MAGISNAT®

DNA Wellness Report:

Sports and Fitness Insights

For:

Alex Morgan

KIT ID: SAMPLE-DNA-0001

Report type: Wellness

Genetic variations: 37 SNPs

Date: 2026-09-24

Dear Alex Morgan

Thank you for choosing our genetic analysis service.

We are pleased to provide you with personalized information based on your genetic data. This report is designed to offer educational insights into selected genetic variants and their associations described in scientific literature.

Our goal is to present your results in a clear and informative format to support a better understanding of certain genetic characteristics related to general wellness. This information is intended for educational purposes only and is not intended to diagnose, treat, cure, or prevent any disease.

We hope your experience with our service has been clear, informative, and valuable. If you have any questions or need additional assistance, our team is available to help.

Thank you again for placing your trust in us.

Sincerely,

MAGISNAT OMICS LLC Team

Table of contents

Introduction

GENETICS is important

DNA Wellness Report: Sports and Fitness Insights

Sport- and fitness-related pathways include biological processes influenced by both lifestyle factors and genetic variation. This DNA report analyzes **37 selected genetic variants (SNPs)** that have been studied in relation to biological pathways associated with exercise response, muscle-related traits, endurance-associated traits, recovery-associated traits, and physical resilience. Scientific literature suggests that genetic variation may be associated with differences in certain exercise-related and recovery-related processes among individuals. The information in this report is provided for educational and general wellness purposes and is intended to offer context about genetic variation and sport- and fitness-related biological pathways. **This report is not intended to diagnose, treat, cure, or prevent any disease.**

Traits

- **Performance Insights**
- **Recovery Insights**
- **Muscle Function and Strength**
- **Physical Resilience**

Understanding the report

How to read your genetic results

This report presents information about selected genetic variants identified through the analysis of specific genes and their variations, known as single nucleotide polymorphisms (SNPs).

Each result is displayed in a dedicated section that includes the gene name, a description of its biological role, the specific SNP analyzed, and the genotype identified (alleles).

The information provided in this report is based on findings from published scientific research describing associations between certain genetic variants and biological processes.

The content of this report is provided for educational and informational purposes only and is not intended to diagnose, treat, cure, or prevent any disease.

Report summary

Performance Insights

Gene:	SNP:	Alleles:	Page
MTHFR	rs1801133	G/A	6
LEP	rs2167270	A/A	7
CYP1A2	rs762551	C/C	8
GABPB1	rs7181866	G/G	9
GABPB1	rs8031031	C/C	10
GABPB1	rs12594956	A/A	11
PPARA	rs4253778	C/C	11
PPARGC1A	rs8192678	T/T	12

Recovery Insights

Gene:	SNP:	Alleles:	Page
SOD2	rs4880	G/G	13

Muscle Function and Strength

Gene:	SNP:	Alleles:	Page
UCP2	rs659366	C/T	**15**
UCP3	rs1800849	A/A	**16**
PPARG	rs1801282	C/G	**16**
ALDH2	rs671	G/A	**17**
AMPD1	rs17602729	G/G	**18**
ACTN3	rs1815739	C/C	**19**
MSTN	rs1805086	T/T	**19**
VEGFA	rs2010963	C/G	**20**

Physical Resilience

Gene:	SNP:	Alleles:	Page
GC	rs4588	T/T	**21**
GC	rs2282679	G/G	**22**
GC	rs7041	A/C	**22**
CYP2R1	rs10741657	A/G	**23**
COL1A1	rs1800012	C/A	**23**
LPL	rs328	C/C	**24**

Genetic Data Results

Performance Insights

Performance-related pathways include biological processes associated with exercise-related traits such as oxygen utilization, muscle fiber composition, and endurance- and power-related characteristics. This section presents information about selected genetic variants that have been studied in relation to biological pathways associated with physical performance. Scientific literature suggests that genetic variation may be associated with differences in certain exercise-related processes among individuals. The information in this section is provided for educational and general wellness purposes and is intended to offer context about genetic variation and performance-related biological pathways.

Reference:

Semenova, Ekaterina A et al. "Genes and Athletic Performance: The 2023 Update." Genes vol. 14,6 1235. 8 Jun. 2023, doi:10.3390/genes14061235

Your results

Gene:	SNP:	Alleles:
MTHFR	**rs1801133**	**G/A**

Methylenetetrahydrofolate reductase.

Enzyme involved in folate metabolism that converts 5,10-methylenetetrahydrofolate to 5-methyltetrahydrofolate and contributes to homocysteine remethylation.

Possible modest reduction in MTHFR activity and differences in folate and homocysteine-related measures. [1-3]

The MTHFR gene encodes methylenetetrahydrofolate reductase, an enzyme involved in folate and homocysteine metabolism. Some genetic and sport-related studies have explored whether the rs1801133 A allele is associated with differences in folate-, homocysteine- and performance-related measures. Having one copy (heterozygosity) of the A allele, corresponding to the G/A genotype, has been associated with reduced MTHFR activity and greater susceptibility to lower folate status, particularly when folate availability is low, while effects on homocysteine-related measures are generally less pronounced than when the A allele is present in two copies.[1-3] In one sport-related study, performance-related measures were less favorable in carriers of the A allele than in individuals with the G/G genotype, although evidence directly linking this variant to athletic performance remains limited.[2][3] This genetic result does not determine individual athletic performance, which is influenced by multiple genetic, physiological, training and environmental factors. A qualified healthcare professional can help assess whether your overall diet and lifestyle are appropriate for your individual needs.

Gene:	SNP:	Alleles:
LEP	**rs2167270**	**A/A**

Leptin.

Hormone produced mainly by adipose tissue that helps regulate appetite, energy balance, and body weight.

Possible lower habitual physical activity. [15]

The LEP gene encodes leptin, a hormone primarily produced by adipose tissue and involved in the regulation of appetite and energy balance. One observational study explored whether rs2167270 is associated with habitual physical activity. Having two copies (homozygosity) of the A allele, corresponding to the A/A genotype, places this genotype within the A-allele-carrier group that reported lower habitual physical activity than individuals with the G/G genotype.[15] Because G/A and A/A individuals were analyzed together, the study does not establish an A/A-specific effect compared with G/A.[15] This genetic result does not determine individual motivation, energy expenditure or athletic performance. A qualified healthcare professional can help assess whether your overall diet and lifestyle are appropriate for your individual needs.

Gene:	SNP:	Alleles:
CYP1A2	**rs762551**	**C/C**

Cytochrome P450 1A2.

Enzyme of the cytochrome P450 family involved in the metabolism of caffeine, various drugs, and other compounds.

Possible slower caffeine metabolism and less favorable caffeine-related exercise response. [2][24][25]

The CYP1A2 gene encodes cytochrome P450 1A2, an enzyme responsible for much of the metabolism of caffeine. Genetic and exercise-related studies have explored whether rs762551 is associated with CYP1A2 activity, caffeine metabolism and exercise-related responses to caffeine.[2][24][25] Having two copies (homozygosity) of the C allele, corresponding to the C/C genotype, has been associated with lower CYP1A2 activity and slower caffeine metabolism compared with genotypes carrying the A allele.[2][24][25] Some studies have reported smaller or less favorable exercise-related responses to caffeine in C/C individuals, although findings have varied across studies.[2] This genetic result does not determine individual caffeine response or athletic performance, and CYP1A2 activity can also be influenced by lifestyle and environmental factors. A qualified healthcare professional can help assess whether your overall diet and lifestyle are appropriate for your individual needs.

Gene:	SNP:	Alleles:
GABPB1	**rs7181866**	**G/G**

GA-binding protein transcription factor subunit beta-1.

Part of a transcription factor complex that helps regulate genes involved in mitochondrial function, energy production, and other essential cellular processes.

No specific endurance-related association established for this genotype. [26][27]

The GABPB1 gene encodes a subunit of the GA-binding protein transcription factor complex, which is involved in the regulation of genes related to mitochondrial function and cellular energy metabolism. Athlete association studies have explored whether rs7181866 is associated with endurance- and athlete-related traits.[26][27] Having two copies (homozygosity) of the G allele, corresponding to the G/G genotype, represents a genotype that was very rare or absent in several cited studies; available evidence therefore does not establish a specific favorable or unfavorable performance-related association for G/G.[26][27] This genetic result does not determine individual endurance capacity or athletic performance. A qualified healthcare professional can help assess whether your overall diet and lifestyle are appropriate for your individual needs.

Gene:	SNP:	Alleles:
GABPB1	**rs8031031**	**C/C**

GA-binding protein transcription factor subunit beta-1.

Part of a transcription factor complex that helps regulate genes involved in mitochondrial function, energy production, and other essential cellular processes.

No specific association with endurance- or elite-athlete status established for this genotype. [26][28]

The GABPB1 gene encodes a subunit of the GA-binding protein transcription factor complex, which is involved in the regulation of genes related to mitochondrial function and cellular energy metabolism. Athlete association studies have explored whether rs8031031 is associated with endurance- and athlete-related traits.[26][28] Having two copies (homozygosity) of the C allele, corresponding to the C/C genotype, does not carry the T allele associated with endurance- and athlete-related traits in the cited studies, and the C/C genotype has not shown the same endurance-related association.[26][28] No specific unfavorable interpretation has been established for this genotype. This genetic result does not determine individual endurance capacity or athletic performance. A qualified healthcare professional can help assess whether your overall diet and lifestyle are appropriate for your individual needs.

Gene:	SNP:	Alleles:
GABPB1	**rs12594956**	**A/A**

GA-binding protein transcription factor subunit beta-1.

Part of a transcription factor complex that helps regulate genes involved in mitochondrial function, energy production, and other essential cellular processes.

Possible association with higher baseline aerobic capacity and elite endurance athlete status. [28][29]

The GABPB1 gene encodes a subunit of the GA-binding protein transcription factor complex, which is involved in the regulation of genes related to mitochondrial function and cellular energy metabolism. Athlete association studies have explored whether rs12594956 is associated with aerobic capacity and endurance-related traits.[28][29] Having two copies (homozygosity) of the A allele, corresponding to the A/A genotype, has been associated with higher baseline aerobic capacity in one study and has been reported more frequently among endurance athletes than among sprinters and non-athletic controls.[28][29] This genetic result does not determine individual endurance capacity or athletic performance. A qualified healthcare professional can help assess whether your overall diet and lifestyle are appropriate for your individual needs.

Gene:	SNP:	Alleles:
PPARA	**rs4253778**	**C/C**

Peroxisome Proliferator-Activated Receptor Alpha.

Transcription factor regulating the expression of various genes involved in lipid metabolism and energy homeostasis.

Possible association with higher power- and speed-strength-related measures. [31]

The PPARA gene encodes peroxisome proliferator-activated receptor alpha, a transcription factor involved in the regulation of fatty-acid metabolism and energy homeostasis. One athlete study explored whether rs4253778 is associated with power-related performance. Having two copies (homozygosity) of the C allele, corresponding to the C/C genotype, placed this genotype among C-allele carriers who showed higher relative peak power during a 30-second Wingate test than individuals with the G/G genotype.[31] This genetic result does not determine individual power, strength or athletic performance. A qualified healthcare professional can help assess whether your overall diet and lifestyle are appropriate for your individual needs.

Gene:	SNP:	Alleles:
PPARGC1A	**rs8192678**	**T/T**

Peroxisome proliferator-activated receptor gamma coactivator 1 alpha.

Transcriptional coactivator regulating the expression of genes involved in energy metabolism, mitochondrial biogenesis, and adaptive thermogenesis.

No specific favorable or unfavorable endurance-related association established for this genotype. [32][33]

The PPARGC1A gene encodes PGC-1α, a transcriptional coactivator involved in energy metabolism, mitochondrial biogenesis and adaptation to exercise. Athlete association studies and a meta-analysis have explored whether rs8192678 is associated with endurance- and performance-related traits.[32][33] Having two copies (homozygosity) of the T allele, corresponding to the T/T genotype, places this genotype within the T-allele-carrier group that showed faster competitive running performance than C/C individuals in one study, but T/T was not evaluated as a separate performance group.[33] A recent meta-analysis did not identify a consistent favorable endurance-related association for T/T across populations.[32] This genetic result does not establish a specific favorable or unfavorable performance profile and does not determine individual endurance capacity or athletic performance. A qualified healthcare professional can help assess whether your overall diet and lifestyle are appropriate for your individual needs.

Your notes

Recovery Insights

Recovery-related pathways include biological processes associated with physical activity, including sleep-, nutrition-, oxidative stress-, and muscle-related processes. This section presents information about selected genetic variants that have been studied in relation to biological pathways associated with recovery. Scientific literature suggests that genetic variation may be associated with differences in certain recovery-related processes among individuals. The information in this section is provided for educational and general wellness purposes and is intended to offer context about genetic variation and recovery-related biological pathways.

Reference:

Naderi, Alireza, et al. "Nutritional Strategies to Improve Post-exercise Recovery and Subsequent Exercise Performance: A Narrative Review." Sports Medicine, vol. 55, 12 Apr. 2025, Article 02213.

Your results

Gene:	SNP:	Alleles:
SOD2	**rs4880**	**G/G**

Superoxide Dismutase 2.

Enzyme found in the mitochondria. It is an important enzyme for reducing oxidative stress in cells.

Possible relatively favorable exercise-related muscle-damage marker profile. [23]

The SOD2 gene encodes mitochondrial superoxide dismutase 2, an antioxidant enzyme involved in protecting cells from oxidative stress. One athlete study explored whether rs4880 is associated with exercise-related muscle-damage markers. Having two copies (homozygosity) of the G allele, corresponding to the G/G genotype, does not carry the A allele associated with higher exercise-related muscle-damage marker levels and was consistent with a relatively favorable muscle-damage-related biomarker profile in the cited study.[23] This genetic result does not determine individual muscle damage, recovery or athletic performance. A qualified healthcare professional can help assess whether your overall diet and lifestyle are appropriate for your individual needs.

Your notes

Muscle Function and Strength

Muscle function- and strength-related pathways include biological processes associated with muscle fiber composition, muscle development, fatigue-related characteristics, and exercise-related responses. This section presents information about selected genetic variants that have been studied in relation to biological pathways associated with muscle function and strength. Scientific literature suggests that genetic variation may be associated with differences in certain muscle-related processes among individuals. The information in this section is provided for educational and general wellness purposes and is intended to offer context about genetic variation and muscle-related biological pathways.

Reference:

Wang, Kaiyong, et al. "Factors, mechanisms and improvement methods of muscle strength loss." Frontiers in Cell and Developmental Biology, vol.12, 4 Dec. 2024, doi:10.3389/fcell.2024.1509519

Your results

Gene:	SNP:	Alleles:
UCP2	**rs659366**	**C/T**

Uncoupling Protein 2.

Protein present in the mitochondria and involved in energy equilibrium.

Possible intermediate training-related increase in skeletal muscle efficiency. [16]

The UCP2 gene encodes uncoupling protein 2, a mitochondrial protein involved in energy metabolism. One human endurance-training study explored whether rs659366 is associated with changes in skeletal-muscle efficiency during exercise. Having one copy (heterozygosity) of the T allele, corresponding to the C/T genotype, was associated with an average increase in delta efficiency after training; when analyzed together, genotypes carrying the T allele showed greater training-related increases in delta efficiency than the C/C genotype.[16] This genetic result does not determine individual exercise efficiency or athletic performance. A qualified healthcare professional can help assess whether your overall diet and lifestyle are appropriate for your individual needs.

Gene:	SNP:	Alleles:
UCP3	**rs1800849**	**A/A**

Uncoupling Protein 3.

Mitochondrial protein expressed mainly in skeletal muscle and involved in energy metabolism and fatty-acid handling.

Possible higher hand-grip strength in variant-allele carriers; a separate effect for A/A has not been established. [17]

The UCP3 gene encodes uncoupling protein 3, a mitochondrial protein expressed primarily in skeletal muscle and involved in fatty-acid metabolism and cellular energy regulation. One human study of older adults explored whether rs1800849 is associated with muscle strength. Having two copies (homozygosity) of the A allele, corresponding to the A/A genotype, places this genotype within the A-allele-carrier group that showed higher hand-grip strength compared with individuals with the G/G genotype; however, the available study does not establish an A/A-specific effect compared with G/A.[17] This genetic result does not determine individual muscle strength or athletic performance. A qualified healthcare professional can help assess whether your overall diet and lifestyle are appropriate for your individual needs.

Gene:	SNP:	Alleles:
PPARG	**rs1801282**	**C/G**

Peroxisome proliferator-activated receptor gamma.

Receptor that regulates fatty acid deposition and glucose metabolism.

Possible association with strength athlete status. [18][19]

The PPARG gene encodes peroxisome proliferator-activated receptor gamma, a protein involved in glucose and lipid metabolism. Athlete association studies have explored whether the rs1801282 G allele is associated with strength-athlete status.[18][19] Having one copy (heterozygosity) of the G allele, corresponding to the C/G genotype, places this genotype within the Ala12-carrier group associated with strength-athlete status in the cited studies.[18][19] This genetic result does not determine individual muscle strength or athletic performance. A qualified healthcare professional can help assess whether your overall diet and lifestyle are appropriate for your individual needs.

Gene:	SNP:	Alleles:
ALDH2	**rs671**	**G/A**

Aldehyde Dehydrogenase 2.

Mitochondrial enzyme involved in the breakdown of acetaldehyde produced during alcohol metabolism and other reactive aldehydes.

Possible differences in strength-related measures; genotype-specific effects vary across the studied populations and performance measures. [21][22]

The ALDH2 gene encodes mitochondrial aldehyde dehydrogenase 2, an enzyme involved in the metabolism of acetaldehyde and other reactive aldehydes. Human genetic and athlete studies have explored whether rs671 is associated with ALDH2 activity and muscle-strength-related measures.[21][22] Having one copy (heterozygosity) of the A allele, corresponding to the G/A genotype, is associated with reduced ALDH2 enzymatic activity compared with the G/G genotype.[21][22] In one study, G/A individuals showed better muscle-strength measures than A/A individuals, while in powerlifters G/A and A/A individuals analyzed together showed lower body-weight-adjusted performance than individuals with the G/G genotype; this association was not observed in weightlifters.[21][22] This genetic result does not determine individual muscle strength or athletic performance. A qualified healthcare professional can help assess whether your overall diet and lifestyle are appropriate for your individual needs.

Gene:	SNP:	Alleles:
AMPD1	**rs17602729**	**G/G**

Adenosine Monophosphate Deaminase 1.

Skeletal muscle enzyme involved in purine nucleotide metabolism and regulation of adenine nucleotide balance during exercise.

Possible association with higher AMPD1 activity and sprint/power athlete status. [34][35]

The AMPD1 gene encodes adenosine monophosphate deaminase 1, a skeletal-muscle enzyme involved in purine nucleotide metabolism and energy regulation during exercise. Genetic and athlete studies have explored whether rs17602729 is associated with AMPD activity and sprint/power-related traits.[34][35] Having two copies (homozygosity) of the G allele, corresponding to the G/G genotype, is associated with higher skeletal-muscle AMPD activity compared with genotypes carrying the A allele.[35] In one study, the G/G genotype was more frequent among sprint/power athletes and was associated with anaerobic performance-related measures.[34] This genetic result does not determine individual muscle strength, sprint capacity or athletic performance. A qualified healthcare professional can help assess whether your overall diet and lifestyle are appropriate for your individual needs.

Gene:	SNP:	Alleles:
ACTN3	**rs1815739**	**C/C**

Actinin Alpha 3.

Structural protein that is expressed in fast type II fibers, where it plays an important role in the generation of explosive and powerful muscle contractions.

Possible association with sprint/power athlete status. [37][38]

The ACTN3 gene encodes alpha-actinin-3, a structural protein expressed primarily in fast-twitch (type II) skeletal muscle fibers and involved in rapid, forceful muscle contractions. Athlete association studies and meta-analyses have explored whether rs1815739 is associated with sprint/power-related traits.[37][38] Having two copies (homozygosity) of the C allele, corresponding to the C/C genotype, retains functional alpha-actinin-3 expression and has been associated with sprint/power athlete status, with this genotype reported more frequently among elite sprint/power athletes than among non-athletic controls.[37][38] This genetic result does not determine individual muscle strength, power or athletic performance. A qualified healthcare professional can help assess whether your overall diet and lifestyle are appropriate for your individual needs.

Gene:	SNP:	Alleles:
MSTN	**rs1805086**	**T/T**

Myostatin.

Protein involved in regulating muscle growth and maintenance by helping control the amount of muscle tissue the body develops.

No specific association with the R-variant strength-athlete profile established for this genotype. [39][40]

The MSTN gene encodes myostatin, a protein involved in regulating skeletal muscle growth by limiting muscle development. Athlete association studies have explored whether rs1805086 is associated with strength-oriented athlete status.[39][40] Having two copies (homozygosity) of the T allele, corresponding to the T/T genotype, does not carry the alternative C allele that has been explored in relation to strength-oriented athlete status, and no specific unfavorable interpretation for muscle strength or athletic performance has been established for T/T.[39][40] This genetic result does not determine individual muscle strength, muscle mass or athletic performance. A qualified healthcare professional can help assess whether your overall diet and lifestyle are appropriate for your individual needs.

Gene:	SNP:	Alleles:
VEGFA	**rs2010963**	**C/G**

Vascular Endothelial Growth Factor A.

Signaling protein involved in the regulation of blood vessel formation and blood vessel permeability.

Possible relatively smaller strength gains following resistance training compared with G/G. [41]

The VEGFA gene encodes vascular endothelial growth factor A, a signaling protein involved in blood vessel formation, vascular function and skeletal-muscle blood flow. One intervention study in healthy young men explored whether rs2010963 is associated with strength adaptation to training. Having one copy (heterozygosity) of the C allele, corresponding to the C/G genotype, placed this genotype within the C-allele-carrier group that showed smaller gains in maximal strength following resistance training than individuals with the G/G genotype.[41] C-allele carriers still showed significant strength improvements with training. This genetic result does not determine individual strength, training response or athletic performance. A qualified healthcare professional can help assess whether your overall diet, lifestyle and training habits are appropriate for your individual needs.

Your notes

Physical Resilience

Physical resilience–related pathways include biological processes associated with connective tissue characteristics, physical stress response, inflammatory response, and exercise-related recovery. This section presents information about selected genetic variants that have been studied in relation to biological pathways associated with physical resilience. Scientific literature suggests that genetic variation may be associated with differences in certain resilience-related processes among individuals. The information in this section is provided for educational and general wellness purposes and is intended to offer context about genetic variation and physical resilience–related biological pathways.

Reference:

Baumert, Philipp, et al. "Genetic variation and exercise-induced muscle damage: implications for athletic performance, injury and ageing." European Journal of Applied Physiology, vol. 116, no. 9, 2016, pp. 1595–1625. doi:10.1007/s00421-016-3411-1.

Your results

Gene:	SNP:	Alleles:
GC	**rs4588**	**T/T**

Vitamin D-binding protein.

Protein binding vitamin D and its plasma metabolites to transport them to target tissues.

Possible lower circulating 25(OH)D levels. [2][4][5]

The GC gene encodes vitamin D-binding protein, which binds and transports vitamin D and its metabolites in the bloodstream. Genetic association studies have explored whether rs4588 is associated with differences in circulating 25-hydroxyvitamin D [25(OH)D] concentrations.[4][5] Having two copies (homozygosity) of the T allele, corresponding to the T/T genotype, has been associated with relatively lower circulating 25(OH)D concentrations compared with the G/G genotype.[4][5] Vitamin D status is relevant to several physiological processes important for physically active individuals, including normal bone and muscle function.[2] This genetic result does not determine individual vitamin D status or athletic performance. A qualified healthcare professional can help assess whether your overall diet and lifestyle are appropriate for your individual needs.

Gene:	SNP:	Alleles:
GC	**rs2282679**	**G/G**

Vitamin D-binding protein.

Protein binding vitamin D and its plasma metabolites to transport them to target tissues.

Possible relatively lower circulating 25(OH)D concentrations. [6][7]

The GC gene encodes vitamin D-binding protein, which binds and transports vitamin D and its metabolites in the bloodstream. Genetic association studies have explored whether rs2282679 is associated with differences in circulating 25-hydroxyvitamin D [25(OH)D] concentrations.[7] Having two copies (homozygosity) of the G allele, corresponding to the G/G genotype, has been associated with a greater tendency toward lower 25(OH)D concentrations.[7] Vitamin D status is relevant to normal muscle and musculoskeletal function in physically active individuals.[6] This genetic result does not determine individual vitamin D status or athletic performance. A qualified healthcare professional can help assess whether your overall diet and lifestyle are appropriate for your individual needs.

Gene:	SNP:	Alleles:
GC	**rs7041**	**A/C**

Vitamin D-binding protein.

Protein binding vitamin D and its plasma metabolites to transport them to target tissues.

Possible intermediate circulating 25(OH)D concentrations. [6][8]

The GC gene encodes vitamin D-binding protein, which binds and transports vitamin D and its metabolites in the bloodstream. Genetic association studies have explored whether rs7041 is associated with differences in circulating 25-hydroxyvitamin D [25(OH)D] concentrations.[6][8] Having one copy (heterozygosity) of the A allele, corresponding to the A/C genotype, was associated with intermediate mean 25(OH)D concentrations between the two homozygous genotypes in the study population.[8] This genetic result does not determine individual vitamin D status or athletic performance; vitamin D status is influenced by multiple genetic, dietary, lifestyle and environmental factors.[6] A qualified healthcare professional can help assess whether your overall diet and lifestyle are appropriate for your individual needs.

Gene:	SNP:	Alleles:
CYP2R1	**rs10741657**	**A/G**

Cytochrome P450 2R1.

Vitamin D 25-hydroxylase involved in the conversion of vitamin D to 25-hydroxyvitamin D [25(OH)D], the major circulating form of vitamin D.

Possible relatively lower circulating 25(OH)D concentrations compared with the A/A genotype. [6][7][9]

The CYP2R1 gene encodes vitamin D 25-hydroxylase, an enzyme involved in the conversion of vitamin D to 25-hydroxyvitamin D [25(OH)D], the major circulating form of vitamin D. Genetic association studies have explored whether rs10741657 is associated with differences in circulating 25(OH)D concentrations.[7][9] Having one copy (heterozygosity) of the G allele, corresponding to the A/G genotype, has been associated with a greater tendency toward lower vitamin D status compared with the A/A genotype.[7][9] This genetic result does not determine individual vitamin D status or athletic performance; vitamin D status is relevant to normal muscle and musculoskeletal function in physically active individuals.[6] A qualified healthcare professional can help assess whether your overall diet and lifestyle are appropriate for your individual needs.

Gene:	SNP:	Alleles:
COL1A1	**rs1800012**	**C/A**

Collagen Type I Alpha 1 Chain.

Main component of type I collagen, the fibrillar collagen found in most connective tissues, including bones, tendons, cartilage, and skin.

Possible intermediate tendency toward lower bone mineral density. [10-14]

The COL1A1 gene encodes the alpha-1 chain of type I collagen, a major structural component of bone and other connective tissues. Genetic association studies have explored whether rs1800012 is associated with differences in bone mineral density and other bone-related measures.[10-14] Having one copy (heterozygosity) of the A allele, corresponding to the C/A genotype, has been associated with relatively lower lumbar spine bone mineral density compared with the C/C genotype in some populations, with values generally intermediate between the two homozygous genotypes.[11-13] This genetic result does not determine individual bone strength, injury risk or physical performance. A qualified healthcare professional can help assess whether your overall diet and lifestyle are appropriate for your individual needs.

Gene:	SNP:	Alleles:
LPL	**rs328**	**C/C**

Lipoprotein lipase.

Enzyme playing a crucial role in the breakdown of triglycerides present in circulating lipoproteins.

No specific association with the favorable lipid-related profile established for this genotype. [20]

The LPL gene encodes lipoprotein lipase, an enzyme involved in the breakdown of triglyceride-rich lipoproteins and the transport of fatty acids to tissues. Human genetic studies have explored whether the rs328 G allele is associated with lipid-related measures.[20] Having two copies (homozygosity) of the C allele, corresponding to the C/C genotype, does not carry the G allele associated with lower triglyceride and higher HDL-C levels, and no specific favorable or unfavorable lipid-related interpretation has been established for this genotype.[20] This genetic result does not determine individual lipid levels, physical fitness or athletic performance. A qualified healthcare professional can help assess whether your overall diet and lifestyle are appropriate for your individual needs.

Your notes

Scientific Glossary

When discussing genetics, it's often necessary to use many technical terms, and there's no way to avoid it if we want to maintain accuracy in explanations. That's why we have compiled a scientific glossary - to enable everyone to understand without getting overwhelmed.

Anyway, it is important to emphasize that our scientific glossary does not aim to be exhaustive and is not intended to replace the advice provided by your healthcare provider. Professional medical support is essential for a proper interpretation of genetic data and for developing a personalized health and wellness plan.

Allele

An allele is one of the different forms of a specific gene. The differences among alleles arise from small changes in the DNA sequence and can lead to changes in the characteristic controlled by the gene itself.

Chromosome

An allele is one of the different forms of a specific gene. The differences among alleles arise from small changes in the DNA sequence and can lead to changes in the characteristic controlled by the gene itself.

Dietary supplement

A dietary supplement is a product that contains one or more dietary ingredients, such as vitamins, minerals, herbs, amino acids, enzymes, or other substances, intended to supplement the diet. These supplements are available in various forms, including pills, capsules, tablets, powders, or liquids.

DNA

DNA stands for Deoxyribonucleic Acid. It is the macromolecule containing the information to build the organism. It is made up of 4 different nucleotides (Adenine, Cytosine, Guanine and Thymine). The human DNA have 3 billion nucleotide basepairs.

Gene

A gene is a segment of a chromosome that occupies a given locus on it and codes for a protein, each one with a specific function: some build the structure of our cells, some respond to signaling molecules, some catalyze reactions (these are called enzymes), and so on.

Genetic Variant

A genetic variant is a change or alteration in the DNA sequence of a gene. The main genetic variant types include base substitutions, deletions, or insertions.

Genomics

Genomics is a field of biology that focuses on the study of an organism's entire genome, which is the complete set of its genetic material. It involves the comprehensive analysis of genes, their functions, interactions, and variations within and between populations.

Genotype

The genotype is the genetic makeup of an organism, then the combination of alleles presents in an individual's DNA at a particular locus on a chromosome. The genotype represents the specific genetic information that an organism inherits from its parents.

Heterozygosity

Heterozygosity refers to having two different alleles at a specific genetic locus. If an individual has one copy of the "A" allele and one copy of the "B" allele for a certain gene (AB genotype), they are said to be heterozygous for that gene.

Homozygosity

Homozygosity refers to having two identical alleles at a specific genetic locus. If an individual has two copies of the "A" allele for a certain gene (AA genotype), they are said to be homozygous for that gene.

Macronutrient

Macronutrients are essential nutrients that are required by the body in large quantities to maintain proper functioning, growth, and overall health. These nutrients provide the necessary energy and building blocks needed for various physiological processes. The three primary macronutrients are: carbohydrates, lipids (fat), and proteins.

Micronutrient

Micronutrients are essential nutrients required by the body in smaller quantities but are equally important for maintaining overall health and supporting various physiological functions. Micronutrients include two main groups: vitamins and minerals.

Nutritional deficiency

Nutritional deficiency, also known as malnutrition, refers to a condition in which the body does not receive enough macronutrients or micronutrients, which are needed to support proper growth, development, and overall wellness.

Phenotype

The phenotype is any observable trait arising from a complex interplay between a given genotype and environmental factors. Examples of phenotypes are height, eye color and blood type.

rsID number

rsID numbers are identifiers used by researchers to name different SNPs.

SNPs (Single Nucleotide Polymorphism)

A SNP, or single nucleotide polymorphism, is a genetic variant in one of the nucleotide bases composing DNA and found in more than 1% of the population.

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