

NR3C1 (Fatigue)

Gene Report

REPORT CATEGORY —



Sample Client

Report date: 15 January 2026

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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.



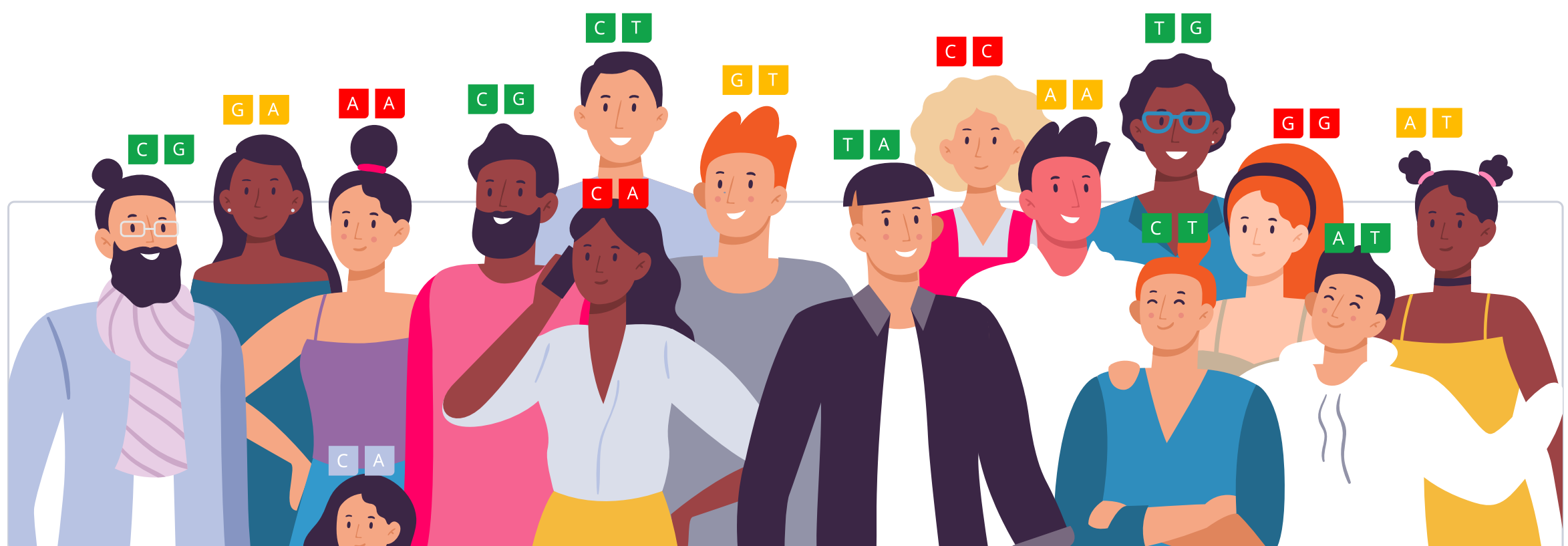
Similarly, our Trait Reports look at how your DNA influences your traits.



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

The [NR3C1](#) gene codes for the [glucocorticoid receptor](#). Upon activation by glucocorticoids (such as the primary stress hormone [cortisol](#)), the glucocorticoid receptor is able to regulate the production of stress-related, inflammatory proteins [\[R\]](#).

The glucocorticoid receptor is also an integral component of the [HPA axis](#), where it functions to inhibit HPA axis activity and suppress the release of cortisol when levels are elevated [\[R\]](#).

Excess cortisol release may lead to continuous stimulation of the glucocorticoid receptor, which may ultimately lower the sensitivity of the receptor to glucocorticoids. This is called *glucocorticoid resistance* [\[R\]](#).

Glucocorticoid resistance has been shown to result in HPA axis dysregulation, excess cortisol release, and inflammation [\[R\]](#).

Inflammation has the potential to induce a variety of unwanted effects, including fatigue. Interestingly, elevated fatigue has been linked to both high and low levels of cortisol, suggesting that optimal cortisol levels and glucocorticoid receptor activity may be required to control energy [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

NR3C1 Genetics and Fatigue

Variants of *NR3C1* have been associated with chronic fatigue syndrome, an illness characterized by prolonged low energy. These variants may lower the sensitivity or activity of the glucocorticoid receptor, thus resulting in dysregulated HPA axis activity, excess cortisol release, and inflammation. They include [\[R, R, R, R\]](#):

- ‘A’ at [rs852977](#) [\[R, R, R\]](#)
- ‘A’ at [rs1866388](#) [\[R, R, R\]](#)
- ‘C’ at [rs6188](#) [\[R, R, R\]](#)
- ‘T’ at [rs2918419](#) [\[R, R, R\]](#)
- ‘A’ at [rs6196](#) [\[R, R, R\]](#)
- ‘C’ at [rs41423247](#) [\[R, R\]](#)



INTERMEDIATE ACTIVITY

Likely intermediate NR3C1 activity based on 5 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
NR3C1	rs2918419	TT
NR3C1	rs6196	AA
NR3C1	rs852977	GA
NR3C1	rs1866388	GA
NR3C1	rs6188	AC
NR3C1	rs41423247	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	Relaxation Techniques	30 minutes	
2	Cognitive-Behavioral Therapy (CBT)		
3	Mindfulness	30 minutes	
4	Yoga		30 minutes
5	L-Carnitine	1 g	

1



Relaxation Techniques

IMPACT

4 / 5

EVIDENCE

4 / 5

How to implement

Incorporate relaxation techniques such as deep breathing exercises, meditation, or yoga into your daily routine. Spend at least 15-30 minutes each day practicing one of these techniques, preferably in a quiet, comfortable space without interruptions.

TYPICAL STARTING DOSE

30 minutes

Description

Relaxation techniques encompass various methods like deep breathing, yoga, meditation, and progressive muscle relaxation, aimed at reducing stress and promoting mental and physical relaxation. Practicing these techniques regularly can help manage stress, improve mental clarity, and enhance overall emotional well-being.

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

Progressive muscle relaxation is another relaxation technique. In this technique, you focus on tensing and relaxing different parts of your body. It is common to start with the toes and slowly work your way up to the neck and head [\[R, R\]](#).

Autogenic training is a relaxation technique that a person may carry out on their own. It uses exercises that take the mind’s attention to bodily sensations such as warmth and heaviness [\[R, R\]](#).

How it helps

Chronic stress is a major cause of excess cortisol release and glucocorticoid receptor dysfunction. In two studies consisting of over 350 healthy volunteers, prolonged stress was reported to inhibit glucocorticoid receptor activity and promote inflammation [\[R\]](#).

Stress and fatigue are closely linked. Stress has the potential to cause or worsen physical and mental fatigue [\[R, R, R\]](#).

Relaxation techniques that may help include:

- Mindfulness meditation [\[R, R\]](#)
- Relaxation therapy (breathing and muscle relaxation) [\[R, R, R, R\]](#)
- [Yoga](#) [\[R, R, R\]](#)
- Tai chi [\[R, R, R, R, R\]](#)

Yoga (at least 60 minutes per week) may be especially helpful for fatigue from chronic health conditions [\[R, R, R, R, R, R, R\]](#).

Stress may cause fatigue by:

- Altering the fight-or-flight response [\[R, R, R\]](#)
- Reducing sleep quality [\[R\]](#)

2



Cognitive-Behavioral Therapy (CBT)

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Schedule weekly sessions with a certified cognitive-behavioral therapist for a period of 5 to 20 weeks. Engage actively in exercises assigned by your therapist both during sessions and as homework to apply CBT strategies to daily life.

Description

Cognitive-behavioral therapy (CBT) is a psychotherapeutic approach that has been effective in treating various mental health conditions by helping individuals identify and change negative thought patterns and behaviors. It is widely used for conditions like depression, anxiety, and phobias.

Psychotherapy (talk therapy) involves talking about your health with a licensed therapist. It may improve the way you react to certain experiences [\[R\]](#).

Talk therapy is a great way to improve many conditions, including [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Depression
- Anxiety disorders
- PTSD
- OCD
- Substance use disorder
- Bipolar disorder

Cognitive-behavioral therapy (CBT) is a type of talk therapy. CBT aims to change the way you think about your life and yourself. Through CBT, a therapist can help you develop healthy coping mechanisms [\[R\]](#).

How it helps

Chronic stress is a major cause of excess cortisol release and glucocorticoid receptor dysfunction. In two studies consisting of over 350 healthy volunteers, prolonged stress was reported to inhibit glucocorticoid receptor activity and promote inflammation [\[R\]](#).

Meta-analyses have shown cognitive-behavioral therapy (CBT), including its combination with mindfulness-based stress reduction, may reduce fatigue in conditions like [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Chronic fatigue syndrome
- Fibromyalgia
- Multiple sclerosis
- Cancer

CBT for chronic fatigue includes psychological strategies to tackle stress-inducing thoughts [\[R\]](#).

3



Mindfulness

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Set aside 5-10 minutes each day to practice mindfulness meditation. Find a quiet place, assume a comfortable seated position, close your eyes, focus on your breathing, and observe your thoughts and sensations without judgment.

TYPICAL STARTING DOSE

30 minutes

Description

Mindfulness involves paying focused and non-judgmental attention to the present moment. It can reduce stress, improve emotional regulation, and enhance overall mental clarity and well-being.

Mindfulness is the practice of being aware of the present moment. When practicing mindfulness, a person acknowledges their thoughts, feelings, and sensations without any judgment [R].

Mindfulness and other types of [meditation](#) may improve [R]:

- Weight and anxiety
- Low mood
- Sleep disturbances
- Pain
- High blood pressure

How it helps

Chronic stress is a major cause of excess cortisol release and glucocorticoid receptor dysfunction. In two studies consisting of over 350 healthy volunteers, prolonged stress was reported to inhibit glucocorticoid receptor activity and promote inflammation [R].

Mindfulness-based interventions in people with chronic medical conditions, especially cancer, may [R, R, R, R, R, R, R]:

- Lower anxiety and depression
- Improve cancer-related fatigue
- Increase vitality

Studied interventions include [R, R, R, R]:

- Mindfulness-Based Stress Reduction (MBSR)
- Mindfulness-Based Cognitive Therapy (MBCT)
- Mindfulness-Based Cancer Recovery (MBCR)
- Mindfulness-based art therapy

These benefits may persist for at least 3 months post-intervention [R].

4



Yoga

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Practice yoga for at least 20 to 30 minutes a day, most days of the week. Choose a style that matches your fitness level and goals, and consider attending a class or using online resources to guide your practice.

TYPICAL STARTING DOSE

30 minutes

Description

Yoga is a mind-body practice that combines physical postures, breathing exercises, and meditation. It enhances flexibility, strength, and mental well-being and is used for stress reduction, relaxation, and overall health improvement.

[Yoga](#) combines breathing, stretching, and relaxation techniques. Practicing yoga may help [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Reduce [stress](#)
- Improve fitness
- Lower blood pressure and heart rate
- Manage pain

How it helps

Chronic stress is a major cause of excess cortisol release and glucocorticoid receptor dysfunction. In two studies consisting of over 350 healthy volunteers, prolonged stress was reported to inhibit glucocorticoid receptor activity and promote inflammation [\[R\]](#).

Yoga (1-3x/week for 6 weeks to 6 months) may reduce fatigue in healthy people and those with chronic conditions, such as [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Low back pain
- Multiple sclerosis
- Fibromyalgia
- Kidney disease
- Cancer

5



L-Carnitine

IMPACT

2 / 5

EVIDENCE

3 / 5

How to implement

Take 500 mg of L-carnitine supplement daily with a glass of water, preferably with a meal to enhance absorption.

TYPICAL STARTING DOSE

1 g

Description

L-carnitine is an amino acid-like compound that plays a role in energy metabolism and helps prevent toxic substances from building up in cells. It is often used in dietary supplements for its potential to support muscle recovery, reduce fatigue, and enhance athletic performance.

[L-carnitine](#) is a compound that helps you burn fat. It also prevents toxic substances from building up in cells [\[R\]](#).

Your body can usually make enough carnitine to meet its needs. You can also get it from **meat and dairy products** [\[R\]](#).

People use L-carnitine for [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Heart problems
- Overactive thyroid
- Fertility problems
- Blood sugar control
- Weight control

How it helps

Multiple studies have reported that the nutrient [L-carnitine](#) can mimic glucocorticoids and activate glucocorticoid receptors, thus resulting in decreased production of inflammatory proteins [\[R\]](#), [\[R\]](#), [\[R\]](#).

L-carnitine (1-4g/day for 2-6 months) may improve mental and physical fatigue, especially in older adults [\[R\]](#), [\[R\]](#), [\[R\]](#).

L-carnitine may also improve chronic fatigue and fatigue linked to health conditions. **However, the evidence is mixed** [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

L-carnitine may lower fatigue by helping you get energy from fat [\[R\]](#).

Next Steps

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

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.