

Protein Metabolism

DNA Health Report

REPORT CATEGORY —



NUTRITION

Sample Client

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Personal information

NAME

Sample Client

SEX AT BIRTH

Male

HEIGHT

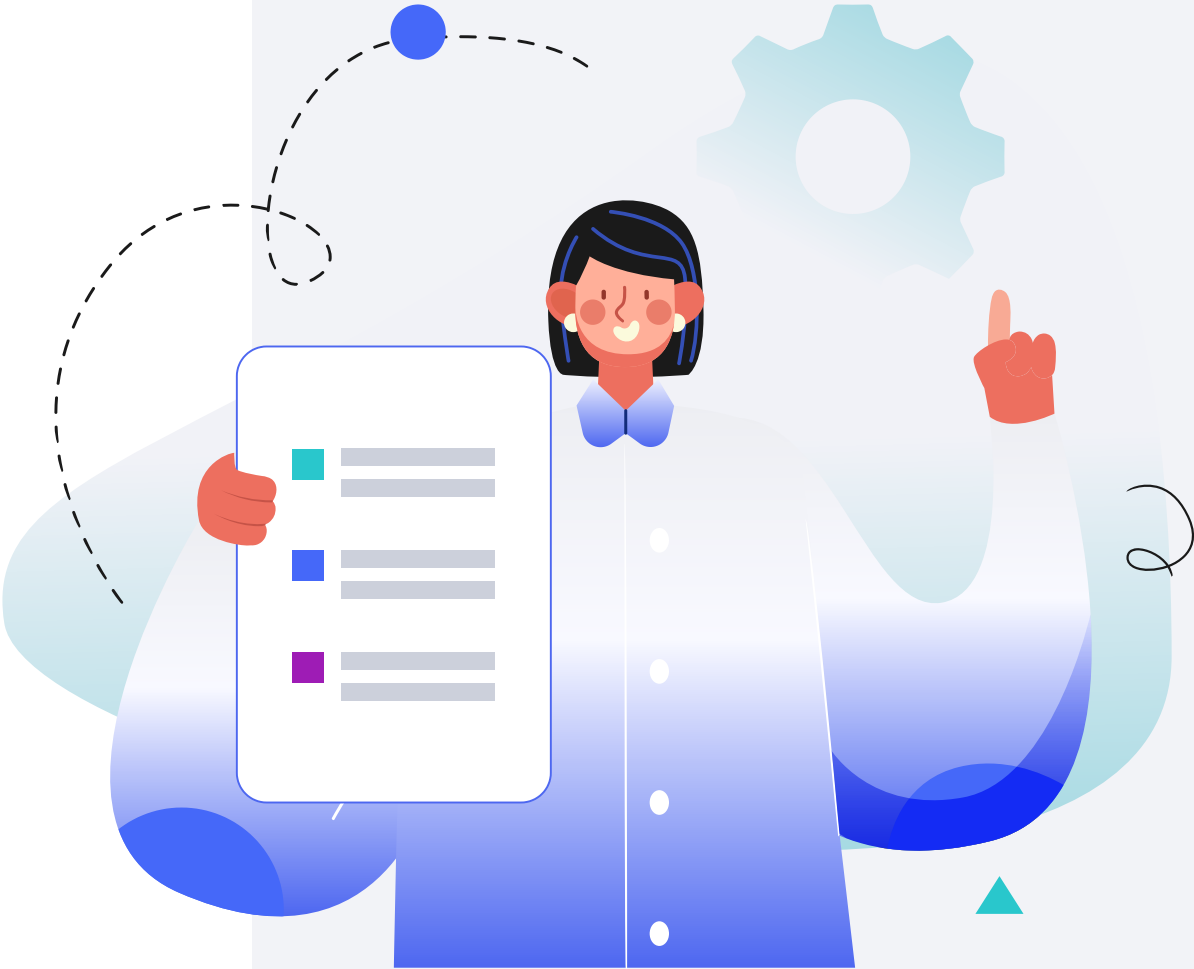
5ft 5" 165cm

WEIGHT

137lb 62kg

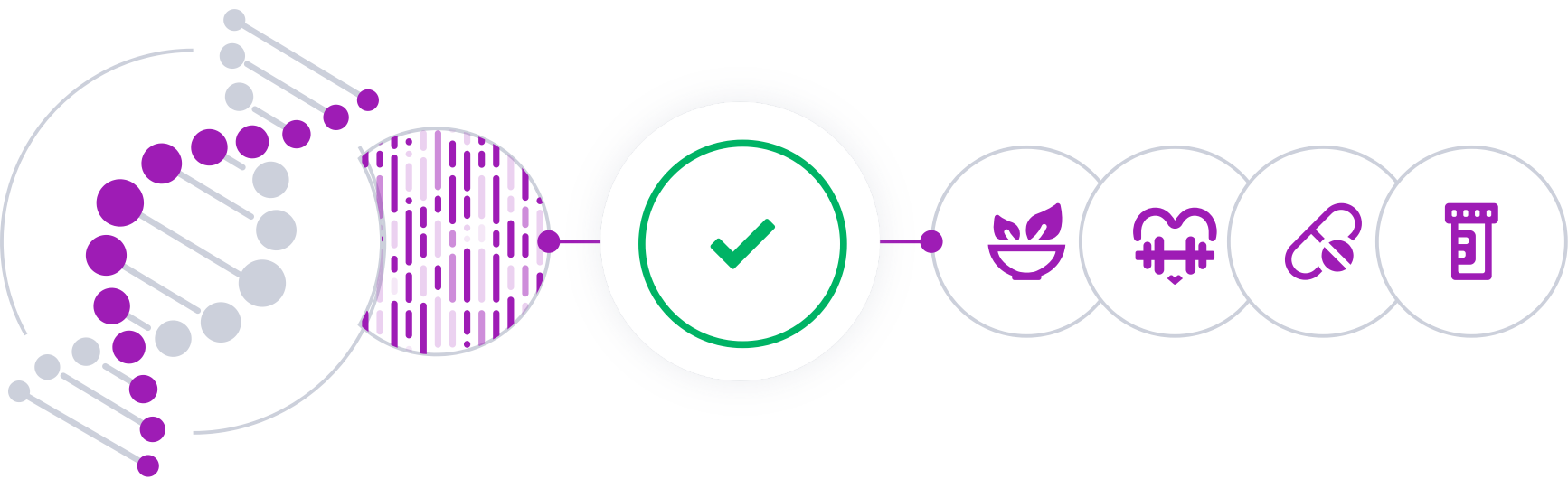
DISCLAIMER

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.



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.

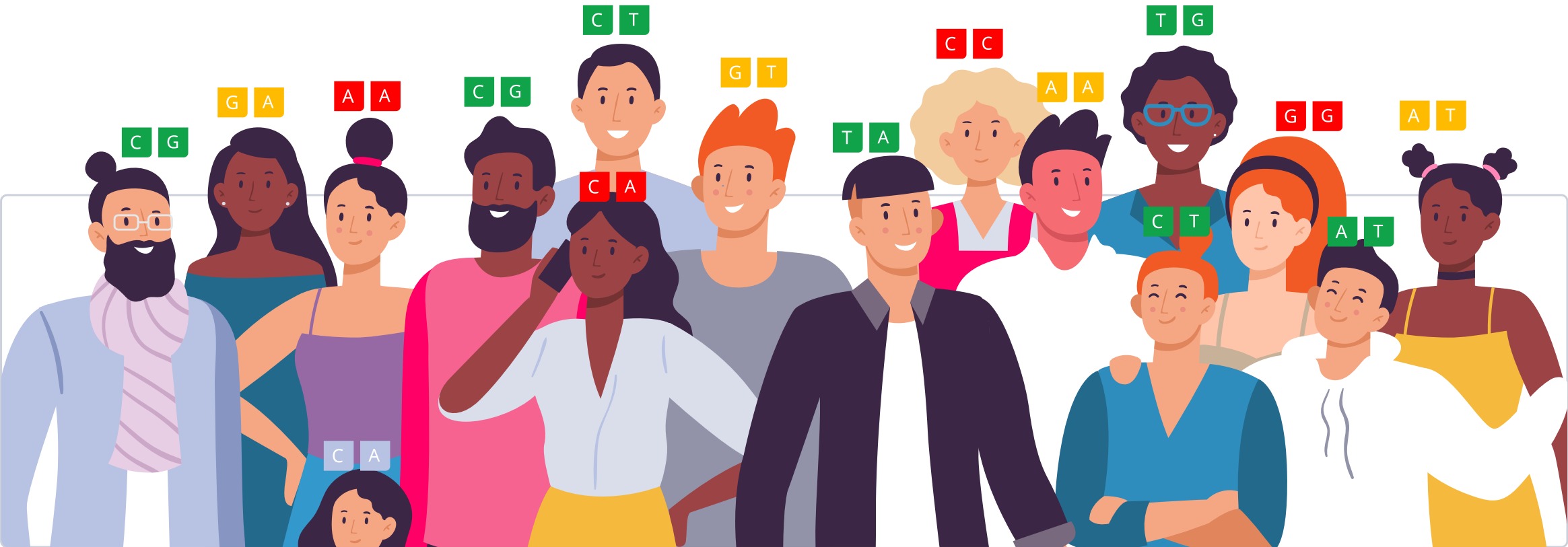


Similarly, our Trait Reports look at how your DNA influences your traits.



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

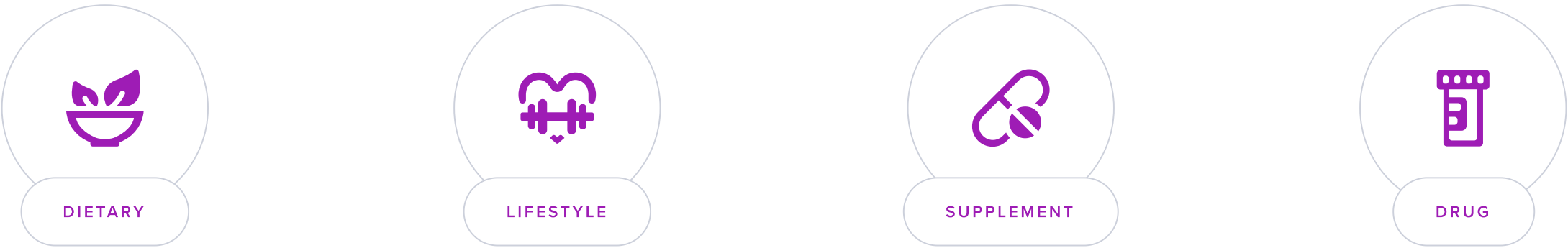
You have 2 risk alleles

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

Proteins are one of the three main *macronutrients*, along with carbohydrates and fats. Proteins are used for energy and as essential building blocks for the body [\[R\]](#), [\[R\]](#).

Experts say that adults should get at least 0.8 g of protein per 1 kg (2.2 lbs) of body weight per day to prevent deficiency. For example, a person who weighs 75 kg (~165 lbs) would need around 60 g per day [\[R\]](#), [\[R\]](#).

Foods high in protein include [\[R\]](#):

- Eggs, lean meats (poultry), and fish
- Dairy (cheese, Greek yogurt)
- Soy products (edamame, tofu)
- Legumes (beans, peanuts, chickpeas)

Protein should make anywhere from 10% to 35% of your calories. Typically, a high-protein diet will include about 25-35% of calories from protein. A high-protein diet may have a number of health benefits for most people, such as [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Weight management
- Improved insulin sensitivity
- Healthier cholesterol levels

However, eating too much protein can have negative effects. Following a high-protein diet long-term may contribute to kidney, liver, and bone problems. Because people typically choose protein sources that are higher in unhealthy fats, such as red meat and dairy, it may also increase the risk of heart disease [\[R\]](#), [\[R\]](#), [\[R\]](#).

The amount of protein a person needs can depend on a variety of factors, such as [\[R\]](#):

- Age
- Overall health
- Exercise goals
- **Genetics**

Genes and the Response to Protein

 PERSONALIZED TO GENES

Based on the genetic variants we looked at, you may have a worse response to dietary protein. High-protein diets may have adverse effects on your weight, metabolism, and cholesterol levels.

You may thrive on a low-protein diet.

Some people do better on low- and others on high-protein diets. Your genes may affect your response to protein. Specifically, genes that affect your response to protein may also influence [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Body weight
- Food preference
- Metabolism

In people with a better response to dietary protein, higher amounts of protein in a diet may improve weight control and metabolism. On the other hand, high-protein diets may have adverse metabolic effects in people with a worse response [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

However, other variants and environmental factors may also influence your dietary protein response. Try to get most of your protein from healthy sources such as legumes, poultry, and fish.



WORSE RESPONSE

Predisposed to worse protein metabolism based on 17 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
FTO	rs9939609	TT
FTO	rs1558902	TT
GLP1R	rs6923761	GG
CNDP2	rs4891558	TT
NADSYN1	rs12785878	GG
MTNR1B	rs10830963	CG
FUCA1	rs3123554	AG
NTN5	rs838147	AG
CLOCK	rs3749474	TC
ADRB3	rs4994	AA
ST6GAL1	rs1501299	GG
TFAP2B	rs987237	AA
CNDP1	rs7244647	TT
TNF	rs1800629	GG

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

Your Recommendations

Your recommendations are prioritized according to the likelihood of it having an impact for you based on your genetics, along with the amount of scientific evidence supporting the recommendation.

You'll likely find common healthy recommendations at the top of the list because they are often the most impactful and most researched.

- 1

Dietary Protein
- 2

Limit Protein Intake

1



Dietary Protein

IMPACT

3 / 5

EVIDENCE

4 / 5

How to implement

Include a variety of protein sources such as meat, fish, eggs, dairy, beans, and nuts in your diet every day, aiming for at least 0.8 grams of protein per kilogram of body weight. For more active individuals or those looking to build muscle, increase intake to 1.2 to 2.0 grams per kilogram of body weight daily, spread out over all meals to maximize absorption.

Description

Protein is essential for building and repairing tissues, supporting muscle growth, and maintaining overall bodily functions. Adequate protein intake is crucial for overall health and well-being.

Foods that are high in protein include:

- Eggs
- Nuts
- Beef
- Chicken
- Fish
- Yogurt
- Tofu
- Pork
- Cottage cheese

How it helps

Protein is essential for building and repairing tissues, supporting muscle growth, and maintaining overall bodily functions. Adequate protein intake is crucial for overall health and well-being.

While everyone should try to get enough high-quality protein, your precise needs depend on different factors, including genetics. Some people may particularly benefit from the effects of protein on muscle growth and metabolic health.

2



Limit Protein Intake

IMPACT3 / 5

EVIDENCE4 / 5

How to implement

Limit your daily protein intake to 0.8 grams per kilogram of your body weight. For example, if you weigh 70 kilograms (about 154 pounds), aim to consume no more than 56 grams of protein per day. Adjust this goal based on your activity level and health status, reducing intake further if advised by a healthcare professional.

Description

Proteins, fats, and carbs are macronutrients. You need these nutrients in large (‘macro’) amounts. They provide your body with the energy it needs to function properly [\[R\]](#).

You should choose high-quality foods that give you the “best” version of each macronutrient. For example, too much protein from certain animal sources may increase the risk of bone, kidney, and metabolic issues in some people [\[R\]](#), [\[R\]](#), [\[R\]](#).

How it helps

Too much protein from certain animal sources may increase the risk of bone, kidney, and metabolic issues in some people [\[R\]](#), [\[R\]](#), [\[R\]](#).

Your ability to handle dietary protein partly depends on genetics. Some people may need to limit their protein intake, especially from red and processed meat, to avoid adverse health effects.

Remember, your genes only tell one important part of your health story!

Now that you've seen your DNA-based results for this health topic, let's take a look at other contributing factors.

Your lab results are impacted by the combined effect of your genes, environment and lifestyle.

Lab tests will give you the best picture of your current health status, while your genes provide insight into your health predispositions and which recommendations are best for you.

