorbing and metabolizing non-vitamin A carotenoids, you can make informed decisions about your diet and supplementation to ensure that you are getting the maximum benefit from these essential nutrients. This module will help you understand how your genetics may affect your ability to absorb and utilize these carotenoids and provide personalized recommendations for maintaining optimal health.



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## Zeaxanthin Level Propensity



**Typical**

### Understanding what this may mean

Individuals with this result have a typical genetic propensity for zeaxanthin levels. They may benefit from consuming foods that are high in zeaxanthin, such as leafy green vegetables, to support overall health.

---

## Beta-Cryptoxanthin Level Propensity



**Typical**

### Understanding what this may mean

Individuals with this result have a typical genetic propensity for beta-cryptoxanthin levels. They may benefit from consuming foods that are high in beta-cryptoxanthin, such as oranges, tangerines, and sweet red peppers, to support overall health.

---

## Lutein Level Propensity



**Typical**

### Understanding what this may mean

Individuals with this result have a typical genetic propensity for lutein levels. They are likely to have adequate levels of lutein with a balanced diet that includes lutein-rich foods.

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## Lycopene Level Propensity



**Increased**

### Understanding what this may mean

Individuals with this genetic result may have higher than average levels of lycopene. While lycopene is an important antioxidant, very high levels may have adverse effects. It is recommended to obtain lycopene from food sources rather than supplements, as excessive supplementation may lead to negative health outcomes.

### Genetic Summary

SNP	Marker	Genotype
BCO1 C1136T	rs7501331	CC
PKD1L2-BCMO1 (T>G)	rs6564851	GG
LPL C1421G	rs328	CC

SNP	Marker	Genotype
APOA4 T1099A	rs675	TA
FABP2 C163T	rs1799883	TT
SCARB-1 A1050G	rs5888	AG

# B Vitamins

B vitamins play a crucial role in various bodily processes, including energy production, DNA synthesis, and nervous system function. This module provides insights into your genetic predisposition for B vitamin metabolism, including levels of B6, B9 (folate), and B12, as well as MTHFR activity.

Low levels of B vitamins can lead to a range of health issues, including anemia, neuropathy, and birth defects. MTHFR is an enzyme involved in folate metabolism, and genetic variations that affect its activity can lead to reduced folate levels and an increased risk of certain health issues.

By understanding your genetic predisposition for B vitamin metabolism and MTHFR activity, you can take targeted actions to optimize your levels of these important nutrients. This module will help you understand how your genetics may affect your levels of B6, B9, and B12 and provide personalized recommendations for maintaining optimal levels.



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## Vitamin B12 Level Propensity



**Reduced**

### Understanding what this may mean

Individuals with this result may have a lower genetic propensity for sufficient levels of vitamin B12. Low levels of vitamin B12 can lead to a range of symptoms, including fatigue, weakness, and even anemia. To optimize vitamin B12 levels, individuals with this result may benefit from consuming more foods that are high in vitamin B12, such as fish, meat, and dairy products. Additionally, supplementation with vitamin B12 may be desirable or necessary.

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## Vitamin B9 Need



**Typical**

### Understanding what this may mean

Individuals with a typical genetic propensity for Vitamin B9 (Folate) may have average requirements for this nutrient. It is important to consume a balanced diet that includes folate-rich foods such as leafy green vegetables, legumes, and fortified cereals to meet their daily needs.

---

## Vitamin B6 Level Propensity



**Reduced**

### Understanding what this may mean

Individuals with this result may have a genetic propensity for lower levels of vitamin B6. Vitamin B6 plays a key role in the production of neurotransmitters that regulate mood and sleep, so individuals with this result may be at increased risk for sleep disturbances and mood disorders. To support optimal health and sleep, individuals with this result may benefit from increasing their intake of vitamin B6-rich foods or taking supplements under the guidance of a healthcare professional.

---

## MTHFR Activity



**60-70% enzyme activity**

### Understanding what this may mean

Individuals with 60-70% MTHFR enzyme activity have a moderate reduction in enzyme activity and may be at an increased risk for elevated homocysteine levels and associated health problems. However, the risk is generally not as high as for individuals with further reduced enzyme activity. It is still important for individuals with this enzyme activity level to work with their medical providers to ensure adequate intake of folate and other B vitamins and to avoid certain medications that may further decrease MTHFR activity.

---

## Genetic Summary

SNP	Marker	Genotype
ALPL G473-148A	rs1256335	AG
FUT2 A204G	rs492602	AG
FUT2 G461A	rs601338	AG
MTHFR G677A	rs1801133	AG
MTHFR T1298G	rs1801131	TT

SNP	Marker	Genotype
MTR A2756G	rs1805087	AA
NBPF3 C134-911T	rs4654748	TC
SLC19A1 C80T	rs1051266	TC
TCN1 G79+372A	rs526934	AG

# Vitamin D

Vitamin D is an essential nutrient that plays a vital role in bone health, immune function, and overall well-being. This module provides insights into your genetic predisposition for Vitamin D levels, enabling you to take steps to optimize your Vitamin D status and support your overall health.

Vitamin D is often referred to as the "sunshine vitamin" because it is produced by the body in response to sunlight exposure. However, many people do not get enough Vitamin D through sunlight exposure alone and may require supplementation or dietary sources.

Vitamin D deficiency has been linked to a range of health issues, including bone weakness, weakened immune function, and an increased risk of chronic diseases. By understanding your genetic predisposition for Vitamin D levels, you can take targeted actions to optimize your Vitamin D status and reduce your risk of associated health issues.

This module will help you understand how your genetics may affect your Vitamin D levels and provide personalized recommendations for maintaining optimal Vitamin D levels, such as getting adequate sunlight exposure, consuming Vitamin D-rich foods, and supplementing when necessary.



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## Vitamin D Dietary Absorption



### Understanding what this may mean

Individuals with this genetic result may have reduced absorption of dietary Vitamin D. It may be beneficial to discuss strategies for improving Vitamin D absorption with a healthcare provider or coach, such as increasing intake of Vitamin D-rich foods or taking Vitamin D supplements.

---

## Vitamin D Deficiency Risk



### Understanding what this may mean

Individuals with this genetic result have a typical risk of developing Vitamin D deficiency and may benefit from monitoring their Vitamin D levels and potentially supplementing if needed, especially if they have limited sun exposure and/or a diet low in Vitamin D.

---

## Genetic Summary

SNP	Marker	Genotype
CYP2R1 g.C536T	rs1562902	TT
CYP2R1 G177A	rs12794714	AG

SNP	Marker	Genotype
GC T58+6190T	rs1155563	TC
NADSYN1 G146+1233T	rs12785878	TG

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CYP2R1 g.G3442A	rs2060793	AG
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CYP27B1 G-1260T	rs10877012	GG
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GC A1296C	rs7041	AA
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GC T*26-796G	rs2282679	TG
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NADSYN1 G1319+496A	rs3829251	AG
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VDR C1025-49A	rs7975232	AC
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VDR C1024+283T	rs1544410	TC
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VDR G2A	rs2228570	AG
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Module 22

## Active Vitamin D

Vitamin D is critical for maintaining bone health, supporting the immune system, and regulating calcium absorption. However, not all vitamin D is created equal. Vitamin D is produced in the body in an inactive form, which must be converted into an active form to be utilized by the body.

Genetic variations can impact the conversion of inactive vitamin D to active vitamin D, leading to differences in active vitamin D levels between individuals. This can affect bone health and immune function, among other things.

This module provides insights into your genetic predisposition for active vitamin D levels, enabling you to take targeted actions to maintain optimal levels. By understanding how your genetics may impact the conversion of inactive to active vitamin D, you can make informed decisions about vitamin D supplementation and sun exposure.



## Inactive vs Active Vitamin D Correlation



**Typical**

### Understanding what this may mean

Individuals with this genetic result are likely to have a typical correlation between inactive and active Vitamin D. The inactive Vitamin D levels may be a useful indicator of overall Vitamin D status.

## Active Vitamin D Level Propensity



**Reduced**

### Understanding what this may mean

Individuals with this genetic result may have reduced active Vitamin D levels. It may be beneficial to discuss bloodwork and potential Vitamin D3 supplementation with a provider or coach to encourage effective levels.

## Genetic Summary

SNP	Marker	Genotype
CYP27B1 G-1260T	rs10877012	GG
GC T*26-796G	rs2282679	TG
KL T1054G	rs9536314	TT

SNP	Marker	Genotype
VDR C1025-49A	rs7975232	AC
VDR C1024+283T	rs1544410	TC



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## Vitamin E Inflammation Risk



**Increased**

### Understanding what this may mean

Individuals with this result may be at higher risk for inflammation and other undesirable effects from high-dose vitamin E supplementation. Low-dose from food and multivitamins are likely to be beneficial, while high-dose alpha-tocopherol supplementation may not be beneficial.

---

## Alpha Tocopherol Level Propensity



**Reduced**

### Understanding what this may mean

Individuals with this genetic result may have reduced levels of alpha tocopherol. It may be beneficial to consume more vitamin E-rich foods or discuss vitamin E supplementation with a provider or coach to ensure adequate levels.

---

## Gamma Tocopherol Level Propensity



**Reduced**

### Understanding what this may mean

Individuals with this genetic result may have reduced levels of gamma tocopherol. Consuming more vitamin E-rich foods, particularly those high in gamma tocopherol, may be beneficial. It may also be worth discussing vitamin E supplementation with a provider or coach.

### Genetic Summary

SNP	Marker	Genotype
APOE C388T	rs429358	TT
APOE C526T	rs7412	TC
ApoC3 C*40G	rs5128	CC
CETP G118+279A	rs708272	GG
COMT G472A	rs4680	GG

SNP	Marker	Genotype
GSTP1 A313G	rs1695	AG
IL10 T-149+2474C	rs1800896	TC
IL10 T-149+1984G	rs1800872	GG
LIPC C-40-517T	rs1800588	CC
TNF G-238A	rs361525	GG

# Electrolytes

Electrolytes are essential minerals that help maintain proper fluid balance and nerve and muscle function in the body. This module provides insights into your genetic predisposition for sodium and potassium sensitivity, as well as magnesium levels, allowing you to make informed decisions about your diet and lifestyle.

Sodium is a critical electrolyte that helps regulate blood pressure and maintain proper fluid balance in the body. However, excessive sodium intake can increase the risk of high blood pressure and other cardiovascular problems. This module can help you understand your genetic predisposition for sodium sensitivity, allowing you to make informed decisions about your sodium intake.

Potassium is another important electrolyte that helps regulate blood pressure and supports proper muscle and nerve function. Low potassium levels can lead to muscle weakness, fatigue, and other health problems. This module can help you understand your genetic predisposition for potassium sensitivity, allowing you to adjust your diet and lifestyle accordingly.

Magnesium is also an important electrolyte that plays a crucial role in nerve and muscle function, as well as bone health. Low magnesium levels can lead to muscle cramps, fatigue, and other health problems. This module can help you understand your genetic predisposition for magnesium levels, allowing you to make informed decisions about your diet and supplement choices.

By understanding your genetic predisposition for sodium and potassium sensitivity, as well as magnesium levels, you can make more informed decisions about your diet and lifestyle, helping you to maintain proper fluid balance, nerve and muscle function, and overall health.



---

## Sodium Sensitivity



**Reduced**

### Understanding what this may mean

Individuals with this genetic result may have a reduced sensitivity to sodium, which means they may be able to tolerate higher levels of sodium intake without negative health effects. However, it is still important to consume sodium in moderation and according to individual needs.

---

## Potassium Sensitivity and Benefit



**Typical**

### Understanding what this may mean

Individuals with this genetic result have a typical sensitivity to the blood pressure-lowering effects of potassium. Adequate potassium intake can help support healthy blood pressure levels in these individuals.

---

## Magnesium Deficiency Risk



**Typical**

### Understanding what this may mean

Individuals with this genetic result have a typical risk of experiencing magnesium deficiency. It is important to consume a balanced diet that includes magnesium-rich foods or consider supplementation to prevent deficiency.

### Genetic Summary

SNP	Marker	Genotype
ADD1 G1378T	rs4961	GG
ACE G2328A	rs4343	AG
CYP11B2 G-344A	rs1799998	AA
AGTR1 G-48+13974A	rs4524238	GG
NAA10 T386+394C	rs1557501	TC
RENBP G688-61A	rs2269372	AG

SNP	Marker	Genotype
AGTR1 A1166C	rs5186	AC
NR3C2 G2015-8060T	rs6810951	GG
ATP2B1 (A>G)	rs7965584	AA
MUC1 C66T	rs4072037	TC
SHROOM3 G168-54767A	rs13146355	AA
DCDC1 (T>C)	rs3925584	CC

# Choline

Choline is an essential nutrient that plays a vital role in several processes in the body, including cell structure and signaling, nerve function, and metabolism. Adequate choline intake is essential for optimal health, and some people may have a higher need for support than others.

The severity of choline deficiency symptoms can vary depending on many factors, including genetics. Symptoms of deficiency can include muscle damage, liver damage, and neurological disorders. Women who are pregnant or breastfeeding may also require higher choline intake to support the developing fetus or infant. Additionally, some individuals may be at an increased risk of organ dysfunction if they are deficient in choline. For example, a deficiency in choline can lead to liver damage, as choline is required for proper liver function and the metabolism of fats.

Genetic variations can impact the individual's need for choline and their ability to synthesize it. Some individuals may have a variation in the PEMT gene, which reduces their ability to produce choline from other compounds in the body.

Overall, ensuring adequate choline intake is essential for maintaining optimal health and preventing deficiencies and related complications. By understanding genetic risks for choline need and deficiency, it is possible to take targeted actions to maintain and improve overall health. This page will provide understand how genetics may affect choline need, the severity of deficiency symptoms, and the risk of organ dysfunction from a deficiency, and provide personalized recommendations for optimizing health.



---

## Choline Need



**Increased**

### Understanding what this may mean

Individuals with this result may have a genetic propensity for a higher than average need for choline. It is important to consume sufficient amounts of choline through dietary sources such as eggs or liver, as choline plays a critical role in various physiological processes such as brain function, methylation, nerve function, and metabolism. Additionally, supplementation with choline may be beneficial for individuals with an increased need.

---

## Choline Deficiency Severity



**Increased**

### Understanding what this may mean

Individuals with this genetic result may have an increased risk of experiencing severe health consequences associated with choline deficiency such as DNA Damage, muscle damage, and organ dysfunction. It is particularly important to consume adequate amounts of choline through their diet or supplementation to prevent deficiency.

---

## Risk of Organ Dysfunction from Choline Deficiency



**Increased**

### Understanding what this may mean

Individuals with this genetic result may have an increased risk of experiencing organ dysfunction associated with choline deficiency. It is particularly to consume adequate amounts of choline through their diet or supplementation to prevent any risk.

### Genetic Summary

SNP	Marker	Genotype
BHMT G716A	rs3733890	AG
CHDH T119G	rs9001	TT
CHKA C1017-182A	rs7928739	AC
CHKA C351-2951A	rs10791957	AC
MTHFD1 G1958A	rs2236225	AG

SNP	Marker	Genotype
MTHFR T1298G	rs1801131	TT
MTHFR G677A	rs1801133	AG
MTR A2756G	rs1805087	AA
MTRR A66G	rs1801394	GG
PEMT C634T	rs7946	TT

# Nitric Oxide

Nitric oxide (NO) is a critical signaling molecule produced by the body that plays a key role in various physiological processes including vasodilation, neurotransmission, immune system activity and cellular communication. This section explores genetic propensities related to nitric oxide production and utilization, providing insights into potential nitric oxide levels and how the body may respond to different factors that affect NO.

Nitric oxide is essential for blood vessel dilation, which helps promote healthy blood flow, cardiovascular function, and overall circulation. Genetics can provide insights into factors that may support or hinder nitric oxide production, such as dietary factors, physical activity, and exposure to environmental pollutants.

Optimal nitric oxide levels are crucial for maintaining cardiovascular health and overall well-being. There are many ways to affect levels, such as lifestyle factors, diet, and targeted supplementation. This may include consuming nitrate-rich foods like leafy greens and beets, engaging in regular physical activity, and adopting a nutrition plan to support nitric oxide production. It's important to remember that lifestyle choices, including exercise and dietary habits, can significantly impact nitric oxide levels and overall cardiovascular health.

By leveraging the insights from genetic predispositions for nitric oxide, and collaborating with healthcare professionals or nutrition experts, a personalized approach can be developed to support nitric oxide production and enhance cardiovascular well-being. Genetic propensities for nitric oxide production can serve as a valuable tool to optimize cardiovascular health and make informed choices to promote long-term well-being.



## Nitric Oxide Production



**Very Low**

### Understanding what this may mean

Individuals with this result may have lower than optimal levels of nitric oxide, which is a molecule that plays a key role in cardiovascular health and blood vessel function. Low levels of nitric oxide have been associated with an increased risk of cardiovascular disease and other health conditions. Lifestyle interventions, such as regular exercise and a healthy diet rich in nitric oxide-boosting foods (such as leafy greens, beets, and garlic), may help increase nitric oxide levels. Consult with a healthcare provider for guidance on nitric oxide supplements or other interventions.

### Genetic Summary

SNP	Marker	Genotype
NOS3 G2984+15A	rs891512	AG
NOS3 G3106+11T	rs7830	GG

SNP	Marker	Genotype
NOS3 T894G	rs1799983	TG
NOS3 T-786C	rs2070744	CC



---

## Selenium Deficiency Severity



**Typical**

### Understanding what this may mean

Individuals with this genetic result have a typical risk of experiencing significant health consequences associated with selenium deficiency. It is important for individuals to consume adequate amounts of selenium through their diet or supplementation to prevent deficiency.

---

## Iodine Level Propensity



**Typical**

### Understanding what this may mean

Individuals with this genetic result are likely to have typical levels of iodine. Adequate iodine intake is important for thyroid function, and it is recommended to consume iodine-rich foods or iodine supplements as needed.

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## Genetic Summary

SNP	Marker	Genotype
GPX1 G599A	rs1050450	GG
SELENOF C85-2631T	rs561104	TT

SNP	Marker	Genotype
SELENOP C*14T	rs7579	CC

# Iron

Iron is an essential mineral that plays a vital role in the transport of oxygen throughout the body. Iron deficiency can lead to anemia, which is characterized by fatigue, weakness, and shortness of breath. On the other hand, excessive iron accumulation in the body can lead to a condition called hemochromatosis, which can cause liver damage and other complications.

Individuals with a genetic predisposition for low iron levels may be at increased risk for iron deficiency anemia. Blood tests that measure serum iron and transferrin levels can help assess iron status. Low serum iron levels and high transferrin levels may indicate iron deficiency, while high serum iron and low transferrin levels may suggest iron overload.

Iron overload is a genetic condition characterized by excessive absorption of dietary iron, which can lead to iron overload in various organs. Individuals with certain genetic variants, such as the HFE C282Y variant, are at higher risk for developing iron overload. Symptoms may include fatigue, abdominal pain, joint pain, and liver damage.

Iron is found in both animal and plant foods, with animal sources being more easily absorbed by the body. Foods rich in iron include red meat, poultry, fish, beans, lentils, fortified cereals, and spinach. Vitamin C can enhance iron absorption, while calcium and tannins found in tea and coffee can inhibit iron absorption.

Individuals with a genetic predisposition for low iron levels or iron overload may benefit from working with a healthcare provider to optimize their iron status through dietary modifications, iron supplementation, or phlebotomy to reduce iron levels in cases of iron overload.



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## Iron Deficiency Risk



**Typical**

### Understanding what this may mean

Individuals with this genetic result have a typical risk of iron deficiency; this is still a risk for pre-menopausal females. It is important to consume adequate amounts of iron through their diet to maintain healthy iron levels and prevent deficiency.

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## Serum Iron Level Propensity



**Typical**

### Understanding what this may mean

Individuals with this genetic result are likely to have typical levels of serum iron in their blood.

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## Transferrin Level Propensity



**Typical**

### Understanding what this may mean

Individuals with this genetic result are likely to have typical levels of transferrin in their blood.

---

## Iron Overload Risk



**Typical**

### Understanding what this may mean

Individuals with this genetic result have a typical risk of developing iron overload, a condition characterized by excessive iron absorption and accumulation in the body. It is important for individuals to monitor their iron levels and discuss any concerns with a healthcare provider.

### Genetic Summary

SNP	Marker	Genotype
BTBD9 G1154+104406A	rs3923809	AG
HBS1L-MYB (A>G)	rs4895441	AA
HFE C187G (H63D)	rs1799945	CC
HFE G845A (C282Y)	rs1800562	GG
HFE A193T (S65C)	rs1800730	AA

SNP	Marker	Genotype
HIST1H2B (C>T)	rs13194491	CC
TF G1330+278A	rs3811647	AG
TFR2 C473+2339A	rs7385804	AA
TMPRSS6 G1563A	rs4820268	AG
TMPRSS6 A*1241G	rs855791	AG

# Environmental Sensitivity

Environmental sensitivity refers to an individual's genetic predisposition to react or respond differently to various environmental factors and chemicals. This section explores genetic risks associated with general chemical sensitivity, pesticides, and bisphenol A (BPA).

General chemical sensitivity encompasses an individual's susceptibility to adverse effects from exposure to a wide range of environmental chemicals, such as cleaning products, fragrances, and pollutants. Genetic variations can influence the body's ability to metabolize and eliminate these chemicals, potentially leading to heightened sensitivity or increased risk of adverse reactions.

Pesticide risk refers to an individual's genetic susceptibility to the potential harmful effects of pesticide exposure. Being aware of genetic predispositions for pesticide risk can guide decisions about pesticide exposure and encourage the use of protective measures when necessary.

Bisphenol A (BPA) risk focuses on an individual's genetic susceptibility to the potential health effects of BPA, a chemical commonly found in plastics and other consumer products. Genetic variations can influence how efficiently the body metabolizes and eliminates BPA, which can affect risk of BPA-related health concerns.

Understanding genetic predispositions for these enviro-toxins can assist in make choices that minimize exposure and promote your overall well-being.

It's important to note that while genetics play a role in environmental sensitivity, other factors such as lifestyle choices, overall health, and individual circumstances also contribute to how you respond to environmental factors.



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## General Chemical Sensitivity



**Typical**

### Understanding what this may mean

Individuals with this genetic result have a typical sensitivity to environmental toxins. Their genetic profile suggests that their bodies respond to chemicals in a manner similar to the general population. It is important for individuals with this result to be aware of potential chemical sensitivities and take appropriate precautions when handling or being exposed to envirotoxins. Hypoallergenic and fragrance-free cleaning and beauty supplies are advisable to mitigate exposure

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## Pesticide Risk



**Typical**

### Understanding what this may mean

Individuals with this genetic result have a typical risk of adverse effects related to pesticide exposure, including organophosphates. Their genetic profile suggests that their bodies respond to pesticide exposure in a manner similar to the general population. It is crucial for individuals with this result to be mindful of potential pesticide exposures and take appropriate precautions to minimize exposure. This may include using protective clothing, practicing safe handling and application of pesticides, and considering organic or pesticide-free alternatives whenever possible.

---

## BPA Risk



**Typical**

### Understanding what this may mean

Individuals with this genetic result have a typical risk of adverse effects associated with exposure to bisphenol A (BPA). BPA is a chemical commonly found in plastics, food containers, and other consumer products. Genetic variations associated with this result suggest that their bodies respond to BPA exposure in a manner similar to the general population. It is important for individuals with this result to be aware of potential sources of BPA exposure and take necessary steps to minimize exposure, such as using BPA-free products, avoiding prolonged contact with plastics, and choosing alternative packaging options whenever possible.

### Genetic Summary

SNP	Marker	Genotype
XPC G2815T	rs2228001	GG
SLCO1B1 T521C	rs4149056	TT
ANKK1 G2137A	rs1800497	GG
PON1 T575C	rs662	TT
BCHE C1699T	rs1803274	CC

SNP	Marker	Genotype
NAT2 G191A	rs1801279	GG
NAT2 G590A	rs1799930	GG
NAT2 T341C	rs1801280	TC
CYP2C9 A1075C	rs1057910	AA
CYP2C9 C430T	rs1799853	CC

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UGT2B15 A253C	rs1902023	AC
PTGS2 C306G	rs5277	CC
GSTP1 A313G	rs1695	AG
GSTM1 (A>G)	rs366631	AA
GSTA1 A-135G	rs3957357	GG
NAT2 G857A	rs1799931	GG

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CAT C1167T	rs769217	CC
CAT (C>T)	rs1001179	CC
HSPA1L G1478A	rs2227956	AA
CYP2E1 g.G3739C	rs3813867	GG
CYP2E1 C-1055T	rs2031920	CC
SOD2 A47G	rs4880	AG

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# Mold Severity

Mold severity refers to an individual's genetic predisposition for metabolizing mold toxins and their risk of experiencing adverse health effects from mold exposure. This section explores genetics for mold metabolism, specifically focusing on CYP1A2 gene variations, as well as symptom severity risk after exposure.

The CYP1A2 gene plays a crucial role in the metabolism of mold toxins. Genetic variations in this gene can impact how efficiently your body processes and eliminates mold toxins, which can influence your susceptibility to mold-related health issues. Understanding genetic predispositions for mold metabolism can provide insights into the body's ability to handle mold exposure.

Mold severity risk assesses genetic susceptibility to experiencing adverse health effects from mold exposure. Genetic variations can affect the body's response to mold toxins, potentially increasing risk of respiratory symptoms, allergies, or other health concerns when exposed to mold. Being aware of genetic predispositions for mold severity can assist in taking proactive measures to reduce mold exposure and creating a healthier living environment.

It's important to note that while genetics play a role in mold severity, other factors such as the extent and duration of mold exposure, overall health, and individual sensitivities also contribute to your response.

Understanding genetic predisposition for mold severity empowers individuals to take proactive steps to protect your health and well-being in mold-prone environments. By creating a mold-resistant living space and adopting healthy practices to minimize exposure, it is possible to reduce the potential risks associated with mold and promote a healthier indoor environment.



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## Mold Metabolism (CYP1A2)



### Rapid Metabolism

#### Understanding what this may mean

Individuals with this genetic result have a rapid metabolism of mold-related substances. Genetic variations associated with this result suggest that their bodies have an enhanced ability to metabolize and eliminate molds efficiently. This may provide a relatively better ability to handle mold exposure and reduce susceptibility to adverse health effects. However, it is still important for individuals with this result to be cautious of potential mold-related risks and take appropriate preventive measures to minimize exposure. Additionally, it is important to ensure phase 2 detoxification systems are working effectively to eliminate mold metabolites.

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## Mold Severity Risk



**Increased**

### Understanding what this may mean

Individuals with this genetic result have an increased severity risk of mold-related asthma and allergies. Genetic variations associated with this result suggest that their bodies may have an enhanced response to mold exposure, potentially leading to more severe asthma symptoms or allergic reactions. It is important for individuals with this result to be extra cautious, take proactive steps to minimize mold exposure, and work closely with healthcare professionals to develop a comprehensive management plan. This may include allergen avoidance strategies, medication management, and regular monitoring of symptoms.

### Genetic Summary

SNP	Marker	Genotype
CYP1A2 C1291T	rs28399424	CC
CYP1A2 C-729T	rs12720461	CC
CYP1A2 T739G	rs2069526	TG
CYP1A2 G-3860A	rs2069514	GG
CYP1A2 C-163A	rs762551	AA

SNP	Marker	Genotype
GSTM1 (A>G)	rs366631	AA
GSTA1 A-135G	rs3957357	GG
XPC G2815T	rs2228001	GG
SLCO1B1 T521C	rs4149056	TT

# Alcohol

Alcohol genetics refers to the genetic factors that influence an individual's response to alcohol consumption. This section explores genetic predispositions for alcohol metabolism, alcohol sensitivity, and other factors that can affect risks related to how the body processes and responds to alcohol.

One key aspect of alcohol genetics is alcohol metabolism. Genetic variations in enzymes such as alcohol dehydrogenase (ADH) and aldehyde dehydrogenase (ALDH) can impact how efficiently the body breaks down alcohol. These variations can determine how quickly or slowly alcohol is metabolized, which can influence how alcohol affects risk of certain alcohol-related health issues.

It's important to note that alcohol genetics can also influence the risk of alcohol-related health conditions, such as alcohol-induced liver disease, alcohol dependence, and certain types of cancer. Genetic variations can affect how the body processes and eliminates alcohol by-products, which can contribute to an increased or decreased risk of developing these conditions.

Understanding alcohol genetics can help make informed decisions about alcohol consumption. Individuals with genetic variations that suggest a higher sensitivity or increased risk for certain health conditions, may choose to consume alcohol in moderation or even abstain from it entirely. On the other hand, if the genetic profile suggests a typical risk, it is still advisable to practice responsible drinking habits and consider potential long-term health effects.

It's important to remember that genetics is just one piece of the puzzle when it comes to alcohol consumption. Other factors such as overall health, lifestyle choices, and social and cultural influences also play a significant role. It's always a good idea to discuss alcohol consumption with a healthcare professional, who can provide personalized guidance based on the genetic profile and individual circumstances.



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## APOe Status



**APOe 2/3 status**

### Understanding what this may mean

Individuals with this APOe status have one copy of the APOe2 allele and one copy of the more common APOe3 allele. This genetic combination is relatively common and considered to be the lowest risk in terms of its association with age-related conditions.. It is important to maintain a healthy lifestyle, including a balanced diet and regular exercise, to promote overall health and well-being.

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## Alcohol Inflammation Risk



**Typical**

### Understanding what this may mean

Individuals with this genetic result have a typical risk associated with alcohol consumption. This genetic profile suggests a response to alcohol that is similar to the general population. It is important for individuals with this result to follow recommended guidelines for moderate alcohol consumption. It is essential to be mindful of individual tolerance, personal health conditions, and any medication interactions. Additionally, biometric trackers such as the Whoop or Garmin can assist in providing real-time feedback.

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## Genetic Summary

SNP	Marker	Genotype
APOE C526T	rs7412	TC
APOE C388T	rs429358	TT
ADH1B T143C	rs1229984	CC
ALDH2 G1510A	rs671	GG
ANKK1 G2137A	rs1800497	GG

SNP	Marker	Genotype
CYP2E1 g.G3739C	rs3813867	GG
CYP2E1 C-1055T	rs2031920	CC
FAAH C385A	rs324420	CC
OPRM1 A118G	rs1799971	AG

# Element and Heavy Metal Management

Element and heavy metal management is a crucial aspect of maintaining optimal health and well-being. This section explores genetic predispositions for managing exposure to certain elements and heavy metals, including arsenic, mercury, lead, and fluoride. Understanding genetic risk factors can help make informed choices to minimize exposure and support the body's natural detoxification processes.

Arsenic exposure risk refers to the likelihood of being more susceptible to arsenic toxicity. Arsenic is a naturally occurring element that can be found in water, soil, and certain foods. High levels of arsenic exposure have been associated with various health concerns. Genetic variations can influence how efficiently the body metabolizes and eliminates arsenic, affecting overall sensitivity to its harmful effects.

Mercury exposure risk refers to the susceptibility to the negative effects of mercury toxicity. Mercury is a toxic heavy metal found in certain fish, dental amalgam fillings, and environmental pollutants. Genetic factors can impact how efficiently the body processes and eliminates mercury, influencing overall sensitivity to its harmful effects on the nervous system and other organs.

Lead exposure risk refers to the genetic predisposition for increased susceptibility to the toxic effects of lead exposure. Lead is a heavy metal commonly found in older homes, soil, and certain industrial settings. High levels of lead exposure can have detrimental effects on neurological development, cardiovascular health, and other organ systems.

Fluoride exposure risk refers to the genetic predisposition for increased sensitivity to the potential adverse effects of fluoride exposure. Fluoride



is a mineral commonly found in water, toothpaste, and certain dental treatments. While fluoride is beneficial for dental health in appropriate doses, excessive exposure can lead to dental fluorosis and other health concerns.

Understanding genetic risk factors for these elements and heavy metals can help guide choices and minimize exposure. Strategies for managing exposure may include drinking filtered water, choosing low-mercury fish options, maintaining good oral hygiene practices, and reducing environmental exposures.

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## Arsenic Exposure Risk



**Increased**

### Understanding what this may mean

Individuals with this genetic result have an increased risk of adverse effects related to arsenic exposure. Genetic variations associated with this result suggest that their bodies may be less efficient at processing or eliminating arsenic, potentially increasing the risk of negative impacts. It is crucial for individuals with this result to be extra vigilant and take proactive steps to minimize exposure to arsenic. This may include ensuring access to safe drinking water, reducing consumption of foods known to have higher arsenic content, and being cautious of potential occupational or environmental sources of arsenic contamination.

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## Mercury Exposure Risk



**Increased**

### Understanding what this may mean

Individuals with this genetic result have an increased risk of adverse effects associated with mercury exposure. Genetic variations associated with this result suggest that their bodies may be less efficient at processing or eliminating mercury, potentially increasing the risk of negative impacts. It is crucial for individuals with this result to be cautious and take extra steps to minimize exposure to mercury. This may include limiting consumption of fish known to be high in mercury, ensuring optimal selenium levels, and being mindful of potential occupational or environmental sources of mercury contamination.

## Lead Exposure Risk



**Increased**

### Understanding what this may mean

Individuals with this genetic result have an increased risk of adverse effects associated with lead exposure. Genetic variations associated with this result suggest that their bodies may be more susceptible to the toxic effects of lead. It is crucial for individuals with this result to be extra vigilant and take proactive steps to reduce lead exposure. This may include avoiding or minimizing contact with potential lead sources, such as lead-based paint, certain occupations involving lead exposure, or contaminated soil.

## Fluoride Exposure Risk



**Typical**

### Understanding what this may mean

Individuals with this genetic result have a typical risk of adverse effects related to fluoride exposure. Their genetic profile suggests a response to fluoride that is similar to the general population.

### Genetic Summary

SNP	Marker	Genotype
ANKK1 G2137A	rs1800497	GG
CREB1 T262-2836C	rs6740584	TC
VDR G2A	rs2228570	AG
ALAD C264G	rs1800435	CC
VDR C1024+283T	rs1544410	TC
GCLM G-588A	rs41303970	GG
GCLC g.G4891A	rs17883901	GG
GSTP1 A313G	rs1695	AG

SNP	Marker	Genotype
MT4 G143A	rs11643815	AG
CPOX4 T814G	rs1131857	TT
AS3MT G529-56C	rs3740393	CG
AS3MT T860C	rs11191439	TC
MTHFR G677A	rs1801133	AG
MTHFR T1298G	rs1801131	TT
GSTO2 A424G	rs156697	AA
GSTO1 g.G4494A	rs2164624	GG

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GSTP1 C341T	rs1138272	CC
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GSTM1 (A>G)	rs366631	AA
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GSTO1 C419A	rs4925	CC
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# Phase 1 Detoxification Systems

The Phase 1 detoxification system in our bodies plays a crucial role in metabolizing and eliminating various substances, including toxins, medications, and environmental chemicals. This section explores genetic predispositions for specific aspects of Phase 1 detoxification, providing insights into how the body may process substances.

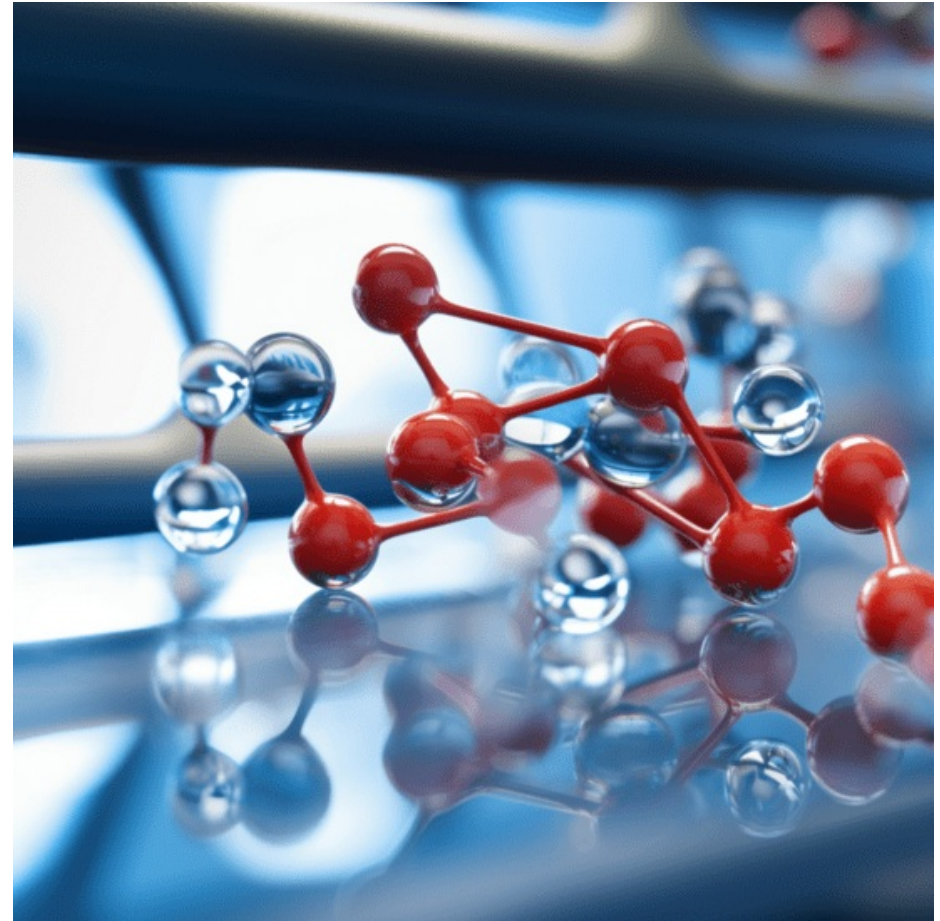
Once exposed to toxicants, the first phase of detoxification involves chemically transforming the compounds to make them easier to remove from the body. The effect of this transformation is that the molecules often become more toxic. Yet it is typically more desirable to have more effective phase 1 metabolism as long as the phase 2 system is working effectively.

Two aspects covered in this section are mold and phthalate metabolism. Genetics play a role in determining predispositions toward the breakdown of these compounds. Understanding these predispositions can assist in providing more precise recommendations.

Additionally, the metabolism of medications is also influenced by a number of genetic factors. While many enzymes are involved in medication metabolism, typically the most impactful is the CYP2D6 enzyme. This enzyme is responsible for metabolizing a wide range of medications.

In addition to general CYP2D6 medications, genetic results for over-the-counter medications such as NSAIDs and acetaminophen are also included. Metabolism genetics can vary greatly and may influence outcomes.

Understanding genetic tendencies related to Phase 1 detoxification can assist in informed decisions about environmental exposures, medication



choices, and potential areas of support for detoxification pathways. It's important to note that genetics is just one factor in detoxification, and lifestyle choices, environmental exposures, and overall health are also factors.

---

## General Medication Metabolism (CYP2D6)



**Below Average Metabolism**

### Understanding what this may mean

Below average metabolism of medications which are substrates of CYP2D6, a Pharmacogenomics report may be desirable to assess in further detail.

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## Acetaminophen Metabolism



**Normal Metabolism**

### Understanding what this may mean

Individuals with this genetic result have a normal metabolism of acetaminophen. Their genetic profile suggests that their bodies can effectively metabolize and eliminate acetaminophen within the average range. It is still important for individuals with this result to use acetaminophen responsibly and follow recommended dosing guidelines to avoid potential risks associated with excessive use or overdose. Understanding the potential side effects and consulting with healthcare professionals or pharmacists when necessary is crucial to ensure safe and appropriate use of acetaminophen.

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## Mold Metabolism (CYP1A2)



**Rapid Metabolism**

### Understanding what this may mean

Individuals with this genetic result have a rapid metabolism of mold-related substances. Genetic variations associated with this result suggest that their bodies have an enhanced ability to metabolize and eliminate molds efficiently. This may provide a relatively better ability to handle mold exposure and reduce susceptibility to adverse health effects. However, it is still important for individuals with this result to be cautious of potential mold-related risks and take appropriate preventive measures to minimize exposure. Additionally, it is important to ensure phase 2 detoxification systems are working effectively to eliminate mold metabolites.

## NSAIDs Metabolism (CYP2C9)



**Normal metabolism**

### Understanding what this may mean

Typical metabolism; likely to have standard effects from over-the-counter NSAIDs

## Phthalate Metabolism (CYP2B6)



### Normal Metabolism

#### Understanding what this may mean

Individuals with this genetic result have a normal metabolism of phthalates. Their genetic profile suggests that their bodies can effectively metabolize and eliminate phthalates within the average range. However, it is still important for individuals with this result to be aware of potential phthalate exposure risks and take preventive measures to minimize exposure. This may include using phthalate-free products, avoiding prolonged contact with plastics, and choosing natural or organic alternatives when possible.

## Caffeine Metabolism (CYP1A2)



### Fast Metabolism

#### Understanding what this may mean

Individuals with this result are considered to have rapid caffeine metabolism. Studies have shown potential for beneficial effects and faster breakdown of caffeine when consumed as coffee. Standard dosing and timing of coffee is likely to affect sleep quality minimally.

## Genetic Summary

SNP	Marker	Genotype
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SNP	Marker	Genotype
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CYP1A2 C1291T	rs28399424	CC
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CYP1A2 C-729T	rs12720461	CC
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CYP1A2 T739G	rs2069526	TG
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CYP1A2 G-3860A	rs2069514	GG
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CYP1A2 C-163A	rs762551	AA
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CYP2B6 T983C	rs28399499	TT
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CYP2B6 T-82C	rs34223104	TT
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CYP2B6 G516T	rs3745274	GG
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CYP2B6 A785G	rs2279343	AA
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CYP1A1 C-27+606A	rs2606345	AC
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CYP2E1 C1263T	rs2515641	CC
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# Phase 2 Detoxification Overview

Phase 2 detoxification is a crucial process in the body's efforts to eliminate harmful substances and chemicals. It involves the transformation of fat-soluble toxins into water-soluble compounds, allowing them to be easily excreted through urine or bile. This section provides an overview of Phase 2 detoxification systems, highlighting their importance and genetic influences.

There are several pathways within Phase 2 detoxification, each responsible for processing different types of toxins. These pathways include glucuronidation, acetylation, sulfation, methylation, glutathione conjugation, and amino acid conjugation. Genetic variations can influence the efficiency of these pathways, affecting how effectively the body processes and eliminates various toxins.

Understanding genetic predispositions for Phase 2 detoxification pathways can provide insights into how efficiently the body processes and eliminates toxins. By knowing which pathways may be more or less efficient, informed lifestyle choices can be made to support the body's natural detoxification processes. However, it's important to remember that while genetics play a role, other factors such as diet, environment, and overall health also contribute to the body's detoxification capabilities. Consulting with healthcare professionals can help tailor a holistic approach to detoxification that aligns with genetic insights and supports well-being.



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## SOD2 Activity



**Typical**

### Understanding what this may mean

Individuals with this genetic result have typical SOD2 activity. Their genetic profile suggests that their bodies can produce and maintain SOD2 levels within the average range. It is still important for individuals with this result to continue supporting their antioxidant defense system by maintaining a balanced diet, engaging in regular physical activity, and avoiding excessive exposure to environmental toxins.

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## Catalase Activity



**Ideal**

### Understanding what this may mean

Likely to have standard catalase activity. This provides robust antioxidant defense, helping to protect cells from oxidative damage caused by ROS. While this genetic makeup may be favorable, it is still essential for individuals with this result to maintain a balanced lifestyle and adopt healthy practices that support overall well-being.

---

## MTHFR Activity



**60-70% enzyme activity**

### Understanding what this may mean

Individuals with 60-70% MTHFR enzyme activity have a moderate reduction in enzyme activity and may be at an increased risk for elevated homocysteine levels and associated health problems. However, the risk is generally not as high as for individuals with further reduced enzyme activity. It is still important for individuals with this enzyme activity level to work with their medical providers to ensure adequate intake of folate and other B vitamins and to avoid certain medications that may further decrease MTHFR activity.

## Glucuronidation



**Reduced Function**

### Understanding what this may mean

Individuals with this genetic result may have reduced glucuronidation function. Genetic variations associated with this result suggest that their bodies may have a decreased capacity to perform glucuronidation efficiently. It is important for individuals with this result to be mindful of their toxicant exposure and consider lifestyle practices that support overall detoxification and elimination processes. This may include consuming a nutrient-rich diet, staying hydrated, engaging in regular physical activity, and avoiding excessive exposure to environmental toxins.

## NAT2 Acetylation (Standard)



**Intermediate Acetylation**

### Understanding what this may mean

Individuals with intermediate NAT2 acetylation activity may have a slightly increased risk for adverse drug reactions, but the risk is generally not as high as for slow acetylators. It is still important for individuals with this enzyme activity level to work with their medical providers to monitor medication use and adjust doses as needed.

## NRF2 Activity



**Typical**

### Understanding what this may mean

Individuals with this genetic result have a typical NRF2 activity. Their genetic profile suggests that their bodies can activate the NRF2 pathway within the average range. It is still important for individuals with this result to support their body's natural antioxidant defense system by maintaining a balanced diet, engaging in regular physical activity, and avoiding excessive exposure to environmental toxins.

## Glutathione Level Propensity



**Typical**

### Understanding what this may mean

Individuals with this genetic result have typical levels of glutathione. Their genetic profile suggests that their bodies can maintain glutathione levels within the average range. It is still important for individuals with this result to support their body's natural antioxidant defense system by maintaining a balanced diet, engaging in regular physical activity, and avoiding excessive exposure to environmental toxins.

### Genetic Summary

SNP	Marker	Genotype
GSTO2 A424G	rs156697	AA
GSTO1 g.G4494A	rs2164624	GG
GSTA1 A-135G	rs3957357	GG
GSTO1 C419A	rs4925	CC
GSTM1 (A>G)	rs366631	AA
GSTP1 C341T	rs1138272	CC

SNP	Marker	Genotype
UGT1A6 A541G	rs2070959	AA
UGT2B15 A253C	rs1902023	AC
UGT1A1 C-364T	rs887829	CC
NAT2 G191A	rs1801279	GG
NAT2 G857A	rs1799931	GG
NAT2 G590A	rs1799930	GG

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GSTP1 A313G	rs1695	AG
GPX1 G599A	rs1050450	GG
SOD2 A47G	rs4880	AG
CAT C1167T	rs769217	CC
CAT (C>T)	rs1001179	CC
NRF2 A45+10270G	rs13001694	AA
UGT1A6 G627T	rs17863783	GG

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NAT2 T341C	rs1801280	TC
BHMT G716A	rs3733890	AG
MTRR A66G	rs1801394	GG
MTR G2775+157T	rs2275565	GG
MTR A2756G	rs1805087	AA
COMT G472A	rs4680	GG

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## Phase 2 - Methylation

Methylation is a vital biochemical process that occurs in every cell of our body. It plays a crucial role in various biological functions, including DNA synthesis, gene expression, detoxification, neurotransmitter synthesis, and more. This section explores genetics related to methylation and provides insights into methylation capacity and potential risks.

Genetic variations in key genes involved in the methylation pathway, such as MTHFR, COMT, and others, can influence your methylation capacity. These variations can impact the efficiency of methylation reactions, potentially leading to imbalances in various metabolic processes.

Understanding genetic predispositions for methylation can help shed light on how the body may process and utilize essential nutrients like folate, vitamin B12, and other cofactors involved in the methylation cycle. It can also provide insights into potential risks associated with impaired methylation, such as elevated homocysteine levels or reduced detoxification capacity.

This section also includes related micronutrients which are relevant to methylation activity.

Optimal methylation is important for overall health and well-being. Lifestyle factors, diet, and targeted supplementation can assist in supporting methylation capacity. This can include ensuring adequate intake of methyl-donating nutrients, adopting a healthy diet rich in whole foods, managing stress, and optimizing lifestyle choices that promote overall methylation balance.



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## Methylation



**Typical Methylation**

### Understanding what this may mean

This result indicates a likely balanced methylation process, which is essential for various biochemical functions and overall health. However, it is still important for individuals with this result to maintain a healthy lifestyle, including a balanced diet, regular physical activity, and other practices that support optimal methylation.

---

## Choline Need



**Increased**

### Understanding what this may mean

Individuals with this result may have a genetic propensity for a higher than average need for choline. It is important to consume sufficient amounts of choline through dietary sources such as eggs or liver, as choline plays a critical role in various physiological processes such as brain function, methylation, nerve function, and metabolism. Additionally, supplementation with choline may be beneficial for individuals with an increased need.

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## MTHFR Activity



**60-70% enzyme activity**

### Understanding what this may mean

Individuals with 60-70% MTHFR enzyme activity have a moderate reduction in enzyme activity and may be at an increased risk for elevated homocysteine levels and associated health problems. However, the risk is generally not as high as for individuals with further reduced enzyme activity. It is still important for individuals with this enzyme activity level to work with their medical providers to ensure adequate intake of folate and other B vitamins and to avoid certain medications that may further decrease MTHFR activity.

### Genetic Summary

SNP	Marker	Genotype
BHMT G716A	rs3733890	AG
CBS T317-917C	rs2851391	CC
COMT G472A	rs4680	GG
MTHFD1 G1958A	rs2236225	AG

SNP	Marker	Genotype
MTHFR G677A	rs1801133	AG
MTHFR T1298G	rs1801131	TT
MTR A2756G	rs1805087	AA
MTRR A66G	rs1801394	GG

## Phase 2 - Acetylation and Glucuronidation

Acetylation and Glucuronidation are important processes that play roles in the metabolism and elimination of various substances, including medications and environmental toxins. This section explores genetic predispositions for acetylation and glucuronidation, providing insights into how efficiently the body may perform these processes.

Genetic variations can impact the activity of these enzymes, affecting how quickly or slowly certain substances are metabolized. Understanding genetic tendencies for acetylation and glucuronidation can help guide medication choices and dosages, as well as provide insights into potential sensitivities or susceptibilities to certain environmental toxins.



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## Acetylation



**Typical**

### Understanding what this may mean

This result is similar to intermediate NAT2 acetylation, and may be associated with an increased risk for adverse drug reactions, it is also the more common combination of genetic variants. This result can also increase potential for sensitivity to certain environmental toxins such as cigarette smoke or pollution.

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## Glucuronidation



**Reduced Function**

### Understanding what this may mean

Individuals with this genetic result may have reduced glucuronidation function. Genetic variations associated with this result suggest that their bodies may have a decreased capacity to perform glucuronidation efficiently. It is important for individuals with this result to be mindful of their toxicant exposure and consider lifestyle practices that support overall detoxification and elimination processes. This may include consuming a nutrient-rich diet, staying hydrated, engaging in regular physical activity, and avoiding excessive exposure to environmental toxins.

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## Genetic Summary

SNP	Marker	Genotype
UGT1A1 C-364T	rs887829	CC
UGT2B15 A253C	rs1902023	AC
UGT1A6 A541G	rs2070959	AA
UGT1A6 G627T	rs17863783	GG

SNP	Marker	Genotype
NAT2 G857A	rs1799931	GG
NAT2 G191A	rs1801279	GG
NAT2 G590A	rs1799930	GG
NAT2 T341C	rs1801280	TC

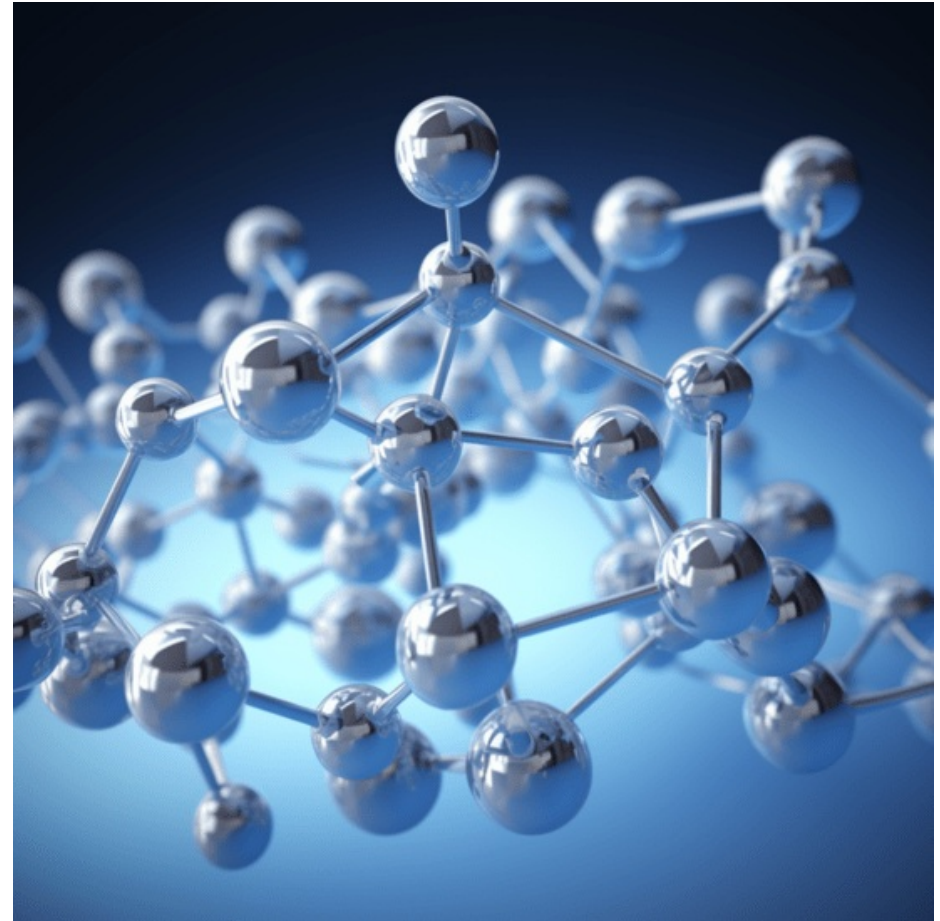
## Phase 2 - Glutathione

Glutathione, often referred to as the 'master antioxidant,' plays a crucial role in protecting our cells from oxidative stress and maintaining overall health. This section explores genetic predispositions for glutathione levels, providing insights into how effectively the body may produce and utilize this essential antioxidant.

Glutathione levels refer to the amount of glutathione present in the body. Glutathione is involved in various detoxification processes and is known for its ability to neutralize harmful free radicals. Genetic variations can influence the production and regulation of glutathione, which can impact your body's overall antioxidant capacity.

NRF2 is a transcription factor that plays a key role in activating the body's antioxidant response and detoxification pathways. It is considered the 'master regulator' of antioxidant and inflammation-related genes including those involved in glutathione production. Genetic variations in NRF2 activity can affect its ability to regulate the expression of antioxidant enzymes, potentially influencing the body's response to oxidative stress and its ability to combat damaging free radicals.

Understanding genetic tendencies for glutathione levels and NRF2 activity can provide valuable insights into the body's antioxidant status and its ability to manage oxidative stress.



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## Glutathione Level Propensity



**Typical**

### Understanding what this may mean

Individuals with this genetic result have typical levels of glutathione. Their genetic profile suggests that their bodies can maintain glutathione levels within the average range. It is still important for individuals with this result to support their body's natural antioxidant defense system by maintaining a balanced diet, engaging in regular physical activity, and avoiding excessive exposure to environmental toxins.

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## NRF2 Activity



**Typical**

### Understanding what this may mean

Individuals with this genetic result have a typical NRF2 activity. Their genetic profile suggests that their bodies can activate the NRF2 pathway within the average range. It is still important for individuals with this result to support their body's natural antioxidant defense system by maintaining a balanced diet, engaging in regular physical activity, and avoiding excessive exposure to environmental toxins.

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## Genetic Summary

SNP                      Marker                      Genotype

SNP                      Marker                      Genotype

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CBS G699A	rs234706	GG
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GSTO2 A424G	rs156697	AA
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GSTO1 g.G4494A	rs2164624	GG
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GSTO1 C419A	rs4925	CC
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GSTA1 A-135G	rs3957357	GG
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GSTM1 (A>G)	rs366631	AA
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GSTP1 C341T	rs1138272	CC
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GSTP1 A313G	rs1695	AG
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NQO1 G415A	rs1131341	GG
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NQO1 G559A	rs1800566	GG
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NRF2 A45+10270G	rs13001694	AA
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TXN A-793G	rs2301241	AG
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## Phase 2 - Catalase

Catalase is a critical enzyme in the body that plays a key role in protecting cells from oxidative stress. This section explores genetic profiles related to catalase activity, providing insights into how efficiently the body produces and utilizes this essential enzyme.

Genetic variations in the catalase gene (CAT) can influence the activity of the catalase enzyme. Catalase functions as a powerful antioxidant, breaking down harmful hydrogen peroxide into water and oxygen, preventing oxidative damage to cells and tissues.

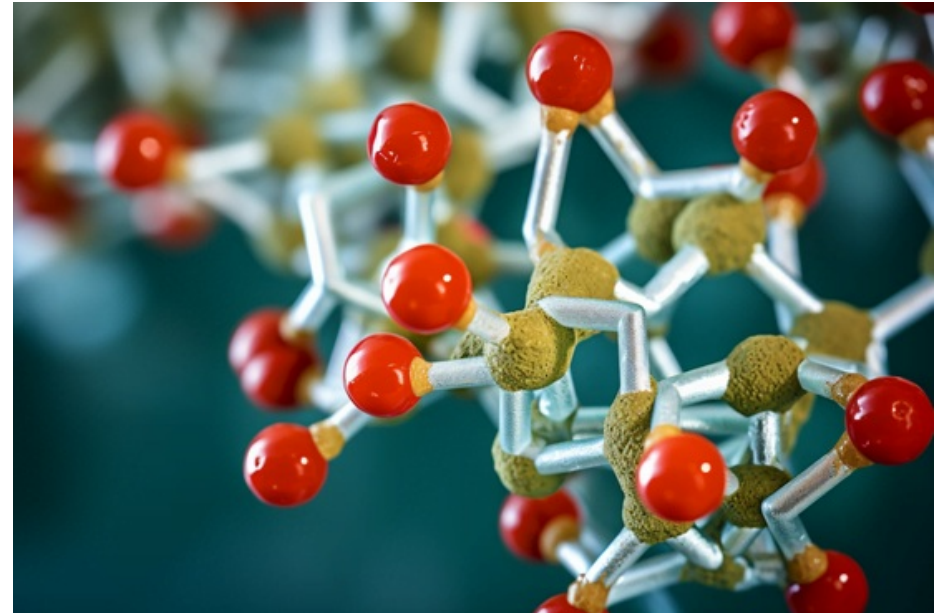
Understanding genetic predispositions for catalase activity can provide valuable information about the body's ability to neutralize oxidative stress and protect against damage caused by free radicals. High catalase activity is generally associated with better antioxidant defense and may offer greater protection against age-related diseases and cellular damage.

Optimal catalase activity is crucial for maintaining cellular health and protecting against oxidative stress, which is linked to various health conditions, including cardiovascular disease, neurodegenerative disorders, and premature aging.

Leveraging the insights from genetic predisposition for catalase activity can assist in making informed decisions about lifestyle factors and dietary choices that may support antioxidant defense. Consuming a diet rich in antioxidant-rich foods, such as fruits, vegetables, and nuts, may help bolster catalase activity and enhance the body's defense against oxidative stress.

Additionally, avoiding exposure to environmental toxins, pollutants, and excessive sun exposure can also contribute to maintaining optimal catalase activity.

Collaborating with healthcare professionals or nutrition experts can help develop a personalized approach to support catalase activity and enhance the body's ability to combat oxidative stress. Integrating this knowledge into a comprehensive wellness plan can promote longevity and overall well-being.



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## Catalase Activity



**Ideal**

### Understanding what this may mean

Likely to have standard catalase activity. This provides robust antioxidant defense, helping to protect cells from oxidative damage caused by ROS. While this genetic makeup may be favorable, it is still essential for individuals with this result to maintain a balanced lifestyle and adopt healthy practices that support overall well-being.

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## Genetic Summary

SNP	Marker	Genotype
TXN A-793G	rs2301241	AG
CAT C1167T	rs769217	CC

SNP	Marker	Genotype
CAT (C>T)	rs1001179	CC

## Phase 3 - Transport and Elimination

Phase 3 detoxification is a crucial process that helps eliminate metabolites from the body. This section explores genetic predispositions for Phase 3 detoxification, specifically providing insights into how efficiently the body may excrete estrogen metabolites.

This section focuses on the breakdown of estrogen into various metabolites (2-OH, 4-OH, 16-OH), protection against any negative effects, and subsequent elimination from the body.

It's important to note that genetics is just one aspect of Phase 3 detoxification, and overall lifestyle factors, such as diet, exercise, and exposure to toxins, can also influence estrogen metabolism. Consulting with a healthcare professional or specialist in hormone health can provide further guidance on optimizing Phase 3 detoxification and promoting overall hormonal well-being.



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## Estrogen Metabolite Elimination



**Typical**

### Understanding what this may mean

Individuals with this genetic result have a typical capacity for estrogen metabolite elimination. Their genetic profile suggests that their bodies can efficiently process and eliminate estrogen metabolites within the average range. However, it is still important to prioritize overall hormonal health through lifestyle practices that support hormonal balance, such as maintaining a healthy weight, regular physical activity, and a nutrient-rich nutrition plan.

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### Genetic Summary

SNP	Marker	Genotype
COMT G472A	rs4680	GG
GSTP1 A313G	rs1695	AG

SNP	Marker	Genotype
GSTM1 (A>G)	rs366631	AA
UGT1A6 A541G	rs2070959	AA

Module 40

## Interesting Toxicant & Inflammation SNPs

This section delves into various interesting genes associated with toxicant metabolism and inflammation responses which may not be included in other sections.

One of the genes of interest is CBS (cystathionine beta-synthase), which plays a role in sulfur amino acid metabolism and detoxification processes. Genetic variations in the CBS gene can impact its activity, potentially affecting how efficiently the body processes and eliminates harmful substances.



## CBS Activity



**Typical**

## Understanding what this may mean

Typical CBS activity.

## Genetic Summary

SNP	Marker	Genotype
MAO-B T1300-36C	rs1799836	TC
MAO-A G891A	rs6323	GG
HDC T1932G	rs2073440	TT
HNMT A*60G	rs1050891	AA
HNMT C314T	rs11558538	CC
AOC1 C47T	rs10156191	CC

SNP	Marker	Genotype
AOC1 G-92-231T	rs2052129	GG
AOC1 C995T	rs1049742	CC
AOC1 C1990G	rs1049793	CC
AOC1 G1329A	rs2071514	GG
CBS G699A	rs234706	GG

# Strength and Muscle

Strength and muscle mass are critical components of overall physical health and functionality. Genetic variations can play a role in how your body responds to strength training and the development of muscle mass. This section delves into your genetic predisposition for strength and muscle mass, offering insights into how you might naturally excel or face challenges in these areas.

A low genetic predisposition for strength and muscle mass suggests that you may need to put in extra effort and adopt specific strategies to achieve substantial gains in strength and muscle size. Engaging in targeted strength training exercises, following appropriate nutrition plans, and focusing on progressive overload may be particularly important for individuals with lower genetic predisposition scores.

A typical genetic predisposition for strength and muscle mass indicates that your body is likely to respond in a manner similar to the general population when engaging in strength training. With consistent effort and a structured training regimen, you can expect to see improvements in both strength and muscle mass over time.

An increased genetic predisposition for strength and muscle mass suggests that you may have a natural advantage when it comes to building muscle and increasing strength. Your body may respond more favorably to strength training, resulting in relatively faster gains in muscle size and overall strength.

It's important to remember that while genetics play a role, lifestyle factors such as training frequency, intensity, recovery, and nutrition are equally crucial for maximizing your strength and muscle mass potential. Tailoring your training routine to your genetic predisposition can be beneficial, but individualized approaches based on your personal goals and preferences are essential.



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## Muscle Mass



**Increased**

### Understanding what this may mean

Individuals with this genetic result may have an increased capacity for building muscle mass. Genetic variations associated with this result suggest that their bodies may have a natural predisposition for developing and maintaining muscle tissue. This could mean that they might experience greater gains in muscle mass from strength training and proper nutrition. Individuals with this result can capitalize on their genetic advantage by engaging in targeted strength training routines and ensuring sufficient protein intake to optimize their muscle growth and overall fitness.

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## Strength



**Elite**

### Understanding what this may mean

Individuals with this genetic result may have elite-level muscle strength. Genetic variations associated with this result suggest that their bodies have a remarkable capacity for building and maintaining muscle strength. This could indicate a potential for exceptional strength gains from strength training exercises. Individuals with this result may consider specialized training programs and guidance from experienced fitness professionals to harness their genetic advantage and excel in strength-based activities.

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## Genetic Summary

SNP	Marker	Genotype
ACE G2328A	rs4343	AG
ACTN3 C1729T	rs1815739	CC
LEPR A668G	rs1137101	AG
MSTN T458C	rs1805086	TT
PPARA G1160-396C	rs4253778	GG
PPARD C*1762T	rs1053049	TC
PPARD C-87T	rs2016520	TC
PPARG C34G	rs1801282	CG

SNP	Marker	Genotype
PPARD G-101-842A	rs2267668	AA
TNF T-1031C	rs1799964	TT
TNF G-238A	rs361525	GG
TNF G-308A	rs1800629	AG
TNF C-857T	rs1799724	CC
TNF C-863A	rs1800630	CC
TRHR A789+9321C	rs16892496	AC

# Fatigue and Recovery

Muscle fatigue and recovery are integral aspects of physical performance and overall fitness. Genetic variations can influence how quickly your muscles fatigue during exercise and how efficiently your body recovers afterward. This section delves into your genetic predisposition for muscle fatigue and recovery, providing insights into how your body might respond to intense physical activity and the strategies you can adopt to optimize recovery.

A low genetic predisposition for muscle fatigue suggests that you may have a natural advantage in sustaining muscular effort during exercise. Your muscles might be able to endure more extended periods of activity before experiencing significant fatigue. However, it's essential to listen to your body and not push beyond safe limits to prevent overexertion and potential injury.

A typical genetic predisposition for muscle fatigue indicates that your muscles are likely to respond similarly to the general population when it comes to fatigue during exercise. Regular training and gradual progression can help improve your endurance and delay the onset of muscle fatigue.

An increased genetic predisposition for muscle fatigue means that you might experience quicker muscle fatigue during exercise compared to others. While this might pose challenges in terms of sustaining high-intensity activities, there are strategies you can adopt to enhance your endurance and extend the time before fatigue sets in.

Recovery after exercise is equally crucial, and genetic variations can influence how efficiently your body repairs and regenerates muscles post-workout. Understanding your genetic predisposition for muscle recovery can help you tailor your recovery strategies effectively.

Incorporating proper nutrition, hydration, sleep, and active recovery techniques based on your genetic profile can aid in optimizing muscle recovery and reducing the risk of overtraining or injury.



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## Muscle Recovery Speed



**Typical**

### Understanding what this may mean

Individuals with this genetic result can expect a typical muscle recovery speed. Their genetic profile suggests that their bodies respond to exercise-induced muscle damage and physical stress in a manner similar to the general population. This indicates a balanced capacity for recovering after workouts and adapting to training. Individuals with this result can engage in well-structured training routines that include proper rest, nutrition, and recovery strategies to support their muscle recovery and overall fitness goals.

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## Muscle Endurance



**Typical**

### Understanding what this may mean

Individuals with this genetic result have a typical level of muscle endurance. Their genetic profile suggests that their bodies respond to physical activity and exercise in a manner similar to the general population. This indicates a balanced muscle endurance capacity, which is important for maintaining overall fitness and participating in various physical activities. Individuals with this result can engage in regular exercise routines to improve and maintain their muscle endurance, supporting their overall health and fitness goals.

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## Genetic Summary

SNP	Marker	Genotype
AMPD1 G34A	rs17602729	GG
CCR2 T780C	rs1799865	TT
IGF2 C-6-285G	rs3213221	CC
IGF2 T-468-2872G	rs7924316	TG

SNP	Marker	Genotype
IL1B G315A	rs1143634	GG
MYLK G62T	rs28497577	TG
SLC30A8 C973T	rs13266634	TC
SOD2 A47G	rs4880	AG

# Injury Risk

Soft tissue injuries can significantly impact your physical activities and overall well-being. Genetic variations can influence your predisposition for specific soft tissue injuries, such as those involving the Achilles tendon and cartilage. This section provides insights into your genetic risk for soft tissue injuries, empowering you to take preventive measures and make informed choices to minimize your risk.

Achilles tendon injuries can be particularly challenging, often leading to discomfort and limitations in mobility. Genetic predispositions can affect the strength and resilience of your Achilles tendon. Understanding your genetic risk can guide your exercise routines, emphasizing appropriate warm-up, cool-down, and gradual progression to reduce the likelihood of injury.

Cartilage injuries are another concern, especially in activities that involve joint movements. Genetic factors play a role in cartilage health and regenerative capacity. Being aware of your genetic predisposition can influence your exercise choices and assist in selecting activities that are less likely to strain your joints.

Additionally, a general genetic predisposition for soft tissue injuries suggests that your body might be more susceptible to various types of soft tissue injuries. This may necessitate adopting cautious training practices, focusing on proper technique, and avoiding sudden spikes in activity intensity.

Incorporating dynamic warm-up routines, flexibility exercises, and proper biomechanics during training can help mitigate your soft tissue injury risk. Furthermore, giving your body adequate time to recover between workouts is crucial for preventing overuse injuries.



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## General Soft Tissue Risk



**Increased**

### Understanding what this may mean

Individuals with this genetic result may have an increased risk of general soft tissue injuries. Genetic variations associated with this result suggest that their bodies may have certain traits that contribute to a higher susceptibility to injuries in soft tissues. This could mean that they might have less optimal tissue strength or flexibility. Individuals with this result should pay extra attention to injury prevention strategies, including appropriate warm-up routines, flexibility exercises, and exercises that enhance soft tissue strength.

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## Achilles Risk



**Typical**

### Understanding what this may mean

Individuals with this genetic result have a typical risk of Achilles tendon injury. Their genetic profile suggests that their bodies respond to physical activity and exercise in a manner similar to the general population. This indicates a balanced Achilles tendon injury risk, which can be influenced by factors such as training techniques, footwear, and biomechanics. It is essential for individuals with this result to incorporate proper warm-up routines, stretching, and strength training exercises into their fitness regimen to minimize the risk of Achilles tendon injuries.

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## Cartilage Risk



**Typical**

### Understanding what this may mean

Individuals with this genetic result have a typical risk of cartilage-related issues. Their genetic profile suggests that their bodies respond to various factors affecting cartilage health in a manner similar to the general population. This indicates a balanced cartilage risk, which can be influenced by factors such as joint biomechanics, physical activity, and overall joint health practices. It is essential for individuals with this result to engage in joint-friendly exercises, maintain a healthy weight, and adopt lifestyle practices that support long-term joint health.

### Genetic Summary

SNP	Marker	Genotype
AMPD1 G34A	rs17602729	GG
BMP4 G-132-945T	rs2761884	TT
COL1A1 C104-441A	rs1800012	CC
COL5A1 C*267T	rs12722	TC
DIO2 C-143T	rs12885300	CC

SNP	Marker	Genotype
DIO2 T274C	rs225014	TC
FCRL3 (A>G)	rs7528684	AG
FOXP3 G2383A	rs3761549	AG
GDF5 G-275A	rs143383	AA
TNF G-308A	rs1800629	AG

# High Intensity vs Endurance

The composition of muscle fibers in your body can have a significant impact on your performance in different types of physical activities. Genetic variations influence whether you are more predisposed towards having a higher percentage of fast-twitch muscle fibers, associated with explosive power and strength, or slow-twitch muscle fibers, geared towards endurance and sustained activities. This section explores your genetic propensity for muscle fiber composition, shedding light on your potential strengths and areas for improvement in high-intensity and endurance activities.



If you possess a higher genetic predisposition for fast-twitch muscle fibers, you may excel in activities requiring short bursts of power and strength, such as weightlifting, sprinting, and jumping. These muscle fibers allow for rapid force generation, making them crucial for explosive movements. Tailoring your training to focus on power and strength exercises can maximize your potential in these activities.

On the other hand, if you have a greater genetic propensity for slow-twitch muscle fibers, you might find yourself thriving in endurance-based activities like long-distance running, cycling, or swimming. Slow-twitch fibers are designed for prolonged, repetitive contractions, providing the necessary stamina for extended efforts. Engaging in regular aerobic exercises and incorporating endurance training can help you make the most of your genetic predisposition.

It's important to remember that most individuals possess a combination of both muscle fiber types, albeit in varying proportions. This genetic makeup means you can benefit from a well-rounded training routine that includes a mix of high-intensity and endurance exercises. Cross-training can help you develop your weaknesses and capitalize on your strengths.

Ultimately, while genetics provide a foundational framework, dedication, training consistency, and proper nutrition all play vital roles in achieving your fitness goals. Seeking guidance from fitness professionals, trainers, or coaches can aid in designing a training regimen tailored to your muscle fiber composition, optimizing your performance across a range of physical activities.

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## Elite Power Propensity



**Below Average**

### Understanding what this may mean

Individuals with this genetic result may have a below-average propensity for elite-level power performance. Genetic variations associated with this result suggest that their bodies may have a somewhat reduced capacity for developing the physiological traits required for exceptional power output. While they may not have the same genetic advantage as elite power performers, they can still engage in strength and power training exercises and focus on improving their explosive strength over time.

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## Elite Endurance Propensity



**Typical**

### Understanding what this may mean

Individuals with this genetic result have a typical propensity for endurance performance. Their genetic profile suggests that their bodies respond to aerobic exercise and training in a manner similar to the general population. This indicates a balanced endurance capacity, which is important for maintaining overall cardiovascular health and participating in various endurance-based activities. Individuals with this result can engage in regular aerobic exercise routines to maintain and improve their endurance, supporting their overall fitness and well-being.

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## Genetic Summary

SNP	Marker	Genotype
AGT A803G	rs699	AA
NOS3 T894G	rs1799983	TG
NOS3 T-786C	rs2070744	CC
PPARD C-87T	rs2016520	TC
PPARGC1B G607C	rs7732671	CG
UCP2 G164A	rs660339	AA
HFE C187G (H63D)	rs1799945	CC
GABPB1 A1-8797G	rs7181866	AA
PPARGC1A C1444T	rs8192678	TT

SNP	Marker	Genotype
COL5A1 C*267T	rs12722	TC
ADRB2 G46A	rs1042713	GG
AGTR2 A*501C	rs11091046	CC
PPARA G1160-396C	rs4253778	GG
VEGFA C-94G	rs2010963	CC
ACE G2328A	rs4343	AG
ACTN3 C1729T	rs1815739	CC
IL6/IL6-AS1 (G>C)	rs1800795	GC

# Aerobic Training Benefit

Aerobic training, also known as cardiovascular exercise, plays a crucial role in improving cardiovascular fitness, endurance, and overall health. However, not everyone responds to aerobic training in the same way due to genetic factors that influence the magnitude of training benefits. This section explores the genetic propensities for aerobic training benefit, shedding light on how the body may respond to cardiovascular exercise.

Some individuals may have a genetic predisposition that allows them to experience a higher benefit from aerobic training. This means that their cardiovascular fitness and endurance may improve more significantly compared to others with different genetic profiles. These individuals are more likely to experience noticeable enhancements in their aerobic capacity, allowing them to perform endurance-based activities with greater ease.

On the other hand, some individuals may have a genetic propensity for a lower benefit from aerobic training. Their cardiovascular fitness and endurance may improve to a lesser extent compared to those with a more favorable genetic makeup. However, it's essential to note that even with a genetically lower benefit, engaging in regular aerobic exercise can still contribute to overall health and fitness.

Understanding genetic tendencies related to aerobic training benefit can provide insights into the body's natural responses to cardiovascular exercise. This knowledge can guide exercise choices, helping optimize the type, intensity, and duration of aerobic training to align with the genetic profile. It's important to remember that while genetics play a role, other factors like consistency, proper training techniques, and individual health considerations also contribute to training outcomes. Consulting with fitness professionals or coaches can help develop an effective and personalized aerobic training plan that leverages genetic insights for improved fitness and overall well-being



## Aerobic Training Benefit



**Below Average**

### Understanding what this may mean

Individuals with this genetic result may have a below-average benefit from aerobic training. Genetic variations associated with this result suggest that their bodies may have a somewhat reduced capacity to adapt to aerobic exercise. While they may not experience the same gains as individuals with a typical genetic profile, they can still engage in regular cardiovascular training and focus on techniques that gradually improve their cardiovascular fitness and endurance.

### Genetic Summary

SNP	Marker	Genotype
PPARGC1A C1444T	rs8192678	TT
PPARD G-101-842A	rs2267668	AA
ACE G2328A	rs4343	AG

SNP	Marker	Genotype
CKMM (T>C)	rs8111989	TC
NOS3 T-786C	rs2070744	CC

# Interesting Exercise SNPs

Exercise genetics encompass a wide range of factors that influence how the body responds to physical activity and training. This section delves into some miscellaneous exercise-related genetic propensities, shedding light on the benefits of creatine supplementation, tolerance for vigorous exercise, and how the body may respond to exercise for weight loss.

**Creatine Benefit:** Creatine is a naturally occurring compound in the body that plays a vital role in providing energy for short bursts of high-intensity activities. Some individuals may have a genetic predisposition that allows them to experience greater benefits from creatine supplementation, such as improved muscle strength and power during high-intensity workouts.

**Vigorous Exercise Tolerance:** Participating in vigorous exercise requires a certain level of cardiovascular fitness and endurance. Some individuals may have genetic factors that contribute to better adaptation to vigorous or high-intensity exercise.

**Weight Loss from Exercise:** Exercise is a valuable tool for weight management, but genetic factors can influence how the body responds to exercise in terms of weight loss. Some individuals may have a genetic predisposition that makes them more responsive to exercise for weight loss, yet others may have more difficulty, and benefit more from leveraging nutrition and other factors.



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## Creatine Benefit



**Typical**

### Understanding what this may mean

Individuals with this genetic result can expect a typical benefit from creatine supplementation. Their genetic profile suggests that their bodies respond to creatine supplementation in a manner similar to the general population. This indicates a balanced capacity to experience improvements in strength, power, and exercise performance when incorporating creatine into their supplement regimen. Individuals with this result can benefit from creatine supplementation as part of their fitness routine to enhance their athletic performance and support muscle growth.

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## Vigorous Exercise Tolerance



**Increased**

### Understanding what this may mean

Individuals with this genetic result may have an increased tolerance for vigorous exercise. Genetic variations associated with this result suggest that their bodies may have a natural predisposition for responding positively to high-intensity exercise. This could mean that they might experience greater benefits from vigorous workouts compared to others. Individuals with this result can capitalize on their genetic advantage by engaging in targeted high-intensity exercise routines to optimize their cardiovascular fitness and endurance.

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## Weight Loss from Exercise



**Typical**

### Understanding what this may mean

Individuals with this genetic result can expect a typical benefit in terms of weight loss from exercise. Their genetic profile suggests that their bodies respond to exercise-induced calorie expenditure and training in a manner similar to the general population. This indicates a balanced capacity to achieve weight loss goals through regular exercise routines. Individuals with this result can engage in regular physical activity, combined with healthy dietary choices, to support their weight loss efforts effectively.

### Genetic Summary

SNP	Marker	Genotype
CKMM (T>C)	rs8111989	TC
FOXP3 G2383A	rs3761549	AG
DIO2 C-143T	rs12885300	CC
FTO T46-23525A	rs9939609	AT
FTO A46-13587G	rs9930506	AG
FTO T46-39685G	rs17817449	TG

SNP	Marker	Genotype
GDF5 G-275A	rs143383	AA
GABPB1 A1-8797G	rs7181866	AA
ADRB1 G1165C	rs1801253	GC
PPARGC1A C1444T	rs8192678	TT
MMP3 T133C	rs679620	TC
TNF G-238A	rs361525	GG

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FTO G46-34805A	rs1121980	AG
FTO T46-43098C	rs1421085	TC
VDR G2A	rs2228570	AG
PPARG C34G	rs1801282	CG
NFATC4 G668C	rs2229309	CC
PPARGC1B G607C	rs7732671	CG
PPARD C-87T	rs2016520	TC
UCP2 G164A	rs660339	AA
LEPR G849+841T	rs12405556	TG
GABRB3 A271-108082G	rs8036270	AG
CNR1 T-63-6513C	rs6454672	TT
ANKK1 G2137A	rs1800497	GG
PPARD C*1762T	rs1053049	TC
PPARD G-101-842A	rs2267668	AA
ADRB2 C79G	rs1042714	GG
ACE G2306-19C	rs4341	GC

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TNF C-857T	rs1799724	CC
TNF C-863A	rs1800630	CC
TNF T-1031C	rs1799964	TT
TNF G-308A	rs1800629	AG
FCRL3 (A>G)	rs7528684	AG
BMP4 G-132-945T	rs2761884	TT
ADRB3 A190G	rs4994	AA
COL5A1 C*267T	rs12722	TC
ADRB2 G46A	rs1042713	GG
AGTR2 A*501C	rs11091046	CC
IGF2 C-6-285G	rs3213221	CC
IGF2 T-468-2872G	rs7924316	TG
LEPR A668G	rs1137101	AG
LEP G-39A	rs2167270	AG
TRHR A789+9321C	rs16892496	AC
PPARA G1160-396C	rs4253778	GG

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FADS1 G1054-143A	rs174549	AG
FADS1 C1054-109G	rs174548	GC
FSHR C2039T	rs6166	TC
DIO2 T274C	rs225014	TC
HFE C187G (H63D)	rs1799945	CC
MSTN T458C	rs1805086	TT
FTO T46-40478A	rs1558902	TA
COL1A1 C104-441A	rs1800012	CC

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AGT A803G	rs699	AA
VEGFA C-94G	rs2010963	CC
ACE G2328A	rs4343	AG
NOS3 T894G	rs1799983	TG
NOS3 T-786C	rs2070744	CC
ACTN3 C1729T	rs1815739	CC
IL6/IL6-AS1 (G>C)	rs1800795	GC
AMPD1 G34A	rs17602729	GG

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# Testosterone

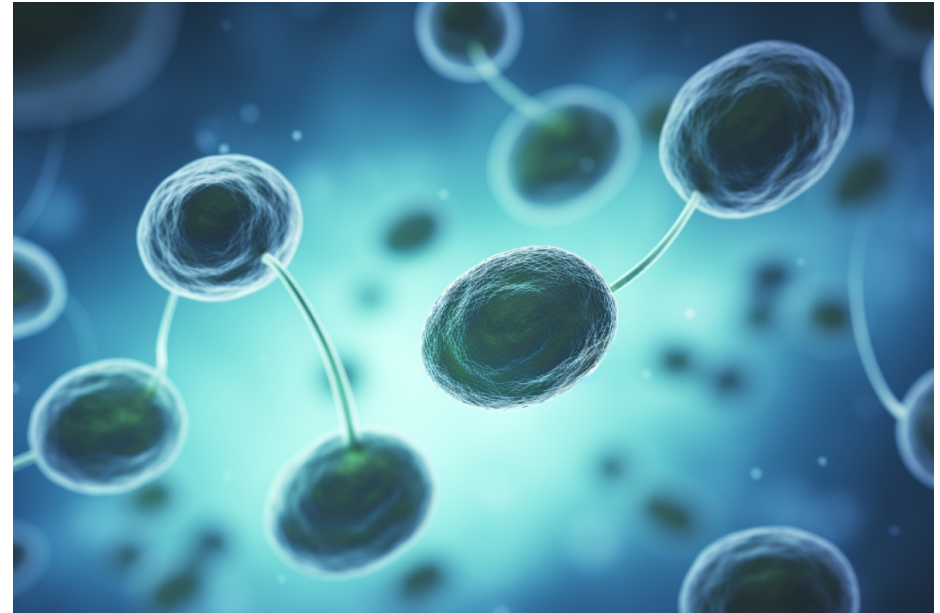
Testosterone is the primary male sex hormone, although it is also present in females in smaller amounts. It plays a crucial role in various physiological processes, including the development of sexual characteristics, muscle mass, bone density, and overall health.

Testosterone levels can vary significantly among individuals and may be influenced by genetics.

Luteinizing hormone (LH) is a hormone produced by the anterior pituitary gland, and it plays a key role in regulating testosterone production. When LH levels rise, they stimulate the cells to produce more testosterone. Conversely, when LH levels are low, testosterone production decreases. Genetic variations can influence an individual's LH level propensity, potentially leading to variations in testosterone levels.

The conversion of testosterone to estrogen is a process that occurs in both males and females. It is primarily carried out by an enzyme called aromatase, which converts testosterone into estradiol, a form of estrogen. While estrogen is often associated with females, it also plays important roles in male health, including bone density regulation and cardiovascular health.

Genetic predispositions related to LH levels and testosterone-to-estrogen conversion can provide insights into hormonal health. They may help explain variations in testosterone levels, which can have implications for fertility, muscle development, and overall well-being.



---

## LH Level Propensity



**Typical**

### Understanding what this may mean

Individuals with typical LH propensity have hormone levels within the normal range. Their reproductive system functions as expected, and they are less likely to experience hormonal imbalances related to LH. It's essential for these individuals to maintain overall health and well-being to support their hormonal balance.

---

## PSA Level Propensity



**Typical**

### Understanding what this may mean

Individuals with this results are likely to have standard PSA levels and risks based on their genetic results.

---

## Conversion from Testosterone to Estrogen



**Increased**

### Understanding what this may mean

Individuals with increased conversion may have higher-than-typical levels of estrogen relative to their testosterone levels. In males, this can lead to symptoms of estrogen dominance, such as mood changes, breast tissue enlargement (gynecomastia), and sexual dysfunction. In females, it can affect menstrual cycles and increase the risk of certain conditions. Individuals with increased conversion may benefit from medical evaluation and treatment options to address any underlying hormonal issues.

### Genetic Summary

SNP	Marker	Genotype
CYP17A1 G138A	rs6162	AG
CYP17A1 A-34G	rs743572	AG

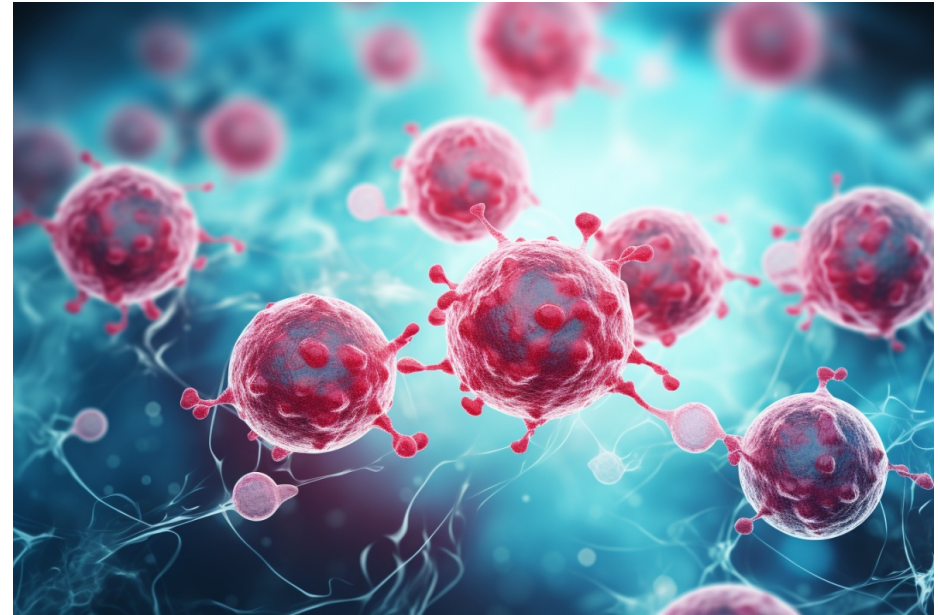
SNP	Marker	Genotype
NR3C1 G1184+646C	rs41423247	GG
NR3C1 C68T	rs6190	CC

# Estrogen

Estrogen is a group of hormones that play crucial roles in both male and female bodies, although they are often associated with female reproductive health. There are several types of estrogen, which are responsible for various physiological processes in the body, including the development of secondary sexual characteristics, regulation of the menstrual cycle, and maintenance of bone density.

Estrogen levels can vary significantly among individuals and throughout life stages. In females, estrogen levels typically rise during puberty, peak during the menstrual cycle, and decline during menopause. In males, estrogen is present in smaller amounts but still plays essential roles in bone health and other functions.

Estrogen receptors are proteins found on the surface of cells in various tissues throughout the body. These receptors bind to estrogen molecules, allowing estrogen to exert its effects. Genetic variations can influence the number and sensitivity of these receptors, affecting how an individual's body responds to estrogen.



---

## Estrogen Level Propensity



**Increased**

### Understanding what this may mean

Individuals with a genetic predisposition for increased estrogen levels have inherited variations that lead to consistently higher-than-typical levels of estrogen. This genetic propensity can affect various aspects of health, including reproductive health and various risks of certain conditions. Managing this genetic predisposition may involve monitoring estrogen levels and addressing any symptoms or health concerns, often under the guidance of healthcare providers.

---

## Estrogen Receptor Response



**Typical**

### Understanding what this may mean

Individuals with a genetic propensity for typical estrogen receptor response are likely to have normal sensitivity and expression of estrogen receptors in their tissues. This genetic profile suggests that their tissues respond to estrogen in a manner consistent with the general population. However, regular healthcare check-ups are important to monitor reproductive and overall health, as the response to estrogen can still be influenced by other factors.

---

## Estrogen Metabolite Elimination



**Typical**

### Understanding what this may mean

Individuals with this genetic result have a typical capacity for estrogen metabolite elimination. Their genetic profile suggests that their bodies can efficiently process and eliminate estrogen metabolites within the average range. However, it is still important to prioritize overall hormonal health through lifestyle practices that support hormonal balance, such as maintaining a healthy weight, regular physical activity, and a nutrient-rich nutrition plan.

### Genetic Summary

SNP	Marker	Genotype
COMT G472A	rs4680	GG
CYP19A1 C145+418A	rs727479	AA
CYP19A1 G-38-23584A	rs749292	AG
CYP19A1 g.C4517T	rs7176005	CC
CYP19A1 T240C	rs700518	TC
CYP19A1 G*19A	rs10046	AG

SNP	Marker	Genotype
CYP19A1 A*161C	rs4646	CC
ESR1 A453-351G	rs9340799	AG
GSTM1 (A>G)	rs366631	AA
GSTP1 A313G	rs1695	AG
UGT1A6 A541G	rs2070959	AA

# Progesterone

Progesterone is a vital hormone in the human body, primarily associated with the female reproductive system, although it also has essential functions in males. It is produced mainly by the ovaries in females and, to a lesser extent, by the adrenal glands. This hormone plays a key role in various aspects of reproductive health and overall well-being.

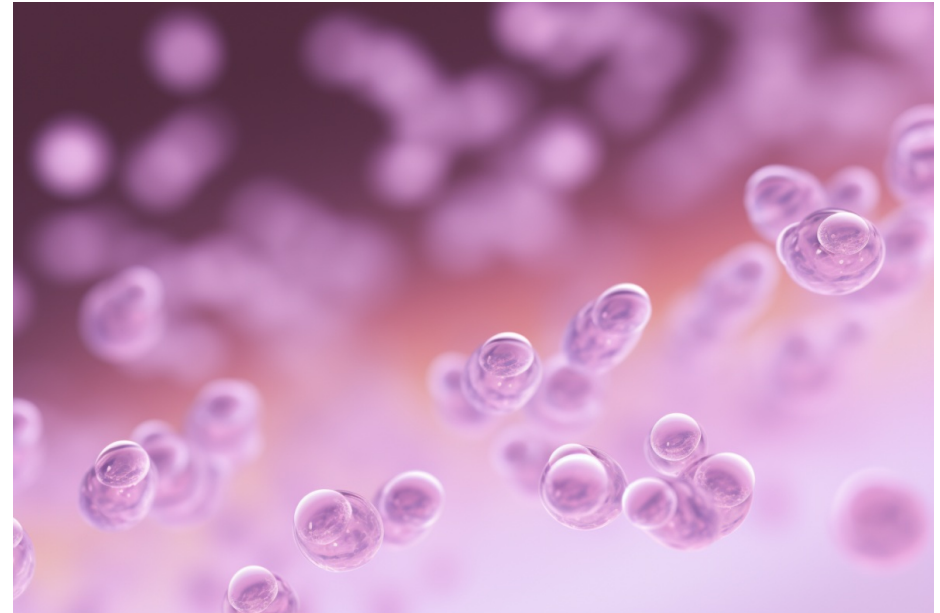
Genetic factors can influence how efficiently the body metabolizes progesterone. Some individuals may have genetic variations that affect the enzymes responsible for breaking down progesterone. These variations can impact the rate at which progesterone is cleared from the body, potentially leading to variations in hormone levels and response.

Genetic factors can also influence baseline progesterone levels. Some individuals may have a genetic predisposition for higher or lower levels of progesterone. This can be relevant for fertility, menstrual cycle regulation, and overall reproductive health.

Progesterone exerts its effects by binding to progesterone receptors, including progesterone receptor A (PRA) and progesterone receptor B (PRB). Genetic variations can affect the expression and sensitivity of these receptors, influencing how the body responds to progesterone.

Progesterone can be converted into other hormones in the body, such as cortisol or testosterone. In this case, conversion refers more specifically to androstenedione, which is a precursor for testosterone. Variations in genes involved in hormone metabolism can affect the balance of hormones in the body and may have implications for reproductive health and overall well-being.

Understanding genetic predispositions related to progesterone can provide insights into hormonal health and reproductive function. It can help explain variations in progesterone levels, receptor responsiveness, and hormone metabolism. This information can be valuable for managing conditions related to hormonal imbalance, optimizing fertility, and making informed decisions about hormone therapy.



---

## Progesterone Metabolism (CYP2C19)



**Normal Metabolism**

### Understanding what this may mean

Individuals with normal CYP2C19 metabolism are likely to process exogenous progesterone at a normal rate. However, it's important to note that everyone's response to medications can vary, so healthcare providers may still need to adjust medication dosage or switch to a different medication if necessary.

---

## Progesterone Level Propensity



**Typical**

### Understanding what this may mean

Individuals with a typical progesterone level propensity have hormone levels within the normal range. Their bodies produce progesterone in a manner consistent with the general population. This suggests that their reproductive system is functioning as expected, and they are less likely to experience hormonal imbalances related to progesterone. Maintaining overall health and well-being is important to support their hormonal balance.

---

## Progesterone Receptors



**Increased**

### Understanding what this may mean

Individuals with increased progesterone receptors may have a higher number of progesterone receptors or receptors that are more sensitive to progesterone. This can lead to heightened responses to progesterone in various tissues. The implications of increased progesterone receptors can vary depending on the specific context. In some cases, it may be associated with increased sensitivity to progesterone's effects, which could affect the menstrual cycle, pregnancy, or other hormonal processes. It may also be relevant in the context of hormone receptor-positive cancers, where increased receptor sensitivity could influence treatment options.

---

## Progesterone Conversion



**Increased**

### Understanding what this may mean

Individuals with increased progesterone conversion to androstenedione may have higher-than-typical levels of androstenedione relative to progesterone. This could have various implications depending on the individual's specific circumstances. Elevated androstenedione levels can be associated with conditions such as polycystic ovary syndrome (PCOS) in females. Increased conversion may disrupt the hormonal balance, affecting the menstrual cycle and fertility. Additionally, it can have downstream effects on increasing testosterone production. It's important for individuals with increased conversion to consult with healthcare providers for evaluation and management, especially if they are experiencing symptoms or have concerns about their reproductive health.

### Genetic Summary

SNP	Marker	Genotype
CYP2C19 C680T	rs6413438	CC
CYP2C19 T358C	rs41291556	TT
CYP2C19 T819+2A	rs72558186	TT

SNP	Marker	Genotype
CYP2C19 G636A	rs4986893	GG
CYP2C19 G681A	rs4244285	GG
APOE C526T	rs7412	TC

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CYP2C19 G395A	rs72552267	GG
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CYP2C19 C1297T	rs56337013	CC
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CYP2C19 A1G	rs28399504	AA
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APOE C388T	rs429358	TT
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PGR C1978A	rs1042838	AC
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CYP17A1 A-34G	rs743572	AG
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# Cortisol

Cortisol is a steroid hormone produced by the adrenal glands in response to stress and low blood glucose levels. It plays a crucial role in various bodily functions, including regulating metabolism, immune response, and blood pressure. Genetic factors can influence cortisol levels and how an individual's body responds to stress.

Genetic variations can impact the baseline levels of cortisol in the body. Some individuals may have genetic factors that make them more likely to have higher or lower cortisol levels when at rest. These variations can be linked to the activity of genes involved in cortisol production and regulation, such as those related to the adrenal glands and the hypothalamus-pituitary-adrenal (HPA) axis.

Understanding genetic predispositions related to cortisol levels and stress response can have implications for health. Elevated cortisol levels over an extended period, often due to chronic stress, can have negative effects on various systems in the body, including the cardiovascular, immune, and nervous systems. It's associated with conditions such as anxiety, depression, and metabolic disorders.

Conversely, low cortisol levels during periods of stress can also have health consequences. These may include reduced resilience to stress, fatigue, and altered immune function.

By understanding genetic predispositions for cortisol levels and stress response, steps can be taken to manage stress effectively, implement stress-reduction techniques, and make lifestyle choices that promote healthy cortisol levels. This information can be especially valuable for chronic stress or when concerned about conditions related to cortisol dysregulation.



## Cortisol Level Propensity



**Below Average**

### Understanding what this may mean

Individuals with a genetic predisposition for below-average cortisol levels may have inherited variations that affect cortisol production or regulation. As a result, their bodies tend to produce cortisol at levels lower than what is typically observed in the population. This genetic propensity can influence their stress response, metabolism, and overall hormonal balance. While it's genetic, it's important to note that external factors, such as stressors or health conditions, can still impact cortisol levels in these individuals. Monitoring and managing cortisol levels may be necessary, and this should be guided by a healthcare provider.

### Genetic Summary

SNP	Marker	Genotype
SERPINA6 (C>T)	rs11621961	TC
FKBP5 T106-2636C	rs1360780	CC
CRHR1 G121+904T	rs242924	TT
CRHR1 G34-4329A	rs110402	AA

SNP	Marker	Genotype
NR3C1 C68T	rs6190	CC
NR3C1 G1184+646C	rs41423247	GG
NR3C1 G-13-6284A	rs10052957	GG
NR3C2 C538T	rs5522	TT

# Thyroid

The thyroid gland plays a crucial role in regulating various bodily functions by producing thyroid hormones, primarily thyroxine (T4) and triiodothyronine (T3). These hormones influence metabolism, energy production, body temperature, and more. Thyroid health is essential for overall well-being, and genetic factors can provide insights into thyroid function.

Genetic variations can influence the body's natural set point for thyroid-stimulating hormone (TSH) levels. TSH is produced by the pituitary gland and regulates the production of thyroid hormones in the thyroid gland. Some individuals may have genetic factors that predispose them to have naturally higher or lower baseline levels of TSH.

Thyroid hormones include thyroxine (T4) and triiodothyronine (T3). T4 is converted into the more active T3 hormone in various tissues throughout the body. Genetic variations can affect this conversion process. Some individuals may have genetic factors that promote efficient T4 to T3 conversion, ensuring that they have adequate levels of the active thyroid hormone. Others may have genetic variations that result in less efficient conversion, potentially leading to lower T3 levels.

Understanding genetic predispositions related to TSH levels and thyroid hormone conversion can have implications for thyroid health. Elevated TSH levels, often due to genetic factors, may indicate an underactive thyroid, while low TSH levels may suggest an overactive thyroid. Thyroid dysfunction can impact various aspects of health, including metabolism, energy levels, and mood.

Efficient conversion of T4 to T3 is essential for ensuring that the body has an adequate supply of the active thyroid hormone. Genetic factors that affect this conversion can influence thyroid function. Individuals with less efficient conversion may be at risk of suboptimal thyroid hormone levels, potentially leading to symptoms of hypothyroidism.

It's important to note that while genetics play a role in thyroid health, other factors, such as iodine intake, autoimmune conditions, and environmental influences, can also contribute to thyroid dysfunction. Regular thyroid function tests and consultations with healthcare professionals are essential for comprehensive thyroid management.



---

## TSH Level Propensity



**Low**

### Understanding what this may mean

Individuals with a genetic predisposition for low TSH levels have inherited variations that lead to consistently lower-than-typical levels of TSH in their blood. Studies suggest between 0.25 and 1 uIU/mL reduction of TSH at baseline. Studies generally show these genetic variants affecting TSH to be independent from T4 and T3 levels, so this is unlikely to contribute to underactive or overactive thyroid.

---

## Thyroid Hormone Conversion



**Typical**

### Understanding what this may mean

Individuals with a genetic predisposition for typical thyroid hormone conversion are likely to have efficient T4 to T3 conversion. Their bodies produce T3 in a manner consistent with the general population, suggesting a proper balance of thyroid hormones. However, regular healthcare check-ups are essential to monitor thyroid health.

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## Genetic Summary

SNP	Marker	Genotype
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SNP	Marker	Genotype
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ATP5MGP4 (T>C)	rs10032216	TT
CAPZB (A>G)	rs10917469	AG
DIO1 C*29T	rs11206244	CC
DIO1 C682-34A	rs2235544	CC
DIO2 C-143T	rs12885300	CC
DIO2 T274C	rs225014	TC
FOXE1 g.A558G	rs7850258	GG
FOXE1 (A>G)	rs965513	GG
IGFBP5 (A>G)	rs13015993	AA

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LHX3 G776-90A	rs7860634	AG
MAFTRR (C>T)	rs3813582	TT
NFIA A559+66144A	rs334699	GG
PDE10A C67+34106G	rs753760	CC
PDE8B T339+14779C	rs1382879	TT
PDE8B A339+23260G	rs6885099	AA
PDE8B G339+11353A	rs4704397	GG
THRA T53+1059C	rs939348	CC
VEGFA (C>T)	rs9472138	TC

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# Autoimmune Thyroid

Autoimmune thyroid refers to a group of conditions in which the immune system mistakenly targets and attacks the thyroid gland. Genetic factors play a significant role in the development of autoimmune thyroid issues.

Specific genetic variations can increase the risk of developing autoimmune thyroid issues. These genetic factors can influence the immune system's response and its ability to recognize the thyroid gland as "self."

Understanding genetic predispositions for autoimmune thyroid diseases can be valuable for early detection and proactive management. Healthcare providers can closely monitor thyroid function and implement appropriate treatments or interventions if necessary.

While genetics contribute to autoimmune thyroid diseases, other factors like environmental triggers (e.g., viral infections, stress, inflammation) also play a role. Therefore, a comprehensive approach to managing autoimmune thyroid conditions considers both genetic predisposition and environmental influences. Regular thyroid function tests and consultations with healthcare providers are essential for effective management.



## Autoimmune Thyroid Risk Propensity



**Typical**

### Understanding what this may mean

Individuals with a genetic propensity for typical autoimmune thyroid risk are likely to have the same risk as the general population when it comes to an immune response against the thyroid. However, it's important to remember that the development of autoimmune diseases is influenced by both genetic and environmental factors.

### Genetic Summary

SNP	Marker	Genotype
TNF G-308A	rs1800629	AG
IL23R T929C	rs7530511	CC
IL23R A956+8194G	rs2201841	AA
IL23R C*309A	rs10889677	CC
FCRL3 (A>G)	rs7528684	AG
CTLA4 A49G	rs231775	AG

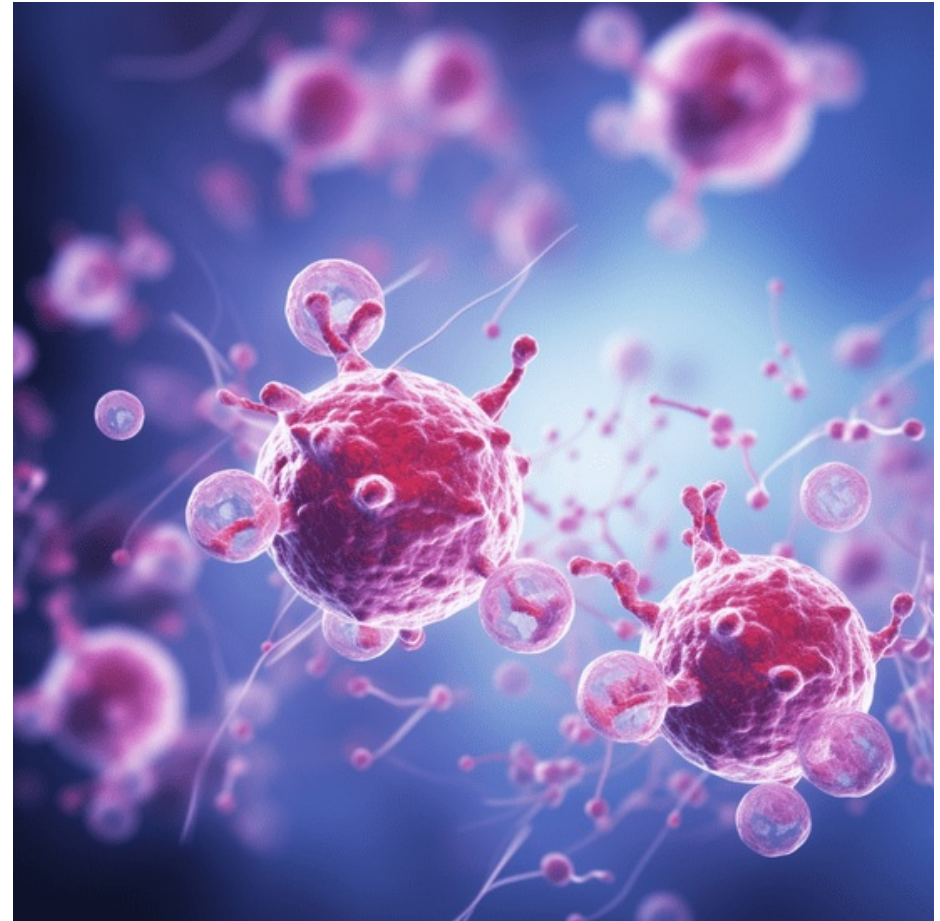
SNP	Marker	Genotype
CTLA4 G6230A	rs3087243	GG
IL6/IL6-AS1 (G>C)	rs1800795	GC
ATXN2 C732-14033T	rs653178	TC
PTPN22 A1858G	rs2476601	GG
TPO A-80G	rs2071403	AG
FOXE1 g.A558G	rs7850258	GG

Module 53

## Interesting Hormone SNPs

This section delves into various interesting genes associated with hormones which may not be included in other sections.

In addition to some research on aromatase inhibitor side-effects risk, there's some research available for providers on a few other topics such as postpartum depression, endometriosis, and preterm birth risk.



## Aromatase Inhibitor Side-effects Risk



**Typical**

### Understanding what this may mean

Individuals with this result are likely to have standard effects and side-effects from the use of aromatase inhibitors based on the limited studies associated with genetic risk. Use should be guided and monitored by a medical professional.

### Genetic Summary

SNP	Marker	Genotype
CYP19A1 (G>A)	rs934635	GG
APOE C388T	rs429358	TT
APOE C526T	rs7412	TC
PGR G*4550A	rs471767	AA
PGR C1978A	rs1042838	AC
Intergenic-8 (A>C)	rs10859871	AC
CDKN2B-AS1 (C>A)	rs10965235	CC
ESR1 A453-351G	rs9340799	AG

SNP	Marker	Genotype
CRHR1 G121+904T	rs242924	TT
CRHR1 G34-4329A	rs110402	AA
NR3C1 G1184+646C	rs41423247	GG
SERPINA7 A347T	rs28933689	AA
FOXE1 (A>G)	rs965513	GG
TSHR G1637A	rs121908866	GG
CYP17A1 A-34G	rs743572	AG
CYP19A1 g.C4517T	rs7176005	CC

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SERPINA6 C1033-601T	rs941601	TC
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FKBP5 T106-2636C	rs1360780	CC
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CRHR1 C241+1631T	rs242939	TT
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CRHR1 A122-1309C	rs242941	CC
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CYP19A1 T240C	rs700518	TC
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CYP19A1 G*19A	rs10046	AG
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CYP19A1 A*161C	rs4646	CC
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Module 54

# Skin Elasticity and Hydration

Healthy, elastic skin is an essential part of maintaining a youthful appearance and reducing the signs of aging. This page provides insights into genetic predispositions for skin elasticity and hydration to assist in maintaining and improving skin health.

Skin elasticity is a measure of how well skin can stretch and return to its original position. Factors such as aging, sun exposure, and smoking can all contribute to a loss of skin elasticity, leading to wrinkles, sagging, and other visible signs of aging.

Skin hydration is also critical for maintaining healthy skin. When skin is adequately hydrated, it looks full and supple, but when it's dry, it can become itchy, flaky, and more prone to wrinkles.

By understanding your genetic predisposition for skin elasticity and hydration, you can take targeted actions to improve the health and appearance of your skin. This page will help in taking targeted action to support skin health and appearance through understanding how genetics may affect the skin's ability to maintain elasticity and hydration.



---

## Skin Hydration



**Typical**

### Understanding what this may mean

Individuals with this genetic result are likely to have typical skin hydration levels. Maintaining adequate hydration through drinking water and using moisturizing skincare products can help maintain skin health.

---

## Skin Elasticity



**Typical**

### Understanding what this may mean

Individuals with this genetic result are likely to have typical skin elasticity. They may experience some loss of elasticity over time due to aging, but this is generally not severe. Environmental risk factors such as smoking, sun exposure, and poor diet can still have a negative impact on skin elasticity and should be avoided or limited.

---

## Genetic Summary

SNP	Marker	Genotype
OLFM1/FCN1 (A>G)	rs11103631	AG
MMP9 (C>T)	rs3918242	TT

SNP	Marker	Genotype
IL6/IL6-AS1 (G>C)	rs1800795	GC

# Skin Glycation and Antioxidants

The skin is constantly exposed to damaging free radicals and other harmful substances that can accelerate the aging process and contribute to a wide range of skin issues. Fortunately, the body has a natural defense system in the form of antioxidants, which can neutralize these harmful substances and protect the skin from damage.

This page provides insights into genetic predispositions for skin antioxidant capacity and anti-glycation, which is the process by which sugar molecules in the body bind to and damage proteins, including those in skin.

By understanding genetic risks for reduced skin antioxidant capacity and increased anti-glycation, targeted steps can be taken to protect the skin from damage and slow down the aging process. This may include incorporating antioxidant-rich foods and supplements into the diet, as well as adopting lifestyle habits that promote healthy skin, such as regular exercise and stress management.

This page will provide personalized insights into genetic risk for reduced skin antioxidant capacity and increased anti-glycation, as well as practical recommendations for protecting and promoting healthy, youthful-looking skin.



---

## Skin Antioxidant Capacity



**Typical**

### Understanding what this may mean

Individuals with this genetic result are likely to have a typical level of skin antioxidant capacity. While it is still important to protect the skin from environmental stressors, individuals with this result may not need to take additional measures beyond a healthy lifestyle and a balanced diet.

---

## Anti-Glycation



**Improved**

### Understanding what this may mean

Individuals with this genetic result may have an increased ability to counteract glycation, which can lead to improved skin health and a slower rate of aging. However, it is still important to follow a healthy diet and lifestyle, as well as use topical antioxidants and other skin-protective products to maintain optimal skin health.

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## Genetic Summary

SNP	Marker	Genotype
NQO1 G559A	rs1800566	GG

SNP	Marker	Genotype
GPX1 G599A	rs1050450	GG

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SOD2 A47G

rs4880

AG

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CAT (C>T)

rs1001179

CC

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GLO1 G-7A

rs1049346

GG

# Skin Aging

As we age, our skin undergoes a variety of changes that can affect its appearance and health. This page provides insights into genetic predispositions for skin aging, helping to provide clarity on how genetics may affect the aging process and providing personalized recommendations for maintaining youthful, healthy skin.

Skin aging can manifest in various ways, including wrinkles, fine lines, age spots, and a loss of elasticity. While aging is a natural part of life, certain lifestyle factors, such as sun exposure, smoking, and poor diet, can accelerate the aging process.

By understanding genetic predispositions for skin aging, proactive steps can be taken to slow down the aging process and maintain healthy, youthful-looking skin.



## Rate of Skin Aging



**Slow**

### Understanding what this may mean

Individuals with this genetic result may experience a slower rate of skin aging. Proper skincare and sun protection are still important, but this result may suggest a reduced likelihood of developing wrinkles, fine lines, and other signs of aging at a younger age.

### Genetic Summary

SNP	Marker	Genotype
IRF4 C492+386T	rs12203592	CC
MC1R G274A	rs2228479	GG
MC1R G178T	rs1805005	GG
MC1R C451T	rs1805007	CC
MC1R C478T	rs1805008	CC
MC1R G880C	rs1805009	GG
MC1R C*252T	rs35063026	CC

SNP	Marker	Genotype
RALY G877-563A	rs6059655	GG
RNU6-682P/RPL10P19 (T>C)	rs96621	TT
Intergenic-4 (C>T)	rs322458	CC
OCA2 C1441T	rs74653330	CC
RAB11FIP2 (C>T)	rs11198112	CC
RNU1-117P (A>C)	rs72620727	AA
MRPS22 (C>T)	rs4894405	TC

# Skin Spots

Sunspots, also known as age spots, are dark spots that appear on the skin as a result of sun damage. They are common in individuals who have had a lot of exposure to sunlight or have fair skin. Understanding genetics for sunspots can provide understanding for risk of developing these spots, and take preventative measures to protect skin from further damage.

Freckles, on the other hand, are small brown spots on the skin that are caused by an increase in the production of melanin, the pigment that gives skin its color. While freckles are harmless, understanding genetic risk for freckles can help make informed decisions about sun protection and skincare to keep the skin healthy and prevent the development of sun damage and other skin issues.

By understanding genetics for sunspots and freckles, informed decisions about sun protection and skincare can be made, and preventative measures can be taken to protect the skin from further damage.



## Freckles



**Typical Chance**

### Understanding what this may mean

Individuals with this genetic result have a typical chance of having freckles.

## Sunspots



**Reduced**

### Understanding what this may mean

Individuals with this genetic result may have a reduced risk for developing sunspots. However, it is always beneficial to practice sun protection and regular skin check-ups with a healthcare provider.

## Genetic Summary

SNP	Marker	Genotype
IRF4 C492+386T	rs12203592	CC
MC1R G274A	rs2228479	GG
MC1R G178T	rs1805005	GG
MC1R C451T	rs1805007	CC

SNP	Marker	Genotype
MC1R C*252T	rs35063026	CC
RALY G877-563A	rs6059655	GG
Intergenic-6 (G>A)	rs1540771	TT
TYR C575A	rs1042602	AC

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MC1R C478T	rs1805008	CC
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MC1R G880C	rs1805009	GG
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ASIP (G>T)	rs4911414	GG
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ASIP (C>T)	rs1015362	CC
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Module 58

# Skin Response to Sunlight

The skin's response to sunlight can impact overall health and well-being. Understanding genetic predisposition for skin tanning ability and UV resilience can help to make informed decisions about sun exposure and protect the skin from potential damage.

This page will provides personalized insights into skin tanning ability and UV resilience based on the genetic analysis.



---

## Skin Tanning Ability



**Reduced**

### Understanding what this may mean

Individuals with this genetic result may have reduced skin tanning ability, which can lead to increased susceptibility to sunburns and skin damage from UV radiation. They may need to take extra precautions when exposed to sunlight, such as avoiding prolonged sun exposure.

---

## UV Resilience



**Typical**

### Understanding what this may mean

Individuals with this genetic result may have typical UV resilience, meaning they have an average ability to resist the damaging effects of UV radiation. However, it is still essential to take precautions to protect the skin from sun exposure.

---

## Genetic Summary

SNP	Marker	Genotype
IRF4 C492+386T	rs12203592	CC
SLC45A2 C1122G	rs16891982	GG

SNP	Marker	Genotype
MC1R C478T	rs1805008	CC
RALY G877-563A	rs6059655	GG

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ASIP (C>T)	rs1015362	CC
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MC1R C451T	rs1805007	CC
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TYR G1205A	rs1126809	GG
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ASIP (G>T)	rs4911414	GG
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Module 59

## Skin Risks

Melanoma and basal cell carcinoma are two of the most common types of skin cancer, and both are linked to exposure to ultraviolet (UV) radiation from the sun. This page provides insights into genetic predispositions for developing these types of skin cancers, enabling proactive steps to reduce risk.

Melanoma is a particularly aggressive form of skin cancer that can quickly spread to other parts of the body. Early detection and treatment are essential for the best possible outcome.

Basal cell carcinoma is a more common type of skin cancer that often appears as a pink or flesh-colored bump on the skin. While it's typically not as aggressive as melanoma, it can still cause significant damage if left untreated.

By understanding genetic risk for developing melanoma and basal cell carcinoma, steps can be taken to reduce the risk of developing these cancers, including avoiding excessive sun exposure, using sunscreen, wearing protective clothing, and getting regular skin checks



## Melanoma Risk



**Typical**

### Understanding what this may mean

Individuals with this genetic result have a typical risk of developing melanoma compared to the general population. It is important to practice sun safety and consider regular skin cancer screenings.

## Basal Cell Carcinoma Risk



**Low**

### Understanding what this may mean

Individuals with this genetic result have a lower risk of developing basal cell carcinoma than the general population. However, regular sun protection and skin checks are still recommended.

## Genetic Summary

SNP	Marker	Genotype
MC1R C451T	rs1805007	CC
MC1R C478T	rs1805008	CC
MC1R G880C	rs1805009	GG

SNP	Marker	Genotype
MC1R C252A	rs1805006	CC
MC1R G425A	rs11547464	GG
OCA2 G-21-1724A	rs7174027	GG

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RALY G877-563A	rs6059655	GG
MITF G1255A	rs149617956	GG
SLC45A2 C1122G	rs16891982	GG
TYR G1205A	rs1126809	GG
ASIP (G>T)	rs4911414	GG
ASIP (C>T)	rs1015362	CC
IRF4 C492+386T	rs12203592	CC
KITLG (T>C)	rs12821256	TT
TYRP1 C*123A	rs683	AC

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OCA2 A-22+8550G	rs4778138	AA
HERC2 T3577+2139C	rs8028689	TT
HERC2 T1598+247C	rs916977	CC
TYR C575A	rs1042602	AC
TP53 T*1175G	rs78378222	TT
RGSS22 A2167-3709C	rs7006527	AA
TGM3 A7+5254G	rs214782	AA
PADI6 G1619+204A	rs7538876	GG
Intergenic-1 (T>G)	rs801114	GG

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