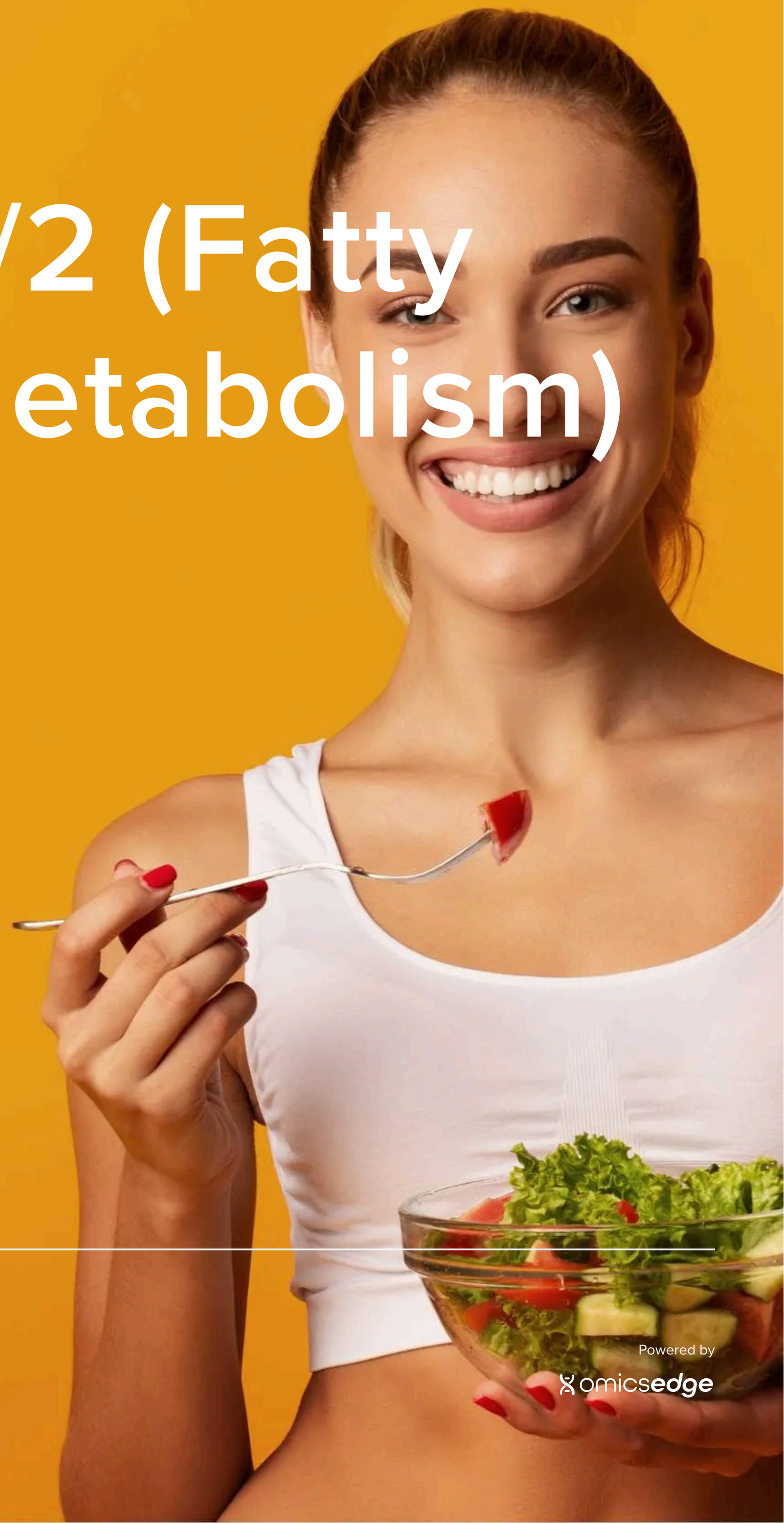
SelfDecode™

FADS1/2 (Fatty Acid Metabolism)

Gene Report



REPORT CATEGORY

NUTRITION

Sample Client

Report date: 15 January 2026

Powered by omicsedge

Table of Contents

Personal information

NAME

Sample Client

SEX AT BIRTH

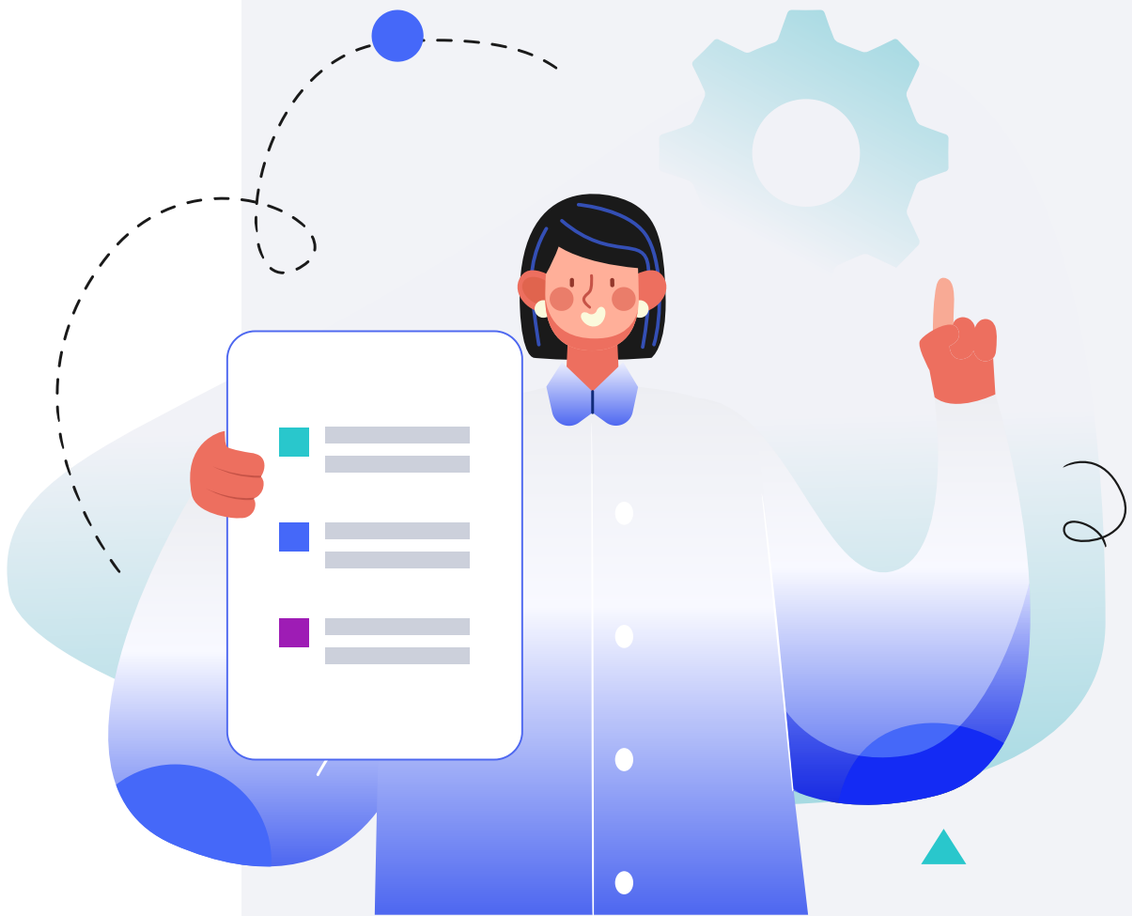
Male

HEIGHT

5ft 5" 165cm

WEIGHT

137lb 62kg

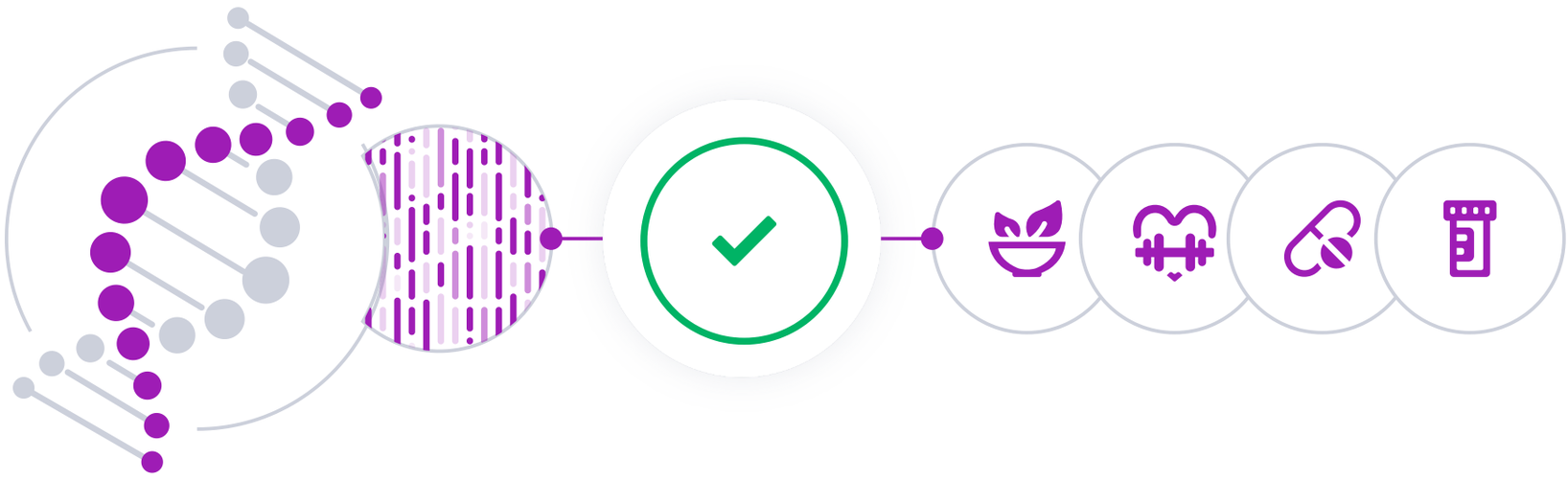


DISCLAIMER

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

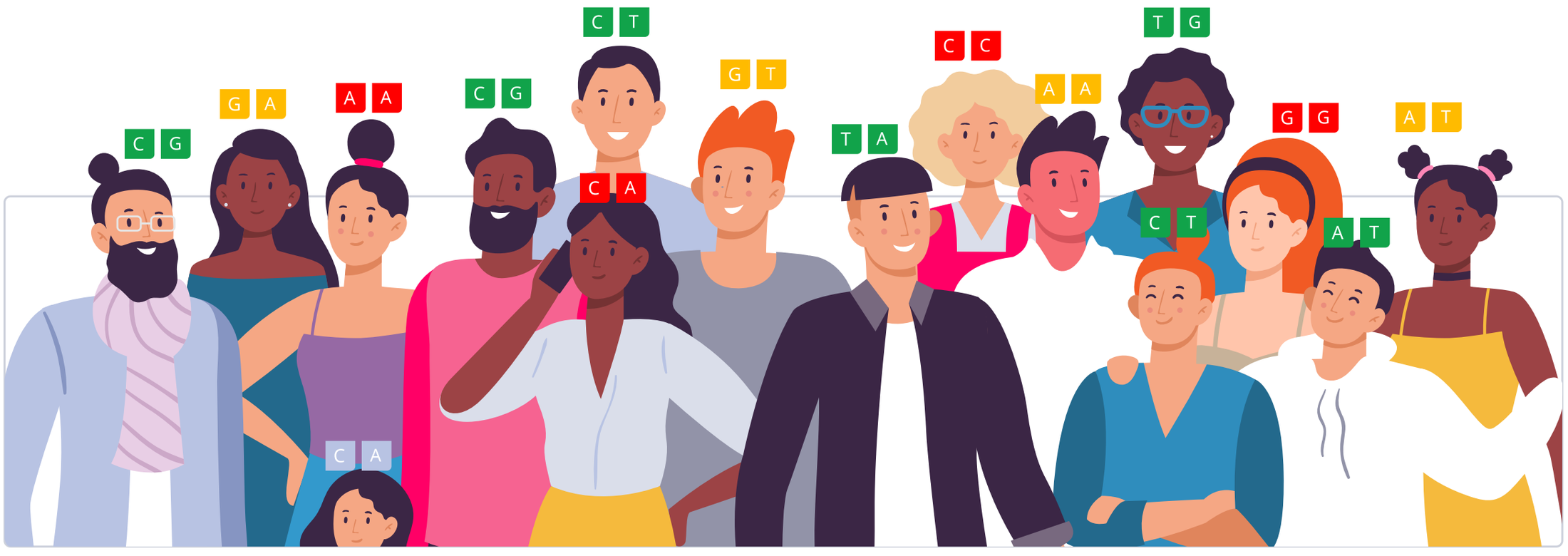
Our Wellness Reports analyze how your DNA influences your health.
We then use this analysis to give you personalized risk estimates and recommendations.



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.

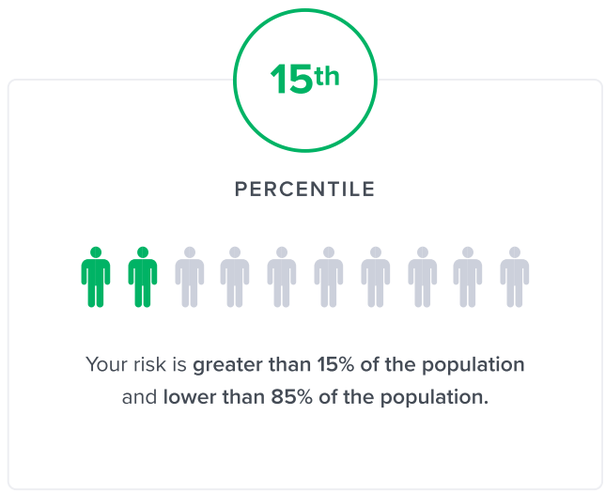
Genetic variants are parts of DNA that differ from person to person. Some can make you more vulnerable to certain health issues, while others may influence traits such as eye color.



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.

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

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



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, afew 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 *FADS1* and *FADS2* genes encode a protein called **fatty acid desaturase (FADS)** or **delta-5 desaturase** (**D5D**). The FADS protein is an enzyme that plays an integral role in fat metabolism because it's responsible for the conversion of polyunsaturated fatty acids (PUFAs) [R].

PUFAs play several key roles in the body, such as being a structural component of cells, acting as an energy source, and regulating cell signaling pathways [R].

A reduction in FADS activity can lead to lower levels of important PUFAs, such as EPA and DHA. This may also lead to an imbalance in cholesterol and triglyceride levels as fatty acids can influence the concentration of these two compounds [R].

FADS1 Genetics and Fat Metabolism

A number of studies suggest that specific variants in *FADS1/2* may cause fat metabolism issues.

Using data from 426 individuals from Spain, one genome-wide study found that the 'T' allele of **rs174546** is associated with lower levels of PUFAs, such as the omega-6 fatty acid arachidonic acid (AA) and the omega-3s EPA and DHA. This may be because this variant impairs the conversion of ALA from plant sources into EPA and DHA [R].

Another study of 224 people from an isolated island population in the U.S. found that the 'T' allele is also associated with reduced levels of omega-6 fatty acids [R].

This allele has also been associated with higher triglyceride levels, but lower LDL and total cholesterol, based on research in European, Canadian, and Mexican populations [R, R, R, R].

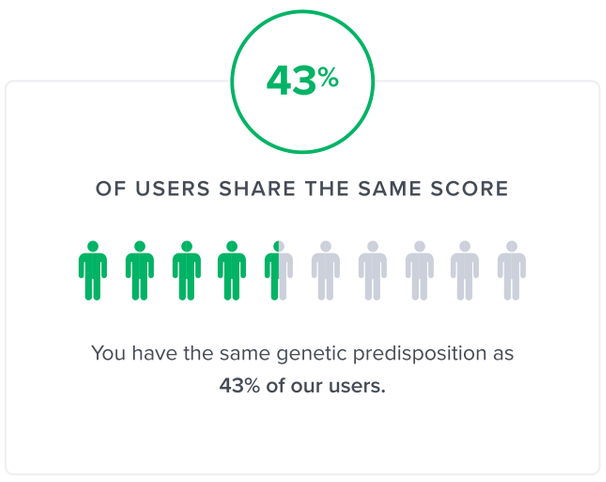
Similar results have been found for other SNPs, such as **rs174547**, **rs174548**, **rs174550**, and **rs1535**. In all these cases, the minor allele was associated with lower D5D activity and decreased levels of omega-3 and omega-6 fatty acids. These alleles are usually inherited together, so you will typically carry all the minor variants or none of them [R, R, R, R, R, R, R].

A different study looked at the SNP **rs174547** in over 21,000 Japanese and over 1,200 Mongolian individuals. Researchers also found that the 'C' allele was associated with higher triglycerides and lower HDL cholesterol in Japanese individuals. In the Mongolian population, the 'C' allele was only associated with lower LDL cholesterol but was unrelated to HDL or triglyceride levels [R].

Another study of **rs174547** suggests that the 'C' allele is only associated with lower LDL in people who have a low intake of omega-3 fatty acids [R].

HIGHER ACTIVITY

Likely higher FADS1/2 activity based on the genetic variants we looked at



Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
FADS2	rs174546	CC
FADS2	rs174550	TT
FADS2	rs174548	CC
FADS2	rs174547	TT
FADS2	rs1535	AA

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

In addition, the ‘C’ allele of **rs174550** may also be associated with low HDL and higher triglyceride levels, according to research in Chinese populations [R].

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.

		DOSAGE
1	Omega-3 (Fish Oil)	2000 mg
2	Dietary Omega-3 Fatty Acids	
3	Choose Healthy Fats	
4	Low-Carbohydrate Diet	

1

Omega-3 (Fish Oil)

IMPACT 4 / 5

EVIDENCE 4 / 5

How to implement

Take 1-2 g of omega-3 (fish oil) supplement daily, preferably with a meal to enhance absorption.

TYPICAL STARTING DOSE

2000 mg

Description

Omega-3 fatty acids are essential fats found in fatty fish like salmon, flaxseeds, and walnuts. They are known for their potential cardiovascular and brain health benefits, including reducing the risk of heart disease and supporting cognitive function.

Omega-3 fatty acids are some of the healthiest fats we can eat. They help lower inflammation and protect the heart, brain, and eyes. Our bodies produce less omega-3s than we need for optimal health, so it's important to get enough through food or supplements [R, R, R].

There are three major types of omega-3s: ALA, EPA, and DHA [R, R].

Fatty fish are rich in EPA and DHA. They include [R]:

- Salmon
- Tuna
- Herring
- Sardines

For optimal protection, try to get at least **two servings of fatty fish per week.** Fish oil supplements are available for those who don't eat fish regularly [R].

How it helps

For those who do not get enough of these fatty acids from their diet, EPA and DHA can be taken as a supplement (commonly referred to as fish oil supplements). Generally speaking, you can start with a 1-gram dose, unless your doctor recommends taking more [R].

If you use an omega-3 supplement other than fish oil, be sure it includes EPA specifically and not just ALA (alpha-linolenic acid). The FADS1 enzyme is needed to convert ALA into EPA, so people with potentially detrimental *FADS1* variants may not get as much benefit from ALA as from EPA [R].

2

Dietary Omega-3 Fatty Acids

IMPACT 4 / 5

EVIDENCE 4 / 5

How to implement

Incorporate foods high in omega-3 fatty acids into your diet daily. This includes eating fish such as salmon, mackerel, and sardines at least twice a week. Alternatively, include a tablespoon of flaxseed oil or chia seeds in your daily diet.

Description

Omega-3 fatty acids are some of the healthiest fats we can eat. They help lower inflammation and protect the heart, brain, and eyes. Our bodies produce less omega-3s than we need for optimal health, so it's important to get enough through food or supplements [R, R, R].

There are three major types of omega-3s: ALA, EPA, and DHA. **EPA and DHA are vital for mental and heart health** [R, R, R].

Fatty fish are rich in EPA and DHA. They include [R]:

- Salmon
- Tuna
- Herring
- Sardines

For optimal health, try to get at least **two servings of fatty fish per week.** Fish oil supplements are available for those who don't eat fish regularly [R].

How it helps

Certain variants in *FADS1/2* can ultimately lead to lower levels of omega-3 acids, such as EPA and DHA. Research in animals suggests that consumption of foods high in PUFAs (especially EPA and DHA) may also stimulate the activity of the D6D enzyme, further benefiting PUFA levels [R, R, R].

PERSONALIZED TO YOUR GENES

Your *FADS2* gene variant has been associated with heart disease but high dietary omega-3 intake may raise the blood levels of these fatty acids and reduce the risk more in carriers of this variant [R, R].
Dietary omega-3 fatty acids may raise their blood levels more in people with your *FADS1* gene variant [R].

YOUR GENETIC VARIANTS

GENE	SNP	GENOTYPE	EVIDENCE
FADS2	**rs174547**	TT	

GENE	SNP	GENOTYPE	EVIDENCE
FADS2	**rs174546**	CC	

3

Choose Healthy Fats

IMPACT 3 / 5

EVIDENCE 3 / 5

How to implement

Incorporate sources of unsaturated fats such as olive oil, avocados, nuts, seeds, and fatty fish into your daily diet. Aim for at least two servings of fatty fish per week and use olive oil for cooking and salad dressings. Replace saturated fats found in red meat, butter, and processed foods with these healthier options whenever possible.

Description

Choosing healthy fats, such as those found in avocados, nuts, and fatty fish, can support cardiovascular health, reduce inflammation, and promote overall well-being. A diet balanced in healthy fats can help manage cholesterol levels and reduce the risk of heart disease.

Based on their structure, the fats in our diet can be broadly divided into *saturated* and *unsaturated* fat. Trans fat is a type of unsaturated fat [R, R, R].

In large amounts, trans fat and saturated fat may have a negative impact on your heart and reproductive health. Processed foods and animal products like red meat and dairy are rich in these fats [R, R, R, R, R].

Some types of unsaturated fat can protect your heart and support fertility. **Experts say you should add more unsaturated fats to your diet**. Some good sources include [R, R, R]:

- Nuts
- Seeds
- Fish

Unsaturated fats include polyunsaturated fats or PUFAs (omega-3 and omega-6) and monounsaturated fats or MUFAs [R, R].

How it helps

Some experts agree that eating a lot of saturated and trans fats may increase the odds of heart disease. Large amounts of these fats raise “bad” (LDL) cholesterol levels, which can damage your heart [R, R, R, R, R, R].

Although limiting your saturated fat intake may help reduce cholesterol, some research suggests it may not affect your risk of heart disease [R, R, R, R, R].

The effect of saturated fat may depend on what food you’re getting it from. For example, **eating a lot of processed meat may raise the odds of dying from heart disease** [R].

Eating more trans fat is linked to 21-22% higher odds of heart disease. Replacing just 2% of your calories from trans fat with healthy unsaturated fats may lower your odds by **21-24%** [R, R, R].

In line with this, experts recommend limiting processed food, red meat, and dairy. They also recommend eating more healthy unsaturated fats from [R, R, R]:

- Fish
- Nuts
- Seeds

PERSONALIZED TO YOUR GENES

Eating moderate (but not low) amounts of dietary fats may lower the risk of metabolic syndrome in people with your *FADS1* gene variant [R].

YOUR GENETIC VARIANTS

GENE	SNP	GENOTYPE	EVIDENCE
FADS2	**rs174547**	TT	●●●○○

4

Low-Carbohydrate Diet

IMPACT 2 / 5

EVIDENCE 2 / 5

How to implement

Limit your daily intake of carbohydrates to less than 26% of your total daily calories. For a standard 2000-calorie diet, this means consuming no more than 130 grams of carbohydrates per day. Focus on including non-starchy vegetables, lean proteins, and healthy fats in your meals while minimizing the intake of sugars, bread, pasta, and other high-carb foods.

Description

Low-carbohydrate diets can promote weight loss, improve blood sugar control, and support heart health. They may also be beneficial for individuals with certain medical conditions, such as epilepsy or metabolic syndrome.

How it helps

Four meta-analyses (the largest one with 17 trials concluded that low-carb diets decrease body weight, fat mass, BMI, and waist circumference. Very low-carbohydrate diets may be the most effective [R, R, R, R].

A meta-analysis of 32 studies found that the short-term effects of low-carb diets on weight parameters persist in the long term, but to a small degree. Another meta-analysis (25 trials) found significant effects of low-carb diets on body weight at 3-8 months, but not at 10-30 months, and on BMI at 3-4 months but not at other time points [R, R].

Low-carb diets help in part with weight loss by **increasing energy expenditure** according to a meta-analysis of 29 trials [R].

The combination of low-carb diets with exercise further decreases waist circumference, body weight, and BMI according to 2 meta-analyses. However, a meta-analysis of 8 studies found no added benefits in trained individuals [R, R, R].

Six meta-analyses (the largest one with 38 trials found low-carb diets more effective than low-fat diets for reducing weight. In line with this, a meta-analysis of 48 trials comparing different diets found the low-carb diet had the largest effect on weight loss. However, 3 meta-analyses found both diets similarly effective at reducing body weight and waist circumference [R, R, R, R, R, R, R, R, R, R]

In patients with type 2 diabetes, the low-carb dietary pattern is the most effective one at lowering body weight according to 2 meta-analyses [R, R].

PERSONALIZED TO YOUR GENES

High dietary carbohydrates may increase the risk of abdominal obesity more in people with your *FADS1* gene variant [R].

YOUR GENETIC VARIANTS

GENE	SNP	GENOTYPE	EVIDENCE
FADS2	**rs174547**	TT	

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.