SelfDecode™

FUT2 (Gut/ Vitamin B12)

Gene Report

REPORT CATEGORY

GUT HEALTH

Sample Client

Report date: 15 January 2026

Powered by omicsedge

Table of Contents

Personal information

NAME

Sample Client

SEX AT BIRTH

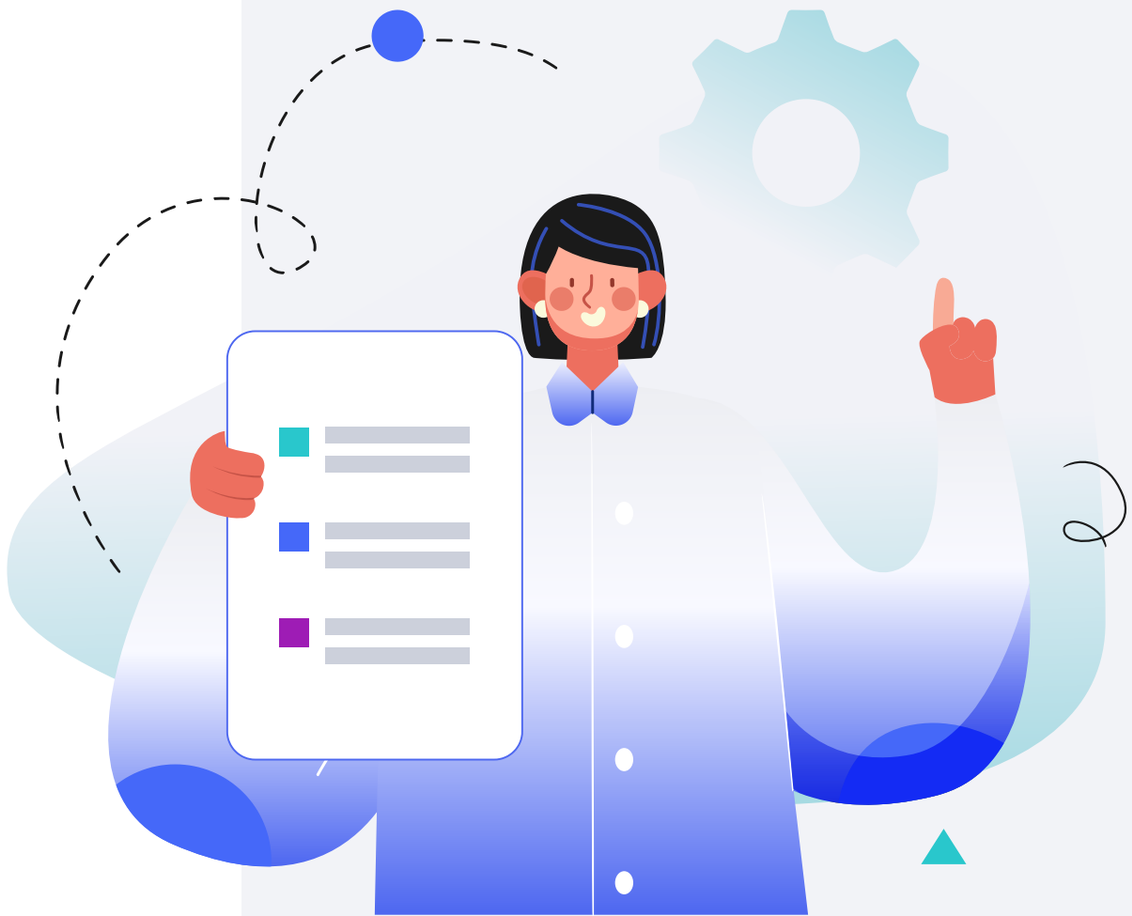
Male

HEIGHT

5ft 5" 165cm

WEIGHT

137lb 62kg

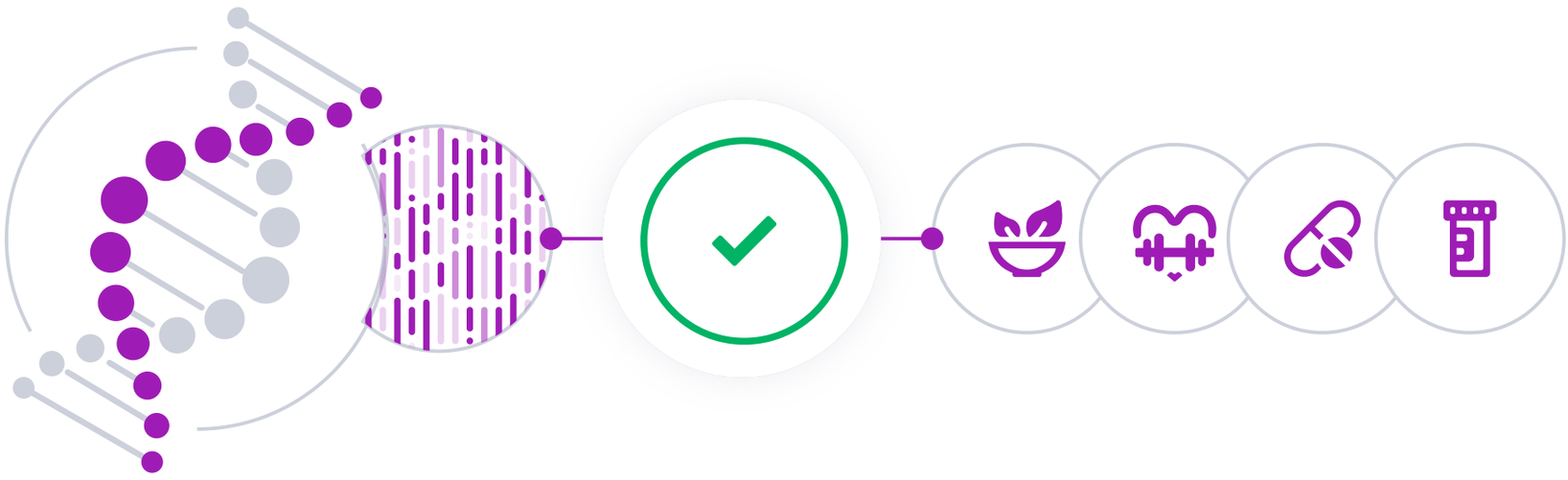


DISCLAIMER

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

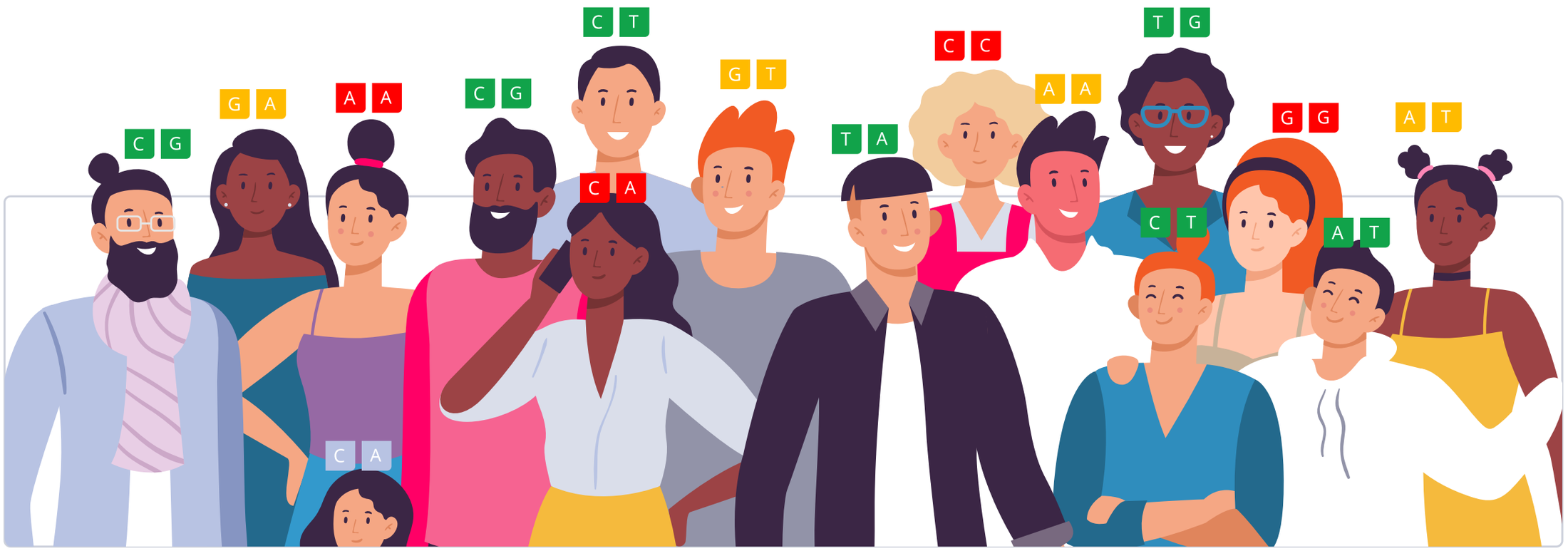
Our Wellness Reports analyze how your DNA influences your health.
We then use this analysis to give you personalized risk estimates and recommendations.



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.

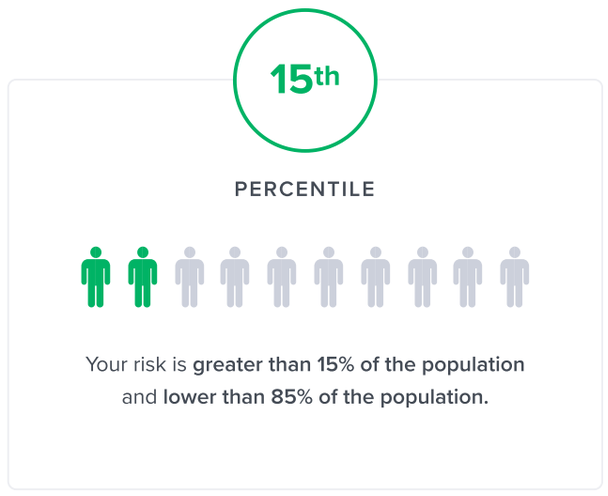
Genetic variants are parts of DNA that differ from person to person. Some can make you more vulnerable to certain health issues, while others may influence traits such as eye color.



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 *FUT2* gene encodes an enzyme named galactoside 2-alpha-L-fucosyltransferase 2. This enzyme is involved in the production of ABO blood group antigens that are released (secreted) into saliva, mucus, and other fluids of the gut [R].

ABO blood group antigens are molecules found on the surfaces of red blood cells. The type of ABO antigen that is found on these red blood cells helps to characterize blood. For example, B antigen is found on the surface of red blood cells in individuals with type B blood [R].

Although ABO blood group antigens are more commonly associated with blood type, ABO antigens are also found in the gut, where they can play a major role in gut health [R].

Depending on their ability or inability to secrete ABO blood group antigens into gut fluids, carriers of *FUT2* variants are categorized respectively as “secretors” or “non-secretors” (“secretor status”) [R].

The composition of bacteria in the gut differs greatly when comparing non-secretors to secretors. Bacteria of non-secretors have been found to be reduced in both number and diversity in comparison to secretors. While this might suggest that secretors have “healthier guts," the researchers also found that certain strains of bacteria can digest nutrients more effectively in non-secretors than secretors [R, R].

On the one hand, a low amount and diversity of gut bacteria can increase susceptibility to infections of the gut. Gut infections have been suggested to alter the way that the immune system responds to future threats -- a potential early step in the development of celiac disease [R, R].

On the other hand, ABO antigens found in mucus that lines the guts of secretors can act as attachment sites for both harmful and beneficial bacteria. The attachment of harmful bacteria such as *Helicobacter pylori* (*H. pylori*) can cause complex inflammatory reactions in the gut lining. These can result in the breakdown of the gut lining and the formation of stomach ulcers, which ultimately prevent the release of a compound required for vitamin B12 absorption [R, R].

FUT2 Genetics

The ‘AA’ (non-secretor) genotype of rs601338 has been associated with higher vitamin B12 absorption in comparison to secretor genotypes in European and West African populations. In European populations, this variant has been associated with a greater risk of developing celiac disease but may protect against the development of Crohn’s disease and ulcerative colitis [R].

The same goes for rs602662-A and rs492602-G, which are almost always inherited with rs601338-A [R, R].

Non-secretors (AA) lack histo-blood group antigens in the gut lining, preventing certain pathogens like norovirus from attaching and causing disease. However, this also limits beneficial bacteria (e.g., bifidobacteria), potentially reducing their immune-supporting and protective effects against harmful species [R, R].

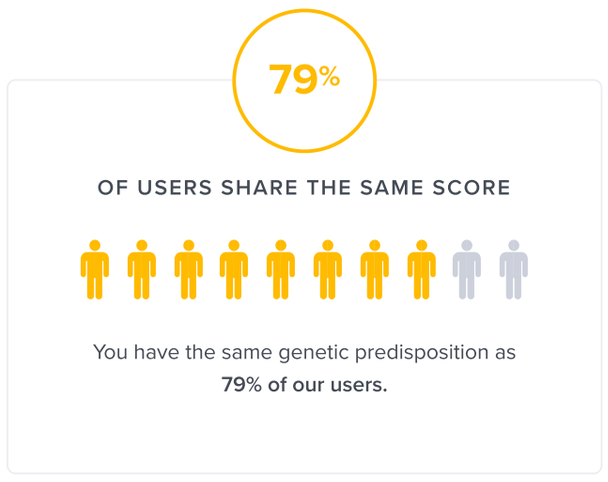
The minor ‘T’ allele of another variant, rs1047781, has been associated with higher vitamin B12 absorption but a greater risk of developing Crohn’s disease. This allele has also been associated with a reduced amount and diversity of gut bacteria [R, R, R].

The rs1047781 is closely associated with rs601338 in all individuals but those of East Asian (Japanese) descent. In individuals of Japanese descent, only rs1047781 determines secretor status. People with the ‘TT’ genotype are non-secretors [R].

FUT2 status is significant for **methylation** because FUT2 influences B12 absorption and availability, which is crucial for the methylation cycle. "Secretors" may have reduced B12 absorption, which can impact the methylation cycle since B12 is required as a cofactor for methionine synthase, a key enzyme in the methylation pathway that helps convert homocysteine to methionine.

SECRETOR

Likely secretor based on the genetic variants we looked at



Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
FUT2	rs601338	AG
FUT2	rs492602	GA
FUT2	rs602662	AG
FUT2	rs1047781	AA

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.

		DOSAGE
1	Vitamin B12	100 mcg
2	Dietary Vitamin B12	
3	Prebiotics	125 mg
4	Probiotics	30 billion CFU

1

Vitamin B12

IMPACT 4 / 5

EVIDENCE 4 / 5

How to implement

Take a 50 mcg vitamin B12 supplement daily, preferably with a meal to enhance absorption.

TYPICAL STARTING DOSE

100 mcg

Description

Vitamin B12 is a water-soluble vitamin primarily found in animal-based foods like meat, fish, and dairy products. It plays a crucial role in maintaining healthy nerve cells, DNA synthesis, and red blood cell formation. Vitamin B12 deficiency can lead to anemia, neurological issues, and fatigue.

Vitamin B12 is important for [R, R]:

- Building DNA
- Nervous system function
- Energy production

You can get vitamin B12 from [R]:

- Animal products (meat, fish, eggs, and dairy)
- Fortified foods
- Supplements

Adults should be getting **2.4 micrograms** of vitamin B12 every day [R].

How it helps

Due to their diminished ability to absorb vitamin B12, secretors may benefit from supplementing with this vitamin.

Vitamin B12 supplements are available over the counter, and their recommended intake varies with age. For example, 2.4 micrograms of vitamin B12 per day is recommended for individuals ages 14 and over [R].

Stomach acid helps to absorb vitamin B12. As stomach acid production is reduced in older adults (ages 65 and over), consuming foods rich in vitamin B12 or taking vitamin B12 supplements is a particularly important recommendation for carriers of these secretor variants that are also part of this age group [R].

Individuals who are secretors and taking medications that inhibit the release of stomach acid, such as omeprazole, might be at a similarly increased risk of vitamin B12 deficiency [R].

PERSONALIZED TO YOUR GENES

Your *FUT2* gene variant has been associated with a decreased ability to absorb vitamin B12. Make sure to supplement with this vitamin to prevent deficiency [R].
Your *FUT2* gene variant has been associated with a decreased ability to absorb vitamin B12. Make sure to supplement with this vitamin to prevent deficiency [R].

YOUR GENETIC VARIANTS

GENE	SNP	GENOTYPE	EVIDENCE
FUT2	**rs601338**	AG	●●●○○

GENE	SNP	GENOTYPE	EVIDENCE
FUT2	**rs1047781**	AA	○○○○○

2

Dietary Vitamin B12

IMPACT 4 / 5

EVIDENCE 4 / 5

How to implement

Incorporate foods rich in vitamin B12 into your daily diet, such as beef, chicken, fish, and dairy products. If you are vegetarian or vegan, consider fortified cereals or plant-based milks. Aim to meet the recommended dietary allowance (RDA) for adults of 2.4 micrograms of vitamin B12 per day.

Description

Vitamin B12 is important for nerve function, red blood cell production, and overall energy metabolism. It's crucial for preventing pernicious anemia and maintaining neurological health.

How it helps

Due to their diminished ability to absorb vitamin B12, secretors may benefit from consuming foods rich in this vitamin.

Foods rich in vitamin B12 include animal products, such as [R]:

- Seafood (especially clams, trout, and salmon)
- Meat (especially beef liver)
- Eggs
- Milk

Stomach acid helps to absorb vitamin B12. As stomach acid production is reduced in older adults (ages 65 and over), consuming foods rich in vitamin B12 or taking vitamin B12 supplements is a particularly important recommendation for carriers of these secretor variants that are also part of this age group [R].

Individuals who are secretors and taking medications that inhibit the release of stomach acid, such as omeprazole, might be at a similarly increased risk of vitamin B12 deficiency [R].

PERSONALIZED TO YOUR GENES

Your *FUT2* gene variant has been associated with a decreased ability to absorb vitamin B12. Make sure to consume plenty of this vitamin to prevent deficiency [R].
Your *FUT2* gene variant has been associated with a decreased ability to absorb vitamin B12. Make sure to consume plenty of this vitamin to prevent deficiency [R].

YOUR GENETIC VARIANTS

GENE	SNP	GENOTYPE	EVIDENCE
FUT2	**rs601338**	AG	

GENE	SNP	GENOTYPE	EVIDENCE
FUT2	**rs1047781**	AA	

3

Prebiotics

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Take 125 mg of a prebiotic supplement daily. Consistent daily intake is key for maintaining gut health.

TYPICAL STARTING DOSE

125 mg

Description

Prebiotics are primarily plant-based sources of dietary fiber that provide nourishment for beneficial gut bacteria. These foods, like garlic, onions, and asparagus, promote a healthy gut microbiome, support digestion, and enhance nutrient absorption.

Prebiotics are certain fibers and other complex carbs that serve as food for gut bacteria. **They support gut health by helping boost the activity and growth of "good" bacteria** [R, R].

Some natural sources of prebiotics include [R, R]:

- Whole grains
- Bananas
- Onions
- Soybeans

Prebiotics are also added to foods and supplements. Common prebiotic ingredients are [R, R]:

- Oligo-fructose
- Oligo-galactose
- Inulin

Combined mixtures of probiotics and prebiotics are known as **synbiotics** [R].

How it helps

Prebiotics are complex carbohydrates (fiber) that act as food sources for resident gut bacteria and probiotics that are newly introduced to the gut. Prebiotics have been shown to promote the growth and activity of beneficial gut bacteria, including *Bifidobacteria* and *Lactobacilli* strains [R].

Although the effect of prebiotic intake on *FUT2* non-secretor variants has not been elucidated, non-secretors may benefit from the modulation of gut bacteria composition observed with prebiotic intake, as non-secretors typically have a lower amount and diversity of gut bacteria.

4

Probiotics

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Take a probiotic supplement containing 10 billion or more live cultures once daily, preferably with a meal or as directed by the packaging or a healthcare provider.

TYPICAL STARTING DOSE

30 billion CFU

Description

Probiotics are live beneficial bacteria and yeasts that can support gut health and digestive function when consumed as supplements or found in fermented foods like yogurt and sauerkraut. They may be beneficial to gut health, immune function, blood sugar, and mood.

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, R]:

- Maintaining gut health
- Supporting a healthy immune system
- Improving your mood
- Helping to maintain healthy blood sugar

Prebiotics are certain types of fiber and other complex carbs that serve as food for gut bacteria. **They support gut health by helping boost the activity and growth of "good" bacteria** [R, R].

Prebiotics are also added to foods and supplements. Common prebiotic ingredients are [R, R]:

- Oligo-fructose
- Oligo-galactose
- Inulin

Mixtures of probiotics and prebiotics are known as **synbiotics** [R].

How it helps

Although the effect of probiotic intake on *FUT2* non-secretor variants has not been elucidated, non-secretors may benefit from the modulation of gut bacteria composition observed with probiotic intake, as non-secretors typically have a lower amount and diversity of gut bacteria.

Probiotics may also protect against *H. pylori* infections. The mechanism behind this is not entirely clear, but it has been suggested that probiotics can compete with *H. pylori* for sites of attachment [R, R, R].

Secretors may benefit from probiotic intake due to their increased susceptibility to *H. pylori* infections. However, studies related to potential ABO antigen-binding competition between probiotics and *H. pylori* in secretors have yet to be conducted.

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.