

FGF21 (Carbs vs Fats)

Gene Report

REPORT CATEGORIES —



NUTRITION



WEIGHT & BODY FAT



BLOOD SUGAR CONTROL

Sample Client

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Table of Contents

03 How this works

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

07 Introduction

08 Your genetics

09 Your recommendations

11 Next Steps

- 11 Your Lab Results

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

The [FGF21](#) (Fibroblast growth factor 21) gene codes for a hormone with complex roles in metabolism, thermoregulation, and food preferences. The liver is the primary source of FGF21, where it regulates fat and glucose metabolism, response to [fasting](#), and more [\[R, R, R\]](#).

More precisely, it increases [insulin sensitivity](#) and promotes fatty acid oxidation. Brown fat tissue is another significant source of FGF21, which stimulates energy production and helps the body adapt to cold temperatures [\[R, R\]](#).

Reduced activity of this hormone may play a role in obesity and other metabolic disorders. In preliminary research, FGF21 analogs have shown the potential to improve weight control, blood lipid profile, liver fat content, and [glucose](#) metabolism [\[R, R, R, R\]](#).

FGF21 Genetics and Macronutrient Preferences

A 2018 study analyzed the data from over 450,000 people and found a significant association between one *FGF21* SNP and macronutrient preference. Carriers of the minor “A” allele at [rs838133](#) consumed less fat and more carbohydrates. Additionally, these subjects had lower body fat but higher waist-hip ratio and blood pressure [\[R\]](#).

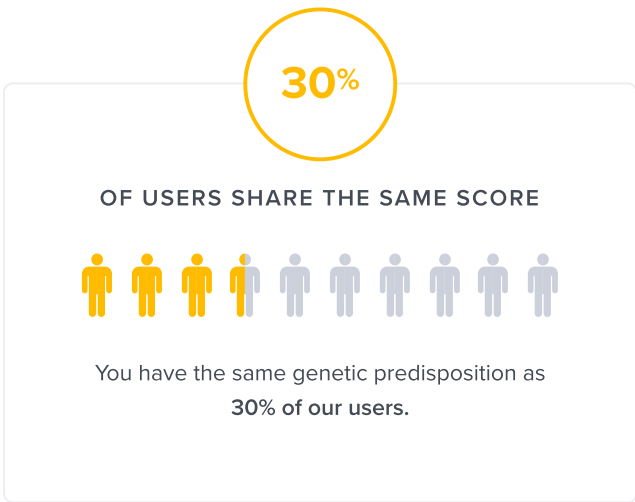
Another trial of 38,000 participants confirmed the link between rs838133 and lower fat/higher carb preference [\[R\]](#).

One more SNP in this gene showed a similar trend in a study of 33,500 subjects. People with the minor “G” allele at [rs838145](#) consumed less fat and more carbs [\[R\]](#).



BALANCED PREFERENCES

Likely balanced macronutrient preferences based on the genetic variants we looked at



Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
FGF21	rs838133	AG
FGF21	rs838145	GA

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

Limit Saturated Fat

1



Limit Saturated Fat

IMPACT2 / 5

EVIDENCE2 / 5

How to implement

Reduce your intake of saturated fats by choosing lean cuts of meat, opting for low-fat or fat-free dairy products, and using cooking oils high in unsaturated fats (like olive or canola oil) instead of butter or lard. Aim to keep saturated fat to less than 10% of your total daily calories. For someone consuming 2000 calories a day, this means 20 grams or less of saturated fat per day.

Description

Limiting saturated fat intake is crucial for managing cholesterol levels and reducing the risk of heart disease. Choosing lean protein sources and incorporating unsaturated fats into the diet supports cardiovascular health and overall well-being.

How it helps

When placed on the keto diet, mice with removed FGF21 gained weight and suffered from fatty liver and glucose intolerance. They weren't able to produce enough ketone bodies. The researchers suggested that FGF21 is essential for the metabolic adaptation to the keto diet and extended periods of fasting [\[R, R\]](#).

Since the above variants likely reduce FGF21 function and hinder fat burning, they may not go well with high-fat diets, especially the keto diet [\[R, R\]](#).

However, human studies have been less consistent: some of them found that FGF21 doesn't drive the production of ketone bodies and may not be among the critical factors for the keto diet metabolic effects [\[R, R, R\]](#).

Additionally, lower FGF21 function may not have the same effects as a complete lack of this hormone, which caused an inadequate response to the keto diet in mice.

Next Steps

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

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.