SelfDecode™

MTHFR

Gene Report

REPORT CATEGORIES

NUTRITION

DETOX

Sample Client

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Personal information

NAME

Sample Client

SEX AT BIRTH

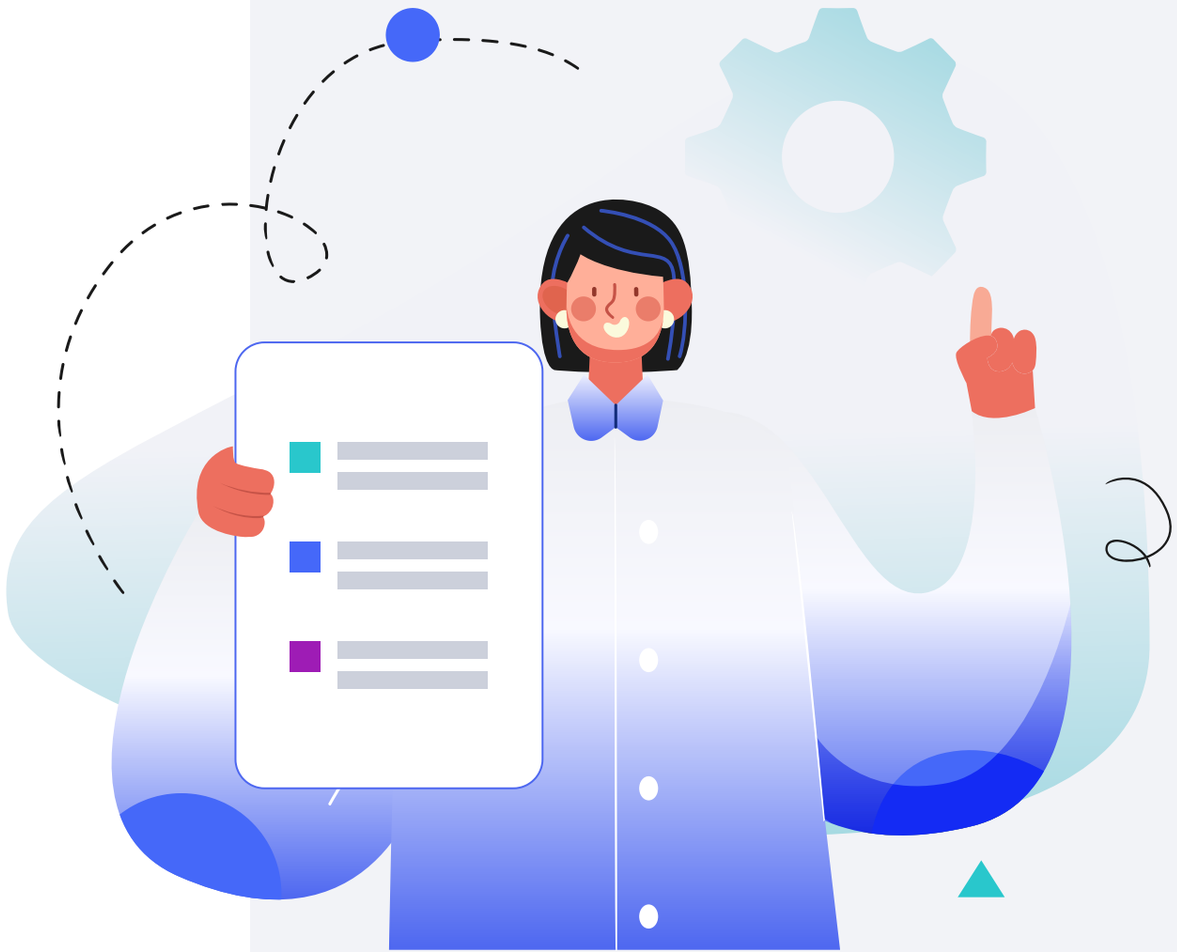
Female

HEIGHT

5ft 9" 175.0cm

WEIGHT

165lb 75.0kg



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.

Introduction

The *MTHFR* gene helps make an enzyme called methylenetetrahydrofolate reductase (MTHFR) [R].

MTHFR helps process folate (vitamin B9). Folate plays a role in [R, R, R, R]:

- DNA production
- Red blood cell production
- Normal fetus development
- Brain and heart health
- Clearing homocysteine, a protein breakdown product

Variants in the *MTHFR* gene can change how the enzyme functions. Two of the most widely studied variants reduce MTHFR enzyme activity [R, R, R, R].

However, **according to experts, *MTHFR* variants don't seem to greatly affect people's health** [R, R]. They have a small impact on folate levels, which likely doesn't affect people who get enough of this vitamin [R].

Some studies linked *MTHFR* variants with higher homocysteine levels. These studies also found links between *MTHFR* variants, higher homocysteine, and:

- Heart disease and stroke [R, R]
- Fertility and pregnancy issues [R, R, R, R, R, R]
- Mental health issues [R]
- Migraines with aura [R, R]

However, larger studies found no evidence for these links. Some even found the opposite results. In one study, *MTHFR* variants were linked to a lower risk of death from heart disease [R, R, R, R, R].

It's always a good practice to get plenty of folate by eating lots of fresh fruits and vegetables. In the US, cereal grains are fortified with folic acid, a form of folate. The Center for Disease Control and Prevention (CDC) recommends folic acid supplements (400 micrograms) to all women trying to get pregnant [R, R, R].

MTHFR Genetics

PERSONALIZED TO GENES

Based on the genetic variants we looked at, you may have lower MTHFR enzyme activity. This means you may have slightly lower folate levels and reduced methylation ability. However, keep in mind that other factors can also influence your MTHFR activity.

LOWER ACTIVITY

Likely lower MTHFR activity based on the genetic variants we looked at

13%

OF USERS SHARE THE SAME SCORE

You have the same genetic predisposition as **13% of our users.**

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
MTHFR	rs1801133	AA
MTHFR	rs1801131	TT

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

Key Takeaways:

- MTHFR is an enzyme that helps your body process folate, an important nutrient for many body functions and processes.
- If you have lower MTHFR activity due to genetics, make sure you include folate-rich foods in your diet, like fruits and vegetables or other fortified foods. This is even more important with pregnancy.

The most common *MTHFR* SNP is **rs1801133** (C677T). The **'A' variant** of this SNP decreases the activity of the MTHFR enzyme. People with two 'A' variants may have about 16% lower blood folate levels ('A' equals 'T' on the opposite DNA strand) [R].

The **'G' variant*** of another SNP, **rs1801131** (A1298C), also decreases MTHFR enzyme activity, but less so than rs1801133. The effects of this variant may only be meaningful in people who also have the other low-activity variant, rs1801133-AA ('G' equals 'C' on the opposite DNA strand) [R, R, R, R, R].

Read this blog post for more details about MTHFR variants and potential ways to reduce their impact.

If you carry a lower-activity variant, make sure your diet is healthy, well-balanced, and contains plenty of folate-rich food sources. These include [R, R, R]:

- Spinach
- Black-eyed and green peas
- Asparagus
- Lettuce

- Avocado
- Broccoli
- Citrus fruits
- Fortified rice, bread, and pasta

Some sources recommend methylfolate supplements instead of folic acid. Methylfolate supplements would in theory bypass the MTHFR enzyme, which converts folic acid to methylfolate. However, even if you have lower-activity *MTHFR* variants, experts say you can still process folic acid without any issues [R].

Importantly, CDC notes that folic acid is the only folate supplement proven to reduce neural tube defects. Methylfolate supplements have not been properly studied [R].

In addition to folate, there is some evidence that people with *MTHFR* variants may do better if they get more riboflavin (vitamin B2). This vitamin helps MTHFR work properly [R, R, R, R, R, R, R, R].

Good sources of riboflavin include [R, R]:

- Eggs
- Dairy (milk, cheese, yogurt)
- Lean and organ meats
- Green vegetables
- Fortified cereals
- Mushrooms
- Almonds

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	Methylfolate	400 mcg
2	Dietary Folate	
3	Leafy Green Vegetables	
4	Betaine (TMG)	500 mg
5	Zinc	15 mg
6	Avoid High-Dose Niacin Supplements	35 mg
7	Riboflavin (Vitamin B2)	25 mg
8	Dietary Riboflavin (Vitamin B2)	

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Methylfolate

IMPACT 5 / 5

EVIDENCE 5 / 5

How to implement

Take an L-methyl folate supplement (400-800 micrograms daily), ideally with a meal, to improve absorption. This dosage is recommended for adults, including pregnant women, to support overall health, especially to reduce the risk of neural tube defects in developing fetuses. Continue daily use as part of your regular supplement routine.

TYPICAL STARTING DOSE

400 mcg

Description

Folate, a B-vitamin, is crucial for DNA synthesis, cell growth, and the formation of red blood cells. Adequate folate intake supports overall health and reduces the risk of neural tube defects during pregnancy.

Vitamin B9 (*folate*) plays an essential role in [R, R, R]:

- Making DNA
- Metabolism
- Energy production

SelfDecode recommends L-methylfolate as the preferred folate supplement for those who need one. It is superior to folic acid because it doesn't require activation, but the research is still ongoing [R, R].

How it helps

People with lower MTHFR activity may have 16% lower folate levels, and they tend to have increased homocysteine [R].

Supplementation with folate (0.5-1 mg/day) may lower homocysteine levels. It may work in healthy people, those with [R, R, R, R, R, R, R]:

- Heart problems
- Cognitive decline
- High blood sugar

CDC notes that **folic acid** is the only supplement proven to reduce birth defects due to low folate [R].

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Dietary Folate

IMPACT 5 / 5

EVIDENCE 5 / 5

How to implement

Increase your intake of folate-rich foods such as leafy green vegetables, fruits, nuts, and legumes. Aim to consume these foods daily, incorporating them into various meals throughout the day to meet the recommended dietary allowance of 400 micrograms for adults.

Description

Vitamin B9 (*folate*) plays an essential role in [R, R, R]:

- Making DNA
- Metabolism
- Energy production

Rich sources of folate include [R, R]:

- Beef liver
- Spinach
- Black-eyed peas
- Asparagus
- Citrus fruits

While folate deficiency is rare, it can happen in people who don't eat enough fruits and vegetables. Alcoholics and lactating women may also be at increased risk [R].

Adults should get **400 micrograms (mcg)** of folate per day. Pregnant or breastfeeding women should get **500-600 mcg per day**. Supplements are usually in the form of *folic acid* or L-methylfolate (5-MTHF) [R, R].

How it helps

People with lower MTHFR activity may have 16% lower folate levels, and they tend to have increased homocysteine [R].

High dietary intake of folate is associated with lower homocysteine levels [R, R].

It's always a good practice to get plenty of folate by eating a variety of fresh fruits and vegetables. This is especially true for people with lower MTHFR activity. Folate in food sources is natural or "active" form. In theory, this means it is equally beneficial for people with lower MTHFR activity [R, R, R, R, R].

Rich sources of folate include [R, R]:

- Beef liver
- Spinach
- Black-eyed peas
- Asparagus
- Citrus fruits

3

Leafy Green Vegetables

IMPACT 3 / 5

EVIDENCE 2 / 5

How to implement

Incorporate at least one serving of leafy green vegetables, such as spinach, kale, or Swiss chard, into your diet daily. This can be done by adding them to salads, smoothies, or as a side dish to your meals.

Description

Leafy green vegetables like spinach and kale are packed with vitamins, minerals, and antioxidants. Incorporating them into your diet can promote overall health by providing essential nutrients, supporting digestion, and reducing the risk of chronic diseases like heart disease and certain cancers.

Leafy green vegetables, also called leafy greens, or greens, are edible plant leaves, which can include stalks and shoots as well. Common examples include: lettuce, spinach, kale, chard, endive, and fennel.

Leafy greens contain a host of vitamins and minerals, as well as fiber. Most of them are a particularly good source of vitamin K.

How it helps

Research indicates that higher intake of dark green leafy vegetables is associated with a lower risk of cutaneous squamous cell carcinoma (SCC) in people carrying specific MTHFR gene variants [R].

Additionally, a study found that people with the MTHFR TT genotype may experience increased benefits from high green vegetable intake, which may lower their risk of breast cancer compared to those with low intake [R].

Leafy green vegetables may help due to their high folate content.

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Betaine (TMG)

IMPACT 3 / 5

EVIDENCE 2 / 5

How to implement

To take Betaine (TMG) as a supplement, consume 500-2000 mg daily, preferably with a meal to enhance absorption. It is recommended to start at the lower end of the dosage range and adjust based on personal tolerance and effectiveness. This supplement can be taken indefinitely for ongoing support of heart health and liver function.

TYPICAL STARTING DOSE

500 mg

Description

Betaine is a compound found in various foods and used in dietary supplements for its potential to support liver health and contribute to healthy homocysteine levels.

How it helps

TMG or betaine helps turn homocysteine into methionine. For this reason, it plays a key role in the methylation cycle.

People with lower MTHFR activity and poor methylation may have reduced betaine production. To make up for this effect, consume a variety of betaine-rich foods such as [R]:

- Liver meats
- Quinoa
- Beets
- Wheat germ
- Spinach

Supplementing with TMG (1.5-4 g/day for 6-24 weeks) may lower homocysteine levels, which tend to be higher in people with impaired MTHFR function [R, R].

Homocystinuria is a rare genetic disorder that results in elevated homocysteine levels in the urine. In people with this condition, TMG is approved by the FDA to lower urinary homocysteine [R].

A study of 860 mothers observed much lower neural tube defect (NTD) rates for the highest vs. lowest dietary intakes of choline, betaine, and methionine. NTDs are of particular concern for people with reduced MTHFR activity due to impaired methylation [R].

According to preliminary findings, early betaine supplementation may improve outcomes in cases of MTHFR deficiency [R].

Please note: *Doses above 4 g/day may increase LDL and triglyceride levels. TMG supplementation can cause a person's urine and sweat to smell fishy* [R, R].

5

Zinc

IMPACT 2 / 5

EVIDENCE 2 / 5

How to implement

Take a 15 mg zinc supplement daily, ideally with a meal to enhance absorption.

TYPICAL STARTING DOSE

15 mg

Description

Zinc is an essential mineral found in various foods, including meat, dairy, and nuts. It is crucial for immune function, wound healing, DNA synthesis, and maintaining healthy skin and nails. Zinc supplements are sometimes used to support immune health and manage zinc deficiencies.

Zinc is an essential mineral. Your body needs it to [R, R]:

- Defend against disease
- Protect DNA from damage
- Heal wounds
- Control blood sugar

Some of the best sources of zinc include **shellfish, pork, beef, and beans**. It is also available as a supplement [R].

Adults should get **8-11 mg of zinc** per day [R].

How it helps

Zinc is important for folate absorption and healthy methylation. Ensure that your zinc levels are optimal [R].

If you are deficient in zinc, your gut enzymes can’t break down folate into the form you can absorb [R, R].

Zinc also helps folate carry out its role in the body [R].

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Avoid High-Dose Niacin Supplements

IMPACT 2 / 5

EVIDENCE 1 / 5

How to implement

Ensure your daily intake of niacin (vitamin B3) from supplements does not exceed 35 mg, which is the upper intake level for adults, to prevent the risk of negative side effects like flushing and liver damage. Always check the label of your supplement to confirm the niacin dosage.

TYPICAL STARTING DOSE

35 mg

Description

High doses of Niacin (greater than 500 mg) may reduce T4 levels [R].

Please note: *There is no evidence from controlled clinical trials to support this recommendation. It is included based on uncontrolled clinical trials, animal or cell studies, or non-scientific criteria. Please take this recommendation with a grain of salt until more research is available*

How it helps

MTHFR is essential for converting homocysteine to methionine. High doses of niacin can exacerbate the accumulation of homocysteine in individuals with reduced MTHFR function.

This is because niacin in large amounts can deplete methyl donors like SAMe (S-adenosylmethionine), which are needed for homocysteine metabolism [R].

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Riboflavin (Vitamin B2)

IMPACT 1 / 5

EVIDENCE 3 / 5

How to implement

Take a riboflavin (vitamin B2) supplement daily, with a dose ranging from 5mg to 400mg, depending on the specific health concern or advice from a healthcare provider. Swallow the supplement with water, preferably with a meal to enhance absorption. This regimen can be continued long-term or as directed by a healthcare professional.

TYPICAL STARTING DOSE

25 mg

Description

Riboflavin is a water-soluble B vitamin found in various foods like dairy products, leafy greens, and lean meats. It plays a crucial role in energy production, metabolism, building red blood cells, and maintaining healthy skin and eyes.

Vitamin B2 helps our cells create energy. It's also known as riboflavin [R, R].

This vitamin is important for [R, R]:

- Brain, liver, and gut health
- Building red blood cells

Riboflavin deficiency is rare in the US. People with gut, eating, or hormonal disorders may be at a higher risk. Alcohol abuse and certain medications can also deplete this vitamin [R, R].

Good sources of riboflavin include [R, R]:

- Eggs
- Dairy
- Lean and organ meats
- Green vegetables
- Fortified cereals

How it helps

There is some evidence that people with MTHFR variants may do better if they get more riboflavin (vitamin B2) [R, R, R, R, R, R, R, R].

For example, supplementing with riboflavin may decrease blood pressure more in people with reduced MTHFR activity [R, R, R, R].

This vitamin helps MTHFR work properly [R, R, R].

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Dietary Riboflavin (Vitamin B2)

IMPACT 1 / 5

EVIDENCE 2 / 5

How to implement

Include riboflavin-rich foods in your daily diet, such as milk, cheese, eggs, lean meats, green leafy vegetables (like spinach), almonds, and fortified cereals. Aim for an intake of 1.1 to 1.3 mg of riboflavin per day for adults, as recommended by dietary guidelines.

Description

Riboflavin, also known as vitamin B2, is important for energy metabolism and maintaining healthy skin and eyes. It plays a role in various enzymatic processes in the body.

Vitamin B2 helps our cells create energy. It's also known as *riboflavin* [R, R].

This vitamin is important for [R, R]:

- Brain, liver, and gut health
- Building red blood cells

Riboflavin deficiency is rare in the US. People with gut, eating, or hormonal disorders may be at a higher risk. Alcohol abuse and certain medications can also deplete this vitamin [R, R].

How it helps

There is some evidence that people with MTHFR variants may do better if they get more riboflavin (vitamin B2) [R, R, R, R, R, R, R, R].

This vitamin helps MTHFR work properly [R, R, R].

Good sources of riboflavin include [R, R]:

- Eggs
- Dairy
- Lean and organ meats
- Green vegetables
- Fortified cereals