

# Vitamins & Minerals

## Summary Report

REPORT CATEGORY —



Sample Client

Report date: 08 October 2025

Powered by

 omicsedge



# Table of Contents

**03** Summary

**04** Overview of Your Results

**06** Recommendations Overview

**08** Your Results in Details

08 Vitamins

27 Minerals

**48** Recommendations Details

## Personal information

NAME

**Sample Client**

SEX AT BIRTH

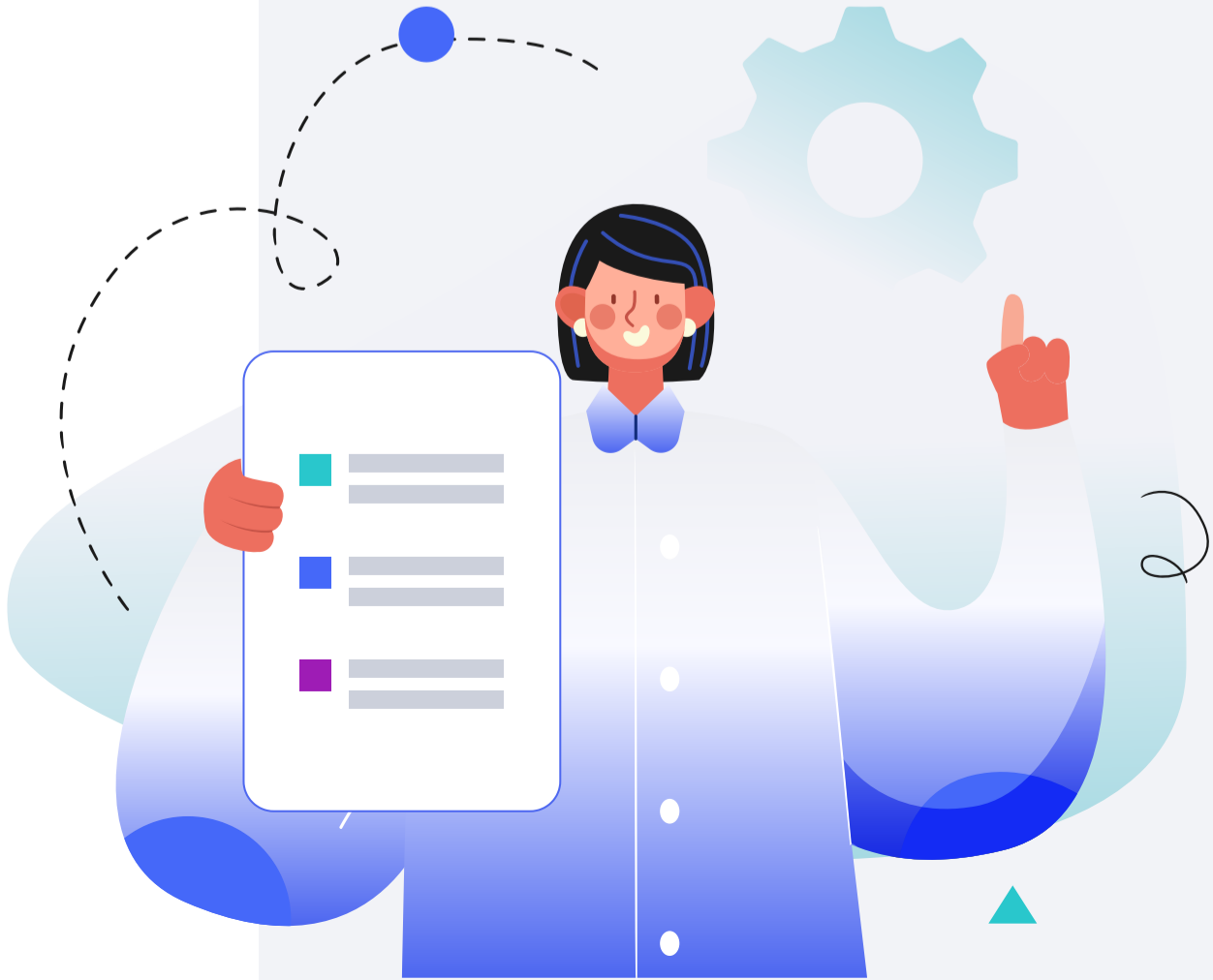
**Male**

HEIGHT

**5ft 0" 153.0cm**

WEIGHT

**110lb 50.0kg**



### 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.

# Summary

Your body's ability to absorb, metabolize, and utilize essential vitamins and minerals is fundamentally influenced by your genetic makeup. This comprehensive genetic analysis examines your unique predispositions for processing key nutrients including **folate, vitamin D, vitamin B12, magnesium, zinc, selenium, and potassium**, among others. By understanding how your genes affect nutrient metabolism, you can identify potential deficiencies or imbalances before they impact your health.

Your genetic variants provide valuable insights into how efficiently your body processes different nutrients, from absorption in the digestive tract to cellular utilization and excretion. This personalized approach enables you to fine-tune your nutrient intake through targeted dietary choices or supplementation strategies tailored to your specific genetic profile.

By optimizing your body's access to essential nutrients needed for energy production, immune function, cardiovascular health, and overall cellular processes, you can support your long-term vitality and well-being while preventing nutrient-related health complications.














**This summary report contains:**

**26 Genetic Results**














**50 Recommendations**

# Overview of Your Results

## Vitamins

<p> <b>INCREASED NEED</b> <b>Folate (Vitamin B9)</b></p> <p>Likely increased need for folate</p>	<p> <b>INCREASED NEED</b> <b>Riboflavin (Vitamin B2)</b></p> <p>Likely increased need for riboflavin</p>	<p> <b>INCREASED NEED</b> <b>Vitamin K</b></p> <p>Likely increased vitamin K need</p>
<p> <b>INCREASED NEED</b> <b>Vitamin B6 (Pyridoxine)</b></p> <p>Likely increased need for vitamin B6</p>	<p> <b>TYPICAL NEED</b> <b>Vitamin D</b></p> <p>Likely typical need for vitamin D</p>	<p> <b>TYPICAL NEED</b> <b>Vitamin B12</b></p> <p>Likely typical need for vitamin B12</p>
<p> <b>TYPICAL NEED</b> <b>Vitamin C</b></p> <p>Likely typical need for vitamin C</p>	<p> <b>TYPICAL NEED</b> <b>Vitamin A</b></p> <p>Likely typical need for vitamin A</p>	<p> <b>TYPICAL LEVELS</b> <b>Beta-Carotene</b></p> <p>Predisposed to typical beta-carotene levels</p>
<p> <b>TYPICAL NEED</b> <b>Vitamin E</b></p> <p>Likely typical need for vitamin E</p>	<p> <b>TYPICAL NEED</b> <b>Niacinamide (Vitamin B3)</b></p> <p>Likely typical niacinamide needs</p>	<p> <b>TYPICAL NEED</b> <b>Thiamine (Vitamin B1)</b></p> <p>Likely typical need for thiamine</p>
<p> <b>TYPICAL NEED</b> <b>Biotin</b></p> <p>Likely typical need for biotin</p>		

# Minerals

<p> <b>INCREASED NEED</b> <b>Calcium</b></p> <p>Likely increased need for calcium</p>	<p> <b>INCREASED NEED</b> <b>Zinc</b></p> <p>Likely increased need for zinc</p>	<p> <b>INCREASED NEED</b> <b>Iodine</b></p> <p>Likely increased need for iodine</p>
<p> <b>TYPICAL NEED</b> <b>Iron</b></p> <p>Likely typical need for iron</p>	<p> <b>TYPICAL NEED</b> <b>Magnesium</b></p> <p>Likely typical need for magnesium</p>	<p> <b>TYPICAL NEED</b> <b>Potassium</b></p> <p>Likely typical need for potassium</p>
<p> <b>TYPICAL NEED</b> <b>Selenium</b></p> <p>Likely typical need for selenium</p>	<p> <b>TYPICAL LEVELS</b> <b>Sodium</b></p> <p>Predisposed to typical sodium levels</p>	<p> <b>TYPICAL NEED</b> <b>Manganese</b></p> <p>Likely typical need for manganese</p>
<p> <b>TYPICAL LEVELS</b> <b>Chloride</b></p> <p>Predisposed to typical chloride levels</p>	<p> <b>TYPICAL NEED</b> <b>Chromium</b></p> <p>Likely typical need for chromium</p>	<p> <b>TYPICAL NEED</b> <b>Copper</b></p> <p>Likely typical need for copper</p>
<p> <b>TYPICAL NEED</b> <b>Molybdenum</b></p> <p>Likely typical need for molybdenum</p>		

# Recommendations Overview

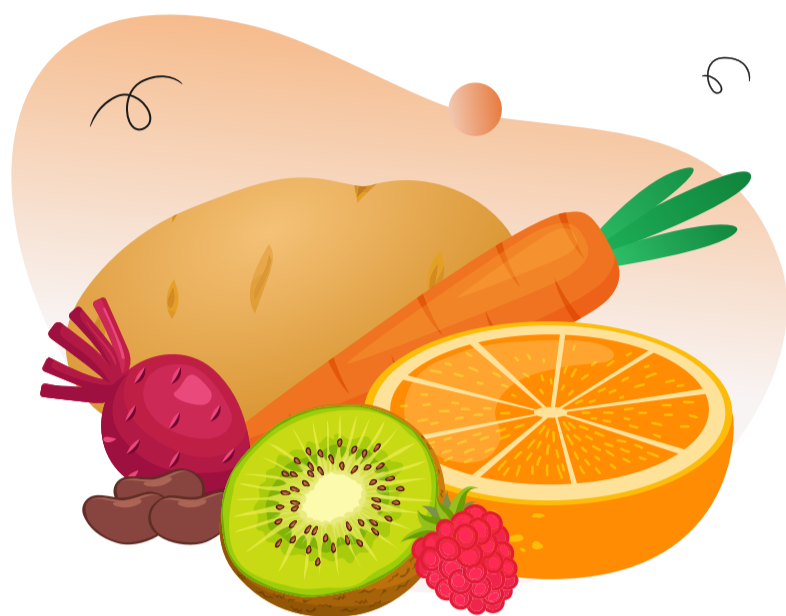
Your recommendations are prioritized according to the likelihood of it having an impact for you based on your genetics, along with the amount of scientific evidence supporting the recommendation.

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		2	
3		4	
5		6	
7	1000 mg	8	
9		10	
11	1000 iu	12	
13		14	
15		16	
17		18	
19		20	
21		22	
23		24	
25		26	
27	10 mg	28	
29		30	

31 Beef Spleen	32 Lentils
33 Pork	34 Cashews
35 Crab	36 Pyridoxine (Vitamin B6) 50 mg
37 Potatoes	38 Chicken Liver
39 Sunflower Seeds	40 Bananas
41 Turkey giblets	42 Bulgur
43 Pistachios	44 Kelp 500 mg
45 Greek Yogurt	46 Iodine 150 mcg
47 Fish	48 Cod
49 Poppy Seed	50 Seaweed

# Your Results in Details



## Vitamins

Vitamins are a group of nutrients that your body needs in relatively small amounts to maintain health. Vitamins are essential nutrients, meaning that we can't make them in our bodies in sufficient amounts. Thus, we need to get all the vitamins from our diet. Some people are genetically inclined to need a little more of a certain vitamin than others—that's why we created this section! Read below to learn how your genes may be affecting your vitamin needs.



INCREASED NEED

**Folate (Vitamin B9)**

Likely increased need for folate



INCREASED NEED

**Riboflavin (Vitamin B2)**

Likely increased need for riboflavin



INCREASED NEED

**Vitamin K**

Likely increased vitamin K need



INCREASED NEED

**Vitamin B6 (Pyridoxine)**

Likely increased need for vitamin B6



TYPICAL NEED

**Vitamin D**

Likely typical need for vitamin D



TYPICAL NEED

**Vitamin B12**

Likely typical need for vitamin B12



TYPICAL NEED

**Vitamin C**

Likely typical need for vitamin C



TYPICAL NEED

**Vitamin A**

Likely typical need for vitamin A



TYPICAL LEVELS

**Beta-Carotene**

Predisposed to typical beta-carotene levels



TYPICAL NEED

**Vitamin E**

Likely typical need for vitamin E



TYPICAL NEED

**Niacinamide (Vitamin B3)**

Likely typical niacinamide needs



TYPICAL NEED

**Thiamine (Vitamin B1)**

Likely typical need for thiamine



TYPICAL NEED

## Biotin

Likely typical need for biotin

# Folate (Vitamin B9)

**Key Takeaways:**

- Folate is an essential vitamin. It is particularly important for pregnant women.
- Folate is needed for brain and heart health, gene signaling, and to protect DNA. It is readily available in citrus fruits, green vegetables, and fortified foods.
- Your diet, smoking, heavy drinking, gut issues, and genes may impact folate levels.
- Click the **next steps** tab for relevant labs.

Vitamin B9, also known as folate or folic acid, is an essential nutrient. Most adults should get **400 micrograms (mcg)** of folate per day. Among other functions, folate helps the body make red blood cells [\[R, R, R, R\]](#).

Low levels of folate are not common. However, women may be at a higher risk than men [\[R, R\]](#).

Additional risk factors and causes of low folate levels include:

- **Low intake of fruits and vegetables** [\[R, R\]](#)
- Heavy drinking [\[R, R\]](#)
- Smoking [\[R, R\]](#)
- Gut issues such as inflammatory bowel disease (IBD) or celiac disease [\[R, R, R\]](#)
- Certain medications [\[R\]](#)

A variant in a gene called *MTHFR* is linked to slightly lower folate levels. People who carry two copies of this variant may have about 16% lower blood folate [\[R\]](#).

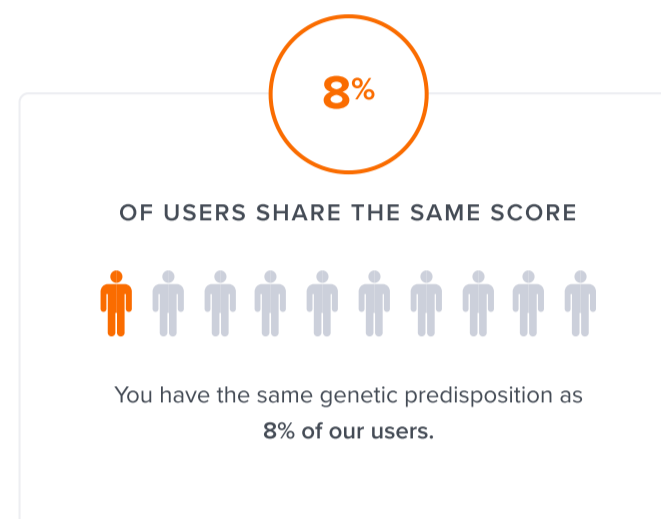
Genetically higher folate levels may be causally associated with [\[R, R, R, R, R, R, R, R\]](#):

- IgE levels
- Fatty liver
- Vitiligo
- Joint pain
- HDL cholesterol
- Heart health (lower CHD)
- Stroke
- Gut inflammation (lower UC)



INCREASED NEED

**Likely increased need for folate based on the genetic variants we looked at**



**Your top variants that most likely impact your genetic predisposition:**

GENE	SNP	GENOTYPE
MTHFR	rs1801133	AA

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

Read [this blog post](#) for more details about MTHFR variants and potential ways to reduce their impact.

# Riboflavin (Vitamin B2)

## Key Takeaways:

- If you are at greater risk for low riboflavin levels, eat riboflavin rich foods like eggs, dairy, lean meats, and green vegetables. You may also consider a riboflavin supplement.
- Symptoms of deficiency include eye and skin issues, swollen/cracked lips, and mouth sores.
- Vegans, athletes, and the elderly may be at greater risk for low levels of riboflavin. Those who become deficient are also likely deficient in other B vitamins.
- Click the **next steps** tab for relevant labs.

Riboflavin helps many enzymes work properly, including the MTHFR (methylenetetrahydrofolate reductase) enzyme. MTHFR helps clear a toxic compound called homocysteine from the body [R].

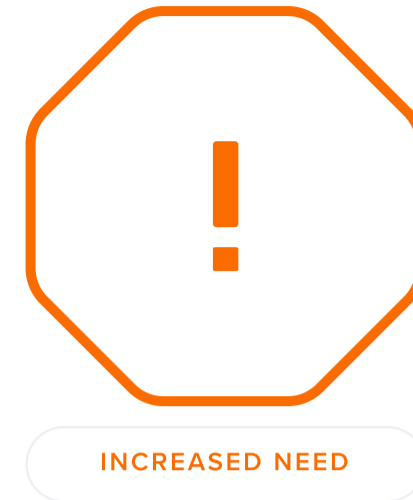
Researchers have found that people with a certain variant in the [MTHFR](#) gene may benefit from a higher riboflavin intake [R].

Those with two copies of this variant may have an MTHFR enzyme that is less active. When their riboflavin levels are low, they may have an increased risk of high blood pressure. They may also have higher levels of homocysteine, a risk factor for heart disease. Finally, low riboflavin may be linked to weaker bones in people with these variants [R, R, R, R, R, R, R, R].

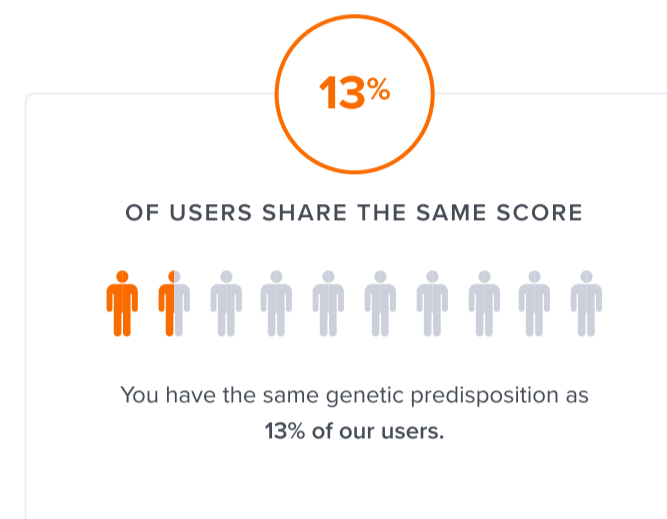
Normal riboflavin levels may help counteract the effect of these variants [R, R, R, R, R, R].

The European Food Safety Authority considered this *MTHFR* variant when setting the dietary requirements for riboflavin [R, R].

**However, keep in mind that other gene variants, your lifestyle, and the environment may also influence your riboflavin levels.**



## Likely increased need for riboflavin based on the genetic variants we looked at



### Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
MTHFR	rs1801133	AA
MTRR	rs1801394	AG
MTHFR	rs1801131	TT

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

# Vitamin K

**Key Takeaways:**

- Genes involved in higher or lower vitamin K levels may influence vitamin K breakdown, fat metabolism, and collagen and bone formation.
- Having low vitamin K levels may contribute to bone health issues like osteoporosis.
- If you are at high genetic risk or lack vitamin K in your diet, taking action now may lower your overall risk for needing it.
- Click the **Recommendations** tab for potential dietary and lifestyle changes. Click the **next steps** tab for relevant labs.

[Vitamin K](#) is essential for **blood clotting** and **bone health**. Low vitamin K levels may play a role in [osteoporosis](#) and other bone problems. They may also increase blood clotting time, putting people at higher risk of bleeding. Good sources of vitamin K include green leafy vegetables, soy products, carrot juice, and pumpkins [\[R,R,R\]](#).

Genetics may influence vitamin K levels. Some gene variants may be linked to **higher vitamin K levels**. Examples include [\[R\]](#):

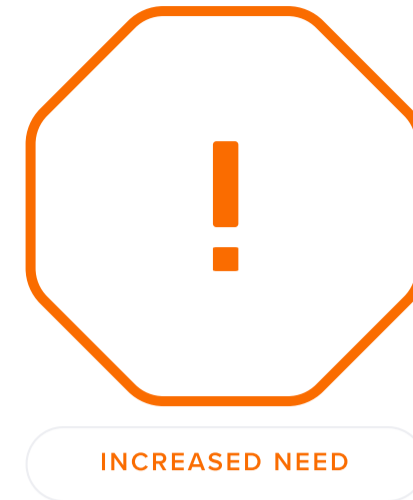
- "G" at [rs964184](#), near the [APOA5](#) and [ZNF259](#) genes
- "T" at [rs2108622](#), near the [CYP4F2](#) gene
- "C" at [rs4852146](#), near the [CTNAA2](#) gene

On the other hand, variants like [rs4645543](#)-T may be linked to **lower vitamin K levels**. It's located near the [COL22A1](#) and [KCNK9](#) genes [\[R\]](#).

Genes involved in vitamin K levels may influence [\[R, R, R, R\]](#):

- Vitamin K breakdown ([CYP4F2](#))
- Fat metabolism ([APOA5](#))
- Other vitamin K-related genes ([CTNAA2](#))
- Collagen and bone formation ([COL22A1](#))

Genetically higher levels of vitamin K1 (phylloquinone) may be causally associated with:



## Likely increased vitamin K need based on 11 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
ATG12	<a href="#">rs6862909</a>	GT
CDO1	<a href="#">rs6862071</a>	AT
CDO1	<a href="#">rs4122275</a>	GA
/	<a href="#">rs2192574</a>	TT
SIDT2	<a href="#">rs964184</a>	CC
CTNNA2	<a href="#">rs4852146</a>	TT
CYP4F2	<a href="#">rs2108622</a>	CC
CYP4F11	<a href="#">rs12609820</a>	TT
KCNK9	<a href="#">rs4645543</a>	CC
KCNK9	<a href="#">rs2199565</a>	GG
KCNK9	<a href="#">rs7018214</a>	TT

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

- Stroke [\[R\]](#)
- Heart health [\[R\]](#)
- High blood sugar (lower diabetes risk) [\[R\]](#)

**Keep in mind that your diet, environment, and other genetic variants also influence your vitamin K levels.**

# Vitamin B6 (Pyridoxine)

Some people may have genetically higher vitamin B6 levels than others. Genes involved may influence vitamin B6 metabolism [\[R\]](#), [\[R\]](#), [\[R\]](#).



INCREASED NEED

**Likely increased need for vitamin B6 based on 5 genetic variants we looked at**

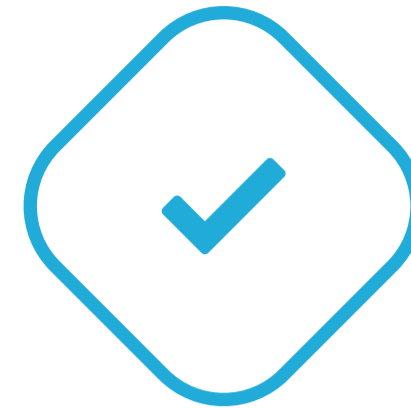
Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
NBPF3	rs4654748	CC
ALPL	rs1256341	TT
NBPF3	rs1697421	TC
CBS	rs234706	AG
MTHFR	rs1801133	AA
PDXK	rs2010795	GA
ALPL	rs1772719	AC
PDXK	rs147242481	GG
ALPL	rs1256335	AA

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

# Vitamin D

## Key Takeaways:



TYPICAL NEED

## Likely typical need for vitamin D based on 1,766 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
COPB1	rs2060793	GG
COPB1	rs12794714	AA
COPB1	rs10832289	TT
GC	rs2282679	GT
COPB1	rs10741657	GG
GC	rs7041	AC
CYP1B1	rs1800440	CT
VDR	rs1544410	CT
VDR	rs2228570	GA
/	rs189918701	GG
/	rs558560635	GG
/	rs375984409	GG
PDE3B	rs571484036	AA
COPB1	rs117913124	GG
GC	rs222026	TT
GC	rs4588	TG
VDR	rs731236	AG
GC	rs11723621	GA
PDE3B	rs201501563	TT
RRAS2	rs117206369	TT
/	rs201561609	TT
ADH1B	rs1229984	TC
GC	rs113938679	GG
CYP2R1	rs117576073	GG
/	rs561089663	GG
PSMA1	rs577185477	TT
/	rs557657187	GG

- Vitamin D is an essential nutrient that you need outside sources of to achieve adequate levels. It is important for mood, immunity, heart health, and blood sugar control.
- Vitamin D levels can be impacted by intensity and amount of sun exposure, age, skin color, and your genetics.
- If you are genetically predisposed to needing more vitamin D, you may want to consider supplementation and addressing possible issues like sun exposure.
- Click the **next steps** tab for relevant labs.

[Vitamin D](#) is an essential nutrient. **Your body needs vitamin D for strong bones.** Our skin naturally makes vitamin D when exposed to [sunlight](#). We also get small amounts of vitamin D from foods such as fatty fish, egg yolks, beef liver, and mushrooms [\[R,R\]](#).

Around **20-40%** of differences in people's vitamin D levels may be due to genetics [\[R\]](#).

Genes that influence vitamin D levels may play a role in its [\[R\]](#):

- Production
- Activation
- Transport
- Breakdown

Besides genetics, the following factors also influence vitamin D levels [\[R\]](#):

- Sun exposure
- Skin color
- Age

Genetically high vitamin D levels may be causally associated with positive outcomes for:

- Alzheimer's [\[R,R,R\]](#)
- COPD [\[R,R\]](#)

- Uterine fibroids [R]
- Migraines [R]
- Heart Failure [R,R]
- Psoriasis [R]
- Lupus [R]
- Delirium [R]
- Hypertension [R]
- Rosacea [R]
- Total Testosterone [R]
- Muscle loss [R,R]
- Muscle mass [R]
- CRP [R,R]
- Longevity [R,R]
- Lower cholesterol, lipoprotein particles, and phospholipids within VLDL and IDL [R]
- Higher HDL cholesterol [R]
- Lower triglycerides [R]
- Higher adiponectin [R]
- eGFR (lower) [R]
- Primary biliary cholangitis [R]

GENE	SNP	GENOTYPE
NADSYN1	rs12785878	GG
PSMA1	rs554808052	CC
GC	rs565277381	TT
/	rs567415847	GG
/	rs529640451	CC
NADSYN1	rs536006581	AA
COPB1	rs148514005	CC
/	rs185433896	AA
PDE3B	rs188480917	CC
GC	rs3775150	TT
NPFFR2	rs143106299	AA

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

Genetically lower vitamin D levels may be causally associated with negative outcomes for:

- Multiple sclerosis [R,R,R,R,R,R,R,R,R]
- Pneumonia [R]
- Gut Inflammation: ulcerative colitis, non-infective colitis, and Crohn's disease [R]
- Lupus [R,R,R]
- Psoriasis [R,R]
- Longevity [R,R,R,R,R,R]

**A blood test is the only reliable way to determine vitamin D status [R].**

# Vitamin B12

## Key Takeaways:

- Vitamin B12 is important for making energy and red blood cells, building DNA, and nerve function.
- It is most easily obtained via animal products like meat, eggs, dairy, and fortified foods.
- If you have an increased need or you tested as deficient, you may want to examine your current diet. You should talk to your doctor before taking B12 supplements.
- Click the **next steps** tab for relevant labs.

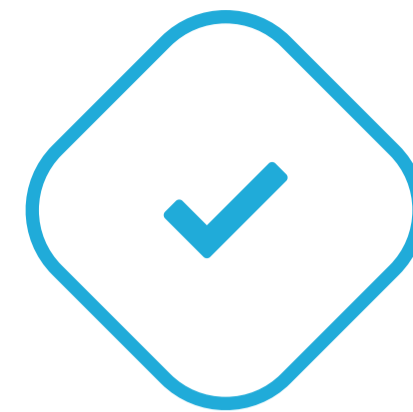
People more prone to low levels of vitamin B12 include [\[R\]](#):

- Vegetarians and vegans
- Older adults
- People with gut disorders (e.g., Crohn's disease, celiac disease)

A hallmark of vitamin B12 deficiency is a lack of healthy red blood cells (anemia). Anemia can cause symptoms like weakness and fatigue. A sign of long-term vitamin B12 deficiency is nerve damage [\[R, R, R, R\]](#).

Vitamin B12 deficiency can be detected with a blood test. After it is diagnosed, you may need to work with your doctor to figure out the cause. Your doctor may recommend oral supplements or injections of vitamin B12 to help correct the deficiency [\[R, R\]](#).

**If you are not deficient, it is best to get vitamin B12 from food. Talk to your doctor before taking vitamin B12 supplements [\[R\]](#).**



TYPICAL NEED

**Likely typical need for vitamin B12 based on 1,023,826 genetic variants we looked at**

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
TCN2	rs1801198	GG
FUT2	rs1047781	AA
FUT2	rs602662	AG
CUBN	rs11254363	GG
ADGRE1	rs62123070	CC
FUT2	rs601338	AG
MTRR	rs1801394	AG
ABCD4	rs4148077	CC
TCN1	rs526934	AG
FUT5	rs3760775	GT
FUT3	rs708686	CT
FUT2	rs516246	TC
CBS	rs234706	AG
MMAB	rs7134594	CT
CUBN	rs1801222	GG
TCN1	rs34324219	CC
RGS7	rs7544372	TT
/	rs1990193	AA
/	rs1513859	AA
FAM240C	rs12478296	CC
SLC25A2	rs3749779	AA
FOXK1	rs314590	AA
CFAP299	rs1385890	AA
LAMA4	rs76190642	GG
CHODL	rs34988353	AA
ARAP2	rs142554771	TT
LAMA4	rs144505878	GG

GENE	SNP	GENOTYPE
C1QL3	rs79770840	GG
RGS18	rs114973754	CC
ADGRL3	rs545255284	TT
C16ORF82	rs139645308	CC
POU3F3	rs188141458	GG
KCNK2	rs72761546	TT
KCNK2	rs189754522	AA
PCSK2	rs141477158	GG
TMEM179	rs79885401	CC
LRRC6	rs117429467	AA
STT3B	rs188968123	AA
SPATA18	rs142766122	CC
SRRM4	rs73215576	CC
MICA	rs556990455	GG
CADM2	rs188586547	AA
CENPF	rs72759663	GG
SMYD3	rs148487271	TT
HSPB7	rs144839376	AA
AKAIN1	rs7239302	CC
ST8SIA6	rs188363440	AA
DACT1	rs118119041	GG
MMUT	rs9473555	GG
TCN2	rs9606756	AA

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

# Vitamin C

## Key Takeaways:

- Vitamin C supports a number of important body functions, like immunity, heart and lung health, wound healing, and collagen production.
- Being genetically predisposed to needing more vitamin C means you may want to consider supplementing with vitamin C.
- It is very difficult to get vitamin C deficiency in the modern, western world.
- Click the **next steps** tab for relevant labs.

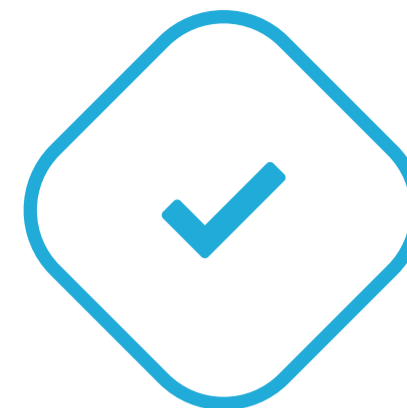
[Vitamin C deficiency](#) or *scurvy* is extremely rare in developed countries. Milder forms may cause [\[R\]](#):

- Poor wound healing
- Gum bleeding
- Skin lesions
- Joint pain

Genetically lower levels of vitamin C may be causally associated with an increased risk for high blood sugar [\[R\]](#).

In turn, genetically higher levels of vitamin C may be causally associated with:

- Lower risk of heart disease [\[R\]](#), [\[R\]](#)
- Lower risk of Alzheimer's disease [\[R\]](#)
- Improved longevity [\[R\]](#)



TYPICAL NEED

## Likely typical need for vitamin C based on 11 genetic variants we looked at



### Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
SLC23A1	rs4257763	GG
LTA4H	rs117885456	GG
GLB1L	rs13028225	CT
GSTO2	rs156697	GA
AKT1	rs10136000	GG
FADS2	rs174547	TT
SYCP3	rs2559850	GA
MAF	rs56738967	CG
SLC23A1	rs33972313	CC
TBX2	rs9895661	TT
RER1	rs6693447	TT
RGS14	rs10051765	CC
GSTA1	rs7740812	AA

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

# Vitamin A

Some people may have higher blood levels of vitamin A after consuming vitamin A or provitamin A-rich foods or supplements.

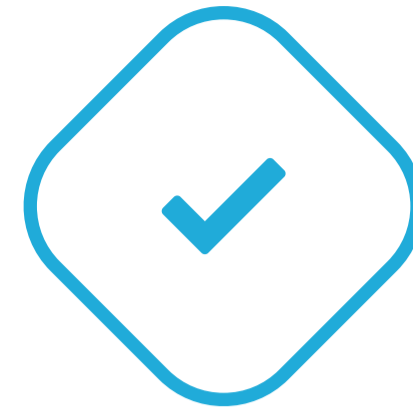
This may partly be due to genetics. Genes involved may influence:

- Vitamin A transport in and out of cells [\[R\]](#)
- Vitamin A metabolism (i.e., the conversion of beta-carotene into vitamin A) [\[R, R\]](#)

To optimize vitamin A absorption in the gut, try to eat vitamin A-rich foods with meals that are higher in fat. This is because vitamin A is fat-soluble [\[R\]](#).

Genetically higher vitamin A levels may play a role in [\[R, R, R, R\]](#):

- Longevity
- Joint Pain
- Joint Inflammation
- High Blood Sugar



TYPICAL NEED

## Likely typical need for vitamin A based on 6 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
BCO1	rs7501331	CT
C16ORF46	rs11645428	GG
FFAR4	rs10882272	CT
BCO1	rs12934922	AA
C16ORF46	rs6564851	TT
BCO1	rs6420424	GG
BCO1	rs4889294	TT

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

# Beta-Carotene

Beta-carotene levels can be measured by a simple blood test. Women will usually have slightly higher levels than men [R].

While dietary intake is the primary source of beta-carotene, genetics can also play a role in how the body processes and utilizes this nutrient. Genes affecting beta-carotene and vitamin A levels may affect beta-carotene uptake in the gut, its conversion into vitamin A, and its transport in and out of cells [R, R].

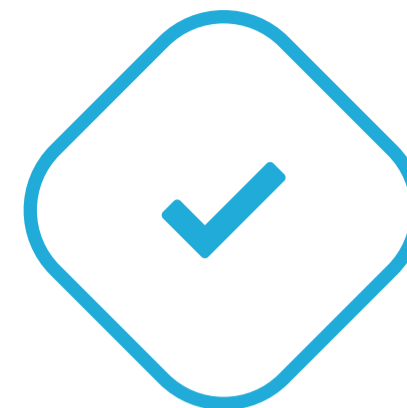
Genetic variants that affect the conversion of beta-carotene into vitamin A have the strongest impact on its blood levels. For this reason, **genetic predisposition towards lower beta-carotene levels is not necessarily a bad thing — it may indicate a better conversion into vitamin A**, which is the active form. Likewise, a predisposition towards higher beta-carotene may indicate poor conversion to vitamin A. [R].

In line with this, lower beta-carotene levels are associated with lower odds of:

- Rheumatoid arthritis [R]
- Ovarian cancer [R]
- Heart attack [R]

However, they may be linked to higher odds of:

- Lung cancer [R]
- Osteoporosis [R]
- Colorectal polyps [R]



TYPICAL LEVELS

## Predisposed to typical beta-carotene levels based on 7 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
C16ORF46	rs8044334	TT
C16ORF46	rs6564851	TT
BCO1	rs12934922	AA
BCO1	rs6420424	GG
BCO1	rs7501331	CT
PTPRT	rs6513787	CC
C16ORF46	rs11645428	GG

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

# Vitamin E

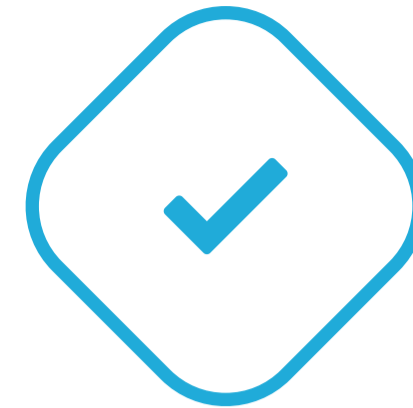
Some people may have higher vitamin E levels than others. These differences may be partly due to genetics. Genes involved may influence [\[R\]](#):

- Vitamin metabolism
- Fat metabolism

Genetically higher vitamin E levels may be causally associated with:

- Heart health [\[R\]](#), [\[R\]](#)
- Stroke [\[R\]](#)
- Bone health [\[R\]](#)

Vitamin E is a fat-soluble nutrient. To help your body absorb more of it, try eating vitamin E-rich foods with meals that are higher in healthy fats [\[R\]](#), [\[R\]](#).



TYPICAL NEED

## Likely typical need for vitamin E based on 4 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
PAFAH1B2	rs12272004	CC
SIDT2	rs964184	CC
CYP4F2	rs2108622	CC
SCARB1	rs11057830	GA
F5	rs6025	CC

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

## Niacinamide (Vitamin B3)

Diet is by far the most important factor influencing niacinamide levels. The body can also convert niacin from the diet into niacinamide. Vegetarians and vegans might need to pay more attention to their niacinamide intake, as plant-based sources may be less bioavailable compared to animal sources.

Other factors influencing niacinamide levels include:

- **Health conditions:** Conditions like chronic liver disease, inflammatory bowel disease, or other disorders affecting nutrient absorption can lead to lower niacinamide levels. Hartnup disease, a rare genetic disorder, affects the absorption of tryptophan, a precursor of niacinamide, leading to deficiency.
- **Age:** Niacinamide absorption may decrease as we age.
- **Physiological status:** Pregnancy and breastfeeding increase the body's requirements for niacinamide.
- **Alcohol consumption:** Excessive alcohol intake can impair the absorption and metabolism of niacinamide, leading to reduced levels.
- **Medications:** Long-term use of certain antibiotics and anticonvulsants has been associated with lower niacinamide levels.
- **Genetics:** Variants at certain genes can affect how the body processes vitamin B3, influencing niacinamide levels.



TYPICAL NEED

### Likely typical niacinamide needs based on 11,120 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
SEPTIN8	rs13354173	CC
SLITRK1	rs181673553	AA

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

# Thiamine (Vitamin B1)

Some people find it hard to maintain healthy thiamine levels. This may partly be due to genetics.

For example, people with the “**TT**” variant at [rs17514104](#) may have lower blood thiamine levels and higher blood pressure [R].

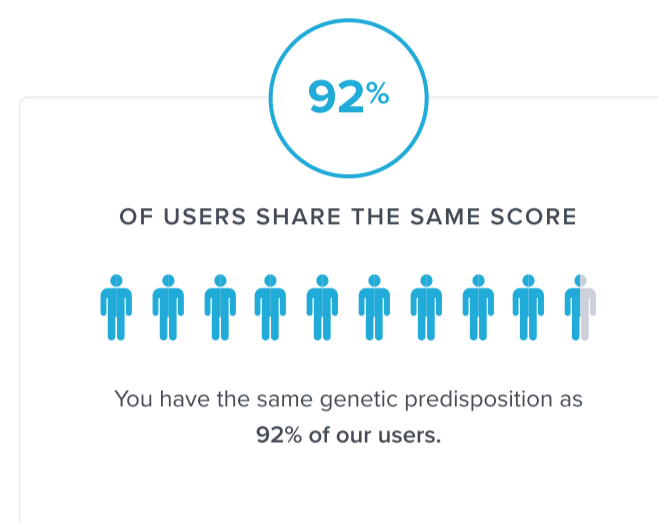
The variant belongs to a gene that helps make a thiamine transporter: [SLC35F3](#). Thiamine transporters are proteins that help carry thiamine through the body [R].

**Please note:** *The above findings stem from a single study. More research is needed to confirm them. Your diet, environment, and other genetic variants also influence your thiamine levels.*



TYPICAL NEED

## Likely typical need for thiamine based on the genetic variants we looked at



### Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
SLC35F3	rs17514104	CT

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

# Biotin

A crucial gene affecting biotin levels is [BT D](#). It helps make an enzyme called *biotinidase*. This enzyme helps release biotin from dietary protein and ‘recycle’ it from proteins in our body [\[R\]](#).

One *BT D* variant, [rs13078881-C](#), may reduce enzyme activity by up to 50%. People with this variant might need more dietary biotin to compensate [\[R\]](#).

**Important:** this variant may be detrimental only when combined with other rare variants, such as [rs71627145-G](#) and [rs34885143-A](#). People carrying single copies of these variants may have higher biotin needs, but they are **not likely to have biotinidase deficiency** [\[R\]](#).

Please also note that other factors, especially your diet, can greatly affect your biotin needs.



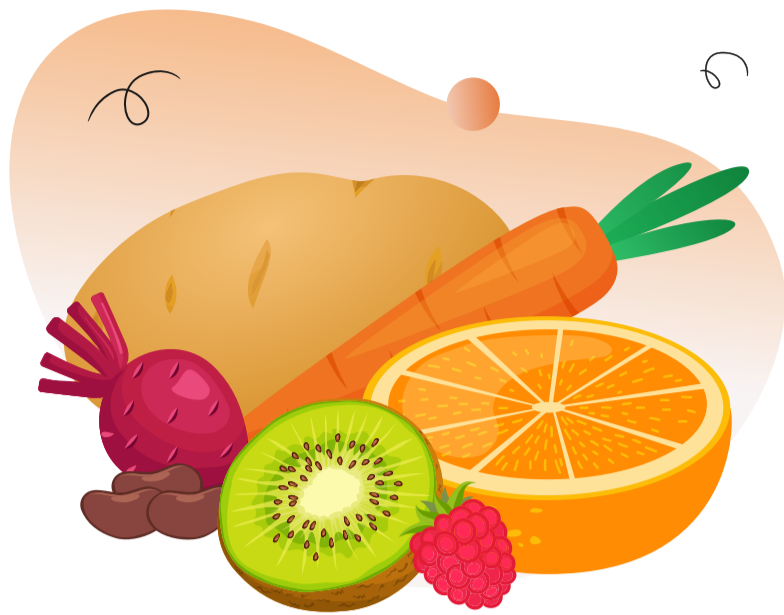
TYPICAL NEED

## Likely typical need for biotin based on 3 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:














GENE	SNP	GENOTYPE
BT D	<a href="#">rs34885143</a>	GG
BT D	<a href="#">rs13078881</a>	GG
ANKRD28	<a href="#">rs71627145</a>	AA

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



## Minerals

Minerals are elements that our bodies need to survive and thrive. Minerals are essential nutrients, which means we must get them from our diet. However, people may have higher needs for certain minerals based on their genes. The four most important minerals that humans need are listed below. Some people may need more of a certain mineral due to genetics. In such cases, getting more of that mineral may help!

<p> <b>INCREASED NEED</b> <b>Calcium</b></p> <p>Likely increased need for calcium</p>	<p> <b>INCREASED NEED</b> <b>Zinc</b></p> <p>Likely increased need for zinc</p>	<p> <b>INCREASED NEED</b> <b>Iodine</b></p> <p>Likely increased need for iodine</p>
<p> <b>TYPICAL NEED</b> <b>Iron</b></p> <p>Likely typical need for iron</p>	<p> <b>TYPICAL NEED</b> <b>Magnesium</b></p> <p>Likely typical need for magnesium</p>	<p> <b>TYPICAL NEED</b> <b>Potassium</b></p> <p>Likely typical need for potassium</p>
<p> <b>TYPICAL NEED</b> <b>Selenium</b></p> <p>Likely typical need for selenium</p>	<p> <b>TYPICAL LEVELS</b> <b>Sodium</b></p> <p>Predisposed to typical sodium levels</p>	<p> <b>TYPICAL NEED</b> <b>Manganese</b></p> <p>Likely typical need for manganese</p>
<p> <b>TYPICAL LEVELS</b> <b>Chloride</b></p> <p>Predisposed to typical chloride levels</p>	<p> <b>TYPICAL NEED</b> <b>Chromium</b></p> <p>Likely typical need for chromium</p>	<p> <b>TYPICAL NEED</b> <b>Copper</b></p> <p>Likely typical need for copper</p>
<p> <b>TYPICAL NEED</b> <b>Molybdenum</b></p> <p>Likely typical need for molybdenum</p>		

# Calcium

## Key Takeaways:

- The amount of calcium in the blood at any given time is controlled by vitamin D and parathyroid hormone.
- Much of the world's population is at risk for low calcium.
- Beyond diet, it is important to maintain adequate vitamin D levels as well.
- Dairy and fortified foods are the easiest ways to ensure adequate calcium intake.
- Click the **next steps** tab for relevant labs.

## Calcium is the most abundant mineral in the human body.

Ninety-nine percent of the calcium in the body is stored in the bones and teeth, and only a small amount is in your bloodstream at any time. **Vitamin D** and **parathyroid hormone** closely control the amount of calcium in your blood [R,R,R].

The recommended daily intake of calcium is 1,000 mg for women who have not gone through menopause and 1,200 mg for women who have. The recommended daily intake for men is 1,000 mg [R].

Many people do not get enough calcium in their diet [R, R, R, R].

Eating more dairy products is an easy way to incorporate more calcium into your diet. You can also add non-dairy calcium sources and calcium-fortified foods like cereal and orange juice [R].

Compared to supplements, calcium from food is easier to absorb and may be better for bone building. It is also unlikely to cause side effects [R, R, R].

Your gut needs vitamin D to be able to absorb calcium. Higher vitamin D levels are linked to higher calcium levels in the body and better bone health [R, R, R, R].

[Sunlight](#) is our main source of vitamin D. Foods like fish, eggs, and fortified milk provide small amounts of vitamin D. People lacking vitamin D should consider taking a supplement [R, R, R].



INCREASED NEED

## Likely increased need for calcium based on 49,961 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
ALDH7A1	rs13182402	GA
FAM216B	rs9525667	TC
GAL	rs880610	GG
CDC42SE1	rs2864700	TT
CTNNB1	rs389264	CC
RSPO3	rs9482772	CC
AMT	rs34240317	IA
GALNT3	rs10204976	GG
CPED1	rs10242100	AA
MRPL20	rs12408050	GA
ARL4C	rs12151790	GG
DOK6	rs17184557	TT
FKBP11	rs3741619	GA
ETS2	rs11088458	AG
HBZ	rs10794639	GA
SMOC1	rs3742909	AG
HOXC6	rs7308105	TC
TNFRSF11B	rs2062375	GC
STK39	rs578031265	CC
MARCO	rs115242848	CC
PRSS3	rs10814041	GG
MN1	rs139959245	CC
NUDT2	rs307646	AA
ARRDC3	rs7733007	GG
CDH6	rs2173682	GA
IDH3A	rs2028548	CC
HLA-DQA1	rs2071805	CC

GENE	SNP	GENOTYPE
MECOM	rs784288	GG
VAR2	rs9262558	CC
SP7	rs144680237	CC
CPED1	rs3779381	AA
ZBTB40	rs34414754	AA
GAL	rs56154705	CC
WLS	rs2566755	TT
SEM1	rs4448201	GG
CCDC170	rs4869744	TT
/	rs12808199	AA

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

# Zinc

Some people have higher zinc levels than others. This may partly be due to genetics. Genes involved may influence zinc metabolism [R, R, R].

Genetically higher zinc levels may be causally associated with [R, R]:

- Gut inflammation (lower risk)
- Fasting glucose (improved)

However, it may also be causally associated with [R, R, R, R, R]:

- Kidney stones (increased risk)
- Longevity (reduced)
- Varicose veins (increased risk)
- Heart health (reduced)
- Joint pain (increased risk)



INCREASED NEED

## Likely increased need for zinc based on 8 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
SLC30A8	rs13266634	CC
SLC30A8	rs11558471	AA
CA2	rs1532423	GG
SORBS3	rs4872479	GG
SLC5A6	rs11126936	GG
SLC39A8	rs233804	CC
SCAMP5	rs2120019	TC
NBDY	rs4826508	C

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

# Iodine

Among other factors, genetics may also play a role in iodine levels.

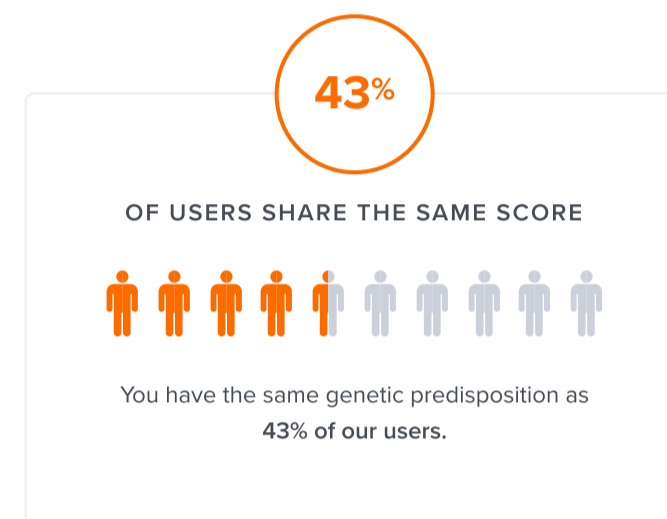
The “G” variant at [rs1050450](#) may be linked to lower iodine levels. This variant belongs to the [GPX1](#) gene, which plays a role in thyroid hormone production and antioxidant protection [R].

**Please note:** *The above findings stem from a single study, so take your results with a grain of salt. We will update the report as soon as more research is available. Also, keep in mind that your diet, environment, and other genetic variants can influence your iodine levels.*



INCREASED NEED

**Likely increased need for iodine based on the genetic variants we looked at**



**Your top variants that most likely impact your genetic predisposition:**

GENE	SNP	GENOTYPE
GPX1	rs1050450	GG

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

# Iron

## Key Takeaways:

- Iron is an essential mineral that your body needs to make hemoglobin, which is used by red blood cells. Women and vegetarians are more likely to be deficient.
- Iron-rich foods include meat, seafood, dark leafy greens, legumes, and fortified foods. You need about 18mg of iron per day.
- If your need is likely higher, you may want to make dietary changes to help ensure adequate intake. Speak to your doctor about supplementation, as high levels of iron can be toxic.
- Click the **next steps** tab for relevant labs.

**Iron (Fe) is an essential mineral.** It helps make [hemoglobin](#), a protein that red blood cells need to carry oxygen throughout the body. In this way, iron supports energy production and fights fatigue[\[R, R, R,R\]](#).

When iron levels are low, the body can't make enough red blood cells. This is called **iron-deficiency anemia**. Although mild cases may not lead to any signs or symptoms, people with more advanced iron-deficiency anemia may experience [\[R\]](#):

- Weakness and fatigue
- Pale skin
- Shortness of breath
- Dizziness
- Cold hands or feet
- Brittle nails

The following groups may be at a higher risk of iron deficiency [\[R, R\]](#):

- Women
- Children
- Routine blood donors
- Vegetarians

Iron from plant sources is harder to absorb than iron from animal sources. This makes vegetarians more prone to iron deficiency [\[R\]](#).



TYPICAL NEED

## Likely typical need for iron based on 446,739 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
TMPRSS6	rs228916	TT
ZDHHC14	rs181143083	TT
TMPRSS6	rs4820268	GA
TMPRSS6	rs855791	AG
MAPRE1	rs146680938	CC
CDH19	rs181670562	CC
MOSPD3	rs7385804	AC
TF	rs3811647	AG
CLDN11	rs113286612	GG
DTWD2	rs2442120	CC
SLC24A2	rs142401741	GG
IRX2	rs62330869	AA
ERG	rs117910189	TT
ZFAT	rs2315834	CC
HFE	rs1799945	CC
SCGN	rs115809796	AA
NOTCH4	rs41270472	AA
CNTN5	rs1398168	GA
GK2	rs12641027	TC
PLAAT1	rs9849045	TT
NCKAP5	rs7588567	TT
CARMIL1	rs111722075	TC
H3C6	rs113507773	AG
TF	rs8177240	GT
IGLV4-60	rs987710	GG
SHISA9	rs78138925	GG
ESM1	rs150548770	TT

Iron-deficiency anemia can often be detected with a blood test. After it is diagnosed, your doctor may recommend supplementing with iron. Keep in mind that it may take several months of supplementation to help correct iron deficiency [\[R, R\]](#).

Genetically higher iron may be causally associated with:

- Varicose veins [\[R, R\]](#)
- Deep vein thrombosis [\[R\]](#)
- Anemia (lower risk) [\[R, R\]](#)
- Low Mood (lower risk) [\[R\]](#)
- High Blood Sugar [\[R\]](#)
- Fatty liver [\[R, R\]](#)
- Back Pain [\[R\]](#)
- Total Cholesterol [\[R\]](#)
- LDL Cholesterol [\[R, R\]](#)
- Parkinson's Disease (lower risk) [\[R\]](#)
- Painful Periods (lower risk) [\[R\]](#)
- eGFR [\[R\]](#)
- Joint Pain (lower risk) [\[R\]](#)
- Heart Health (lower risk) [\[R\]](#)
- Artery Hardening (lower risk) [\[R\]](#)
- Atrial Fibrillation [\[R\]](#)
- Lung Health (improved function) [\[R\]](#)
- Longevity (reduced) [\[R\]](#)
- Gout/Uric acid [\[R\]](#)
- Joint Inflammation (lower risk) [\[R\]](#)

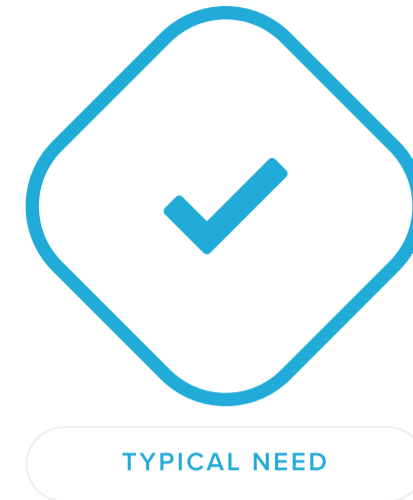
**Note that it is best to get iron from food. A high dose of iron can lead to stomach pain and other unwanted gut issues. It can also be toxic. Talk to your doctor before taking iron supplements [\[R\]](#).**

GENE	SNP	GENOTYPE
FIG4	<a href="#">rs143130997</a>	<b>GG</b>
TMC5	<a href="#">rs4780797</a>	<b>GG</b>
PROC	<a href="#">rs116946164</a>	<b>TT</b>
RAD18	<a href="#">rs113839317</a>	<b>TT</b>
PLCG2	<a href="#">rs9934030</a>	<b>AA</b>
HFE	<a href="#">rs1800562</a>	<b>GG</b>
BMP4	<a href="#">rs210368</a>	<b>GG</b>

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

# Magnesium

Some people may have higher magnesium levels than others. This may be partly due to genetics. Genes involved may influence:



- Magnesium transport in and out of cells [\[R, R, R, R\]](#)
- Magnesium metabolism [\[R, R\]](#)

Genetically higher magnesium levels may be causally associated with:

- Stroke [\[R\]](#)
- Bone health [\[R\]](#)
- Gout [\[R, R\]](#)
- Uric acid [\[R\]](#)
- Cataracts. [\[R\]](#)
- Mood Swings [\[R\]](#)
- Joint Inflammation [\[R\]](#)
- Atrial fibrillation [\[R\]](#)
- Heart Health [\[R\]](#)

## Likely typical need for magnesium based on 31 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
TRPM6	rs11144134	TT
MTMR7	rs3764796	TT
CSTA	rs1801725	GG
FGFR2	rs1219515	GG
RTL1	rs915364	CC
PAPSS2	rs1969821	GG
VIPR1	rs11718502	TC
THBS3	rs4072037	TC
PAPSS2	rs791888	GG
RALGDS	rs7032317	CT
CDKL2	rs6838240	CT
ALPK1	rs2074379	AG
C8ORF48	rs10888073	CT
CANT1	rs11891	GA
THBS3	rs4971100	AG
BORCS7	rs3740393	GC
CDKL2	rs6852678	TC
TRPM6	rs113607577	GG
HDHD2	rs117060920	GG
MPPED2	rs3925584	CC
SHROOM3	rs13146355	GG
SHROOM3	rs9993810	GA
MECOM	rs448378	GA
TRPM6	rs2274924	TT
ASAP1	rs72728275	AA
CAMK1D	rs2648708	CC
FGFR2	rs3135758	CC

GENE	SNP	GENOTYPE
CCDC136	rs1472147	TT
METTL21C	rs603894	CC
PHACTR2	rs2073214	CC
DLK1	rs4905994	CC
OR5BS1P	rs193153567	CC
PRMT7	rs7197653	GG
ATP2B1	rs7965584	AA

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

# Potassium

## Key Takeaways:

- Up to **60%** of differences in people's potassium levels may be due to genetics.
- Other risk factors for potassium deficiency include poor diet, dehydration, magnesium deficiency, and certain medications and health conditions.
- The rate of potassium deficiency in the U.S. has risen from **4% to 11%** in the past two decades.
- If you are at high genetic risk, you may lower overall risk by taking action on factors that you can change.
- Click the **next steps** tab for relevant labs.

Up to **60%** of differences in people's potassium levels may be due to genetics. Involved genes may play a role in [\[R, R, R\]](#):

- Potassium transport
- Electrolyte balance
- Kidney function

**Keep in mind that your diet and the environment may also influence your potassium levels. A [blood test](#) is the only reliable way to determine your potassium levels.**



TYPICAL NEED

## Likely typical need for potassium based on 152,719 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
RGS7	rs183294212	CC
LURAP1	rs111512785	AA
PRG4	rs141261421	GG
NVL	rs78473436	AA
HMCN1	rs138057810	AA
CASQ2	rs117999962	GG
FMO2	rs184768578	AA
SSBP3	rs182561930	CC
PTPRC	rs141793725	TT
ETV3	rs75349367	GG
OLFM3	rs140864890	AA
GALNT2	rs80258856	CC
BEND5	rs139642127	GG
FYB2	rs143507390	GG
SSBP3	rs117932658	TT
RRAGC	rs144130357	CC
DMBX1	rs78451089	GG
/	rs80302144	CC
/	rs7548119	GG
RGS13	rs12071444	GG
HMCN1	rs61829629	GG
PLPP3	rs139123937	GG
PLPP3	rs12075340	AA
ATP1A1	rs10924092	GG
KCNT2	rs77824746	GG
SEC16B	rs75022918	TT
LY9	rs73017956	GG

GENE	SNP	GENOTYPE
KCNT2	rs76559586	GG
KCNT2	rs59729886	CC
PRKAA2	rs138876064	GG
PLPP3	rs146657061	GG
PRKAA2	rs184786990	GG
RNF186	rs7516526	GG
CACHD1	rs185466715	AA
GNAI3	rs76531483	GG
C1ORF174	rs74643023	GG
MTARC1	rs3849284	GG
LRRC52	rs17471444	TT
C1ORF21	rs139777178	AA
LYPLAL1	rs79278760	GG

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

# Selenium

## Key Takeaways:

- Genes that influence selenium levels play a role in selenium transport, storage, and metabolism.
- Selenium deficiency affects anywhere from **500 million to 1 billion** people worldwide, due to inadequate intake.
- Other risk factors for a selenium imbalance include consuming too much selenium, certain health conditions and medications, as well as dialysis.
- If your genetic risk is high, your overall risk is still low unless you live in an area with inadequate selenium sources.
- Click the **next steps** tab for relevant labs.

Genes that influence selenium levels play a role in selenium transport, storage, and metabolism [\[R, R\]](#).

The [DMGDH](#) and [BHMT](#) genes play a role in selenium and [homocysteine](#) metabolism. The following variants near these genes are linked to higher selenium levels [\[R, R, R\]](#):

- [rs921943](#)-T
- [rs11960388](#)-A

The [AGA](#) gene affects proteins that transport selenium. One variant near this gene, [rs1395479](#)-A, is linked to higher selenium levels [\[R, R\]](#).

People with the 'A' variant at [rs891684](#) may have lower selenium levels. This variant is near the [SLC39A11](#) gene, which may affect the amount of fat tissue. Selenium may be partly stored in fat tissue [\[R, R, R\]](#).

Genetically higher selenium levels may be causally associated with:

- Low Mood [\[R\]](#)
- Ldl/Hdl cholesterol [\[R\]](#)
- eGFR [\[R, R\]](#)
- High Blood Sugar (higher for diabetes) [\[R\]](#)
- Bone health (higher bmd) [\[R\]](#)
- Prostate cancer [\[R\]](#)



TYPICAL NEED

## Likely typical need for selenium based on 4 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
ARSB	<a href="#">rs921943</a>	TC
BHMT	<a href="#">rs7700970</a>	TC
SELENOP	<a href="#">rs3877899</a>	TC
COG1	<a href="#">rs891684</a>	GA
AGA	<a href="#">rs1395479</a>	CC
BHMT	<a href="#">rs11960388</a>	TT
GPX1	<a href="#">rs1050450</a>	GG

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

Keep in mind that your diet, environment, and other genetic variants also influence your selenium levels.

# Sodium

Sodium is one of the body's main minerals. It plays vital roles in regulating blood pressure, fluid balance, and muscle and nerve function, among others. Adults need **less than 500 mg sodium/day** to maintain normal sodium levels in the body. **However, 95% of the world's population consumes between 3 and 6 g/day, which is much more than necessary** [R, R].

**Dietary sodium deficiency is extremely rare**, even among people on very low sodium diets. Sodium levels may fall below normal in these situations [R, R]:

- Extreme, heavy sweating
- Severe injury
- Chronic diarrhea
- Kidney disease where the body is unable to hold onto sodium

Blood sodium can increase above normal due to the following [R, R, R]

- Poor fluid intake
- Excessive salt intake
- Kidney disease

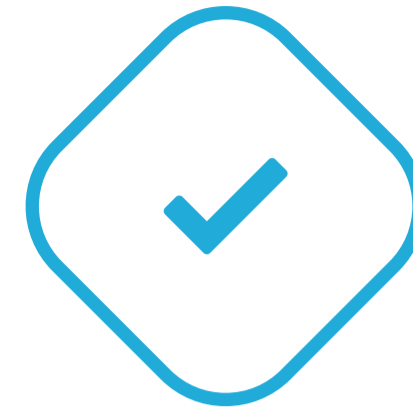
**Up to 40% of differences in people's sodium levels may be due to genetics** [R].

Genetically higher urinary sodium may be causally associated with:

- Overweight (higher bmi) [R]
- Stroke [R]
- Heart failure [R]
- High blood sugar (Type 2 diabetes risk) [R]

Genetically higher dietary sodium intake may be causally associated with:

- High blood pressure [R]
- Atrial fibrillation [R]



TYPICAL LEVELS

**Predisposed to typical sodium levels based on 942,780 genetic variants we looked at**

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
TSNARE1	rs141086701	GG
ULK3	rs2472297	CC
INO80E	rs11646118	TT
GIPR	rs34783010	GG
TFAP2B	rs2504671	CC
ADH1B	rs1229984	TC
SYT1	rs12581220	CC
TINAG	rs816366	CC
BRINP1	rs17635778	CC
SCN2A	rs16850592	TT
STK24	rs7334078	TT
TSHZ2	rs1996928	GG
/	rs9537160	CC
PYGL	rs17123039	TT
/	rs2945091	GG
MLXIPL	rs33951980	CT
GCKR	rs1260326	TC
AHR	rs4410790	TC
NRBP1	rs55807911	CT
HTR4	rs13163314	CT
CABCOC01	rs2393831	GA
MEF2C	rs7442885	CG
MDM4	rs11584700	AG
REEP3	rs7924036	TG
SSBP3	rs643428	CT
NEGR1	rs2422137	CA
UPB1	rs5760425	GT

GENE	SNP	GENOTYPE
MIA	rs117287096	GG
/	rs1957111	CC
FTO	rs11642015	CC
NEBL	rs7072776	GG
/	rs72634682	GG
NOVA1	rs7140993	AA
LONRF2	rs1437971	CC
GSE1	rs2968426	CC
PLCL1	rs1036336	CC

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

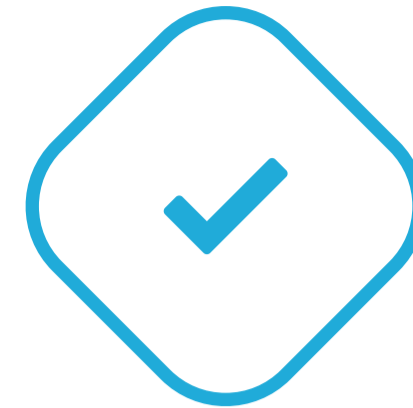
# Manganese

Genetics can partly determine your manganese levels. Responsible genes play a role in [\[R, R\]](#):

- Manganese and zinc transport
- Manganese uptake from the blood into tissues
- Iron and manganese exchange

Rare mutations in the [SLC39A8](#) gene can cause severe manganese deficiency. **However, those mutations result in serious medical conditions that only doctors can diagnose and treat. This report doesn't look into such mutations [\[R, R\]](#).**

**Keep in mind that your diet and environment also influence your manganese levels.**



TYPICAL NEED

## Likely typical need for manganese based on 98,113 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
GYPE	rs114415743	TT
TIAL1	rs151243716	GG
INPP5F	rs137997938	GG
TTF2	rs1289661	TT
AKAP12	rs2786750	CT
OPCML	rs2155533	GA
CSMD1	rs190803682	CC
LHFPL3	rs7796437	AA
CLDN10	rs149628902	TT
SMOC1	rs227446	GG
ADCY9	rs2018513	AA
/	rs4239354	TT

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

# Chloride

Blood chloride levels are generally steady, although they can drop slightly after meals. This is because the stomach produces acid after eating, for which it uses chloride from blood.

Chloride levels usually mirror the level of sodium. However, if there is an acid-base imbalance in your body, chloride levels can change independently of sodium levels [R, R].

Up to **35%** of the differences in people’s chloride levels may be due to genetics [R].

**High levels** of chloride may be due to:

- Dehydration
- Kidney disease
- Metabolic acidosis (too much acid in the blood)

**Low levels** of chloride may be a sign of:

- Heart failure
- Lung disease
- Addison disease (the lack of certain adrenal gland hormones)
- Metabolic alkalosis (too much base in the blood)



TYPICAL LEVELS

## Predisposed to typical chloride levels based on 18 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
WDR72	rs7495833	AA
HNF1A	rs1169288	CC
TBX2	rs7215775	GA
PIN4	rs2984348	T
BORCS7	rs73351820	AT
RPH3A	rs3948714	CT
BCAS1	rs459044	GA
HLA-DQA2	rs2239804	CT
NQO1	rs62049973	AA
CUX2	rs79105258	CC
SYT1	rs11109815	GG
SPPL2A	rs12910301	AA
SLC16A6	rs35397826	AA
TMEM135	rs7113624	GG
NIFK	rs4848713	CC
CEP83	rs113918189	CC
CDKAL1	rs9350272	AA
LIN7C	rs1491850	TT

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

# Chromium

Scientists have found many gene variants affecting chromium levels. However, the mechanisms behind these genetic effects are still largely unknown [R, R].

Interestingly, variants linked to chromium levels may also be involved in cognitive function [R].

**Keep in mind that your diet and environment also influence your chromium levels.**



TYPICAL NEED

## Likely typical need for chromium based on 20 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
PTPRM	rs600533	AA
TRDN	rs78279606	GG
KIAA1549L	rs7104844	CC
/	rs117244450	CC
ADRB1	rs78721021	TT
SMIM21	rs12607014	TC
ELAC2	rs12602392	CC
TCERG1L	rs11017755	CT
ARHGEF4	rs12987736	CT
TRNT1	rs62234189	CC
GPC6	rs80211266	TT
NIPBL	rs74811583	AA
HS6ST3	rs79262085	CC
KITLG	rs61924870	AA
ZCCHC7	rs7850996	TT
ZCCHC7	rs13290794	GG
MICAL2	rs12803936	CC
FIG4	rs9487211	TT

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

# Copper

The amount of copper you need may depend, in part, on your genetics.

Genes involved in copper levels in the body may influence the [\[R, R, R\]](#):

- Absorption of copper in the gut
- Distribution of copper in cells and tissues
- Removal of copper from the liver (in a substance called bile)

Rare genetic mutations may make it harder for the body to absorb, distribute, or remove copper. As a result, these mutations may increase the risk of copper deficiency or toxicity [\[R, R\]](#).

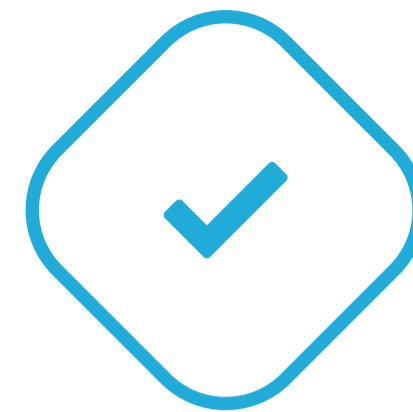
Genetically higher levels of copper may play a positive role in [\[R, R, R, R, R, R, R, R\]](#):

- Heart Health
- High Blood Pressure
- Irritable Bowel
- Mood Swings
- Alzheimer’s Disease
- White Blood Cells
- Anemia
- Fractures

However, they may play a negative role in [\[R, R, R, R, R, R\]](#):

- Higher GGT levels
- Glaucoma
- Sleep Apnea
- Carpal Tunnel Syndrome
- Lupus
- Kidney Health
- eGFR
- Joint Pain
- High Blood Sugar
- Liver Scarring

**Note that this report does not look into such mutations. Also, keep in mind that your diet and environment also influence your copper levels.**



TYPICAL NEED

## Likely typical need for copper based on 16,129 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
SCEL	rs17773384	CC
TFAP2E	rs367771738	TT
SLAIN1	rs17720055	TT
THRAP3	rs118183123	CC
CITED2	rs148460355	AA
ZNF608	rs73311010	AA
SELENBP1	rs2769264	TT
SMIM36	rs201065543	TT
IRF2	rs793811	TT
SMIM1	rs1175550	AA
PHETA1	rs4766566	CC
ZNF429	rs35830602	GA
CAMK1D	rs185903133	GG
BAK1	rs150273297	TT
ELAVL2	rs145001356	CC
SPDYE21	rs78761951	GG
FOXF1	rs2665328	AA
SNAI1	rs74274216	CC
NAA25	rs11066132	CC
ITGA1	rs7736204	GG
MAPKAPK5	rs78069066	GG
OAS1	rs886477	TT
BRAP	rs11066001	TT
ALDH2	rs4646776	GG
ALDH2	rs671	GG
STXBP6	rs66541674	GG
MYL2	rs2188380	TT

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

# Molybdenum

Although small amounts of molybdenum are essential, too much can be harmful. However, [molybdenum toxicity](#) is also **extremely rare**.

Workplace exposure is one of the most common causes of high molybdenum levels. People working in **electric, welding, and mining industries** may be at a higher risk [\[R, R, R\]](#).

One of the more common signs of toxicity is an increase in uric acid, leading to gout-like symptoms such as swelling and **joint pain**. Other reported symptoms include [\[R, R, R\]](#):

- Diarrhea
- Anemia (a lack of healthy red blood cells)
- Weight loss
- Sexual dysfunction

Besides your diet and environment, **genetics may also influence your molybdenum levels** [\[R\]](#).



TYPICAL NEED

## Likely typical need for molybdenum based on 15,556 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
IGFBP7	rs75597017	AA
ABCG2	rs60911526	GG
NR4A2	rs16839950	TT
PTCH1	rs9632898	CC
NPAS3	rs8021455	TC
SPDL1	rs39797	CT
SEC11C	rs7239348	AA
UBE2E2	rs9310713	GG
TGS1	rs10481221	CG
VAT1L	rs76606743	GA
TAFA1	rs7628995	GA
DHCR24	rs12402232	CA
MADCAM1	rs3745925	AC
PPM1L	rs75943454	AA
SLC40A1	rs10170389	GG
KBTBD11	rs78240379	CC
OTX2	rs1504607	TT
NCOA4	rs2075894	AA
LMO4	rs12089211	TT
NAA25	rs11066132	CC
ACAD10	rs11066008	AA
ATXN2	rs11065933	TT

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

# Recommendations Details

1

## Spinach

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.

### Helps with these Symptoms & Conditions:

High Blood Pressure

### Helps with these Goals:

Exercise Recovery    Immunity

### Helps with these DNA Risks:

Calcium
 

 Folate (Vitamin B9)
 

 Riboflavin (Vitamin B2)
 

 Vitamin B6 (Pyridoxine)
 

 Vitamin K

## How it helps

**Calcium**

IMPACT

2 / 5

EVIDENCE

1 / 5

Spinach is rich in calcium, a nutrient important for bone health. Regular consumption of spinach can help prevent calcium deficiency by supplying the body with this essential mineral.

**Folate (Vitamin B9)**

IMPACT

2 / 5

EVIDENCE

1 / 5

Spinach is rich in Folate (Vitamin B9) which is essential for your body to make DNA and genetic material, and for your cells to divide. Eating spinach thus helps prevent folate deficiency related problems such as anemia, and in pregnant women, it can prevent birth defects in the baby's brain or spine.

**Riboflavin (Vitamin B2)**

IMPACT

2 / 5

EVIDENCE

1 / 5

Spinach is a vegetable that provides riboflavin, which aids in metabolism and the functioning of various enzymes within the body.

**Vitamin B6 (Pyridoxine)**

IMPACT

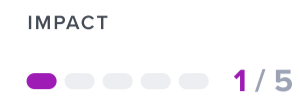
2 / 5

EVIDENCE

1 / 5


Spinach contains vitamin B6, which plays a role in over 100 enzyme reactions in the body related to metabolism.

## Vitamin K



Spinach is loaded with vitamin K, which is essential in the process of blood clotting and maintaining bone health. Therefore, consuming spinach can supply the needed vitamin K, reducing the potential risk for deficiencies.

2



Broccoli

Incorporate at least one cup of chopped broccoli, either steamed or raw, into your daily diet. This can be as part of a meal or snack. Continue this practice daily for ongoing health benefits.

### Helps with these Symptoms & Conditions:

High Blood Pressure

### Helps with these Goals:

Immunity

### Helps with these DNA Risks:

-  Calcium
-  Folate (Vitamin B9)
-  Vitamin K

## How it helps

### Calcium



Broccoli is a vegetable that offers a plant-based source of calcium, beneficial for those who do not consume dairy.

### Folate (Vitamin B9)



Broccoli is rich in folate, a B vitamin that's crucial for your body to make DNA and other genetic material. Including broccoli in your diet can help replenish folate levels, thereby preventing folate deficiency and associated health problems.

### Vitamin K



Broccoli is rich in Vitamin K, which is important for blood clotting and bone health. Regular consumption can help prevent Vitamin K deficiency.

3



## Leafy Green Vegetables

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.

**Helps with these Symptoms & Conditions:**

High Blood Pressure

**Helps with these Goals:**

Immunity

**Helps with these DNA Risks:**

-  Calcium

 Folate (Vitamin B9)

 Vitamin K

## How it helps

### Calcium



Leafy greens like spinach and kale contain calcium, contributing to bone density and muscle function.

### Folate (Vitamin B9)



Leafy green vegetables like kale and arugula are high in folate, which is important for proper brain function.

### Vitamin K



Leafy Green Vegetables are high in Vitamin K, which plays a crucial role in helping your blood clot. Consuming these greens can help prevent vitamin K deficiency by maintaining healthy blood clotting processes and bone health.

4

## Collard Greens

Incorporate at least one cup of cooked or two cups of raw collard greens into your diet 3-4 times a week. Wash the greens thoroughly before use to remove any dirt or pesticides.

**Helps with these DNA Risks:**

- Calcium

Folate (Vitamin B9)

Vitamin K

### How it helps

#### Calcium



Eating collard greens can provide a significant amount of your daily calcium need, an essential nutrient for bone health. They also contain vitamin K, which supports the absorption and use of calcium in the body.

#### Folate (Vitamin B9)



Collard greens are high in folate (Vitamin B9), which is crucial for cell growth and metabolism. Therefore, regularly consuming collard greens can help replenish folate levels in your body, thereby treating or mitigating folate deficiency symptoms.

#### Vitamin K



Collard greens are packed with Vitamin K, which is essential for blood clotting and bone health. By including them in your diet, you can prevent Vitamin K deficiency, thereby reducing the risk of bleeding and bone disorders.

5

## Beef liver

Incorporate beef liver into your diet 1-2 times per week, aiming for a serving size of about 3-4 ounces (85-113 grams) each time. This can be pan-fried, baked, or incorporated into dishes like stews or pate to make it more palatable.

**Helps with these DNA Risks:**

- Folate (Vitamin B9)

Iodine

Riboflavin (Vitamin B2)

Vitamin B6 (Pyridoxine)

Vitamin K

Zinc

### How it helps

**!** **Folate (Vitamin B9)**



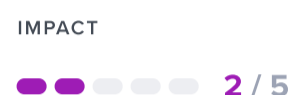
Beef liver is exceptional rich in folate, a vitamin B9 that our bodies need to create DNA and other genetic material, including red blood cells. Regularly incorporating beef liver into your diet can prevent folate deficiency, reducing risks of anemia and other health problems related to low folate levels.

**!** **Iodine**



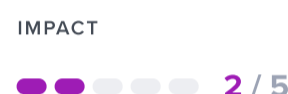
Beef liver is rich in iron, which supports the production of thyroid hormones in your body. In turn, these hormones help regulate your metabolism and prevent iodine deficiency disorders.

**!** **Riboflavin (Vitamin B2)**



Beef liver is high in riboflavin (Vitamin B2), which plays a crucial role in energy production and cell growth and function. Consuming beef liver can therefore help prevent a deficiency by providing your body with sufficient amounts of this essential vitamin.

**!** **Vitamin B6 (Pyridoxine)**



Beef liver is rich in Vitamin B6, which is essential for brain development and function. Consuming it can therefore help prevent B6 deficiency, enhancing your overall health and well-being.

**!** **Vitamin K**



Beef liver is one of the most concentrated sources of vitamin K2, which is important for bone and heart health.

**!** **Zinc**



Beef liver is a rich source of zinc. It contains 5.3 mg of zinc per 100 g, which is approximately 48% of the reference daily intake of this nutrient.

6

**Kale**

Incorporate at least one cup of kale, cooked or raw, into your daily diet. You can add it to smoothies, salads, or use it as a cooked vegetable side dish.

**Helps with these DNA Risks:**

- ! Calcium
- ! Vitamin K

## How it helps

### Calcium




Kale is rich in calcium, a nutrient that helps strengthen your bones and prevent conditions linked to low bone density, like osteoporosis. Including kale in your diet can provide your body with the necessary calcium and thus reduce the risk of developing such conditions.

### Vitamin K



Kale is packed with vitamin K which aids in blood clotting and bone health. A diet rich in kale can help prevent vitamin K deficiency, reducing the risk of excessive bleeding and bone fractures.

7




## Calcium Supplements

Take 500-600 mg of calcium supplement twice daily with food. For best absorption, do not exceed 600 mg at one time and ensure a total daily intake of 1000-1200 mg from all sources, including diet. Continue indefinitely for ongoing support of bone health.

**TYPICAL STARTING DOSE**  
**1000 mg**

#### Helps with these DNA Risks:

-  Calcium

## How it helps


### Calcium



Calcium supplements can help prevent calcium deficiency by increasing the amount of calcium in your body, essential for strong and healthy bones. Also, they can lower the risk of conditions such as osteoporosis that are caused by low calcium levels.

**Please note:** calcium competes with iron for absorption in the intestines, potentially exacerbating anemia or making it harder to manage. If you have anemia, consult your healthcare provider before using calcium supplements.

8



## Swiss Chard

Incorporate Swiss chard into your diet by adding it to salads, sautéing it with olive oil and garlic for a side dish, or mixing it into soups and stews. Aim to eat Swiss chard 2-3 times per week to benefit from its nutrients.

**Helps with these DNA Risks:**

- ⚠ Calcium
- ⚠ Vitamin K

**How it helps**

**⚠ Calcium**



Swiss Chard is high in calcium, which strengthens your bones and teeth. Regular consumption helps prevent osteoporosis and other calcium deficiency disorders.

**⚠ Vitamin K**



Swiss Chard, rich in Vitamin K, promotes proper blood clotting and bone health. Therefore, including it in your diet can help counteract Vitamin K deficiency, which can otherwise lead to increased bleeding and weakened bones.

9

Soy

Incorporate soy-based products such as tofu, soy milk, and edamame into your daily diet. Aim for at least one serving per day, equivalent to about a cup of soy milk, a half-cup of cooked soybeans, or a 3-ounce piece of tofu.

**Helps with these DNA Risks:**

- ⚠ Calcium
- ⚠ Vitamin K

**How it helps**

**⚠ Calcium**




Soybeans are rich in calcium, a nutrient that strengthens bones and prevents conditions like osteoporosis. Including soybeans in your diet can therefore contribute to your daily calcium intake, thus helping maintain bone health.

**⚠ Vitamin K**



Soybeans are rich in vitamin K, which helps in blood clotting and prevents excessive bleeding. Regular consumption can thus replenish vitamin K levels in the body, reducing the risk of vitamin K deficiency.

**10**  **Turnip greens**

Incorporate turnip greens into your diet by adding them to salads, sautéing them with garlic for a side dish, or including them in soups and stews. Aim to include turnip greens in your meals 2-3 times a week to benefit from their rich nutrient profile.

**Helps with these DNA Risks:**

-  Calcium
-  Vitamin K

**How it helps**

 **Calcium**



Turnip greens are abundant in calcium, a nutrient that boosts bone health and prevents osteoporosis or calcium deficiency. Regular consumption of these greens can provide the needed calcium intake, strengthening your bones and reducing the risk of such conditions.

 **Vitamin K**



Turnip greens are a fantastic source of Vitamin K, which is critical for bone health and for proper blood clotting. Regularly incorporating this leafy green in your diet can, therefore, improve bone strength and decrease bleeding risks.

**11**  **Maintain Optimal Vitamin D Levels**

Check your vitamin D levels, they should ideally be in the 30-66 ng/mL range. If your levels are lower than that, take a vitamin D supplement, 1000-4000 IU daily, to reach an optimal range.

**TYPICAL STARTING DOSE**  
**1000 iu**


**Helps with these Symptoms & Conditions:**

- Anxiety
- High Blood Pressure
- Migraines

**Helps with these Goals:**

- Energy
- Immunity
- Mood
- Muscle Growth

Helps with these DNA Risks:

 Calcium

## How it helps

 Calcium



Your gut needs vitamin D to be able to absorb calcium. Higher vitamin D levels are linked to higher calcium levels in the body and better bone health [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

Supplementation with vitamin D and calcium may increase blood calcium levels better than calcium alone. Supplementation with at least 1200 mg/day of calcium and 800 IU/day of vitamin D may be most effective [\[R\]](#).

**Please note:** Experts recommend getting 600-800 IU of vitamin D per day. Medical bodies recommend against taking more than 4,000 IU per day [\[R\]](#).



PERSONALIZED TO YOUR GENES

People with your [GC](#) gene variant may have lower vitamin D levels [\[R\]](#). Make sure to get enough vitamin D to support healthy calcium levels.

YOUR GENETIC VARIANTS

GENE	SNP	GENOTYPE	EVIDENCE
GC	rs7041	AC	

12



Almonds

Incorporate a handful of almonds (about 23 kernels) into your daily diet. You can eat them as a snack, add them to your breakfast cereals or yogurt, or include them in salads and other dishes. Do this consistently for ongoing health benefits.

Helps with these Symptoms & Conditions:

High Blood Pressure

Helps with these Goals:

Exercise Recovery

Helps with these DNA Risks:

- ! Calcium
- ! Riboflavin (Vitamin B2)
- ! Zinc

## How it helps

### ! Calcium



Almonds contain calcium, which is vital for bone health and strength, making them a healthy snack option.

### ! Riboflavin (Vitamin B2)



Almonds are rich in Vitamin B2 (riboflavin), which is essential for energy production and cellular function. Regular consumption of almonds can help prevent a deficiency by supplying necessary riboflavin to support body functions.

### ! Zinc



Almonds contain zinc, which contributes to antioxidant enzyme function.

13

Salmon

Incorporate at least two servings of salmon into your weekly diet, aiming for each serving to be about 3.5 ounces (100 grams), cooked. Choose wild-caught salmon when possible for higher omega-3 content.

#### Helps with these Goals:

- Immunity

#### Helps with these DNA Risks:

- ! Calcium
- ! Riboflavin (Vitamin B2)
- ! Vitamin B6 (Pyridoxine)

## How it helps

### ! Calcium



Salmon is rich in vitamin D, which helps your body absorb calcium more effectively, strengthening bones and preventing calcium deficiency. Eating salmon regularly can reduce the risk of osteoporosis.

## Riboflavin (Vitamin B2)




Salmon is a rich source of riboflavin, which is essential for energy production and cell growth and function. Eating salmon can aid in preventing riboflavin deficiency and supporting overall health.

## Vitamin B6 (Pyridoxine)



Salmon is rich in vitamin B6, a nutrient crucial for brain development and function. Eating salmon regularly helps ensure you receive sufficient B6, preventing deficiencies that can lead to anemia and a weakened immune system.

14



Sardines

Incorporate two to three servings of sardines into your diet each week. You can eat them grilled, steamed, or straight from the can as part of salads, sandwiches, or as a snack. Each serving should be about 3.5 ounces (100 grams), which is roughly one can of sardines.

### Helps with these Goals:

Immunity

### Helps with these DNA Risks:

 Calcium  Zinc

## How it helps

### Calcium




Sardines are a good source of calcium, which is essential for maintaining strong and healthy bones. Regularly consuming sardines can help increase your calcium intake and prevent conditions like osteoporosis.

### Zinc



Sardines are rich in zinc, a mineral that strengthens your immune system and promotes cell growth. Regular consumption can help maintain adequate zinc levels, reducing the risk of zinc deficiency.

15



## Cauliflower

Incorporate cauliflower into your meals at least 2-3 times a week. You can consume it raw in salads, steamed as a side dish, or roasted with a drizzle of olive oil for a healthy snack or part of your main meal.

**Helps with these DNA Risks:**

-  **Folate (Vitamin B9)**

 **Vitamin B6 (Pyridoxine)**

 **Vitamin K**

## How it helps

### **Folate (Vitamin B9)**



Cauliflower is rich in folate (vitamin B9), which helps the body make DNA and genetic material, and it's essential for cell division. So eating cauliflower can help supplement your folate levels, preventing deficiencies which can lead to health issues like anemia.

### **Vitamin B6 (Pyridoxine)**




Cauliflower contributes to your Vitamin B6 intake, which is important for brain development and function. It supports protein metabolism and aids in the synthesis of neurotransmitters, which helps in the treatment and prevention of Vitamin B6 deficiency.

### **Vitamin K**



Cauliflower is a good source of vitamin K, which plays a crucial role in blood clotting and bone health. Including cauliflower in your diet can prevent vitamin K deficiency and associated complications.

16



## Romaine lettuce

Integrate romaine lettuce into your diet by including it in at least one meal per day. This can be done by adding a handful of chopped romaine lettuce to salads, sandwiches, or wraps. Aim to maintain this dietary habit daily for ongoing health benefits.

**Helps with these DNA Risks:**

-  **Folate (Vitamin B9)**


## How it helps

## Folate (Vitamin B9)



Romaine lettuce is rich in folate (Vitamin B9), which is essential for cell growth and metabolism. Consuming it regularly can help prevent folate deficiency, which can lead to anemia and other health issues.

17



### Edamame

Incorporate shelled or whole edamame into your diet by boiling, steaming, or pan-frying them for about 5 to 10 minutes until tender. Eat them as a snack, add to salads, or include in main dishes. Aim for a serving size of about 1 cup (155 grams) a few times a week to benefit from their nutritional value.

#### Helps with these DNA Risks:


Vitamin K


## How it helps

### Vitamin K



Edamame are soybeans that are high in Vitamin K, which helps your body with blood clotting and bone health. Including edamame in your diet can help prevent vitamin K deficiency, reducing risks tied to excessive bleeding and bone diseases.

18



### Turnips

Incorporate turnips into your diet 2-3 times a week by adding them to soups, stews, or roasting them as a side dish. You can also shred raw turnips into salads for a crunchy texture.

#### Helps with these DNA Risks:


Vitamin K


## How it helps

### Vitamin K



Turnip greens are high in vitamin K1, which plays an essential role in maintaining bone health and blood coagulation.

19



## Pumpkin

Incorporate pumpkin into your diet by adding it to meals a few times a week. This can be in the form of roasted pumpkin as a side dish, pumpkin puree in soups and sauces, or adding pumpkin seeds to salads, yogurts, or as a snack on their own.

**Helps with these DNA Risks:**



Vitamin K

## How it helps




Vitamin K



Pumpkin is rich in Vitamin K which is essential for blood clotting and bone health. Including pumpkins in your diet can therefore help to maintain proper levels of Vitamin K and prevent related health problems.

20



## Natto

Incorporate natto, a fermented soybean dish, into your diet a few times per week. You can eat it as is, add it to rice, or include it in breakfast meals for its health benefits.

**Helps with these DNA Risks:**



Vitamin K


## How it helps



Vitamin K



Natto, a Japanese dish made from fermented soybeans, is rich in Vitamin K2 which helps in regulating calcium in your body, strengthening bones, and preventing heart disease. Adding it to your diet can help to offset a Vitamin K deficiency, reducing related risks.

21  **Sauerkraut**

Incorporate sauerkraut into your diet by eating a small portion, such as 2-3 tablespoons, 2-3 times per week. It can be added to sandwiches, salads, or eaten as a side dish. Ensure it is unpasteurized for maximum health benefits.

**Helps with these Goals:**

Immunity

**Helps with these DNA Risks:**


 Vitamin K

**How it helps**

 **Vitamin K**





Sauerkraut contains vitamin K2, which may be beneficial for bone strength and arterial health.

22  **Shrimp**

Incorporate shrimp into your diet 2-3 times per week, either grilled, boiled, or baked, aiming for servings of about 3-4 ounces (85-113 grams) per meal. Avoid frying or preparing with high-fat sauces to maintain nutritional benefits.

**Helps with these DNA Risks:**

 Iodine  Zinc

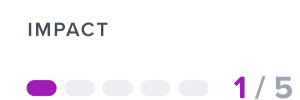
**How it helps**

 **Iodine**



Shrimp is a good source of iodine, a nutrient essential for thyroid function and preventing goiter (enlarged thyroid). Consistently consuming foods rich in iodine, like shrimp, helps maintain good thyroid health and reduce your risk of iodine deficiency.

 **Zinc**



Shrimp is an excellent source of zinc. Consuming shrimp aids in maintaining adequate zinc levels in the body, preventing associated deficiency diseases.

23

Tuna

Incorporate tuna into your meals 2-3 times per week, aiming for a serving size of about 3.5 ounces (100 grams) per meal. Choose fresh or water-packed tuna instead of oil-packed to reduce unnecessary calorie intake.

**Helps with these DNA Risks:**

- Iodine

Vitamin B6 (Pyridoxine)

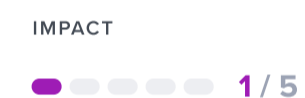
## How it helps

### Iodine



Tuna is rich in iodine, a nutrient that helps your thyroid gland produce hormones regulating growth and metabolism. Regular consumption of tuna can therefore prevent iodine deficiency, which can lead to issues like slowed metabolic function or goiter.

### Vitamin B6 (Pyridoxine)



Tuna is rich in vitamin B6, which your body needs for brain development and function. Regular intake of tuna helps maintain adequate B6 levels in your body, thus preventing deficiencies.

24


Red Meat

Limit your red meat consumption to no more than three portions per week, with each portion being about 3-4 ounces (85-113 grams), roughly the size of a deck of cards. Opt for leaner cuts of meat and consider replacing some red meat meals with poultry, fish, or plant-based protein sources.

**Helps with these Goals:**

- Muscle Growth

**Helps with these DNA Risks:**



 Zinc

## How it helps

 Zinc



Red meat is an excellent source of zinc, a mineral that plays a crucial role in immune system function, wound healing, and DNA synthesis. Zinc from animal sources is more bioavailable, which means that the body can absorb and use it more effectively [\[R\]](#).

  **Vitamin B12 And Folate**

Take a combined supplement of vitamin B12 and folate daily. For adults, the typical dose is 2.4 mcg of B12 and 400 mcg of folate. This supplement should be taken with water and a meal to enhance absorption.

**Helps with these Goals:**

 Energy

**Helps with these DNA Risks:**



 Folate (Vitamin B9)

## How it helps

 Folate (Vitamin B9)




Vitamin B12 works closely with folate in the body. It helps recycle folate in the body which can contribute to maintaining healthy levels of this nutrient.

  **Pumpkin Seeds**

Incorporate a handful of pumpkin seeds (about 28 grams) into your diet daily. You can add them to your breakfast cereal, sprinkle them over a salad, blend them into smoothie bowls, or simply eat them as a snack. This practice can be continued indefinitely as part of a healthy dietary pattern.

**Helps with these DNA Risks:**



 Zinc

## How it helps

 Zinc



Pumpkin seeds are high in zinc, a nutrient that helps maintain immune system health, heal wounds, and supports normal growth. Regular consumption can thus provide the necessary zinc your body needs, preventing any deficiencies.

  Zinc

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

**TYPICAL STARTING DOSE**

**10 mg**


### Helps with these Symptoms & Conditions:

- High Blood Pressure
- Migraines

### Helps with these Goals:

- Immunity
- Mood

### Helps with these DNA Risks:

 Zinc


## How it helps

 Zinc



Zinc supplements help maintain the body's immune function and facilitate the healing process, which is crucial in preventing diseases. Since Zinc is an essential trace element that our bodies can't produce, consuming recommended supplements can help prevent Zinc deficiency.

28



## Chicken

Incorporate chicken into your meals 2-3 times a week, preferably opting for lean cuts like breast meat. Cook it through methods such as grilling, baking, or boiling to avoid adding excess fats. Aim for a portion size of about 3-4 ounces (85-113 grams) per serving.

**Helps with these Goals:**

Muscle Growth

**Helps with these DNA Risks:**

-  Riboflavin (Vitamin B2)

 Vitamin B6 (Pyridoxine)

## How it helps

### Riboflavin (Vitamin B2)




Eating chicken supports Riboflavin (Vitamin B2) levels because it's a good source of this vital nutrient. Adequate B2 is necessary for energy production, cellular function, and maintaining your overall health.

### Vitamin B6 (Pyridoxine)



Chicken is rich in Vitamin B6 which plays a critical role in protein metabolism and contributes to brain health and function. Regular consumption can help to prevent a deficiency, which can cause several health problems such as skin disorders and immune system issues.

29



## Whole Grains

Incorporate at least three servings of whole grains into your daily diet. This can include consuming foods such as whole grain bread, brown rice, whole grain pasta, and oats. Aim to replace refined grains with whole grains at each meal for optimal benefits.

**Helps with these Symptoms & Conditions:**

High Blood Pressure

**Helps with these DNA Risks:**

-  Riboflavin (Vitamin B2)

 Vitamin B6 (Pyridoxine)

## How it helps

### Riboflavin (Vitamin B2)



Whole grains are often fortified with riboflavin and consuming them can ensure adequate intake of this essential nutrient.

### Vitamin B6 (Pyridoxine)



Whole grains are a dietary source of vitamin B6, essential for the metabolism and breaking down of starches.


30



## Beef Heart

Incorporate beef heart into your meals 2-3 times a week. It can be grilled, braised, or stewed. For a balanced diet, accompany it with vegetables and whole grains.

#### Helps with these DNA Risks:


Zinc

## How it helps


### Zinc



Consuming beef heart can help manage a zinc deficiency because it's a rich source of this essential mineral. Adequate zinc levels are crucial for immune function, wound healing, and cellular metabolism.

Beef heart is a good source of zinc. It contains 2.9 mg of zinc per 100 grams. Hearts from other animals may have similar nutritional profiles [\[R\]](#).


31



## Beef Spleen

Incorporate beef spleen into your diet by consuming it 2-3 times a week. You can cook it by braising, grilling, or making it into stews. Ensure it's thoroughly cooked before eating.

#### Helps with these DNA Risks:

 Zinc

## How it helps


 Zinc



Eating beef spleen provides an excellent source of zinc which is required by the body for many biological functions like processing food and nutrients. Adequate zinc intake can help maintain healthy immune function and promote wound healing, aiding those with zinc deficiency.

Beef spleen is a good source of zinc. It contains 2.8 mg of zinc per 100 grams. Spleens from other animals may have similar nutritional profiles [\[R\]](#).


32



Lentils

Incorporate at least 1/2 cup of cooked lentils into your daily diet. You can add them to salads, soups, or rice dishes for a nutritious boost. Continue this practice as a regular part of your diet to benefit from their high fiber and protein content.

**Helps with these DNA Risks:**

 Zinc

## How it helps

 Zinc



Lentils are rich in Zinc, a nutrient your immune system requires to fight off invading bacteria and viruses. Regular consumption of lentils can help prevent Zinc deficiency, thereby bolstering your immune function.


33



Pork

Incorporate lean cuts of pork, such as tenderloin or loin chop, into your diet 2-3 times per week, aiming for a portion size of about 3-4 ounces (85-113 grams) per meal. Cook it using healthy methods like grilling, baking, or broiling to minimize added fats.

**Helps with these DNA Risks:**

 Zinc

## How it helps



Pork is an excellent source of zinc, a nutrient essential for your immune system and metabolism function. Regular consumption can help maintain adequate zinc levels preventing a deficiency.

34

### Cashews

Incorporate a handful of cashews (about 1 to 2 ounces) into your daily diet. You can eat them as a snack, or add them to meals like salads, stir-fries, or oatmeal for added texture and nutritional benefits.

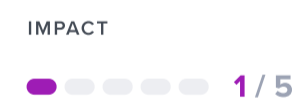
### Helps with these Symptoms & Conditions:

High Blood Pressure

### Helps with these DNA Risks:

Zinc

## How it helps



Cashews provide a notable amount of zinc, supporting immune system and healing processes.

35

### Crab

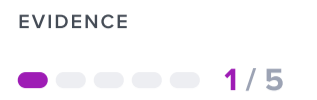
Incorporate crab meat into your diet 2-3 times per week, ensuring it is cooked thoroughly to avoid foodborne illness. Crab can be added to salads, pastas, or eaten as a main dish with a side of vegetables.

### Helps with these DNA Risks:

Zinc

## How it helps

### Zinc



Crabs are a rich source of zinc, a mineral crucial for maintaining a strong immune system and aiding in DNA synthesis and cell division. Consistently incorporating crabs into your diet can help maintain adequate zinc levels, preventing deficiencies and associated health issues.

## Pyridoxine (Vitamin B6)

Take a pyridoxine (vitamin B6) supplement daily. Requirements range from 1.3 to 1.7 milligrams per day for adults, but supplement doses usually start from 50 mg. Consult with a healthcare provider for higher doses or specific medical conditions that might benefit from increased supplementation.

**TYPICAL STARTING DOSE**  
50 mg

### Helps with these Symptoms & Conditions:

High Blood Pressure

### Helps with these Goals:

Immunity

### Helps with these DNA Risks:

 Vitamin B6 (Pyridoxine)

## How it helps

### Vitamin B6 (Pyridoxine)




Vitamin B6 (pyridoxine) assists in over 100 enzyme reactions in the body, predominantly related to protein metabolism and brain development. Taking B6 supplements can prevent and treat vitamin B6 deficiency, which can cause mood disorders, weakened immune function, and issues with nerves.

## Potatoes

Incorporate potatoes into your diet 2-3 times per week, either baked, boiled, or steamed, avoiding deep-frying to minimize unhealthy fats. Aim for portion sizes of about a half to a whole medium-sized potato per serving.

**Helps with these DNA Risks:**


 **Vitamin B6 (Pyridoxine)**

**How it helps**

 **Vitamin B6 (Pyridoxine)**



Potatoes are rich in Vitamin B6, a nutrient that your body uses to build new cells and break down amino acids. Consuming potatoes regularly can help keep your B6 levels healthy, preventing deficiency and its symptoms like fatigue or skin disorders.

  **Chicken Liver**

Incorporate chicken liver into your meals 1-2 times per week, aiming for portions of about 100 grams (3.5 ounces) per serving. You can cook it by pan-frying, baking, or incorporating it into dishes like pâtés or spreads.

**Helps with these DNA Risks:**



 **Vitamin B6 (Pyridoxine)**

**How it helps**

 **Vitamin B6 (Pyridoxine)**



Chicken liver is high in vitamin B6, which supports energy metabolism and the creation of red blood cells.

  **Sunflower Seeds**

Incorporate a small handful of sunflower seeds (about 1 ounce or 28 grams) into your daily diet. You can eat them alone as a snack, sprinkle them on salads, or add them to homemade bread or muffins. Ensure they are unsalted to keep your sodium intake in check.

**Helps with these DNA Risks:**

 **Vitamin B6 (Pyridoxine)**


## How it helps

 **Vitamin B6 (Pyridoxine)**



Sunflower seeds are enriched with vitamin B6, contributing to emotional and mental well-being.

40



**Bananas**

Incorporate 1-2 bananas into your daily diet. Bananas can be eaten as a standalone snack, added to cereal, oatmeal, or smoothies, or used as an ingredient in baking. Aim to include them regularly for ongoing dietary benefits.

### Helps with these Symptoms & Conditions:

High Blood Pressure

### Helps with these Goals:

Exercise Recovery

### Helps with these DNA Risks:

 **Vitamin B6 (Pyridoxine)**


## How it helps

 **Vitamin B6 (Pyridoxine)**



Bananas are rich in vitamin B6 which raw your body needs for brain development and function, and for the production of the hormones serotonin and norepinephrine that influence mood. Adding bananas to your diet can thus help prevent a deficiency of this nutrient.


41



**Turkey giblets**

Incorporate cooked turkey giblets into your diet a few times a week. You can add them to soups, stews, gravies, or finely chopped in stuffing, providing a source of protein, vitamins, and minerals. Ensure they are properly cooked to a safe internal temperature of 165°F to avoid foodborne illnesses.

**Helps with these DNA Risks:**



 **Vitamin B6 (Pyridoxine)**

**How it helps**

 **Vitamin B6 (Pyridoxine)**



Turkey giblets are nutrient-dense and contain high levels of vitamin B6, vital for cognitive development and immune function.

  **Bulgur**

Incorporate bulgur into your diet by replacing rice or pasta with it in meals. Aim to consume bulgur at least 2-3 times per week. It can be used in salads, soups, or as a side dish, cooked by boiling in water or broth for about 12-15 minutes until tender.

**Helps with these DNA Risks:**



 **Vitamin B6 (Pyridoxine)**

**How it helps**

 **Vitamin B6 (Pyridoxine)**



Bulgur is rich in Vitamin B6, a nutrient essential in brain development and function. Consuming Bulgur can help meet your daily Vitamin B6 needs, preventing potential deficiencies that may result in conditions such as anemia or skin disorders.

  **Pistachios**

Incorporate a handful of pistachios (about 1-2 ounces) into your daily diet. You can add them to your breakfast cereals, salads, or simply snack on them throughout the day. Do this regularly for ongoing heart health benefits and to aid in maintaining a balanced diet.

**Helps with these Symptoms & Conditions:**

High Blood Pressure

Helps with these DNA Risks:

⚠ Vitamin B6 (Pyridoxine)

### How it helps

⚠ Vitamin B6 (Pyridoxine)



Pistachios have a significant amount of vitamin B6, which is crucial for hormone regulation and immune health.

44



Kelp

Take a kelp supplement daily, ensuring the dosage aligns with the product's label, typically ranging from 600 to 1000 micrograms of iodine. It's important to not exceed the recommended dosage to avoid potential thyroid issues. Use for ongoing nutritional support, especially if your diet lacks iodine.

TYPICAL STARTING DOSE  
500 mg

Helps with these Goals:

Mood

Muscle Growth

Helps with these DNA Risks:

⚠ Iodine

### How it helps

⚠ Iodine



**Kelp has a high iodine content** (200 to 400 µg). For instance, **it improved thyroid function** in a study of 7 patients with severe motor and intellectual disabilities and hypothyroidism due to iodine deficiency. Patients were given 1 to 2 grams of powdered kelp daily, and this treatment restored thyroid function, increasing the concentration of iodine in the urine [R].

45

Greek Yogurt

Incorporate Greek yogurt into your diet by eating at least one serving (about 6 ounces or 170 grams) daily. You can enjoy it as a breakfast item, a healthy snack, mixed with fruits and nuts, or as a substitute for sour cream in recipes.

**Helps with these Goals:**

- Exercise Recovery

Muscle Growth

**Helps with these DNA Risks:**

- ! Iodine

## How it helps

! Iodine



Greek yogurt is often fortified with iodine, supporting thyroid function and hormone synthesis.

46

Iodine

Take a 150 mcg iodine supplement daily, preferably with a meal to enhance absorption.

TYPICAL STARTING DOSE

150 mcg

**Helps with these DNA Risks:**


- ! Iodine

## How it helps

! Iodine



Taking iodine supplements can help avoid iodine deficiency, which is crucial in preventing conditions such as hypothyroidism and goiter. Iodine is necessary for the synthesis of thyroid hormones that control various body functions, especially metabolism.


47  Fish

Incorporate two servings of fish into your diet each week, focusing on oily fish like salmon, mackerel, or sardines for their high omega-3 fatty acid content. Each serving should be about 3.5 ounces cooked, or about ¾ cup of flaked fish.

Helps with these Goals:

- Mood
- Muscle Growth

Helps with these DNA Risks:


-  Iodine

### How it helps

 Iodine




Many types of fish are rich in iodine, a key component needed for synthesis of thyroid hormones.

48  Cod

Incorporate cod into your diet 2-3 times per week, choosing baked or grilled options to maximize health benefits. Each serving should be about 3-4 ounces (85-113 grams).

Helps with these DNA Risks:

-  Iodine


### How it helps

 Iodine



Cod is rich in iodine, a nutrient essential in producing thyroid hormones in your body, which regulate metabolism. Consuming cod regularly can, therefore, maintain your iodine levels and prevent iodine deficiency disorders.


49



## Poppy Seed

Incorporate about 1 to 2 teaspoons of poppy seeds into your daily diet. You can sprinkle them on salads, blend them into smoothies, or use them as a topping for yogurt and cereals.

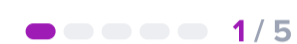
**Helps with these DNA Risks:**

 Iodine

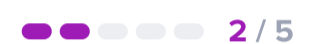
## How it helps


Iodine

IMPACT




EVIDENCE



In 2 placebo-controlled trials of 305 iodine-deficient children, supplementation with iodized poppy seed oil (400 mg/day) for 4-12 months increased serum iodine and urinary iodine excretion. However, serum levels remained below normal and iodized peanut oil was more effective. Interestingly, intestinal parasitic infestation reduced the efficiency of iodized poppy seed oil (490 mg/day) and their treatment improved it in a non-placebo-controlled trial of 110 severely iodine-deficient children with parasitic infestations [\[R\]](#), [\[R\]](#), [\[R\]](#).

50




## Seaweed

Incorporate seaweed into your diet 2-3 times per week by adding it to salads, soups, or as a wrap for sushi and other ingredients. Seaweed can be consumed both in dried form as a snack or rehydrated in meals.

**Helps with these Goals:**

Immunity

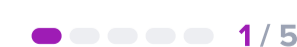
**Helps with these DNA Risks:**

 Iodine

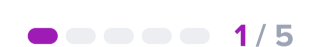
## How it helps


Iodine

IMPACT



EVIDENCE



Seaweed is rich in iodine, a nutrient your thyroid needs to produce hormones that regulate metabolism. Consuming seaweed can help ensure adequate iodine intake, preventing conditions like goiter and hypothyroidism caused by deficiencies.

