

Folate (Functional)

DNA Health Report

REPORT CATEGORY —



NUTRITION

Sample Client

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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.

Personal information

NAME

Sample Client

SEX AT BIRTH

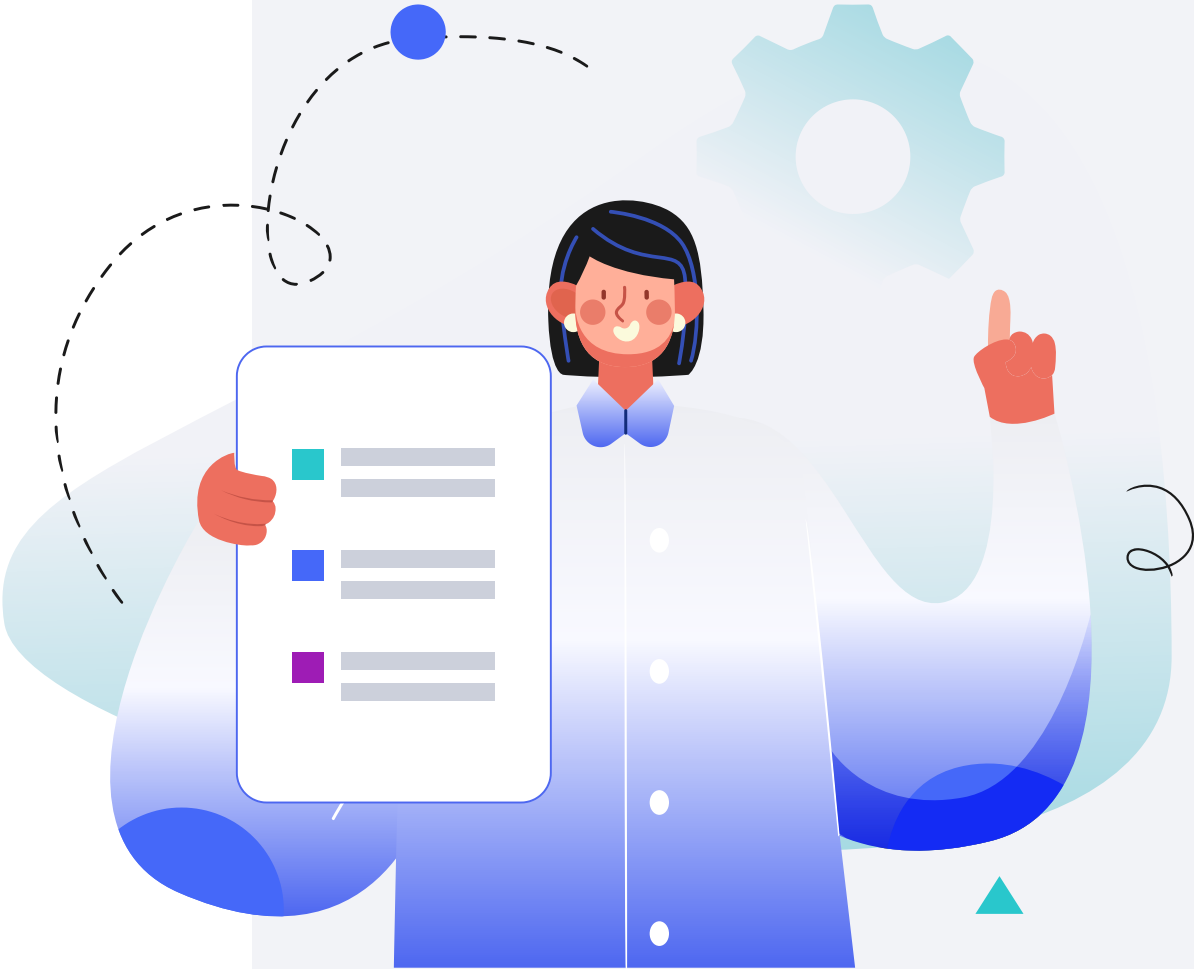
Male

HEIGHT

5ft 5" 165cm

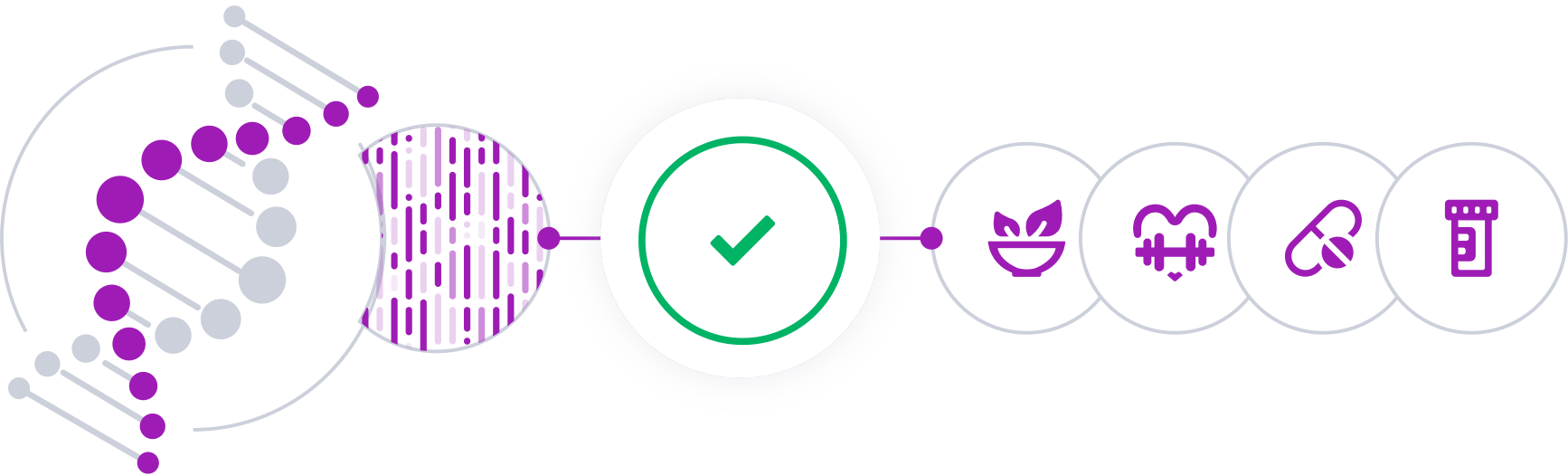
WEIGHT

137lb 62kg



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.

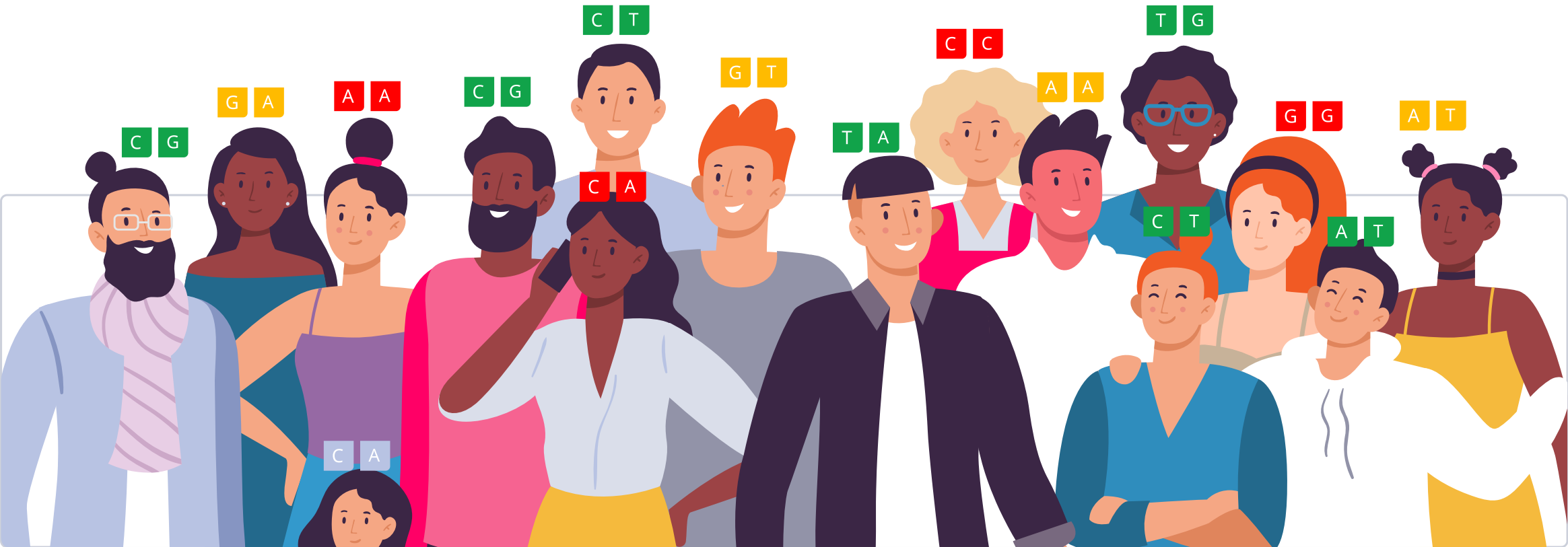


Similarly, our Trait Reports look at how your DNA influences your traits.



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

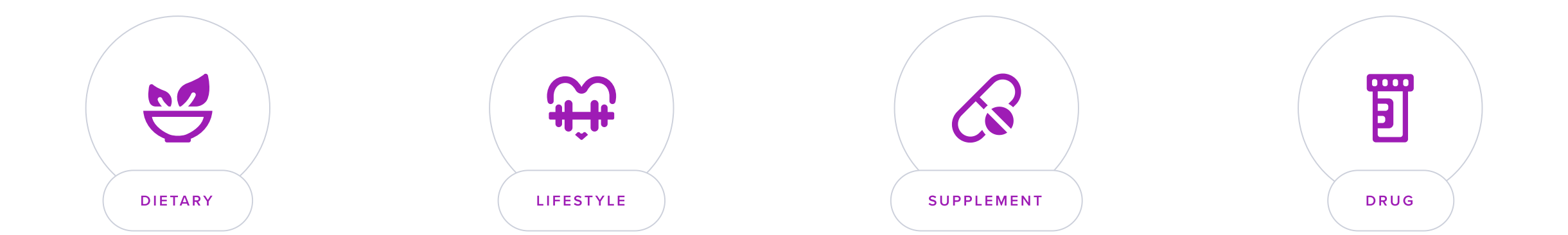
You have 2 risk alleles

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

Folate is the natural form of vitamin B9 found in food. Supplements are usually in the form of *folic acid* or [L-methylfolate](#) (5-MTHF). Most adults should get **400 micrograms (mcg)** of folate per day [\[R\]](#), [\[R\]](#).

Folate is an essential nutrient that helps the body:

- Protect DNA from damage [\[R\]](#), [\[R\]](#)
- Turn genes on and off [\[R\]](#), [\[R\]](#)
- Support brain health [\[R\]](#), [\[R\]](#), [\[R\]](#)
- Support heart health [\[R\]](#), [\[R\]](#), [\[R\]](#)
- Make red blood cells [\[R\]](#), [\[R\]](#)

Folate is particularly important to support a healthy pregnancy. Low levels can lead to birth defects. It may be helpful to increase folate intake when trying to get pregnant. Additionally, pregnant women should get 500-600 mcg of folate per day. [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

Rich sources of folate include [\[R\]](#), [\[R\]](#):

- Spinach
- Black-eyed and green peas
- Asparagus
- Lettuce
- Avocado
- Broccoli
- Citrus fruits
- Fortified rice, bread, and pasta

Genetics of Folate

Several genetic variants are associated with folate metabolism, affecting how the body processes, utilizes, and requires folate.

MTHFR (rs1801133, 677 C>T): MTHFR is essential for converting folate to its active form. The rs1801133 variant (677 C>T) can reduce enzyme activity, leading to higher homocysteine levels and an increased need for dietary folate to support healthy methylation [R].

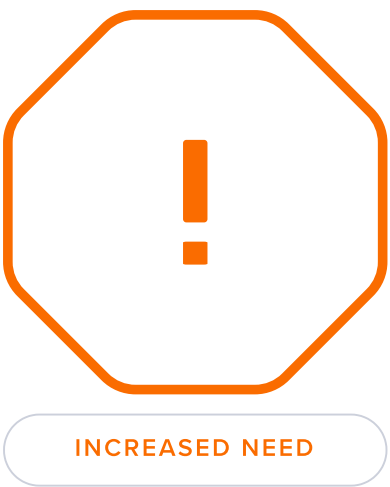
MTHFR (rs1801131, 1298 A>C): Another variant in *MTHFR*, rs1801131 (1298 A>C), also impacts folate processing efficiency. This variant may compound the effects of the 677 C>T variant, further increasing folate needs for individuals with both mutations [R, R, R, R].

MTHFD1 (rs2236225, 1958 G>A): The *MTHFD1* gene is involved in folate metabolism, particularly in providing one-carbon units for methylation and DNA synthesis. The rs2236225 variant (1958 G>A) can affect enzyme efficiency, potentially impacting folate requirements for optimal metabolic function [R].

MTHFS (rs6495446, G482S): The *MTHFS* gene is involved in the folate cycle, specifically in converting folinic acid (a form of folate) into 5,10-methylenetetrahydrofolate, which is crucial for DNA synthesis and repair. The rs6495446 variant (G482S) may reduce enzyme activity and has been linked to kidney disease [R].

MTHFD1L (rs202676, 484 T>C): The *MTHFD1L* gene plays a role in the folate metabolism pathway, specifically in the conversion of folate derivatives needed for cellular methylation and DNA synthesis. The rs202676 variant (484 T>C) may reduce the efficiency of this enzyme, potentially leading to impaired methylation and homocysteine removal. This variant has been associated with Alzheimer’s disease, Parkinson’s disease, and depression [R, R, R, R, R].

SHMT1 (rs1979277, 1420 C>T): The *SHMT1* gene encodes serine hydroxymethyltransferase, an enzyme that converts serine to glycine while generating 5,10-MTHF, a key form of folate involved in DNA synthesis and repair. The rs1979277



INCREASED NEED

Predisposed to increased need for folate based on 12 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
MTHFR	rs1801133	AA
SHMT1	rs1979277	AA
MTHFS	rs6495446	CC
FOLH1	rs61886492	GG
MTHFD1	rs2236225	GA
MTRR	rs1801394	AG
MSH3	rs408626	TT
MSH3	rs1650697	AA
MTHFR	rs1801131	TT
MTHFD1L	rs11754661	GG
FOLH1	rs202676	AA
MTR	rs1805087	AA

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

variant (1420 C>T) seems to reduce the ability of SHMT to produce 5,10-MTHF, leading to lower levels of active folate. The minor allele has been linked to liver cirrhosis, congenital problems with blood vessels, and Down’s syndrome [\[R\]](#), [\[R\]](#)

DHFR (rs408626, 317 A>G): The *DHFR* gene encodes an enzyme called dihydrofolate reductase that converts dihydrofolate (DHF) into tetrahydrofolate (THF). THF is a methyl group shuttle required for the production of purines and thymidine, both of which are required for DNA synthesis and cell growth. The rs408626 variant (317 A>G) may increase gene expression [\[R\]](#).

DHFR (rs1650697, 473 T>C): Another *DHFR* gene variant, rs1650697 (473 T>C) may increase DHFR levels [\[R\]](#).

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		DOSAGE	
1	Dietary Folate	2	Maintain Optimal Iron Levels10 mg
3	Methylfolate400 mcg	4	B Vitamins
5	Spinach	6	Asparagus300 mg
7	Dietary Iron	8	Vitamin B12100 mcg

1



Dietary Folate

IMPACT

1 / 5

EVIDENCE

1 / 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

Inadequate folate levels can impair DNA synthesis, leading to cellular dysfunction. By increasing dietary folate intake, this recommendation supports optimal DNA function and cellular health, particularly crucial during pregnancy to prevent neural tube defects.

2



Maintain Optimal Iron Levels

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Check your iron levels. If they are below optimal, take a 10 mg iron supplement daily, preferably with a meal to enhance absorption and reduce stomach upset.

TYPICAL STARTING DOSE

10 mg

Description

Iron (Fe) is an essential mineral. It helps make [hemoglobin](#), a protein that carries oxygen to cells. In this way, iron **increases energy** and supports **brain and immune system function** [\[R\]](#), [\[R\]](#), [\[R\]](#).

Foods rich in iron include [\[R\]](#):

- Oysters
- White beans
- Beef
- Chocolate
- Spinach
- Fortified cereals

Women should be getting **8-18 mg** of iron per day, while **men** should be getting **8 mg** [\[R\]](#).

Groups at risk of iron deficiency include [\[R\]](#):

- Women
- Children
- Vegetarians
- Routine blood donors

Iron supplements are available for people who can't meet their needs through a balanced diet, but they should not be taken without consulting a doctor.

How it helps

Maintaining optimal iron levels is crucial as it aids in the proper transport and utilization of folate, thereby enhancing erythropoiesis and reducing the risk of anemia-related fatigue and weakness, which can exacerbate overall health complications.

3



Methylfolate

IMPACT

1 / 5

EVIDENCE

1 / 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

Methylfolate supplementation enhances folate bioavailability, promoting effective DNA synthesis and cellular growth. This is particularly critical during pregnancy, as it helps prevent folate deficiency and reduces the risk of neural tube defects.

4



B Vitamins

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take a B vitamin complex supplement once daily, preferably with your morning meal to enhance absorption. The supplement should include a range of B vitamins such as B1 (thiamine), B2 (riboflavin), B3 (niacin), B5 (pantothenic acid), B6 (pyridoxine), B7 (biotin), B9 (folate), and B12 (cobalamin). Ensure consistency by taking it at the same time each day.

Description

B vitamins help the body function properly. Two examples are [vitamin B9 \(folate\)](#) and [vitamin B12](#). They play essential roles in [\[R, R, R, R\]](#):

- DNA formation
- Metabolism
- Energy production

You can get these vitamins from [\[R, R, R, R, R\]](#):

- Animal products
- Green leafy vegetables
- Citrus fruits
- Fortified foods
- Supplements

Adults should be getting **400 micrograms (mcg) of folate** and **2.4 mcg of vitamin B12** every day [\[R, R\]](#).

Folate deficiency is rare but can happen in people that don’t eat enough fruits and vegetables. Alcoholics and lactating mothers may also be at an increased risk [\[R\]](#).

Vitamin B12 deficiency often takes years to develop, as the body is able to store large amounts in the liver. Groups that may be at an increased risk include [\[R, R\]](#):

- Vegans
- Pregnant women
- Older people
- People with gut issues

How it helps

B vitamins, particularly folate, are crucial for DNA synthesis and repair, making them essential for proper cell division and overall metabolic processes. Supplementing with B vitamins can mitigate deficiencies that may impair energy production and metabolic functions.

5



Spinach

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Incorporate one cup of fresh spinach or half a cup of cooked spinach into your daily diet. You can add spinach to salads, smoothies, omelets, or pastas to easily increase your intake.

Description

Spinach is a leafy green vegetable packed with essential nutrients, including vitamins A and K, iron, and folate. Incorporating spinach into the diet supports eye health, bone health, and overall nutrition.

Spinach is a good source of molybdenum, folate, calcium, and iron, as well as vitamins A, C, and K1. A ½ cup serving provides 8 mcg of molybdenum or 18%DV.

How it helps

Incorporating spinach into the diet enhances folate intake, which is crucial for DNA synthesis and cell division, directly impacting the prevention of neural tube defects during pregnancy and supporting overall cellular health.

6



Asparagus

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take a standardized asparagus extract supplement, typically available in capsules or tablets, in doses of 300-500 mg per day. It is best taken with meals to maximize absorption and minimize potential digestive discomfort. Continue this regimen daily as part of your supplement routine.

TYPICAL STARTING DOSE

300 mg

Description

Asparagus is a low calorie source of nutrients, including folate, fiber, and vitamins A, C and K. A serving of four asparagus spears provides 89 mcg of folate or 22%DV.

How it helps

Asparagus is rich in folate, a crucial B-vitamin that plays a vital role in DNA synthesis and repair, making it essential for cell growth and development. Increasing folate intake through asparagus can help mitigate deficiencies and support overall health.

7



Dietary Iron

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Incorporate iron-rich foods into your daily meals, such as red meat, chicken, turkey, fish, beans, lentils, tofu, cooked spinach, and fortified cereals. Aim for at least 18 mg of iron per day for adult women and 8 mg per day for adult men. It's also beneficial to pair these foods with vitamin C-rich foods like oranges, strawberries, or bell peppers to enhance iron absorption.

Description

Iron (Fe) is an essential mineral. It helps make [hemoglobin](#), a protein that carries oxygen to cells. In this way, iron **increases energy** and supports **brain and immune system function** [\[R\]](#), [\[R\]](#), [\[R\]](#).

Foods rich in iron include [\[R\]](#):

- Oysters
- White beans
- Beef
- Chocolate
- Spinach
- Fortified cereals

Women should be getting **8-18 mg** of iron per day, while **men** should be getting **8 mg** [\[R\]](#).

Groups at risk of iron deficiency include [\[R\]](#):

- Menstruating women
- Children
- Vegetarians
- Routine blood donors

How it helps

Dietary iron supports optimal oxygen transport in hemoglobin, enhancing energy levels and overall cellular function. This synergy can create a more balanced nutritional profile, indirectly benefiting folate metabolism and its associated physiological processes.

8



Vitamin B12

IMPACT

1 / 5

EVIDENCE

1 / 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

Supplementing with Vitamin B12 enhances folate's effectiveness in DNA synthesis and red blood cell formation, addressing deficiencies that can lead to anemia and neurological issues. This synergy is essential for optimal metabolic function and overall health.