Underactive Thyroid

DNA Wellness Report

CATEGORIES

LESS LIKELY

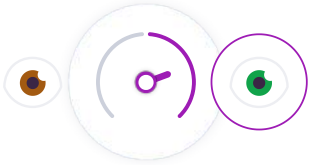
Reduced likelihood of hypothyroidism

Client

Sonja Schmitzer 2

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

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



Your DNA is like an instruction manual — it contains a lot of information. You can think of it as a blueprint for your body.

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

We use artificial intelligence and machine learning to analyze all this information. We then summarize your results as a risk score or display it on a gauge.

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

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

Your risk is also displayed as a percentile. This will tell you how your risks compare to our sample population. The lower your percentile number, the lower your risk. The "50th percentile" would be an average risk.

Similarly, the gauge tells you your relative risk score compared to our sample population, or it indicates a specific trait or haplotype you are more likely to have based on your genetic variants.

Our recommendations come in three categories: lifestyle, diet, and supplements. The following icons tell you which category a recommendation falls into:

When applicable, we also list top evidence-based recommendations that may help lower your risk. The focus is on recommendations that may be of benefit to you, based on your genetics.

Impact shows how strongly a recommendation will affect your health in a certain area. Evidence is how much scientific support there is for the recommendation. Rankings are from 1 to 5 (low to high):

Our team of scientists also ranks each recommendation. We rank based on impact and the strength of evidence in the medical literature.

Impact

An impact score can range from 1-5. It can be assigned to a recommendation that helps with a measurable trait, such as cholesterol levels or blood pressure. In this case, the impact score will reflect how much the trait can change in a person who follows the recommendation. An impact score of 1 reflects the smallest change, while 5 reflects the largest.

An impact score can also be assigned to a recommendation that helps with stress levels, mood, or other traits that can't be measured directly. In this case, the recommendation is compared to other recommendations and standard treatments (if they exist). An impact score is assigned based on these relative comparisons.

Evidence

5 / 5

Recommendations that are considered effective and generally recommended by experts and medical bodies.

4 / 5

Recommendations that are considered likely effective and that have multiple independent meta-analyses and a great many studies supporting them.

3 / 5

Recommendations that are considered possibly effective and have many studies supporting them.

2 / 5

Recommendations that have insufficient evidence, with two or several clinical trials supporting them, or many studies but with ambiguous results.

1 / 5

Recommendations that have insufficient evidence, with a single clinical trial.

0 / 5

No evidence in humans.

Some things to keep in mind:

- The scores/gauges use the latest scientific studies. But they are not perfect and will change as the models improve.
- Results might be more accurate for some ethnic groups than others. This depends on the studies used in each report.
- Not everyone with risk variants will develop a health condition.
- People without risk variants can also develop health conditions.
- Genetics is not the whole story. Your health is most often a combination of genetics, lifestyle, and environmental factors.
- Great news, as this means that you can often change your lifestyle to lower your risk.
- It’s important to work with your doctor to better understand your risks. Our reports do not diagnose or treat any health condition. They are not a substitute for medical advice. If you're diagnosed with a certain health condition, follow your doctor's advice.

Summary

Your quick takeaway

GENETICS

Reduced likelihood of hypothyroidism based on 714 genetic variants we looked at

Introduction

How much do you know about the butterfly-shaped organ located in your lower neck?

If you don't already know, we're talking about the **thyroid gland**. The thyroid is responsible for maintaining many bodily functions. It also plays a role in growth and development. So if you have a thyroid disorder, it can have a pretty big impact on your health [R].

Thyroid disorders generally occur if your gland is over- or underactive. Underactive thyroid is called **hypothyroidism**. It's a fairly common disorder, affecting around **20 million Americans**. The main drug for this condition, levothyroxine, is the **second most prescribed drug in the US** [R, R]!

(Side note: If you'd like to read more about an overactive thyroid, check out our Overactive Thyroid Report.)

If you're concerned you may have an underactive thyroid, then it's crucial to consult a medical professional.

The key take-home is that you want to do everything possible to optimize your thyroid health. **One strategy that may give you an edge over your thyroid health is using information contained in your genes.**

For example, take the FTO gene. Certain variants of this gene may increase your risk of being overweight. Being overweight may decrease your thyroid activity. If you're at an increased risk of weight gain, your thyroid activity may particularly benefit from better weight management [R, R, R].

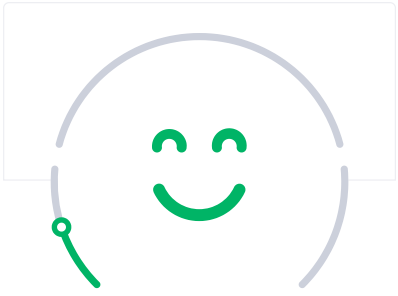
Alternatively, low thyroid activity may be linked to iron deficiency. Carrying a particular variant of the TMPRSS6 gene may increase your risk of iron deficiency. In this instance, you may benefit from getting more iron [R, R].

Understanding your genetics definitely has the potential to improve your thyroid health.

Ultimately, the best course of action for improving your thyroid health should be discussed with your doctor.

Read on to find out more about:

- **How your genetics play a role in thyroid health**
- **Your genetic risk score based on over 700 genetic variants**
- **Personalized recommendations based on your genetics**



Reduced likelihood of hypothyroidism

About Underactive Thyroid

The thyroid is a gland found in the front of the neck. It produces hormones T3 and T4, which affect [R]:

- Heart function
- Energy production
- Breathing rate
- Bone growth
- Alertness
- Reproductive health

If the thyroid does not produce enough of these hormones, the whole body may suffer ill effects. This condition is known as *hypothyroidism* (underactive thyroid) [R, R, R].

Up to 10% of people may have an underactive thyroid. Of these, about half don't know they have it [R].

Hypothyroidism can have a number of causes. These include [R, R, R]:

- Autoimmune conditions like *Hashimoto's disease*
- Too much or too little iodine
- Thyroid inflammation (*thyroiditis*)
- Surgery that removes all or part of the thyroid gland
- Radiation treatment
- Some medications
- **Genetics**

If your doctor suspects hypothyroidism, they may look for signs and symptoms like [R, R, R]:

- Fatigue
- Sensitivity to cold
- Constipation
- Enlarged thyroid gland (*goiter*)
- Weight gain
- Voice changes
- Dry skin
- Puffy face

Diagnosis is confirmed with blood tests. These tests check for hormone levels that indicate the thyroid is not as active as it should be [R].

If you have an underactive thyroid (hypothyroidism), treatment will depend on your hormone levels, medical history, and your signs and symptoms.

The standard treatment involves a daily dose of synthetic thyroid hormone medication that can restore thyroid hormone levels and reverse the signs and symptoms. But keep in mind that it may take some time to adjust the dosage of thyroid hormones so they are right for you [R].

It is extremely important to treat hypothyroidism according to your doctor's instructions. Left untreated, hypothyroidism can lead to *myxedema coma*. This condition is a medical emergency. Even with treatment at a hospital, up to 60% of these cases can lead to death [R].

Up to 67% of differences in thyroid hormone levels may be attributed to genetics. Genes that may affect thyroid function include [R, R]:

- PDE8B
- DIO1
- CAPZB
- TSHR
- FOXE1

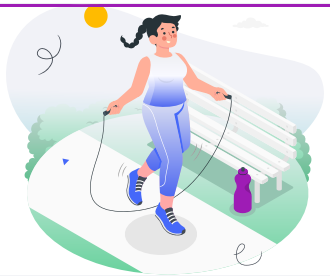
Your recommendations

1

Maintain a Healthy Weight

IMPACT 2 / 5

EVIDENCE 3 / 5



People have a healthy weight when they don't have too much or too little body fat [R].

Body mass index (BMI) can help determine body fat levels. Your BMI is your mass (in kg) divided by the square of your height (in meters) [R].

In general [R]:

- People with a BMI **between 18.5 and 25** tend to have a **healthy weight**
- People with a BMI **between 25 and 30** tend to be **overweight**
- People with a BMI **over 30** tend to be **obese**

People who are overweight or obese are more likely to have [R, R, R, R]:

- High blood pressure
- Type 2 diabetes
- Heart disease
- Joint problems
- Sleep problems
- Underactive thyroid

The best ways to lose weight are to consume fewer calories and exercise regularly [R].

How Maintaining a Healthy Weight Helps With Underactive Thyroid

Obesity is linked to underactive thyroid. However, it's not clear which one might cause or worsen the other [R, R, R].

People with excess body weight tend to have more inflammation. This may impair thyroid function [R].

In turn, an underactive thyroid may contribute to weight gain by [R, R]:

- Slowing the body's metabolism
- Increasing fluid retention

Some thyroid hormones may decrease in the short term after weight loss. However, weight loss generally improves thyroid function in the long run [R, R, R, R].

PERSONALIZED TO YOUR GENES

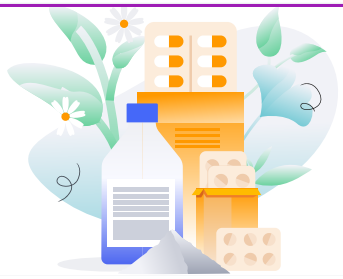
Your FTO **gene variant is linked to higher weight and body fat** [R, R]. **If you are overweight, weight loss may help improve thyroid function** [R, R].

GENETIC VARIANTS

GENE	SNP	GENOTYPE	EVIDENCE
FTO	**rs9939609**	AA,AT	

2

Selenium



IMPACT 2 / 5

EVIDENCE 3 / 5

CHECK YOUR LEVELS BEFORE SUPPLEMENTING

MAKE SURE YOUR RESULTS ARE UP TO DATE

INPUT LAB RESULT

ORDER LAB TEST

Selenium is a mineral that supports [R]:

- Reproduction
- Thyroid function
- DNA production
- Immune response

Adults should be getting **55 micrograms** of selenium per day. Good sources of selenium include [R]:

- Brazil nuts
- Fish
- Meat
- Eggs
- Rice
- Oatmeal

How Selenium Helps With Underactive Thyroid

People with underactive thyroid may have lower selenium levels. Healthy levels may support normal thyroid function. They may also help reduce the risk of thyroid problems [R, R, R, R, R].

Selenium supplements (80-200 micrograms/day for 3-12 months) may help on their own or in combination with other nutrients. However, not all studies found a clear benefit [R, R, R, R, R, R, R, R, R, R, R].

Some experts recommend against supplementing with selenium [R].

Please note: *High levels of selenium are linked to type 2 diabetes. Talk to your doctor before taking selenium* [R].

PERSONALIZED TO YOUR GENES

People with your DIO1 **variant may have lower levels of T3, the active thyroid hormone. This variant likely reduces the activation of thyroid hormones by the DIO1 enzyme. Selenium may help by increasing DIO1 activity** [R, R, R].

GENETIC VARIANTS

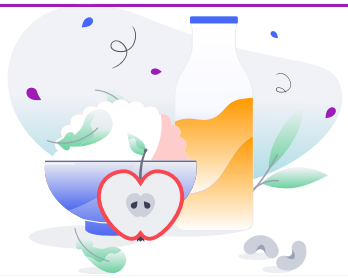
GENE	SNP	GENOTYPE	EVIDENCE
DIO1	**rs2235544**	AA,AC	

3

Iron

IMPACT 2 / 5

EVIDENCE 3 / 5



CHECK YOUR LEVELS BEFORE SUPPLEMENTING

MAKE SURE YOUR RESULTS ARE UP TO DATE

INPUT LAB RESULT

ORDER LAB TEST

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

Foods rich in iron include [R]:

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

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

Groups at risk of iron deficiency include [R]:

- Women
- Children
- Vegetarians
- Routine blood donors

How Iron Helps With Underactive Thyroid

There is a two-way relationship between iron and thyroid hormones.

Iron plays a role in the metabolism of thyroid hormones and may help the body use iodine [R, R, R].

In turn, thyroid hormones help the body absorb iron [R, R].

In line with this, **low iron levels are linked to lower thyroid hormone levels**. However, one study didn't find this link [R, R, R].

In people who lack iron, supplementing with iron may help improve thyroid function [R].

Iron supplementation may also improve the body's response to iodine [R, R, R, R].

Please note: *A high dose of iron can be toxic. If you are not deficient, it is best to get iron from food. Talk to your doctor before taking iron supplements* [R].

PERSONALIZED TO YOUR GENES

Your TMPRSS6 **gene variant is linked to lower iron levels** [R]. **Getting more iron may make up for this and may help improve thyroid function** [R].

GENETIC VARIANTS

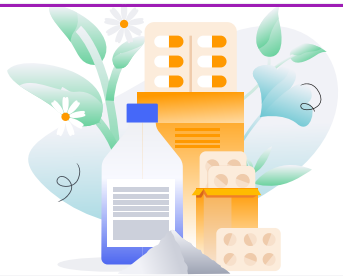
GENE	SNP	GENOTYPE	EVIDENCE
TMPRSS6	**rs855791**	AA,AG	

4

Zinc

IMPACT 2 / 5

EVIDENCE 2 / 5



CHECK YOUR LEVELS BEFORE SUPPLEMENTING

MAKE SURE YOUR RESULTS ARE UP TO DATE

INPUT LAB RESULT

ORDER LAB TEST

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

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

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

How Zinc Helps With Underactive Thyroid

Low blood zinc levels are linked to an underactive thyroid. This is likely because zinc supports the normal release of thyroid hormones [R, R, R].

Thyroid hormones also help the body absorb zinc. Thus, an underactive thyroid may lead to low zinc levels as well [R].

Zinc (30 mg/day for 12 weeks) may help increase levels of thyroid hormones in people with an underactive thyroid. However, not all studies found a clear benefit [R, R].

Please note: *A high intake of zinc may cause stomach pain and gut irritation. Adults should not ingest more than **40 mg** of zinc per day* [R, R].

PERSONALIZED TO YOUR GENES

Your PPCDC **gene variant is linked to lower blood zinc levels** [R]. **Make sure to get enough zinc to potentially improve thyroid health.**

GENETIC VARIANTS

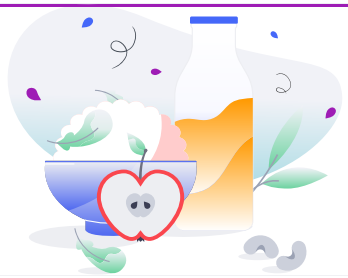
GENE	SNP	GENOTYPE	EVIDENCE
PPCDC	**rs2120019**	CC,CT	

5

Avoid Food Triggers

IMPACT 2 / 5

EVIDENCE 2 / 5



A "trigger" is something that prompts or worsens the symptoms of a health condition.

Food triggers can lead to a wide range of symptoms in people who are sensitive to them. These may include [R, R, R, R]:

- Gut problems
- Itchy skin
- Migraines

How Avoiding Food Triggers Helps With Underactive Thyroid

There seems to be a link between celiac disease and autoimmune thyroid diseases. People with one disorder may be at higher risk of the other [R, R, R, R, R].

In line with this, a gluten-free diet may improve thyroid function in people with autoimmune disease. However, some studies didn't find these benefits [R, R, R].

Lactose intolerance is also common in people with autoimmune thyroid disease. People with lactose intolerance may have trouble absorbing prescribed thyroid medication. This may impair their ability to achieve normal thyroid function [R, R, R].

Avoiding lactose may help improve thyroid activity in these people [R].

Please note: *Avoiding food triggers may only help people who have been diagnosed with a food sensitivity. Please talk to your doctor if you suspect any food triggers* [R, R].

PERSONALIZED TO YOUR GENES

Your MCM6 **gene variant is linked to lactose intolerance. If you are lactose intolerant and taking thyroid medication, removing lactose from your diet may help you respond better to medication** [R, R, R, R].

GENETIC VARIANTS

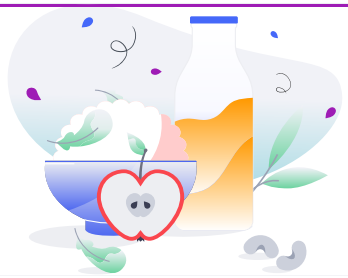
GENE	SNP	GENOTYPE	EVIDENCE
MCM6	**rs4988235**	GG	

6

Balance Iodine Intake

IMPACT 3 / 5

EVIDENCE 4 / 5



Iodine is an element that helps make thyroid hormones. It's important for [R, R, R, R]:

- Thyroid function
- Healthy pregnancy
- Cognitive function

Iodine can be found in foods like [R]:

- Seaweed
- Enriched bread
- Fish (cod)
- Dairy
- Iodized salt

Adults should be getting **150 micrograms** of iodine per day. People who are deficient can take iodine as a supplement. However, most people in the US and other developed countries don't need to take extra iodine. Excess iodine can be harmful [R, R].

How Balancing Iodine Intake Helps With Underactive Thyroid

Iodine helps make thyroid hormones [R].

In line with this, low iodine levels are linked to an underactive thyroid [R, R, R].

Getting enough iodine from food or supplements may support normal thyroid function. However, a sudden increase in iodine intake may be harmful to people who are iodine-deficient [R, R, R, R, R, R].

Too much iodine is also linked to an underactive thyroid. The human body can normally adapt to high levels of iodine. This adaptation prevents excess thyroid hormones from being made. In some people, the thyroid can remain underactive when iodine intake drops [R, R, R, R, R, R, R, R, R, R, R, R].

It is thus important to balance iodine intake [R, R, R].

Experts don't recommend iodine supplements unless iodine deficiency is confirmed [R, R].

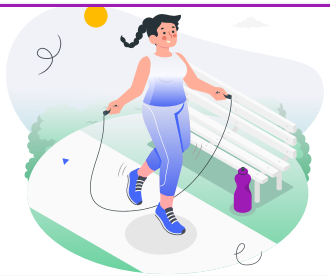
Please note: *Iodine supplementation can be harmful and may make hypothyroidism worse. Supplement only if deficient and instructed by your doctor.*

7

Exercise

IMPACT 2 / 5

EVIDENCE 2 / 5



Exercise can do wonders for your health. It can help you lose weight, improve your heart health, boost your mood, and more [R].

There are many ways you can be active. You can walk, run, swim, dance, or play team sports. **Everything counts, and it's never too late to start!**

Try getting a mix of cardio (at least 150 min/week) and strength training (2 times/week) [R].

How Exercise Helps With Underactive Thyroid

Exercise may help increase levels of thyroid hormones. However, some studies didn't note this effect [R, R, R, R].

In people with mildly underactive thyroid, it may improve the quality of life [R].

Exercise may improve thyroid health by:

- Supporting a healthy weight [R, R, R]
- Reducing insulin resistance [R]

Please note: *Exhaustive exercise may decrease thyroid hormone. If you have thyroid issues, take care not to over-exercise and always speak with your doctor before starting a new exercise program* [R, R].

8

Vitamin D

IMPACT 2 / 5

EVIDENCE 2 / 5

CHECK YOUR LEVELS BEFORE SUPPLEMENTING

MAKE SURE YOUR RESULTS ARE UP TO DATE

INPUT LAB RESULT

ORDER LAB TEST

Your body needs vitamin D **for strong bones**. Vitamin D also plays a role in [R]:

- Mood
- Immunity
- Heart health
- Blood sugar control

Sunlight is our main source of vitamin D. Experts recommend getting at least **5-15 minutes of midday sun, 2-3 times per week**. People with darker skin and those living at high latitudes may need longer periods of sun exposure [R, R].

Foods like fish, eggs, and fortified milk provide small amounts of vitamin D. **People lacking vitamin D should consider taking a supplement** [R].

How Vitamin D Helps With Underactive Thyroid

People with autoimmune thyroid conditions tend to have lower vitamin D levels [R, R].

In people with these conditions, vitamin D supplements may help balance the immune response. However, not all studies found this benefit [R, R, R].

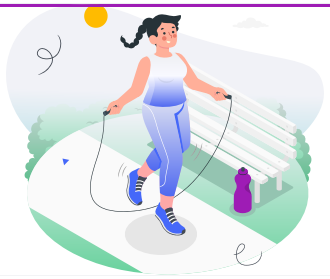
Please note: *Experts recommend getting 600-800 IU of vitamin D per day. Medical bodies recommend against taking more than 4,000 IU per day* [R].

9

Optimize Sleep

IMPACT 2 / 5

EVIDENCE 2 / 5



Sleep supports your body and mind. More precisely, sleep helps:

- Support brain health [R, R]
- Maintain a healthy weight and appetite [R, R, R]
- Regulate blood pressure [R, R]
- Balance blood sugar [R, R]

Ways to sleep better include [R]:

- Reducing your bright light exposure (screen time) in the evenings
- Sticking to a regular sleep schedule
- Avoiding hunger or large meals before bed
- Avoiding nicotine, caffeine, and alcohol before bed
- Maintaining a sleep area that's cool, dark, and quiet

How Optimizing Sleep Helps With Underactive Thyroid

Poor sleep is linked to an underactive thyroid. Some potential issues include:

- Sleep apnea (interrupted breathing during sleep) [R, R, R]
- Getting too much sleep [R]
- Night shift work [R]
- Poor sleep quality [R]

Optimizing your sleep may help improve thyroid function [R].

10

Relaxation Techniques

IMPACT 1 / 5

EVIDENCE 1 / 5

We all get stressed from time to time.

Stress can help you deal with a challenge or avoid danger. However, **it's not healthy to be stressed for a long time** [R, R].

Relaxation techniques such as yoga and meditation can relieve stress in different ways. Most of them focus on breathing and help you get rid of negative thoughts and emotions [R].

People use relaxation techniques to improve conditions like [R, R, R]:

- Anxiety
- Depression
- Chronic pain

How Relaxation Techniques Help With Underactive Thyroid

Stress may affect thyroid function. It may reduce or increase levels of thyroid hormones [R, R].

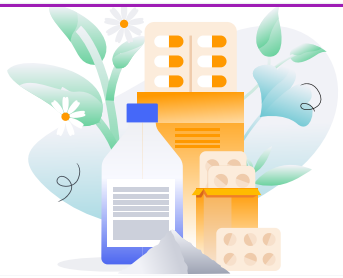
However, some studies found no clear link between stress and an underactive thyroid [R, R].

11

Black Seed

IMPACT 1 / 5

EVIDENCE 1 / 5



Black seed (black cumin) and its oil are used in cooking and traditional medicine [R].

People use black seed for [R, R, R, R]:

- Allergies
- Joint pain
- Thyroid problems

How Black Seed Helps With Underactive Thyroid

According to a single study, **powdered black seed (2 g for 8 weeks)** may help increase thyroid hormones in people with autoimmune thyroid disease [R].

Black seed may support thyroid function by [R, R, R]:

- Reducing oxidative stress
- Supporting a healthy weight

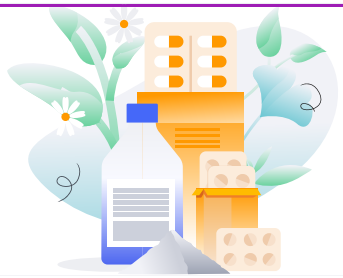
Please note: *Black seed is not a replacement for thyroid medication. Talk to your doctor before using any supplements for thyroid issues.*

12

Ashwagandha

IMPACT 1 / 5

EVIDENCE 1 / 5



Ashwagandha (*Withania somnifera*) is an herb used in traditional Indian medicine [R, R].

This herb is known as an *adaptogen* because it helps people adapt to stress [R, R].

How Ashwagandha Helps With Underactive Thyroid

According to a single study, ashwagandha root extract (600 mg/day for 8 weeks) may help balance thyroid hormones in people with mildly underactive thyroid [R].

It may help by reducing stress. Stress may have a negative impact on thyroid function [R, R].

Please note: *Ashwagandha is not a replacement for thyroid medication. Talk to your doctor before using any supplements for thyroid issues.*