Blood Sugar

DNA Wellness Report

Client

Victoria Shelton

YOUR LOGO HERE

Your company

Your Name

✉ youremail@email.com

🌐 https://www.yourwebsite.com

📞 1234567890

📍 123 Main Street, City, State

Notes:

Notes for your client.

1. Note 1
2. Note 3
3. Note 3

Provide further instructions here.

Blood Sugar

DNA Wellness Report

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.

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

We use artificial intelligence and machine learning to analyze all this information.

In total, we analyze up to 83 million genetic variants. 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 have no effect on health.
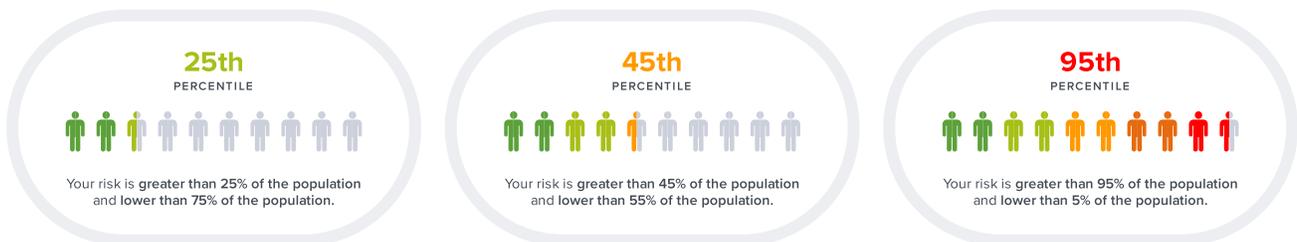
This report will find the variants in your DNA that have an effect on your health. We then summarize your results as a risk score.

The risk icon tells you if you are at a higher or lower risk compared to other people:

| Low risk	Below average risk	Average risk	Above average risk	High risk
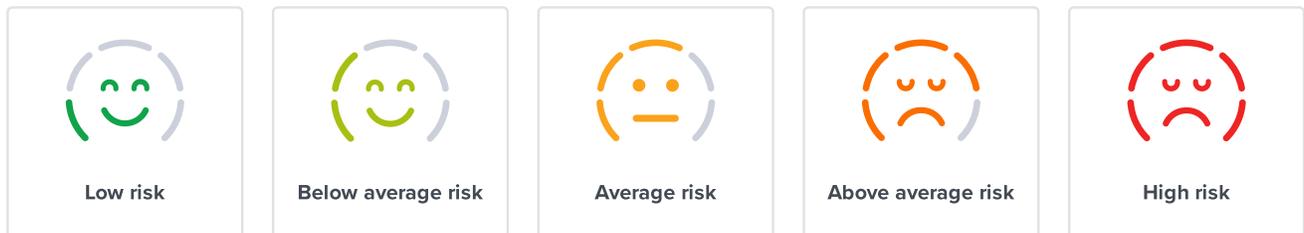
Your risk is also displayed as a percentile. This will tell you how your risks compare to our sample population.

The lower your percentile number, the lower your risk. The "50th percentile" would be an average risk.

25th PERCENTILE	**45th** PERCENTILE	**95th** PERCENTILE
Your risk is **greater than 25% of the population** and **lower than 75% of the population.**	Your risk is **greater than 45% of the population** and **lower than 55% of the population.**	Your risk is **greater than 95% of the population** and **lower than 5% of the population.**

This report lists the 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 three categories: lifestyle, diet, and supplements. The following icons tell you which category a recommendation falls into:

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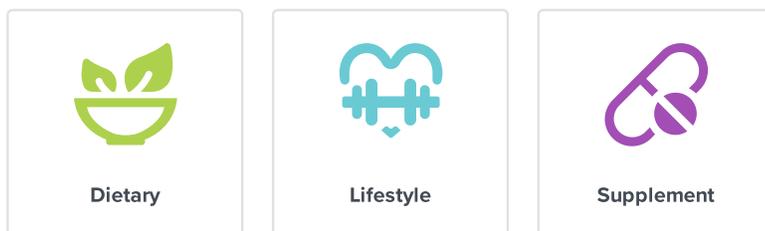
Our team of scientists also ranks each recommendation. We rank based on impact and the strength of evidence in the medical literature.

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

Evidence

IMPACT ▁▁▪▮▮   EVIDENCE ▁▁▪▮▮

Some things to keep in mind:

• The scores use the latest scientific studies. But they are not perfect and will change as the models improve
• Results might be more accurate for some ethnic groups than others. This depends on the studies used in each report
• Not everyone with risk variants will develop a health condition
• People without risk variants can also develop health conditions

Genetics is not the whole story. Your health is a combination of genetics, lifestyle, and environmental factors.

Great news, as this means that you can change your lifestyle to lower your risk.

It's important to work with your doctor to better understand your risk. Our reports do not diagnose or treat any health condition. They are not a substitute for medical advice. If you're diagnosed with a certain health condition, follow your doctor's advice.

Your genetic risk summary

Blood Sugar
Increased risk of type 2 diabetes

Your recommendations summary
See more details

| 1 | **Maintain a Healthy Weight** | | IMPACT ▁▁▪▮▮ | EVIDENCE ▁▁▪▮▮ |
| | Try to maintain a healthy weight. | | | |

| 2 | **Avoid Sugary Foods** | | IMPACT ▁▁▪▮▮ | EVIDENCE ▁▁▪▮▮ |
| | Avoid high-sugar foods and refined carbs. | | | |

| 3 | **Resistant Starch** | | IMPACT ▁▁▪▮▮ | EVIDENCE ▁▁▪▮▮ |
| | Consider supplementing with resistant starch. | | | |

| 4 | **Exercise** | | IMPACT ▁▁▪▮▮ | EVIDENCE ▁▁▪▮▮ |
| | Exercise regularly. | | | |

| 5 | **Mediterranean Diet** | | IMPACT ▁▁▪▮▮ | EVIDENCE ▁▁▪▮▮ |
| | Consider following the Mediterranean diet. | | | |

| 6 | **Alpha-Lipoic Acid** | | IMPACT ▁▁▪▮▮ | EVIDENCE ▁▁▪▮▮ |
| | Consider supplementing with alpha-lipoic acid. | | | |

| 7 | **Soy Protein** | | IMPACT ▁▁▪▮▮ | EVIDENCE ▁▁▪▮▮ |
| | Consider getting more soy protein. | | | |

Welcome Victoria Shelton

Your Blood Sugar DNA Wellness Report

Introduction

Whole grains are loved by doctors, and it's no wonder why. They're a great source of fiber and can lower your risk of health problems like CVD, type 2 diabetes, and digestive issues.

Despite these benefits, some people claim the opposite: that eating whole grains is bad for their health. For a long time, this peculiar disagreement has gone unanswered.

Now, through clues hidden in our DNA, we may finally have an answer. This is all thanks to scientists who investigated the link between two variants of the *TCF7L2* gene and type 2 diabetes.

What they found was that when it comes to eating whole grains and fiber, those who carried the first variant were indeed protected from diabetes. However, those who carried the second variant were actually at a higher risk of diabetes [R, R]!

Confusing, right? But why was this the case…?

Well, we don't know for certain, but scientists believe it comes down to the evolutionary origin of your inherited *TCF7L2* gene variant.

We think that the first variant they tested likely evolved over the last 12,000 years as we transitioned to farming. Farmed foods like grains are typically higher in sugar, and this genetic variant may help us to better digest these.

On the other hand, the second variant is believed to stem back to our ancient hunter-gatherer ancestors, who used to roam far and wide foraging for food like berries and wild animals. Compared to us today, these people would have rarely needed to digest complex carbohydrates.

Despite high fiber foods like whole grains containing less sugar, they can still cause a blood sugar spike in those with hunter-gatherer DNA, because these individuals aren't as well equipped to digest these foods [R].

That's where this report comes in. Here, you can identify whether you have the "hunter-gatherer" or "farmer" genetic variants. You can then take action — for example, if you happen to have hunter-gatherer DNA, maybe you eat less starch and eat more resistant starch instead.

Why? Because resistant starch can't be digested. This means that it doesn't cause the same blood sugar spikes typical starches do. Better yet, because resistant starch remains undigested, it passes through to our gut where it helps to feed our friendly bacteria, which provide a host of health benefits. These benefits make resistant starch much more suited to those with hunter-gatherer genes [R, R, R].

That's why it's essential to know how your genes affect your blood sugar! Your DNA can help predict which strategies may work best for you, helping you to live a healthier and happier life.

This report focuses on the genetics of blood sugar. Read more to find out:

- **How your genetics play a role in high blood sugar**
- **Your genetic risk score based on over one million genetic variants**
- **Personalized recommendations based on your genetics**

Topics Covered

Blood Sugar

Blood Sugar

Your Genetics Overview

Increased risk of type 2 diabetes

Based on your genetics

You've probably heard about the dangers of high blood sugar (glucose). It puts **almost 1 in 3 Americans at risk of developing type 2 diabetes** [R].

Type 2 diabetes is a common and dangerous disease. In older adults, it can cause heart disease, stroke, kidney damage, and more. If diabetes isn't treated, it can be fatal [R].

If you're at risk of diabetes, your doctor may recommend weight loss and diet changes. **Eating less sugar is usually the first step.** If your blood sugar (glucose) is very high, your doctor may also prescribe medications [R, R].

To understand how blood sugar rises and falls, we first need to understand how insulin works.

When blood sugar is high, the pancreas releases insulin. Insulin is responsible for lowering blood sugar. It signals your liver and muscles to store sugar [R, R].

Insulin levels rise when you eat sugary foods. If insulin stays high for a long time, your body can stop responding to it. This is called insulin resistance [R].

Insulin resistance often leads to higher than normal blood sugar levels, or *prediabetes*. **If you don't take steps to fix it, prediabetes can develop into type 2 diabetes** [R].

Prediabetes is hard to spot because it doesn't have obvious symptoms. However, blood tests can help diagnose it [R].

A doctor might order blood sugar tests if any of the following risk factors apply to you [R]:

- Obesity
- A diet high in sugar and refined carbs
- Lack of exercise
- Age over 45
- Polycystic ovary syndrome (PCOS)
- Smoking
- Family history of diabetes
- Black, Hispanic, Asian, or Native American ethnicity

Up to 80% of the differences in people's chances of getting type 2 diabetes can be attributed to genetics. Genes that may contribute to high blood sugar influence [R]:

- Sensitivity to insulin (*TCF7L2*, *FTO*, *PPARG*)
- Insulin production & release (*KCNJ11*, *SLC30A8*)
- Liver function (*HNF4A*)

We analyzed 1,097,561 genetic variants.

Prioritized Recommendations

Your Blood Sugar DNA Wellness Report

1 Maintain a Healthy Weight

Your Recommendation

LIFESTYLE

Impact

Evidence

Description

People have a healthy weight when they don't have too much or too little body fat [R].

Body mass index (BMI) can help determine body fat levels. Your BMI is your mass (in kg) divided by the square of your height (in meters) [R].

In general [R]:

- People with a BMI **between 18.5 and 25** tend to have a **healthy weight**
- People with a BMI **between 25 and 30** tend to be **overweight**
- People with a BMI **over 30** tend to be **obese**

People who are overweight or obese are more likely to have [R, R]:

- High blood pressure
- Type 2 diabetes
- Heart disease
- Joint problems
- Sleep problems

The best ways to lose weight are to consume fewer calories and exercise regularly [R].

How Weight Control Helps Reduce Blood Sugar

Fat and insulin have a close relationship. Insulin tells your body to make more fat and store it. **In turn, having more body fat can lead to insulin resistance** [R, R, R].

If you are overweight, losing weight can help you reduce blood sugar. A healthy weight can also help prevent complications of diabetes, such as heart problems. [R, R, R].

All health experts agree that healthy weight is essential for blood sugar control [R, R, R].

Eating a low-calorie diet is a good way to lose weight. **It may also lower blood sugar, especially in overweight people** [R, R, R, R].

- **Weight control can help reduce your blood sugar by targeting many of your gene variants at once [R].**

Helps with these:

Blood Sugar

Avoid Sugary Foods

Your Recommendation

DIETARY

Impact

Evidence

Description

High-sugar foods and refined carbs spike your blood sugar levels. They include [R, R, R]:

- Sugary drinks
- Baked goods
- Sweets
- White bread
- White rice
- Pasta

Eating a lot of sugary foods can contribute to:

- Diabetes [R, R, R]
- Weight gain and obesity [R, R]
- Insomnia [R]
- Heart disease [R]

How Avoiding Sugary Foods Helps Reduce Blood Sugar

Sugary foods can spike your blood sugar and insulin. **Over time, this can lead to insulin resistance and increase the risk of type 2 diabetes** [R, R, R].

All health experts recommend avoiding sugary foods to people at risk of diabetes [R, R, R].

Diets that limit sugary foods and help lower blood sugar include:

- The Mediterranean diet [R, R, R]
- The keto diet [R, R]
- The paleo diet [R, R]

  - **Avoiding sugary foods can help reduce your blood sugar by targeting many of your gene variants at once [R, R].**

Helps with these:

Blood Sugar

Resistant Starch

Your Recommendation

SUPPLEMENT   Impact   Evidence

Description

[Resistant starch](#) is starch that doesn't get digested in the small intestine [R, R].

It feeds good bacteria in the colon that, in turn [R, R]:

- Support healthy gut function
- Support immunity
- Reduce inflammation

Resistant starch doesn't increase blood sugar like typical digestible starches do [R, R].

Resistant starch is found in foods such as green bananas, cooked and cooled potatoes, and oats. **Supplements like high-amylose corn starch are also available.**

How Resistant Starch Helps Reduce Blood Sugar

Resistant starch supplements (10-30 g/day) may help reduce blood sugar and prevent diabetes [R, R, R].

Resistant starch **delays the absorption of sugar**, which prevents blood sugar spikes. It may even boost your response to insulin [R].

- **You carry the "hunter-gatherer" variant of the** *TCF7L2* **gene. People with your** *TCF7L2* **gene variant don't seem to handle carbs well. You may need to limit even high-fiber carbs like whole grains, which are protective against diabetes in other people [R, R, R, R].**
  To reap the benefits of fiber for blood sugar, try supplementing with resistant starch instead.

Helps with these:

Blood Sugar

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(4) # Exercise
Your Recommendation

LIFESTYLE   Impact   Evidence

| Exercise regularly.

Description

[Exercise](#) can do wonders for your health. It can help you lose weight, improve your heart health, boost your mood, and more [R].

There are many ways you can be active. You can walk, run, swim, dance, or play team sports. **Everything counts, and it's never too late to start!**

Helps with these:

Blood Sugar

How Exercise Helps Reduce Blood Sugar

Exercise is a great way to control blood sugar levels. When you exercise, your muscles use up sugar for energy. Exercise also makes your cells more sensitive to insulin [R, R, R, R, R].

Try a mix of cardio and strength training for at least 150 min/week [R, R, R].

All health experts recommend exercise to reduce blood sugar levels. However, you may need to combine it with diet for optimal results [R, R, R, R, R].

- **Exercise may lower blood sugar more in people with your _LEPR_ gene variant [R].**

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5 # Mediterranean Diet

Your Recommendation

DIETARY   Impact   Evidence

Consider following the Mediterranean diet.

Description

The Mediterranean diet is based on the traditional cuisine from the Mediterranean regions. It's rich in foods like [R]:

- Fruits and vegetables
- Whole grains
- Healthy fats (fish and olive oil)

Red meat consumption is limited and dairy is eaten in moderation.

How the Mediterranean Diet Helps Reduce Blood Sugar

The Mediterranean diet may lower blood sugar levels in the long run. It's rich in foods that help reduce inflammation and insulin resistance [R, R, R, R, R, R].

People who stick to the Mediterranean diet may thus be less likely to have diabetes. Studies suggest this type of diet may be the best choice for people at risk of diabetes [R, R, R, R].

The Mediterranean diet is rich in olive oil. **Eating olive oil may lower blood sugar levels and reduce the risk of diabetes** [R].

- **Your _FTO_ gene variant is linked to diabetes. Following the Mediterranean diet may cancel out the effects of this variant on blood sugar [R, R].**

Helps with these:

Blood Sugar

Alpha-Lipoic Acid

Your Recommendation

SUPPLEMENT

Impact

Evidence

Description

Alpha-lipoic acid (ALA) is a natural antioxidant. Almost every cell in your body contains ALA [R, R, R].

People use ALA to help manage [R, R, R]:

- Diabetes and its complications
- Skin aging
- Obesity

How Alpha-Lipoic Acid Helps Reduce Blood Sugar

ALA has similar effects as insulin. It may help your body use sugar more efficiently [R, R].

ALA is also a powerful antioxidant. Oxidative stress can make diabetes worse, and ALA may protect against it [R, R].

ALA is approved for diabetes in some countries. **It may help with complications of diabetes**, including [R, R, R, R]:

- Nerve damage
- Kidney damage
- Eye damage

Supplementing with ALA may improve long-term blood sugar control. It may also reduce inflammation and cholesterol [R, R, R].

- **Your _SOD2_ gene variant is linked to a higher risk of diabetes and its complications. It may make you more sensitive to oxidative stress. ALA may help by reducing oxidative stress [R, R, R, R].**

Helps with these:

Blood Sugar

Soy Protein

Your Recommendation

SUPPLEMENT

Impact

Evidence

Description

Soy is a common food in many cuisines around the world. It is especially common in Asian food [R].

Soy is a great source of plant-based protein. It's also high in fiber. Soy-based foods include [R, R]:

- Tofu
- Tempeh
- Edamame
- Miso
- Natto

Soy protein is also available as a supplement.

How Soy Protein Helps Reduce Blood Sugar

Soy protein may help reduce blood sugar. People who eat more soy or supplement with soy protein seem to be less likely to get diabetes [R, R, R].

Soy protein is likely responsible for soy's beneficial effects on blood sugar. Soy also contains chemicals called *isoflavones* that may improve insulin sensitivity [R, R, R].

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8 # Probiotics

Your Recommendation

SUPPLEMENT   **Impact**   **Evidence**

Consider supplementing with probiotics.

Description

Probiotic bacteria are "good" bacteria found mainly in the large intestine. They support your body and mind by [R, R, R, R, R, R, R]:

- Enhancing gut health
- Balancing the immune system
- Fighting "bad" bacteria
- Improving your mood
- Controlling blood sugar

How Probiotics Helps Reduce Blood Sugar

Probiotics may reduce blood sugar levels and improve insulin resistance [R, R, R, R, R].

Probiotics likely influence blood sugar by [R]:

- Boosting beneficial gut bacteria
- Supporting gut function
- Lowering inflammation

A healthy gut helps your body use sugar by making it more sensitive to insulin [R].

The following probiotics may help [R, R, R, R]:

- *L. acidophilus*
- *L. casei*
- *L. rhamnosus*
- *B. breve*
- *B. longum*
- *B. animalis*

  - **Your *TNF* gene variant is linked to diabetes. It likely increases inflammation. Probiotics help by reducing inflammation [R, R, R, R].**