

ABCB1 (Chronic Lyme)

Gene Report

REPORT CATEGORIES —



INFLAMMATION &
AUTOIMMUNITY



IMMUNITY &
INFECTIONS

Sample Client

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Personal information

NAME

Sample Client

SEX AT BIRTH

Male

HEIGHT

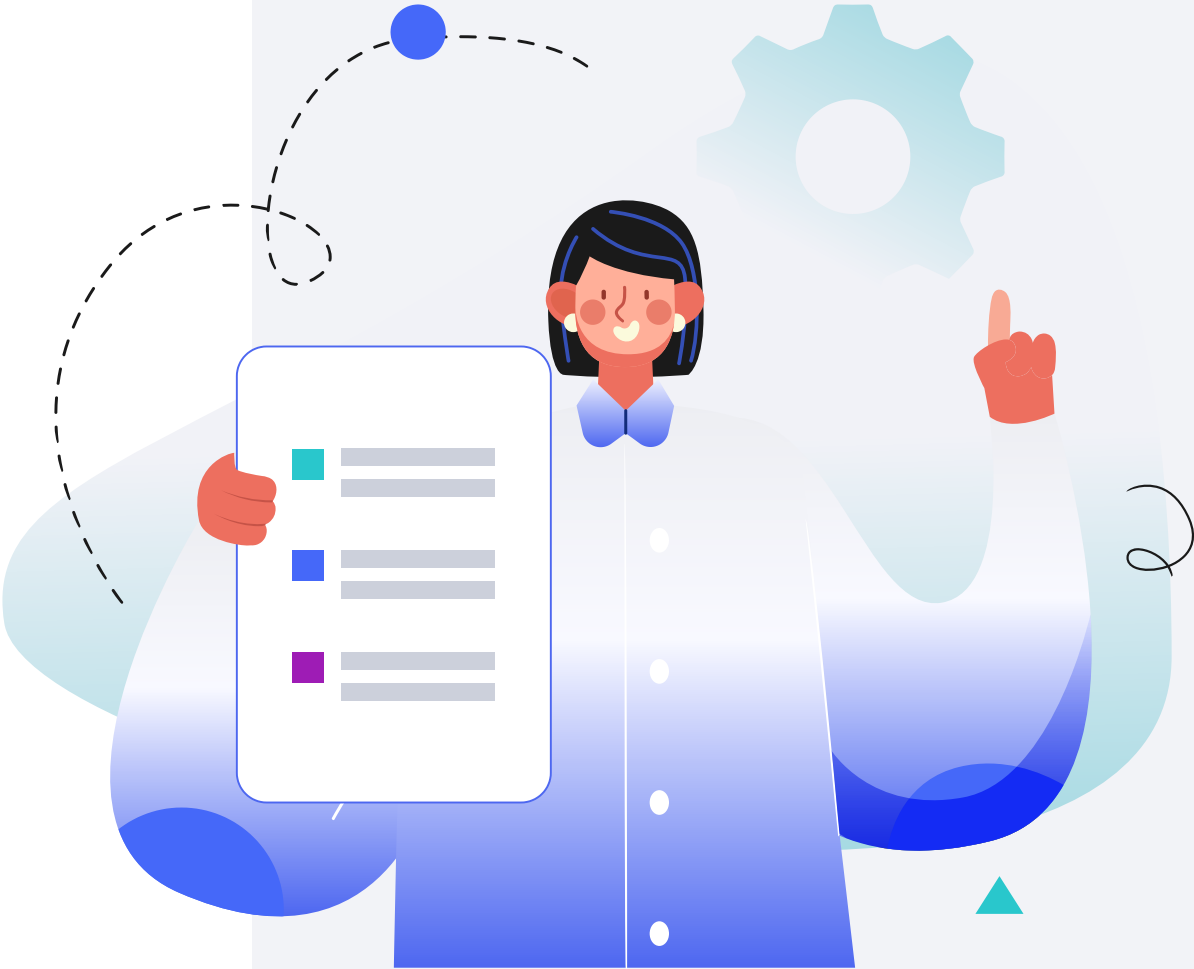
5ft 5" 165cm

WEIGHT

137lb 62kg

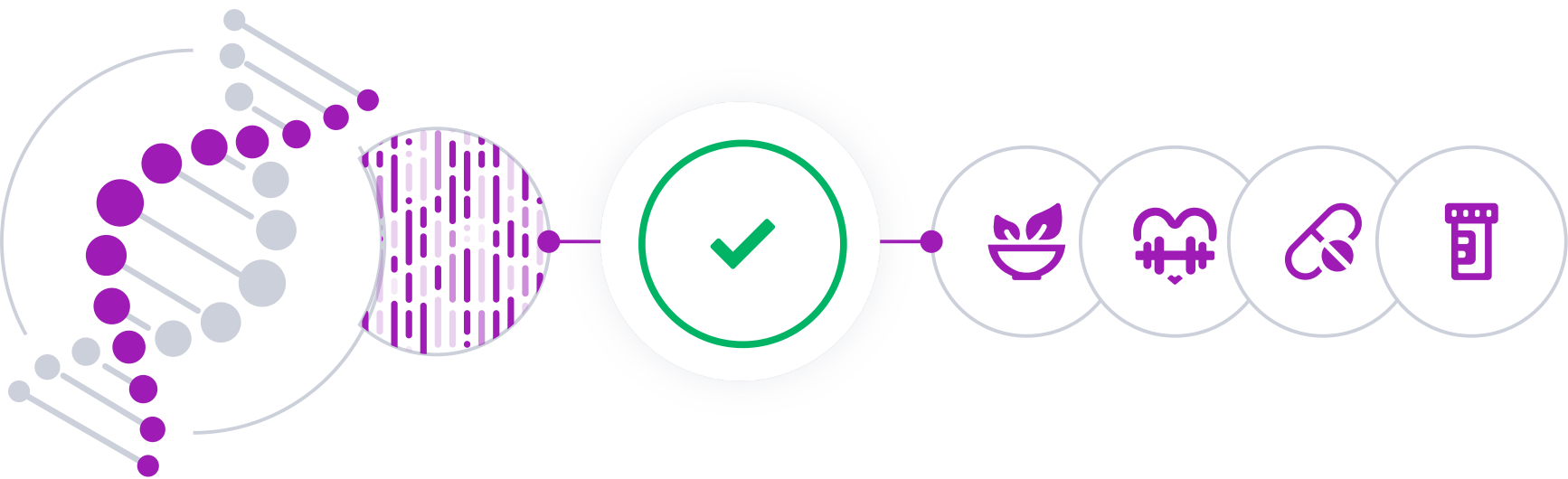
DISCLAIMER

This report does not diagnose this or any other health conditions. Please talk to a healthcare professional if this condition runs in your family, you think you might have this condition, or you have any concerns about your results.



How this works

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

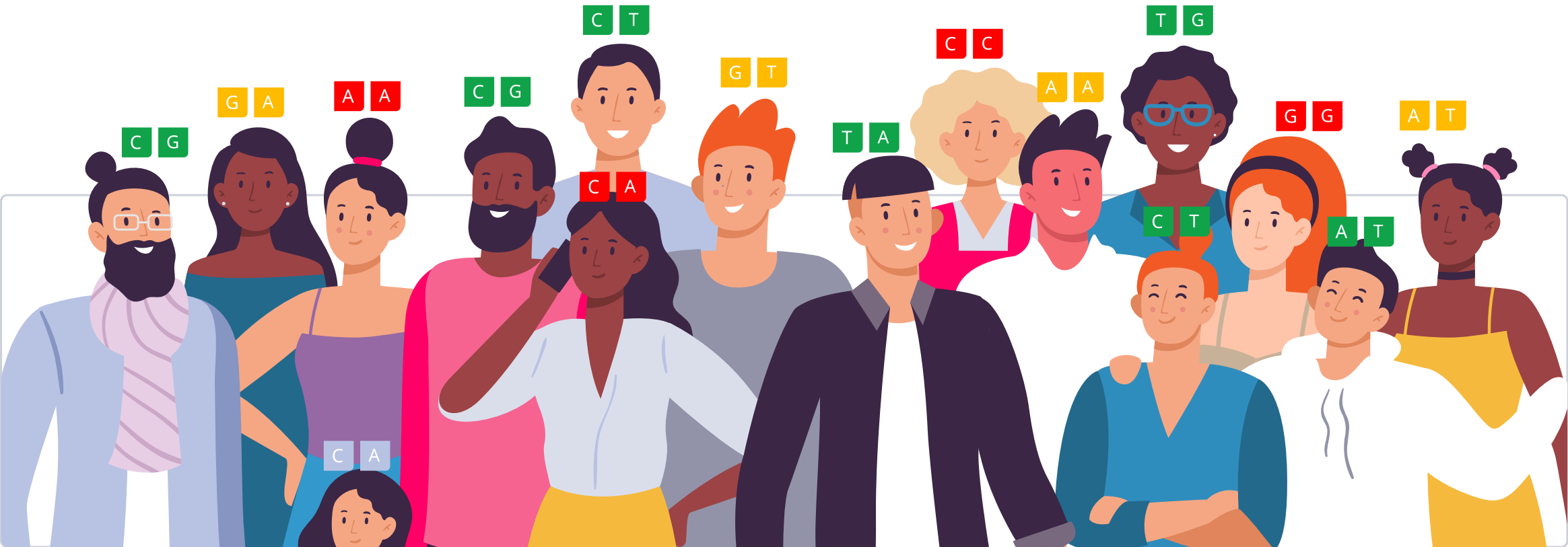


Similarly, our Trait Reports look at how your DNA influences your traits.



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

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



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

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

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



Genotype color info:

AA

You don't have any risk alleles

AA

You have 1 risk allele

AA

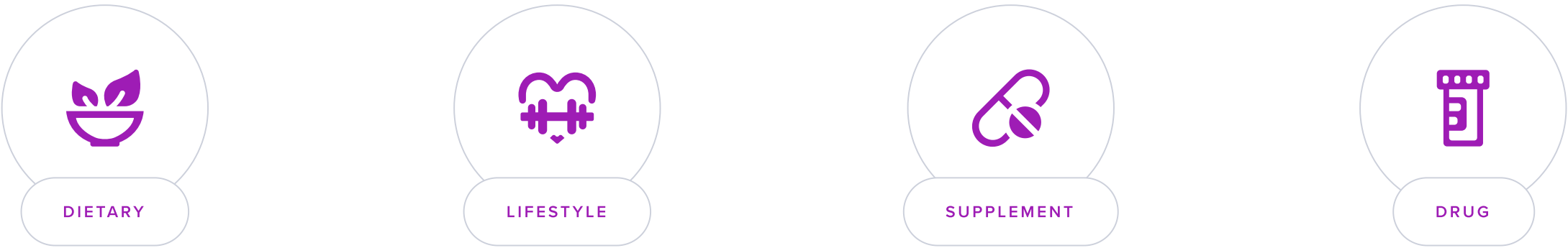
You have 2 risk alleles

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

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

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

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



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

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



Impact

Impact scores range from 1-5. These scores reflect how much of an effect each recommendation can have. An impact score of 5 predicts the biggest effect.

When a recommendation affects something we can measure, we use those measurements to assign the impact score. For example, a recommendation that decreases cholesterol by 20% will have a higher impact score than one that decreases it by 5%.

Some recommendations affect things that we cannot directly measure, like stress or mood. For these, the impact score is based on how well they work relative to other recommendations and standard treatments. The best ones get the highest scores.

If there is a lot of research that shows a recommendation works especially well for your genotype, the impact score gets increased.

Recommendation Evidence

- 5 / 5
- Recommendations that are considered effective and generally recommended by experts and medical bodies.
-
- 4 / 5
- Recommendations that are considered likely effective and that have multiple independent meta-analyses and a great many studies supporting them.
-
- 3 / 5
- Recommendations that are considered possibly effective and have many studies supporting them
-
- 2 / 5
- Recommendations that have insufficient evidence, with two or several clinical trials supporting them, or many studies but with ambiguous results.
-
- 1 / 5
- Recommendations that have insufficient evidence, with a single clinical trial, or with many studies most of which didn't find support for the recommendation.
-
- 0 / 5
- No evidence in humans.

Genotype-specific Evidence

- High-quality
- Direct evidence that a recommendation helps more in people with your gene variant (many clinical trials, a few large clinical trials, or a meta-analysis).
-
- Medium-quality
- Direct evidence that a recommendation helps more in people with your gene variant (a few clinical trials or one large clinical trial).
-
- Low-quality
- Direct evidence that a recommendation helps more in people with your gene variant (a single clinical trial or more trials with inconsistent results).
-
- Indirect
- A recommendation may help more in people with your gene variant because it targets a specific gene or protein affected by your variant (e.g., MTHFR, dopamine).
-
- In theory
- A recommendation may help more in people with your gene variant because it targets a specific mechanism affected by your variant (e.g., inflammation, oxidative stress).

Some things to keep in mind:

- Genetics doesn’t play a considerable role in a condition or a trait.
- There is not enough research available to estimate a genetic predisposition.
- There are technical limitations to estimating or presenting a genetic predisposition.
- The topic is sensitive, and a genetic predisposition should only be estimated and presented by a healthcare professional.

Introduction

[Lyme disease](#) is a debilitating illness caused by an infection of *Borrelia burgdorferi* bacteria, typically transmitted to humans by tick bites. In most cases, Lyme can be successfully treated with a course of antibiotics, after which the patient returns to full health [\[R\]](#).

Mysteriously, however, some people suffer from fatigue, [pain](#), and difficulty thinking ([brain fog](#)) for months or years after the infection. This is chronic Lyme disease, sometimes called post-treatment Lyme disease syndrome (PTLDS), a condition that extends and persists after the normal course of Lyme [\[R\]](#), [\[R\]](#).

The [ABCB1](#) gene, sometimes called MDR1 (for multi-drug resistance gene 1), codes for a protein called P-glycoprotein (P-gp) [\[R\]](#), [\[R\]](#).

P-glycoprotein’s job is to remove xenobiotics—compounds produced by bacteria and other potential pathogens—that make their way into our cells [\[R\]](#).

For instance, P-gp can flush *Borrelia* proteins. It may therefore [protect against chronic Lyme](#) by preventing your body from producing antibodies that react to both bacterial and human enzymes [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

However, this little protein may be troublesome when it interferes with medication; people with certain variants in *ABCB1* have higher P-gp activity and require more of a given drug (like antidepressants, HIV medications, or chemotherapy) or may not respond to some treatments at all [\[R\]](#), [\[R\]](#), [\[R\]](#).

ABCB1 Genetics

According to a study, the more P-gp-reducing variants you have in your *ABCB1* gene, the more likely you are to suffer from chronic Lyme after an acute *Borrelia* infection [R].

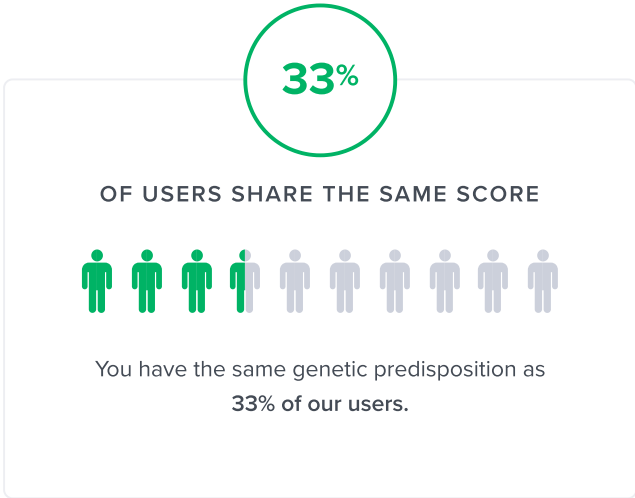
The single SNP with the greatest impact is [rs1128503](#), which has a significant effect on chronic Lyme risk on its own. Its ‘A’ variant, which decreases *ABCB1* activity, is associated with an increased risk of chronic Lyme [R].

Two other variants, at [rs2235067](#) and [rs4148740](#), also increase the risk of chronic Lyme. These variants are usually inherited together, so you will typically have either both or neither of them [R].



HIGHER ACTIVITY

Likely higher **ABCB1** activity based on the genetic variants we looked at



Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
ABCB1	rs1128503	GG

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

Your Recommendations

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

You'll likely find common healthy recommendations at the top of the list because they are often the most impactful and most researched.

DOSAGE		DOSAGE	
1	Dietary Antioxidants	2	Cat's Claw 250 mg

1



Dietary Antioxidants

IMPACT2 / 5

EVIDENCE2 / 5

How to implement

Incorporate foods rich in antioxidants, such as fruits (berries, oranges, plums), vegetables (spinach, kale, bell peppers), nuts (walnuts, almonds), and seeds (flaxseeds, chia seeds) into your daily meals. Aim for at least 5 servings of fruits and vegetables per day, ensuring a variety of colors to cover different antioxidants.

Description

Dietary antioxidants are compounds found in foods that help neutralize harmful molecules called free radicals, potentially reducing the risk of oxidative stress-related diseases and supporting overall health. Examples include vitamins C and E, beta-carotene, and polyphenols.

Our cells sometimes produce molecules called **reactive oxygen species (ROS)** [\[R\]](#).

High levels of ROS can cause [oxidative stress](#) and damage our cells. Oxidative stress plays a role in many health conditions, including [\[R\]](#):

- High blood sugar
- Type 2 diabetes
- Heart disease

Antioxidants are substances that help combat ROS [\[R\]](#).

Antioxidants are found in many plants. Good sources include [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Fruits like tomatoes, berries, and pomegranates
- Vegetables like onions, spinach, and celery
- Chocolate
- Olive oil
- Wine

How it helps

Several plant flavonoids induce or stimulate P-gp; eating the fruits and vegetables that contain them may help prevent or improve chronic Lyme. They include [\[R\]](#):

- Rhoifolin (lemons)
- Kaempferol (onions, grapes, tomatoes, apples, broccoli, spinach...)
- [Quercetin](#) ([capers](#), dill, cilantro, red onion...)

Kaempferol and quercetin had what’s called a biphasic effect on P-gp in cell studies: at low concentrations, they stimulated P-gp, and at high concentrations, they blocked it. As such, you probably don’t want to supplement with these polyphenols; stick to eating the foods that naturally contain them [\[R\]](#).

2



Cat's Claw

IMPACT

2 / 5

EVIDENCE

2 / 5

How to implement

Take 250-350 mg of cat's claw extract daily, preferably with a glass of water. This dosage can be split into two separate doses, one in the morning and one in the evening. Continue this regimen for at least 4 to 8 weeks to observe potential benefits.

TYPICAL STARTING DOSE

250 mg

Description

Cat's claw is an herbal supplement derived from a tropical vine known for its potential anti-inflammatory and immune-boosting properties. It's used in traditional medicine to support joint health and overall well-being.

Cat's claw (*Uncaria tomentosa* and *Uncaria guinaensis*) is a vine native to the Amazon rainforest and other tropical regions of Central and South America. Its curved thorns look like cat’s claws [\[R\]](#).

Cat's claw has been used for centuries in South American traditional medicine for [\[R\]](#):

- Fever
- Fatigue
- Muscle and joint pain

How it helps

[Cat’s claw](#) induced P-gp in a cell study. Cat’s claw is sometimes used as a supportive measure—along with conventional antibiotics—to boost the immune system and fight Lyme; it may help prevent chronic Lyme from developing as well [\[R\]](#), [\[R\]](#).

Remember, your genes only tell one important part of your health story!

Now that you've seen your DNA-based results for this health topic, let's take a look at other contributing factors.

Your lab results are impacted by the combined effect of your genes, environment and lifestyle.

Lab tests will give you the best picture of your current health status, while your genes provide insight into your health predispositions and which recommendations are best for you.

