

**DNA LIFESTYLE OPTIMIZER TEST FOR OBESITY  
REPORT**

Dear John,

Thank you for choosing to take the *MAGISNAT DNA Lifestyle Optimizer Test for Obesity*.

Below, you will find the report that we have prepared for you. We trust that the insights on your genetic makeup provided in there will be a powerful tool to better live with obesity and improve your overall well-being, making the most out of your individuality.

We encourage you to take the time to review this report thoroughly and discuss the findings with your healthcare provider.

Thank you for entrusting us with your genetic information, and we hope that this report will be valuable in guiding your journey towards a healthier and happier life.

Sincerely,

# Personal Information

SUBJECT INFORMATION	
First name	Last name
Date of Birth	Place of birth
ZIP Code	City
Mailing address	State
Telephone	E-mail

## Summary

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# 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:** The chromosome is the structure in which the DNA is organized in the nucleus of the cells. Humans have 23 pairs of chromosomes, with one copy coming from the mother and one copy from the father.
- **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 base pairs.
- **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.
- **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 present 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.
- **Mutation:** A mutation is a change or alteration in the DNA sequence of a gene. The main mutation types include base substitutions, deletions, or insertions.
- **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 health.
- **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 mutation in one of the nucleotide bases composing DNA and found in more than 1% of the population.

## How to read this report

In this report, you will find insights about the characteristic under analysis, followed by a table listing the genes and polymorphisms considered for that characteristic. After this introductory session, you will find your results in tabular form. Here, the color code uses the same rationale as above: in **green** we report polymorphism with a beneficial outcome (*e.g.*, increased enzyme function), in **orange** when the outcome is a slight increase in the risk (*e.g.*, reduced enzyme function), in **red** when the outcome is a higher increase in the risk (*e.g.*, enzyme loss of function). Finally, you will find the section recommendations, in which the outcome of the polymorphism is treated in more details. In any case, remember that this information is intended to be discussed with your healthcare provider.

**Please note: in this sample report genomic coordinates are not reported. These will be available in the actual report.**

## Response to Diet and Obesity-Related Conditions

The response to diet (e.g., weight loss) and symptoms in obese patients can vary depending on various factors, such as medical history, lifestyle, environment, and genetics. Additionally, the presence of other obesity-related conditions (e.g., insulin resistance) can contribute to determining the severity of symptoms.

Insulin resistance is a condition in which the body's cells do not respond effectively to insulin, a hormone produced by the pancreas, and essential for regulating blood glucose intake in cells (where it is used for energy). This leads to elevated blood sugar levels and compensative overproduction of insulin by the pancreas, which can strain the organ and lead to health issues.

Moreover, there are several conditions related to obesity, including abdominal obesity, high blood pressure, high blood sugar, and abnormal lipid levels (elevated triglycerides and low HDL cholesterol).

### Analyzed Genes and Polymorphisms:

Gene	Gene Function	SNP
GHSR	<b>Growth Hormone Secretagogue Receptor.</b> Receptor binding ghrelin, hormone involved in the regulation of appetite, hunger, and growth hormone release.	Locus1
ADIPOQ	<b>Adiponectin.</b> Hormone produced and secreted by the adipose tissue. Low adiponectin levels have implications in metabolic health, insulin sensitivity, inflammation, and cardiovascular function.	Locus1
		Locus2
		Locus3
		Locus4
MC4R	<b>Melanocortin 4 Receptor.</b> Receptor found in the brain and involved in the control of appetite, food intake, energy balance, and body weight.	Locus1
MAP2K5	<b>Mitogen-Activated Protein Kinase Kinase 5.</b> Enzyme involved in the response of the cell to external stimuli.	Locus1
		Locus2
		Locus3
UCP2	<b>Uncoupling Protein 2.</b> Mitochondrial protein involved in regulating energy metabolism and thermogenesis, by dissipating energy as heat.	Locus1
		Locus2
GHRL	<b>Ghrelin.</b> Hormone involved in the regulation of appetite, hunger, and growth hormone release.	Locus1
		Locus2
		Locus3



## Your Results:

SNP	Alleles	Outcome
Locus1	C/C	Higher weight loss upon diet. <sup>1</sup>
Locus1	A/A	Typical.
Locus2	A/A	Typical.
Locus3	T/T	Typical.
Locus4	C/C	Typical.
Locus1	G/G	Typical.
Locus1	A/A	Typical.
Locus2	G/G	Typical.
Locus3	G/G	Typical.
Locus1	C/C	Typical.
Locus2	G/G	Typical.
Locus1	C/C	Typical.
Locus2	T/T	Typical.
Locus3	G/G	Typical.

## Recommendations:

The GHSR gene encodes the protein Growth Hormone Secretagogue Receptor, a receptor protein which binds ghrelin and mediates its function. Ghrelin is a hormone produced in the stomach which regulates appetite, hunger and the release of the growth hormone. The presence of the Locus1 polymorphism in two copies (homozygosity) has been associated with a better response to low-calorie diets, with a higher weight lost.

Based on these results, your genetic makeup may be favorable for weight lost. This is good news! Anyway, remember that other genetic, environmental, and lifestyle factors may negatively impact your response to diet.

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<sup>1</sup> Mage U et al., Variations in the ghrelin receptor gene associate with obesity and glucose metabolism in individuals with impaired glucose tolerance. PloS one (2008).

## Fat Distribution

Fat distribution in the body is a critical aspect of obesity, since it plays a significant role in determining health risks and overall well-being. Fat is stored in two primary forms: subcutaneous and visceral fat. Measuring waist and hip circumference can provide valuable insights into an individual's health.

Subcutaneous fat is the fat stored just beneath the skin. It serves as a source of energy and provides insulation. While excessive subcutaneous fat can contribute to obesity, it is generally considered less harmful than visceral fat, which is stored deep within the abdominal cavity, surrounding vital organs. High levels of visceral fat are strongly associated with an increased risk of serious health condition. Moreover, visceral fat is metabolically active and can release inflammatory substances.

Measuring waist and hip circumference can offer valuable insights into fat distribution patterns. More fat around the waist, is associated with a greater risk of obesity-related health problems, particularly cardiovascular diseases. In contrast, a more favorable fat distribution around the hips is generally associated with a lower risk of such health issues.

### Analyzed Genes and Polymorphisms:

Gene	Gene Function	SNP
ADIPOQ	<b>Adiponectin.</b> Hormone produced and secreted by the adipose tissue. Low adiponectin levels have implications in metabolic health, insulin sensitivity, inflammation, and cardiovascular function.	Locus1
INSR	<b>Insulin Receptor.</b> Receptor found in skeletal muscle, adipose tissue, and liver. It mediates the effect of insulin.	Locus1
PPARG	<b>Peroxisome Proliferator-Activated Receptor Gamma.</b> Receptor that regulates fatty acid deposition and glucose metabolism.	Locus1
NCOA1	<b>Nuclear Receptor Coactivator 1.</b> Transcriptional coactivator, which interacts with transcription factors to enhance their activation function.	Locus1
ADCY3	<b>Adenylate Cyclase 3.</b> Enzyme involved in the production of cyclic adenosine monophosphate (cAMP) a signaling molecule that plays a crucial role in transmitting signals within cells and regulating various physiological processes.	Locus1
		Locus2
		Locus3
		Locus4

### Your Results:

SNP	Alleles	Outcome
Locus1	G/G	Typical.
Locus1	G/G	Typical.
Locus1	C/T	Visceral adiposity and higher waist circumference. <sup>2</sup>
Locus1	G/G	Typical.
Locus1	A/A	Typical.
Locus2	A/A	Typical.
Locus3	C/C	Typical.
Locus4	T/T	Typical.

### Recommendations:

The PPARG gene encodes the protein Peroxisome Proliferator-Activated Receptor Gamma, a nuclear receptor and a transcription factor that regulates several processes, such as metabolism and adipogenesis. When activated, this protein promotes fat deposition and the formation of fat cells. The presence of the Locus1 polymorphism in one copy (heterozygosity) has been associated with a higher deposition of visceral fat and a higher waist circumference. These are two main risk factors for cardiovascular disease, chronic inflammation, and metabolic syndrome.

Based on these results, your healthcare providers may recommend you embrace a healthy lifestyle to fight fat deposition, reduce inflammation, and sustain cardiovascular function. This includes physical activity, diet, and targeted dietary supplementation such as curcumin, resveratrol, olive polyphenols, capsantine, carnitine.

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<sup>2</sup> Karlsson T et al., Contribution of genetics to visceral adiposity and its relation to cardiovascular and metabolic disease. Nature medicine (2019).

## Cardiovascular Function

Obesity significantly impacts cardiovascular health. In individuals with obesity, the heart must work harder to pump blood, leading to various cardiovascular complications. One key aspect of this relationship involves the lipid profile, including triglycerides, LDL (low-density lipoprotein), and HDL (high-density lipoprotein) cholesterol.

Triglycerides are a type of fat found in the blood and are stored in adipose tissue. High triglyceride levels are associated with an increased risk of heart disease.

LDL cholesterol, often referred to as "bad" cholesterol, can accumulate in the arteries, leading to the formation of plaque and atherosclerosis. The excess body fat in obesity can promote inflammation and oxidative stress, which, in turn, can modify LDL particles, making them more prone to causing arterial damage.

HDL cholesterol, known as "good" cholesterol, helps remove LDL cholesterol from the bloodstream and transport it to the liver for elimination.

### Analyzed Genes and Polymorphisms:

Gene	Gene Function	SNP
APOE	<b>Apolipoprotein E.</b> Component of lipoproteins, present in the blood and playing a crucial role in lipid transport in the body.	Locus1
NCOA2	<b>Nuclear Receptor Coactivator 2.</b> Transcriptional coactivator, which interacts with transcription factors to enhance their activation function.	Locus1
NPC1	<b>Niemann-Pick C1.</b> Protein involved in the transport of cholesterol and other lipids within cells.	Locus1
		Locus2

### Your Results:

SNP	Alleles	Outcome
Locus1	T/C	Higher fasting levels of triglycerides and LDL. <sup>3</sup>
Locus1	G/G	Typical.
Locus1	A/A	Typical.
Locus2	T/C	Typical.

### Recommendations:

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<sup>3</sup> <https://www.ebi.ac.uk/gwas/variants/rs429358>

The APOE gene encodes the protein Apolipoprotein E, a crucial component of lipoproteins which are found in the bloodstream where they transport cholesterol and other lipids. The main functions of Apolipoprotein E are cholesterol transport and clearance. The presence of the Locus1 polymorphism in one copy (heterozygosity) has been associated with a higher fasting level of triglycerides and LDL (known as “bad” cholesterol). This is a risk factor for cardiovascular disease.

Based on these results, your healthcare providers may recommend you embrace a healthy lifestyle to reduce cholesterol and triglycerides levels and sustain cardiovascular function. This includes physical activity, diet, and targeted dietary supplementation such as GPEA (Glycerophosphorylethanolamine), capsantine, and phospholipids from sunflowers.

## Conclusions

### Main results:

Gene	SNP	Alleles	Outcome
GHSR	Locus1	C/C	Higher weight loss upon diet.
PPARG	Locus1	C/T	Visceral adiposity and higher waist circumference.
APOE	Locus1	T/C	Higher fasting levels of triglycerides and LDL.

### Your genetic makeup has been correlated to:

- A better response to diet, with higher weight loss upon diet. Based on these results, your genetic makeup may be favorable for weight lost. This is good news! Anyway, remember that other genetic, environmental, and lifestyle factors may negatively impact your response to diet.
- A higher deposition of visceral fat and higher waist circumference. Based on these results, your healthcare providers may recommend you embrace a healthy lifestyle to fight fat deposition, reduce inflammation, and sustain cardiovascular function. This includes physical activity, diet, and targeted dietary supplementation such as curcumin, resveratrol, olive polyphenols, capsantine, carnitine.
- Higher fasting levels of triglycerides and LDL (“bad cholesterol”). Based on these results, your healthcare providers may recommend you embrace a healthy lifestyle to reduce cholesterol and triglycerides levels and sustain cardiovascular function. This includes physical activity, diet, and targeted dietary supplementation such as GPEA (Glycerophosphorylethanolamine), capsantine, and phospholipids from sunflowers.

With this, our journey of discovering your genetic makeup comes to an end. It's essential to note that the genetic test does not need to be repeated since it remains constant over time. However, your healthcare provider may suggest other tests that can complement the information obtained from the *DNA Wellness Test* and the *DNA Lifestyle Optimizer Test for Obesity* and can be repeated periodically to monitor your health and well-being. Some examples are our metabolomic and proteomic tests. For more details, please refer to our website ([www.magisnat.com](http://www.magisnat.com)).

## DISCLAIMERS

The final results obtained by the Low-Risk General Wellness Tests have not been evaluated by the Food and Drug Administration, and they are not intended to diagnose, treat, cure, or prevent any disease.

All information regarding the DNA Wellness Test and the DNA Lifestyle Optimizer Tests is provided in good faith. While we have made every attempt to ensure that the information contained in these tests is accurate to the best of our knowledge, we are not responsible for any errors or omissions or for the results obtained from the use of this information.

Before taking any action based on the information provided by the DNA Wellness Test or the DNA Lifestyle Optimizer Tests, we urge you to consult with appropriate professionals as it is not a substitute for professional medical advice. In any case, we are not liable if you receive inadequate or even dangerous advice or recommendations for your health from third parties.

Genetic test results can have psychological implications, so it's important to be prepared for potential emotional distress or anxiety related to learning about health risks.

The use, any losses and/or damages incurred because of the use of the DNA Lifestyle Optimizer Tests, and the reliance of any information contained in these DNA Lifestyle Optimizer Test are solely the responsibility of the user.

Any testimonials regarding the DNA Wellness Test or the DNA Lifestyle Optimizer Tests are personal and are not representative of all users. We do not claim, and you should not assume that all users have the same experiences.

We make every effort to ensure the highest standards, the analysis for the DNA Wellness Test and the DNA Lifestyle Optimizer Tests is performed in a CLIA (Clinical Laboratory Improvement Amendments)-certified laboratory and have validated the process to the best of our abilities. The sensitivity and specificity of the DNA Wellness Test and the DNA Lifestyle Optimizer Tests are computed and may be consulted at this [link](#). As a result, different tests may yield partially different results, also due to technical details. We do not assume any responsibility if such events were to occur.

Polymorphisms, due to a phenomenon known as pleiotropy, can be associated with multiple characteristics. For the purposes of the DNA Wellness Test and the DNA Lifestyle Optimizer Tests, the considered polymorphisms are analyzed from the perspective of general well-being, even in the context of diseases or clinical conditions. Similarly, the interpreted significance of these analyzed polymorphisms may vary in other contexts, potentially leading to unsought results and/or genetic discrimination. This could affect aspects like determining family relationships, potential health conditions, ethnic associations, and more. We are not responsible for any improper use of the information provided by the DNA Wellness Test and the DNA Lifestyle Optimizer Tests.

The data collection and processing system is secure, and the DNA sample is discarded 180 days after the analysis. We are not liable for any data breaches resulting from cyber-attacks or rare events beyond the control of our standard security measures. If consent has been provided, the collected data, both genetic and non-genetic, may be used solely for the purpose of improving our tests and conducting scientific research approved by the ethics committee. The information may be shared, in an anonymous and aggregated form, exclusively through publications in scientific journals or books, communications in medical courses/congresses, and theses as part of university and post-graduate training courses.

We make no warranty of any kind, expressed or implied, as to the accuracy, adequacy, validity, reliability, or completeness of the information regarding the DNA Wellness Test and the DNA Lifestyle Optimizer Test.

If you have any questions, concerns, or need support in understanding the test, please call our support team on +1 470-482-1800 or email [info@magisnat.com](mailto:info@magisnat.com) or visit our website [www.magisnat.com](http://www.magisnat.com).