

HMGCR (Cholesterol)

Gene Report

REPORT CATEGORIES



COGNITION



HEART & BLOOD
VESSELS



CANCER

Sample Client

Report date: 15 January 2026

Powered by

 omicsege

Table of Contents

03 How this works

- 04 Impact
- 05 Evidence
- 06 Some things to keep in mind

07 Introduction

08 Your genetics

DISCLAIMER

This report does not diagnose this or any other health conditions. Please talk to a healthcare professional if this condition runs in your family, you think you might have this condition, or you have any concerns about your results.

Personal information

NAME

Sample Client

SEX AT BIRTH

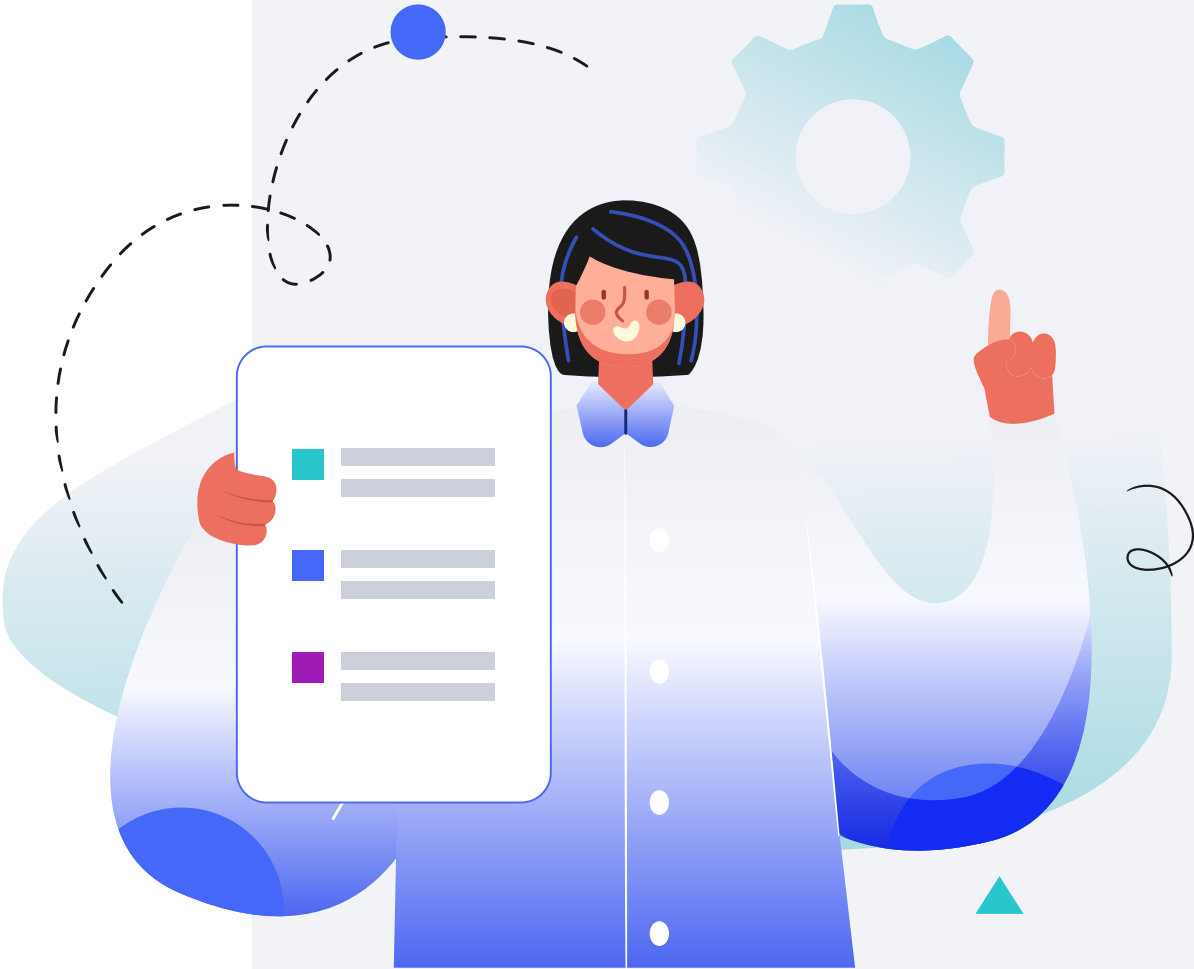
Male

HEIGHT

5ft 5" 165cm

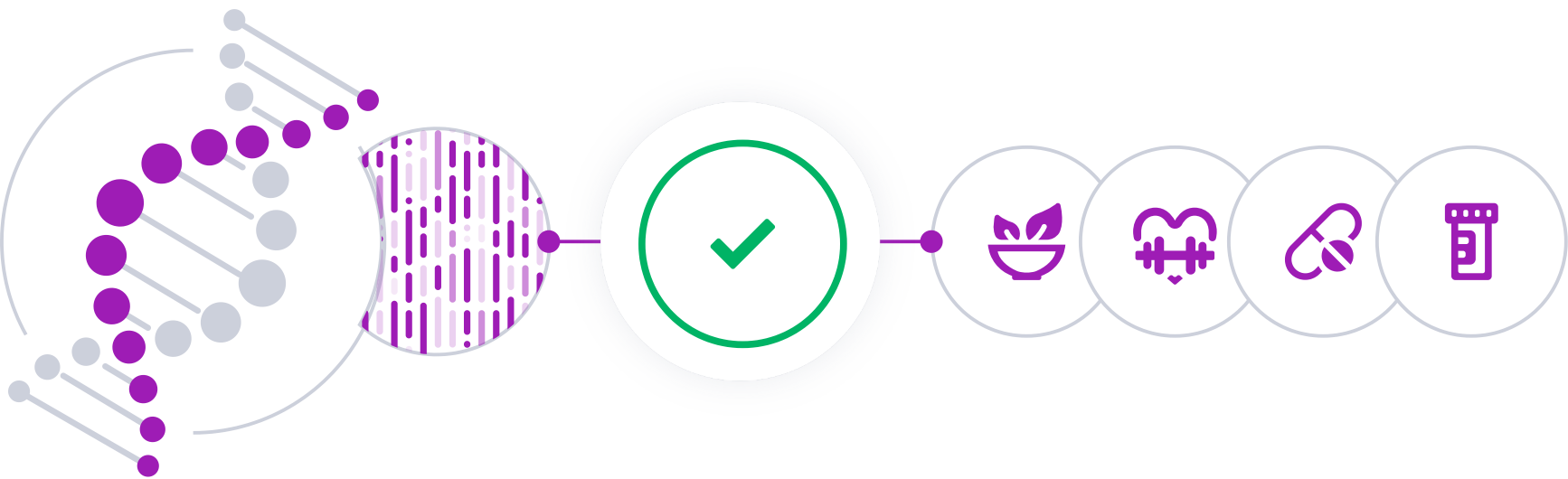
WEIGHT

137lb 62kg



How this works

Our Wellness Reports analyze how your DNA influences your health.
We then use this analysis to give you personalized risk estimates and recommendations.

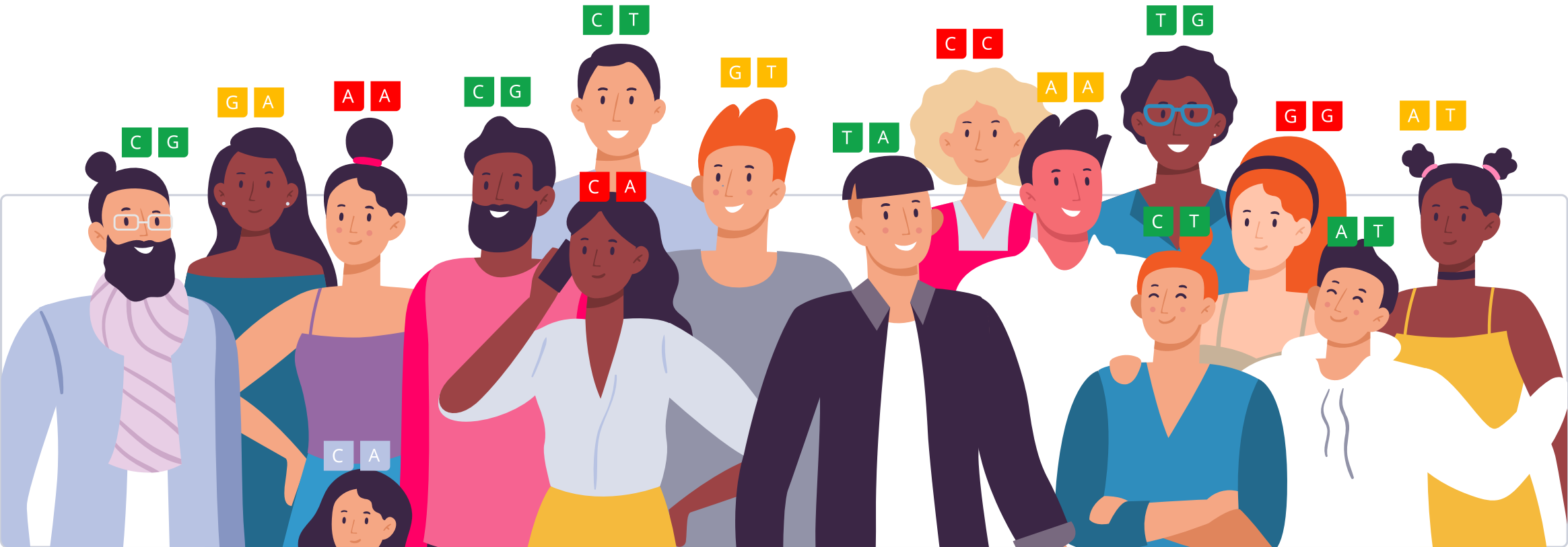


Similarly, our Trait Reports look at how your DNA influences your traits.



Your DNA is like an instruction manual — it contains a lot of information.
You can think of it as a blueprint for your body.

Genetic variants are parts of DNA that differ from person to person. Some can make you more vulnerable to certain health issues, while others may influence traits such as eye color.



We use artificial intelligence and machine learning to analyze all this information.
We then summarize your results as a risk score or display it on a gauge.

In total, we analyze up to 83 million genetic variants.

When we give a risk score, the risk icon tells you if you are at a higher or lower risk compared to other people:



Genotype color info:

AA

You don't have any risk alleles

AA

You have 1 risk allele

AA

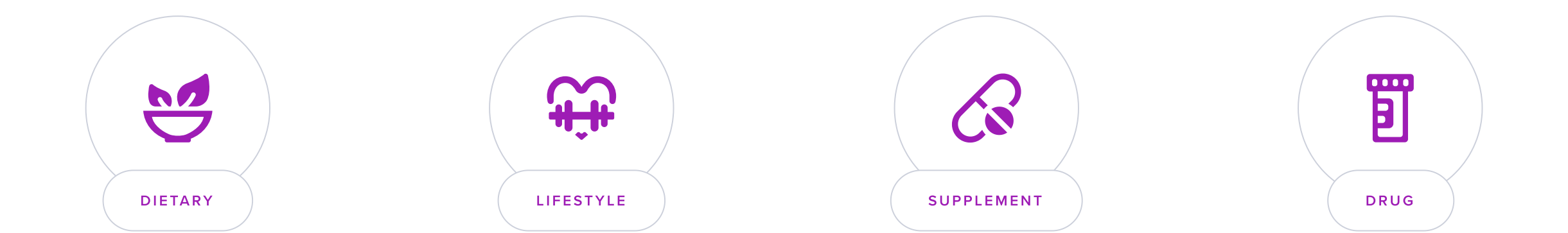
You have 2 risk alleles

Your risk is also displayed as a percentile. This will tell you how your risks compare to our sample population. The lower your percentile number, the lower your risk. The "50th percentile" would be an average risk.

Similarly, the gauge tells you your relative risk score compared to our sample population, or it indicates a specific trait or haplotype you are more likely to have based on your genetic variants.

When applicable, we also list top evidence-based recommendations that may help lower your risk. The focus is on recommendations that may be of benefit to you, based on your genetics.

Our recommendations come in four categories: lifestyle, diet, supplements and drugs.
The following icons tell you which category a recommendation falls into:



Our team of scientists also ranks each recommendation.
We rank based on impact and the strength of evidence in the medical literature.

Impact shows how strongly a recommendation will affect your health in a certain area.
Evidence is how much scientific support there is for the recommendation. Rankings are from 1 to 5 (low to high):



Impact

Impact scores range from 1-5. These scores reflect how much of an effect each recommendation can have. An impact score of 5 predicts the biggest effect.

When a recommendation affects something we can measure, we use those measurements to assign the impact score. For example, a recommendation that decreases cholesterol by 20% will have a higher impact score than one that decreases it by 5%.

Some recommendations affect things that we cannot directly measure, like stress or mood. For these, the impact score is based on how well they work relative to other recommendations and standard treatments. The best ones get the highest scores.

If there is a lot of research that shows a recommendation works especially well for your genotype, the impact score gets increased.

Recommendation Evidence

- 5 / 5
- Recommendations that are considered effective and generally recommended by experts and medical bodies.
-
- 4 / 5
- Recommendations that are considered likely effective and that have multiple independent meta-analyses and a great many studies supporting them.
-
- 3 / 5
- Recommendations that are considered possibly effective and have many studies supporting them
-
- 2 / 5
- Recommendations that have insufficient evidence, with two or several clinical trials supporting them, or many studies but with ambiguous results.
-
- 1 / 5
- Recommendations that have insufficient evidence, with a single clinical trial, or with many studies most of which didn't find support for the recommendation.
-
- 0 / 5
- No evidence in humans.

Genotype-specific Evidence

- High-quality
- Direct evidence that a recommendation helps more in people with your gene variant (many clinical trials, a few large clinical trials, or a meta-analysis).
-
- Medium-quality
- Direct evidence that a recommendation helps more in people with your gene variant (a few clinical trials or one large clinical trial).
-
- Low-quality
- Direct evidence that a recommendation helps more in people with your gene variant (a single clinical trial or more trials with inconsistent results).
-
- Indirect
- A recommendation may help more in people with your gene variant because it targets a specific gene or protein affected by your variant (e.g., MTHFR, dopamine).
-
- In theory
- A recommendation may help more in people with your gene variant because it targets a specific mechanism affected by your variant (e.g., inflammation, oxidative stress).

Some things to keep in mind:

- Genetics doesn’t play a considerable role in a condition or a trait.
- There is not enough research available to estimate a genetic predisposition.
- There are technical limitations to estimating or presenting a genetic predisposition.
- The topic is sensitive, and a genetic predisposition should only be estimated and presented by a healthcare professional.

Introduction

The [HMGCR](#) gene encodes an enzyme called 3-hydroxy-3-methylglutaryl-CoA reductase) that is part of the process that creates cholesterol. HMGCR is, in fact, the rate-limiting enzyme for this process, meaning that if HMGCR slows down, cholesterol production as a whole slows down [\[R\]](#).

Normally, HMGCR activity is suppressed by cholesterol so that this enzyme doesn’t produce too much [\[R\]](#), [\[R\]](#).

HMGCR is also part of T cell activation, making it important for immune function [\[R\]](#).

Variants in *HMGCR* have been linked to [\[R\]](#), [\[R\]](#), [\[R\]](#):

- High cholesterol
- Ovarian cancer
- Alzheimer’s disease

HMGCR

Genetics

Summary

Variants that increase HMGCR activity are linked to higher cholesterol levels and adverse brain and cardiovascular health outcomes. On the bright side, people with those variants may see greater improvements from statin therapy for high cholesterol.

Details

The most well-researched *HMGC*R polymorphism is [rs3846662](#). Its ‘G’ allele results in an increased production of HMGCR and has been associated with **higher LDL, apoB, and total cholesterol** but lower HDL cholesterol levels. On the bright side, carriers of this variant may lower their LDL cholesterol more in response to statins [\[R, R, R, R, R, R, R, R, R, R, R, R\]](#).

This allele has also been associated with an increased risk of:

- Alzheimer’s disease [\[R, R, R, R, R\]](#)
- Mild cognitive impairment [\[R\]](#)
- Myocardial infarction [\[R\]](#)
- Overweight, especially in those with low soy intake [\[R\]](#)

Another well-researched polymorphism is [rs12916](#). Its ‘C’ allele has been associated with higher total and LDL cholesterol levels and increased risk of ovarian cancer, but also with an increased effectiveness of statin treatment [\[R, R, R, R, R\]](#).

This variant has also been associated with:

- Insomnia [\[R\]](#)
- Prostate cancer [\[R\]](#)
- Aortic aneurysm [\[R\]](#)
- Premature triple-vessel coronary disease and residual cholesterol risk [\[R, R\]](#)

The ‘T’ allele of [rs17244841](#) has been associated with a reduced effectiveness of statin therapy at lowering LDL cholesterol. Interestingly, a study of 306 patients with Parkinson’s disease found that those carrying this allele had higher HDL cholesterol levels [\[R, R, R, R, R\]](#).



TYPICAL ACTIVITY

Likely typical HMGCR activity based on 4 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
HMGC	rs3846662	GA
HMGC	rs12916	CT
ANKRD31	rs17244841	AA
HMGC	rs17238540	TT

The number of "risk" variants in this table doesn't necessarily reflect your overall result.

Finally, the ‘G’ allele at [rs17238540](#) has been associated with a reduced effectiveness of statin therapy at lowering cholesterol and triglycerides, as well as with [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Greater triglyceride decrease in response to a low-fat, high-fiber diet [\[R\]](#)
- Higher blood pressure and increased stroke risk [\[R\]](#)

Because this variant and rs17244841 are usually inherited together, you will most likely carry either both or neither of them.