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Longevity & Cardiovascular Performance

Client

Demo Client

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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.



Muscle Mass



Neutral

Understanding what this may mean

Individuals with this genetic result have typical muscle mass. Their genetic profile suggests that their bodies respond to strength training, physical activity, and nutrition in a manner similar to the general population. This indicates a balanced muscle mass capacity, which is important for overall health and fitness. Individuals with this result can engage in regular strength training routines and ensure adequate protein intake to maintain and improve their muscle mass, supporting their fitness goals.

Strength



Neutral

Understanding what this may mean

This result suggested a standard response to strength training and physical activity compared to the general population. Individuals with this result can engage in regular strength training routines to maintain and improve their muscle strength, supporting their overall health and fitness goals. Foundational support such as creatine supplementation, strength training, and sufficient protein intake are recommended.

Genetic Summary ¹⁵

SNP	Marker	Genotype
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SNP	Marker	Genotype
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MSTN T458C	rs1805086	TT
ACTN3 C1729T	rs1815739	TC
PPARD G-101-842A	rs2267668	AG
TRHR A789+9321C	rs16892496	AA
ACE G2328A	rs4343	AA
LEPR A668G	rs1137101	.
PPARA G1160-396C	rs4253778	CG
PPARD C*1762T	rs1053049	CC

PPARD C-87T	rs2016520	TC
PPARG C34G	rs1801282	CC
TNF T-1031C	rs1799964	TC
TNF G-238A	rs361525	GG
TNF G-308A	rs1800629	GG
TNF C-857T	rs1799724	CC
TNF C-863A	rs1800630	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.



Muscle Recovery Speed



Neutral

Understanding what this may mean

This result suggests that the body responds to exercise-induced muscle damage and physical stress in a manner similar to the general population. This shows balanced capacity for recovering after workouts and adapting to training. Standard recommendations apply, such as well-structured training routines that include proper rest, nutrition, and recovery strategies to support their muscle recovery and overall fitness goals. In cases of intense training, antioxidant support such as vitamin C can be beneficial to enhancing recovery speed and reducing injury risk in exchange for reduced muscle growth.

Muscle Endurance



Neutral

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.

Genetic Summary 8

SNP	Marker	Genotype
AMPD1 G34A	rs17602729	GG
SOD2 A47G	rs4880	AG
IGF2 C-6-285G	rs3213221	GG
IGF2 T-468-2872G	rs7924316	GG

SNP	Marker	Genotype
CCR2 T780C	rs1799865	CC
IL-1B G315A	rs1143634	GG
MYLK G62T	rs28497577	GG
SLC30A8 C973T	rs13266634	CC

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.



General Soft Tissue Risk



Neutral

Understanding what this may mean

Individuals with this genetic result have a neutral risk of general soft tissue injuries. 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 soft tissue injury risk, which can be influenced by factors such as training techniques, biomechanics, and overall conditioning. 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 soft tissue injuries.

Achilles Risk



Low

Understanding what this may mean

Individuals with this genetic result have a low risk of Achilles tendon injury. Genetic variations associated with this result suggest that their bodies may have certain traits that contribute to a lower susceptibility to Achilles tendon injuries. This could mean that they might have relatively better tendon strength and structure. While this genetic profile may provide some degree of protection, it is still important for individuals with this result to engage in appropriate warm-up routines, flexibility exercises, and strength training to maintain optimal tendon health and prevent injuries.

Cartilage Risk



Low

Understanding what this may mean

Individuals with this genetic result have a low risk of cartilage-related issues. Genetic variations associated with this result suggest that their bodies may have certain traits that contribute to a lower susceptibility to cartilage degradation and related problems. This could mean that they might have relatively better cartilage structure and integrity. While this genetic profile may offer some degree of protection, it is still important for individuals with this result to engage in joint-friendly exercises, maintain a healthy weight, and consider strategies to support joint health as they age.

Genetic Summary ¹⁰

SNP	Marker	Genotype
AMPD1 G34A	rs17602729	GG
TNF G-308A	rs1800629	GG
BMP4 G-132-945T	rs2761884	TG
DIO2 T274C	rs225014	CC
COL5A1 C*267T	rs12722	TT

SNP	Marker	Genotype
COL1A1 C104-441A	rs1800012	AC
DIO2 C-143T	rs12885300	TT
FOXP3 G2383A	rs3761549	AA
GDF5 G-275A	rs143383	AG
FCRL3 (A>G)	rs7528684	GG

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.

Elite Power Propensity



Neutral

Understanding what this may mean

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

Elite Endurance Propensity



Increased

Understanding what this may mean

Individuals with this genetic result may have an increased propensity for elite-level endurance. Genetic variations associated with this result suggest that their bodies may have a natural predisposition for developing the physiological traits required for exceptional endurance performance. This could mean that they might experience greater gains in endurance from aerobic exercise and training. Individuals with this result can capitalize on their genetic advantage by engaging in targeted aerobic training routines to optimize their cardiovascular fitness and overall endurance.

Genetic Summary ¹⁷

SNP	Marker	Genotype
AGTR2 A*501C	rs11091046	AA
PPARGC1A C1444T	rs8192678	CC
ACTN3 C1729T	rs1815739	TC
ACE G2328A	rs4343	AA
IL6/IL6-AS1 (G>C)	rs1800795	GC
AGT A803G	rs699	AG
GABPB1 A1-8797G	rs7181866	AA
NOS3 T894G	rs1799983	GG
NOS3 T-786C	rs2070744	TT

SNP	Marker	Genotype
PPARD C-87T	rs2016520	TC
PPARGC1B G607C	rs7732671	GG
UCP2 G164A	rs660339	AA
HFE C187G (H63D)	rs1799945	CC
COL5A1 C*267T	rs12722	TT
ADRB2 G46A	rs1042713	AG
PPARA G1160-396C	rs4253778	CG
VEGFA C-94G	rs2010963	CG

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



Neutral

Understanding what this may mean

Individuals with this genetic result can expect a neutral benefit from aerobic training. Their genetic profile suggests that their bodies respond to aerobic exercise and cardiovascular training in a manner similar to the general population. This indicates a balanced capacity for improving cardiovascular fitness and endurance through aerobic exercises. Individuals with this result can engage in regular aerobic training routines to maintain and improve their cardiovascular health and overall endurance.

Genetic Summary ⁵

SNP	Marker	Genotype
PPARGC1A C1444T	rs8192678	CC
CKMM (T>C)	rs8111989	TC
ACE G2328A	rs4343	AA

SNP	Marker	Genotype
PPARD G-101-842A	rs2267668	AG
NOS3 T-786C	rs2070744	TT

Cardiovascular Genetics

Cardiovascular genetics focuses on understanding how genetic variations influence the risk, progression, and treatment responses of cardiovascular diseases (CVD), including heart disease, stroke, hypertension, and arrhythmias. This section explores the critical role of genetics in cardiovascular health, offering insights into the identification, prevention, and management of genetic predispositions to cardiovascular conditions. Several genes have been identified as playing pivotal roles in cardiovascular health.

Variations in genes related to lipid metabolism, blood pressure regulation, coagulation pathways, and inflammation can significantly impact an individual's risk of developing CVD. For example, variations in the APOE gene can influence cholesterol metabolism and CVD risk.

Advancements in cardiovascular genetics are paving the way for innovative therapies, including gene editing and gene therapy approaches targeting the root genetic causes of some cardiovascular diseases. These cutting-edge treatments offer hope for conditions previously deemed challenging to manage, providing a glimpse into the future of personalized cardiovascular care.



CAD Propensity



Neutral

Understanding what this may mean

Those with a neutral risk for coronary artery disease exhibit genetic markers that reflect the average population's likelihood of developing CAD. This indicates a standard level of risk, with lifestyle and environmental factors playing a significant role in the actual development of heart disease. Individuals with a neutral risk are advised to adopt heart-healthy habits, including eating a diet rich in fruits, vegetables, and whole grains, exercising regularly, avoiding tobacco use, and monitoring blood pressure and cholesterol levels to support overall cardiovascular well-being.

APOe Status



APOe 4/4 status

Understanding what this may mean

Individuals with this APOe status have two copies of the APOe4 allele. This genetic variation is associated with the highest risk of developing certain age-related conditions such as plaque buildup and cognitive decline. Individuals with this APOe status should prioritize brain health by adopting healthy lifestyle habits, including regular physical and mental exercise, limiting saturated fat and alcohol, avoiding smoking, and supporting effective metabolic health.

Atrial Fibrillation



Neutral

Understanding what this may mean

Individuals with a neutral risk have an average genetic likelihood of developing atrial fibrillation, aligning with the general population's risk level. This suggests a standard susceptibility to atrial fibrillation.

LP(a) Risk



Neutral

Understanding what this may mean

Normal Function. No additional risk

Genetic Summary ¹³

SNP	Marker	Genotype
APOE C388T	rs429358	CC
APOE C526T	rs7412	CC
LP(a) A3947+467G	rs10455872	AA
LP(a) T5673C	rs3798220	TT

SNP	Marker	Genotype
IL6/IL6-AS1 (G>C)	rs1800795	GC
APOC4 (T>C)	rs10413089	TC
ICAM1 A1405G	rs5498	AA
IL37 A124G	rs3811047	GG

4q25-1	rs2200733	CC
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4q25-2	rs10033464	GG
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CETP G1264A	rs5882	AA
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APOA2 (G>T)	rs3813627	GG
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CDKN2A (A>G) / 9p21	rs10757278	GG
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Module 7

Hypertension

This section investigates the role of genetics in the development of hypertension, a major risk factor for cardiovascular diseases. It focuses on identifying genetic variants that contribute to elevated blood pressure, providing insight into individual susceptibility to this condition.

Research has identified several genes that play significant roles in blood pressure regulation, such as those involved in the renin-angiotensin-aldosterone system (RAAS) and sodium balance. Variations in these genes can affect an individual's risk of developing hypertension by influencing vascular resistance and fluid retention.

This knowledge can guide preventive measures and lifestyle adjustments aimed at mitigating this risk, such as dietary modifications and physical activity. For individuals with hypertension, genetic insights can help tailor medication choices to achieve better blood pressure control with fewer side effects



Hypertension Propensity



Neutral

Understanding what this may mean

Individuals at a neutral risk level have an average likelihood of developing hypertension, mirroring the general population's predisposition. Standard preventive strategies, including a balanced diet, regular exercise, and avoiding excessive salt intake, are key to managing this baseline risk

Genetic Summary ³¹

SNP	Marker	Genotype
ACE G2328A	rs4343	AA
ADD1 G1378T	rs4961	TG
CYP11B2 G-344A	rs1799998	AG
DIO2 T274C	rs225014	CC
NOS3 T-786C	rs2070744	TT
NOS3 G2984+15A	rs891512	GG
ADRB2 G46A	rs1042713	AG
AGTR1 A1166C	rs5186	AC

SNP	Marker	Genotype
CSK C-66+2306A	rs1378942	AC
ATXN2 C732-14033T	rs653178	TT
CABCOC01 C679-1106T	rs1530440	CC
ZNF652-AS1 (A>G)	rs16948048	GG
ATP2B1 G-221-10702A	rs17249754	GG
CACNB2 C168+36987G	rs12258967	CC
MECOM T38-1574C	rs419076	TC
H4C3 / H1-6 (A>G)	rs198846	GG

MTHFR A359+160G	rs17367504	AG
CNNM2 T*9241C	rs11191548	TT
FGF5 g.A1600T	rs16998073	TA
SLC39A8 C1171T	rs13107325	CC
NT5C2 T-25+1773C	rs11191593	TT
NPPA C94T	rs5063	CC
LTA A252G	rs909253	AA
PLEKHA7 C222-9539T	rs381815	TC

ZNF831 A-36-14922G	rs6015450	AA
LINC02227 (C>T)	rs9313772	CC
ARHGAP42 G154+34975C	rs633185	CG
ADRB1 (C>T)	rs2782980	CC
NPR3 (A>G)	rs1173771	AG
SLC4A7 (T>C)	rs13082711	TT
ULK3 / CPLX3 (A>C)	rs6495122	AC

Exercise and Weight Loss

Exercise is a cornerstone of weight management and overall health, but the effectiveness of physical activity in promoting weight loss can vary significantly among individuals. This variability is partly due to genetic factors that influence how the body responds to exercise. This section explores how specific genetic variants can either enhance or diminish the weight loss benefits derived from physical activity.

Research has identified several genetic markers that impact the body's response to exercise, particularly in terms of weight loss. Variants in genes related to fat metabolism, appetite regulation, and energy expenditure, such as those in the PPARG and ADRB2 genes, play significant roles.

Acknowledging these genetic differences is crucial for tailoring exercise programs that are more effective on an individual basis. For some, standard exercise recommendations may need to be adjusted to achieve optimal weight loss results. Genetic testing can provide insights into the most effective types of exercise for individual metabolic types—whether higher intensity workouts or longer durations of moderate activities are more beneficial



Weight Loss from Exercise



Neutral

Understanding what this may mean

Individuals with this genetic result can expect a neutral 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 ⁴

SNP	Marker	Genotype
PPARD C-87T	rs2016520	TC
PPARD C*1762T	rs1053049	CC

SNP	Marker	Genotype
PPARD G-101-842A	rs2267668	AG
ADRB2 G46A	rs1042713	AG

Longevity

Longevity refers to a long life span, characterized by a greater number of years of healthy living. While lifestyle factors such as diet, exercise, and stress management play significant roles in determining longevity, genetic factors also contribute to the ability to live a long and healthy life. Understanding the genetic components that influence longevity can provide insights into strategies for promoting health and well-being into older age.

Several genes have been identified that are associated with longevity and healthy aging. These genes are involved in various biological processes, including DNA repair, cellular maintenance, metabolism, and the regulation of inflammation and oxidative stress. For example, variations in the FOXO3 gene, which is involved in cellular stress response and longevity, have been linked to an increased lifespan. Additionally, genes related to the maintenance of telomeres (the protective caps on the ends of chromosomes) such as TERT, play a crucial role in cellular aging. Genetic variations that enhance the body's ability to manage oxidative stress and inflammation, such as those in the SIRT and IL-6 genes, can also contribute to a longer, healthier life. By examining these genetic markers, it is possible to gain insights into an individual's potential for longevity and develop personalized strategies to support healthy aging.

Understanding genetic predispositions to longevity can inform personalized health and wellness strategies aimed at promoting a longer, healthier life. For individuals with genetic variations associated with increased longevity, recommendations may include maintaining a balanced diet rich in antioxidants, engaging in regular physical activity, and practicing stress management techniques to support overall health. Supplements that promote cellular health, such as omega-3 fatty acids, vitamin D, and antioxidants, may also be beneficial. Additionally, lifestyle interventions that promote DNA repair and cellular maintenance, such as intermittent fasting and caloric restriction, can be considered. Regular health screenings and proactive management of chronic conditions are crucial to preventing age-related diseases. By leveraging genetic information, healthcare providers can develop individualized strategies to enhance longevity and improve the quality of life, helping individuals to live longer, healthier lives.



Longevity Propensity



Increased

Understanding what this may mean

Genetic results indicate an increased propensity for longevity. This suggests a higher than average likelihood of experiencing a longer lifespan. Leveraging this advantage by continuing to engage in healthy lifestyle practices, such as a balanced diet, regular physical activity, proper sleep, and effective stress management, can help maximize the potential for a long and healthy life.

Telomere Length Propensity



Neutral

Understanding what this may mean

This indicates an average likelihood of having telomeres of typical length. Maintaining a healthy lifestyle, including a nutritious diet, regular physical activity, stress reduction, and avoiding harmful habits like smoking, can support overall cellular health and longevity.

Genetic Summary ²⁰

SNP	Marker	Genotype
SIRT1 g.T3660C	rs12778366	TT
STN1 C133+755A	rs9420907	AC

SNP	Marker	Genotype
KL T1054G	rs9536314	TG
COMT G472A	rs4680	AA

NAF1 (A>G)	rs7675998	AG
MYNN C18T	rs10936599	CC
TERT g.C28A	rs2736100	CC
TERT C1951-205T	rs10069690	TC
MTR A2756G	rs1805087	AA
ATM G5557A	rs1801516	AG
C2 G73+1410A	rs558702	GG
BHMT G716A	rs3733890	AG

CYP2B6 G516T	rs3745274	GG
IL-6 A211-285G	rs2069837	AA
TP53 G215C	rs1042522	GG
CETP G1264A	rs5882	AA
IGF1R G3129A	rs2229765	GG
FOXO3 G621+25486T	rs2802292	TG
SIRT1 T1718C	rs3758391	CC
SIRT6 C137T	rs352493	TT
