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# DNA Wellness Report
# Sport and Fitness Insights

**For: Test User**

KIT ID: X-M1PT00 | Report type: Wellness | Genetic variations: 37 SNPs | Date: 05/07/2026

## Table of contents



Dear **Test User**

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**

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# GENETIC is important

## DNA Wellness Report: Sport 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.

For clarity, each genetic variant is presented using a color-coded system that summarizes how the identified genotype relates to scientific observations reported in literature. This system is intended to help readers easily interpret the information presented in the report.

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.

- Typically reported variation
- No clear reported association
- Moderate reported variation
- Greater reported variation

# Report summary

## Performance Insights

| | | | | |
|---|---|---|---|---|
| SNP: rs1801133 G/A | SNP: rs3811647 G/A | SNP: rs8031031 C/C | SNP: rs1799722 C/T | SNP: rs1800795 C/C |
| SNP: rs2282679 T/G | SNP: rs2167270 G/G | SNP: rs12594956 C/C | SNP: rs2010963 G/G | |
| SNP: rs7041 A/C | SNP: rs328 C/C | SNP: rs4253778 G/C | SNP: rs680 C/C | |
| SNP: rs10741657 G/G | SNP: rs762551 A/A | SNP: rs8192678 T/T | SNP: rs1799983 T/G | |
| SNP: rs1800562 G/G | SNP: rs7181866 A/A | SNP: rs6454672 T/T | SNP: rs429358 T/T | |

## Recovery Insights

| | | |
|---|---|---|
| SNP: rs3892097 C/T | SNP: rs4880 A/G | SNP: rs1800629 G/A |

## Muscle Function and Strength

| | | | | |
|---|---|---|---|---|
| SNP: rs659366 C/T | SNP: rs1801282 C/C | SNP: rs671 G/G | SNP: rs1815739 T/T | SNP: rs1799722 C/T |
| SNP: rs1800849 G/G | SNP: rs116987552 G/G | SNP: rs17602729 G/A | SNP: rs1805086 T/T | |

## Physical Resilience

| | | | |
|---|---|---|---|
| SNP: rs4588 G/T | SNP: rs1800012 C/C | SNP: rs6746030 G/G | SNP: rs699947 A/A |

# 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: MTHFR — Methylenetetrahydrofolate reductase.

Enzyme involved in the conversion of vitamin B9 into its biologically active form.

**SNP:** rs1801133 **Alleles: G/A** Possibly supportive of athletic performance [1-2]

The MTHFR gene encodes an enzyme involved in folate metabolism, a process that helps support normal biochemical pathways related to methylation and homocysteine metabolism. Some observational studies have explored whether the rs1801133 variant, when present in one copy (heterozygosity), is associated with differences in certain exercise-related traits compared with other genotype groups.[1-2]

## Gene: GC — Vitamin D-binding protein.

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

**SNP:** rs2282679 **Alleles: T/G** Somewhat lower vitamin D levels. [1-4][5]

The GC gene encodes the vitamin D–binding protein, which is responsible for binding and transporting vitamin D and its metabolites in the bloodstream. Some observational studies have explored whether the rs2282679 variant, when present in two copies (homozygosity), is associated with lower circulating levels of vitamin D.[1-4] Research has also examined how vitamin D levels may relate to muscle function and performance. [5] A qualified healthcare professional can help assess whether your diet, including vitamin D intake, is appropriate for your individual needs.

**SNP:** rs7041 **Alleles: A/C** Possible higher Vitamin D levels. [1-3][5-6]

The GC gene encodes the vitamin D-binding protein, which is responsible for binding and transporting vitamin D and its metabolites in the bloodstream. [1-3] Some observational studies have explored whether the rs7041 variant, when present in one copy (heteroygosity) ,is associated with possibly higher levels of vitamin D.[6] Research has also examined how vitamin D levels may relate to muscle function and performance.[5]

## Gene: CYP2R1 Cytochrome P450 2R1.

Enzyme converting vitamin D into the active ligand for the vitamin D receptor.

**SNP:** rs10741657 **Alleles: G/G** Possible lower vitamin D levels. [1-3][5][7-8]

The CYP2R1 gene encodes an enzyme involved in vitamin D metabolism, including the conversion of vitamin D into 25-hydroxyvitamin D in the liver. This form is commonly used as a marker of vitamin D status in the body.[1-3] Some observational studies have explored whether the rs10741657 variant, when present in two copies (homozygosity), is associated with lower circulating levels of vitamin D. Research has also examined how vitamin D levels may relate to muscle function and performance[5][7-8] A qualified healthcare professional can help assess whether your diet, including vitamin D intake, is appropriate for your individual needs.

## Gene: HFE Hemojuvelin or High Fe (iron) protein.

Protein involved in the regulation of iron homeostasis in the body by controlling iron absorption from the diet and the maintenance of iron levels in the bloodstream.

**SNP:** rs1800562 **Alleles: G/G** Normal function. [2][9]

## Gene: TF Transferrin.

Transferrin, main iron transport protein in blood.

**SNP:** rs3811647 **Alleles: G/A** Possible higher ferritin. [9-12]

The TF gene encodes transferrin, the primary protein responsible for transporting iron in the bloodstream. It binds iron and facilitates its transport from sites of absorption or storage to where it is needed in the body. Some observational studies have explored whether the rs3811647 variant, when present in one copy (heterozygosity), is associated with higher ferritin levels, a measure related to iron storage.[9-12] A qualified healthcare professional can help assess whether your diet, including iron intake, is appropriate for your individual needs.

## Gene: LEP Leptin.

Hormone produced by adipose tissue and involved in the regulation of energy balance and body weight.

**SNP:** rs2167270 **Alleles: G/G** Higher natural energy expenditure and physical activity tendency. [18-20]

The LEP gene encodes leptin, a hormone primarily produced by adipose tissue that helps regulate appetite and energy balance through signaling pathways in the brain. [18-19] Some observational studies have explored whether the rs2167270 variant, when present in two copies (homozygosity), is associated with differences in energy expenditure and a tendency toward higher levels of habitual physical activity compared with other genotype groups.[20]

## Gene: LPL Lipoprotein lipase.

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

**SNP:** rs328 **Alleles: C/C** Normal function. [19][35-37]

## Gene: CYP1A2 Cytochrome P450 1A2.

Enzyme member of the cytochrome P450 superfamily. It catalyzes many reactions involved in drug metabolism and synthesis of cholesterol, steroids and other lipids.

**SNP:** rs762551 **Alleles: A/A** Possible faster caffeine metabolism. [2][48][53-55]

The CYP1A2 gene encodes cytochrome P450 1A2, an enzyme involved in the metabolism of various compounds, including caffeine. Some observational studies have explored whether the rs762551 variant, when present in two copies (homozygosity), is associated with possible faster caffeine metabolism, meaning caffeine may be processed more quickly and remain in the body for a shorter period of time. Research has also examined how caffeine metabolism may relate to exercise-related responses in endurance and strength activities.[2][48][53-55]

## Gene: GABPB1 GA-binding protein transcription factor subunit beta-1.

Transcription factor regulating various genes involved in energy metabolism, cellular respiration, and other essential cellular processes.

**SNP:** rs7181866 **Alleles: A/A** Possible better mitochondrial efficiency and aerobic capacity. [56-58]

The GABPB1 gene encodes GA-binding protein subunit beta-1, also known as nuclear respiratory factor 2 (NRF-2), a transcription factor involved in the regulation of nuclear-encoded mitochondrial genes and cellular energy metabolism. Some observational studies have explored whether the rs7181866 variant, when present in two copies (homozygosity), is associated with possible better mitochondrial efficiency and aerobic capacity, including differences in running economy–related measures following endurance training.[56-58]

**SNP:** rs8031031 **Alleles: C/C** Normal function. [56][59]

**SNP:** rs12594956 **Alleles: C/C** Normal function. [56][59]

## Gene: PPARA Peroxisome Proliferator-Activated Receptor Alpha.

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

**SNP:** rs4253778 **Alleles: G/C** Normal function. [56-57]

## Gene: PPARGC1A Peroxisome Proliferator-Activated Receptor Gamma Coactivator 1 Alpha.

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

**SNP:** rs8192678 **Alleles: T/T** Possibly better in endurance sports; higher mitochondrial efficiency on aerobic training. [56-57]

The PPARGC1A gene encodes peroxisome proliferator-activated receptor gamma coactivator 1-alpha (PGC-1α), a transcriptional coactivator involved in energy metabolism and mitochondrial function, including mitochondrial biogenesis. Some observational studies have explored whether the rs8192678 variant, when present in two copies (homozygosity), is associated with possibly lower mitochondrial efficiency during aerobic training and possible differences in endurance-related performance measures. [56-57] Research has also examined variation in oxygen-use and exercise-related metabolic markers in relation to this variant.

## Gene: CNR1 Cannabinoid Receptor 1.

Receptor regulating various physiological processes, including pain sensation, mood, appetite, memory, and immune response.

**SNP:** rs6454672 **Alleles: T/T** Possibly better tolerance of high-intensity training. [56][64]

The CNR1 gene encodes cannabinoid receptor 1 (CB1), a receptor primarily expressed in the central nervous system that is involved in endocannabinoid signaling. Some observational studies have explored whether the rs6454672 variant, when present in two copies (homozygosity), is associated with possibly better tolerance of high-intensity training.[56][64]

## Gene: BDKRB2 Bradykinin Receptor B2.

Receptor that relaxes and widens blood vessels, leading to increased blood flow and decreased blood pressure.

**SNP:** rs1799722 **Alleles: C/T** Possibly more favorable for endurance than power performance. [56-57][66]

The BDKRB2 gene encodes the bradykinin B2 receptor, which is involved in normal physiological responses related to vascular signaling. Some observational studies have explored whether the rs1799722 variant, when present in one copy (heterozygosity), is associated with traits that may be more commonly observed in endurance-related exercise settings than in power-based settings. [56-57] [66] A qualified healthcare professional can help assess whether your physical activity routine is appropriate for your individual needs.

## Gene: VEGFA Vascular Endothelial Growth Factor A.

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

**SNP:** rs2010963 **Alleles: G/G** Lower protein levels. [56][70]

The VEGFA gene encodes vascular endothelial growth factor A, a signaling protein involved in the regulation of blood vessel formation and permeability. Some observational studies have explored whether the rs2010963 variant, when present in two copies (homozygosity), is associated with lower protein levels and with differences in VO2 max–related response measures following aerobic training.[56][70] A qualified healthcare professional can help assess whether your physical activity routine is appropriate for your individual needs.

## Gene: IGF2 Insulin-Like Growth Factor 2.

Protein member of the insulin-like growth factor (IGF) family, playing a role in promoting cell proliferation and differentiation.

**SNP:** rs680 **Alleles: C/C** Better sprint and jumping ability. [56][71]

The IGF2 gene encodes a protein in the insulin-like growth factor family that is involved in growth and development processes in the body. Some observational studies have explored whether the rs2010963 variant, when present in two copies (homozygosity), is associated with possible differences in sprint- and jumping-related performance measures, including better values.[56][71]

## Gene: NOS3 Nitric Oxide Synthase 3.

Enzyme involved in the production of nitric oxide, a signaling molecule crucial for the regulation of blood vessel dilation, blood pressure, and vascular health.

**SNP:** rs1799983 **Alleles: T/G** Moderate enzyme activity. Adaptable for both endurance and power-based activities. [75]

The NOS3 gene encodes endothelial nitric oxide synthase (eNOS), an enzyme involved in the production of nitric oxide, a signaling molecule that plays a role in vascular function and blood flow. Some observational studies have explored whether the rs10060424 variant, when present in one copy (heterozygosity), is associated with moderate enzyme activity and with traits observed in both endurance- and power-related exercise settings.[75]

## Gene: APOE Apolipoprotein E.

Component of lipoproteins, present in the blood and playing a crucial role in lipid transport in the body.

**SNP:** rs429358 **Alleles: T/T** Normal function. [77]

## Gene: IL6 Interleukin 6.

Signaling protein involved in immune response, inflammation, and various physiological process.

**SNP:** rs1800795 **Alleles: C/C** Lower IL-6 production; potentially less effective muscle adaptation in strength activities. [79]

The IL6 gene encodes interleukin-6, a cytokine involved in immune signaling and inflammatory processes in the body. Some observational studies have explored whether the rs1800795 variant, when present in two copies (homozygosity), is associated with lower IL-6 production and with possible differences in muscle adaptation–related responses during strength or high-intensity exercise. [79] A qualified healthcare professional can help assess whether your physical activity routine is 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: CYP2D6** Cytochrome P450 2D6.

Enzyme member of the cytochrome P450 superfamily. It catalyzes many reactions involved in drug metabolism and synthesis of cholesterol, steroids and other lipids.

**SNP:** rs3892097 **Alleles: C/T** Normal function. [38][45-47]

**Gene: SOD2** Superoxide Dismutase 2.

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

**SNP:** rs4880 **Alleles: A/G** Normal function. [48-52]

**Gene: TNF** Tumor Necrosis Factor-alpha.

Signaling protein (cytokine) involved in immune response, inflammation, and cell death (apoptosis).

**SNP:** rs1800629 **Alleles: G/A** Normal function. [78]

## 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: UCP2 — Uncoupling Protein 2.

Protein present in the mitochondria and involved in energy equilibrium.

**SNP:** rs659366 **Alleles: C/T** Possible moderate differences in delta efficiency (measure of how efficiently your muscles work during exercise). [19][21-26]

The UCP2 gene encodes uncoupling protein 2, which is involved in energy regulation and metabolic processes that influence how the body uses fuel. [19] [21-26] Some observational studies have explored whether the rs659366 variant, when present in one copy (heterozygosity), is associated with possible differences in delta efficiency, a measure of how efficiently muscles work during exercise, and with variation in training-related changes in muscle efficiency.[23]

## Gene: UCP3 — Uncoupling Protein 3.

Protein present in the mitochondria and involved in energy equilibrium.

**SNP:** rs1800849 **Alleles: G/G** Normal function. [19][26-27]

## Gene: PPARG — Peroxisome Proliferator-Activated Receptor Gamma.

Receptor that regulates fatty acid deposition and glucose metabolism.

**SNP:** rs1801282 **Alleles: C/C** Normal function. [19][28-30]

## Gene: PYGM — Glycogen Phosphorylase (muscle form).

Enzyme involved in glycogen metabolism, a macromolecule that serves as storage for glucose.

**SNP:** rs116987552 **Alleles: G/G** Normal function. [19][31-34]

## Gene: ALDH2 Aldehyde Dehydrogenase 2.

Enzyme required for clearance of cellular acetaldehyde, a toxic byproduct of alcohol metabolism, and formaldehyde, a toxic byproduct of some metabolic process and environmental pollutant.

**SNP:** rs671 **Alleles: G/G** Possible improvement in muscle function. [38-44]

The ALDH2 gene encodes the aldehyde dehydrogenase 2 enzyme, which is involved in the metabolism of acetaldehyde, a byproduct of alcohol metabolism. Some observational studies have explored whether the rs671 variant, when present in two copies (homozygosity), is associated with possible differences in muscle function–related measures, including possible differences in muscle function–related measures.[38-44]

## Gene: AMPD1 Adenosine Monophosphate Deaminase 1.

Enzyme found in the skeletal muscles and playing a crucial role for movement, producing energy.

**SNP:** rs17602729 **Alleles: G/A** Reduced enzyme function. May experience muscle soreness. [56][60-63]

The AMPD1 gene encodes adenosine monophosphate deaminase 1, an enzyme involved in purine metabolism and cellular energy processes. Some observational studies have explored whether the rs17602729 variant, when present in one copy (heterozygosity), is associated with possible reduced enzyme function and may be associated with muscle soreness during or after physical activity.[56] [60-63] A qualified healthcare professional can help assess whether your physical activity routine is appropriate for your individual needs.

## Gene: ACTN3 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.

**SNP:** rs1815739 **Alleles: T/T** Possible impaired muscle function. [56-57][65]

The ACTN3 gene encodes alpha-actinin-3, a structural protein expressed in fast-twitch (type II) muscle fibers that is involved in forceful muscle contraction. Some observational studies have explored whether the rs1815739 variant, when present in two copies (homozygosity), is associated with possible impaired muscle function–related traits, along with differences observed in endurance-related exercise settings.[56-57][65] A qualified healthcare professional can help assess whether your physical activity routine is appropriate for your individual needs.

## Gene: MSTN Myostatin.

Protein involved in the control of growth and development of muscle tissues.

**SNP:** rs1805086 **Alleles: T/T** Normal function. [56][67-69]

## Gene: BDKRB2 Bradykinin B2 Receptor.

Receptor involved in inflammation, pain perception, and blood vessel dilation.

**SNP:** rs1799722 **Alleles: C/T** Normal function. [74]

## 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: GC — Vitamin D-binding protein.

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

**SNP:** rs4588 **Alleles: G/T** Normal function. [1-3]

## Gene: COL1A1 — 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.

**SNP:** rs1800012 **Alleles: C/C** Possible higher bone mineral density. [9][13-17]

The COL1A1 gene encodes the collagen type I alpha 1 chain, an important structural component of connective tissues, including bone. Some observational studies have explored whether the rs1800012 variant, when present in two copies (homozygosity), is associated with higher bone mineral density compared with other genotype groups. [9][13-16] Research has also explored whether this variant may be associated with differences in certain connective tissue–related traits, including ligament-related measures.[17]

## Gene: SCN9A — Sodium voltage-gated channel alpha subunit 9.

Protein essential for the generation and propagation of electrical signals neurons and muscle cells.

**SNP:** rs6746030 **Alleles: G/G** Higher pain tolerance. [56][67][72-73]

The SCN9A gene encodes the sodium voltage-gated channel alpha subunit 9, a protein involved in the transmission of signals in nerve and muscle cells, including those related to pain perception. Some observational studies have explored whether the rs6746030 variant, when present in two copies (homozygosity), is associated with higher pain tolerance.[56][67][72-73]

## Gene: VEGFA — Vascular Endothelial Growth Factor A.

Signaling protein with a crucial role in angiogenesis, the process of formation of new blood vessels.

**SNP:** rs699947 **Alleles: A/A** Lower VEGFA expression; possibly lower support for tendons and ligaments. [76]

The VEGFA gene encodes vascular endothelial growth factor A, a signaling protein involved in the regulation of blood vessel formation (angiogenesis) and vascular permeability. Some observational studies have explored whether the rs699947 variant, when present in two copies (homozygosity), is associated with lower VEGFA expression and possibly lower support for tendon- and ligament-related tissues. [76] A qualified healthcare professional can help assess whether your physical activity routine is 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.

# Scientific References

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**[2]** Guest NS, Horne J, Vanderhout SM, El-Sohemy A. Sport Nutrigenomics: Personalized Nutrition for Athletic Performance. Front Nutr. 2019 Feb 19;6:8. doi: 10.3389/fnut.2019.00008. PMID: 30838211; PMCID: PMC6389634.

**[3]** Niforou, Aikaterini et al. "Genetic Variants Shaping Inter-individual Differences in Response to Dietary Intakes-A Narrative Review of the Case of Vitamins." Frontiers in nutrition vol. 7 558598. 1 Dec. 2020, doi:10.3389/fnut.2020.558598

**[4]** https://www.snpedia.com/index.php/Rs2282679

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