

HNFB4A (Gut Inflammation)

Gene Report

REPORT CATEGORIES —



GUT HEALTH



INFLAMMATION &
AUTOIMMUNITY

Sample Client

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DISCLAIMER

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

Personal information

NAME

Sample Client

SEX AT BIRTH

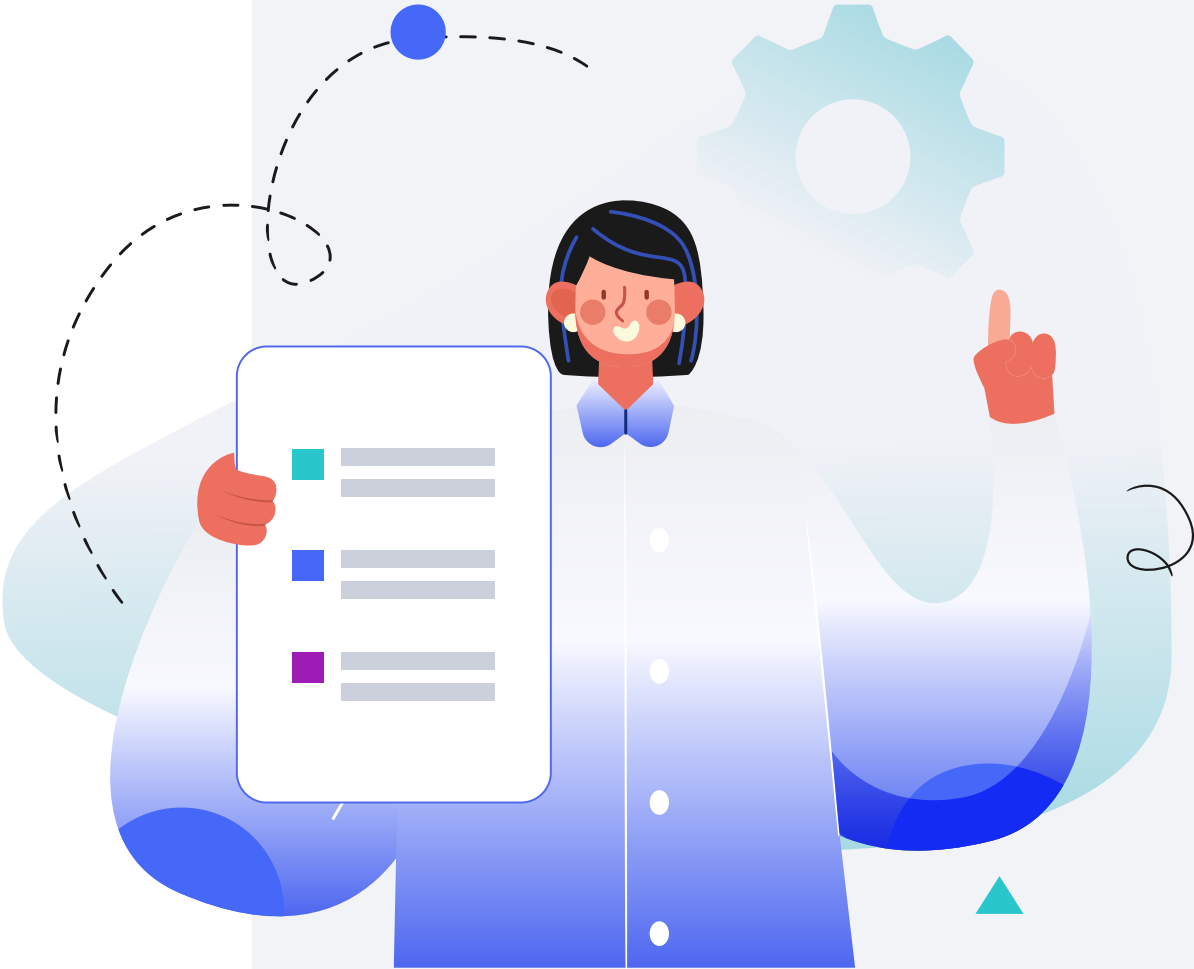
Male

HEIGHT

5ft 5" 165cm

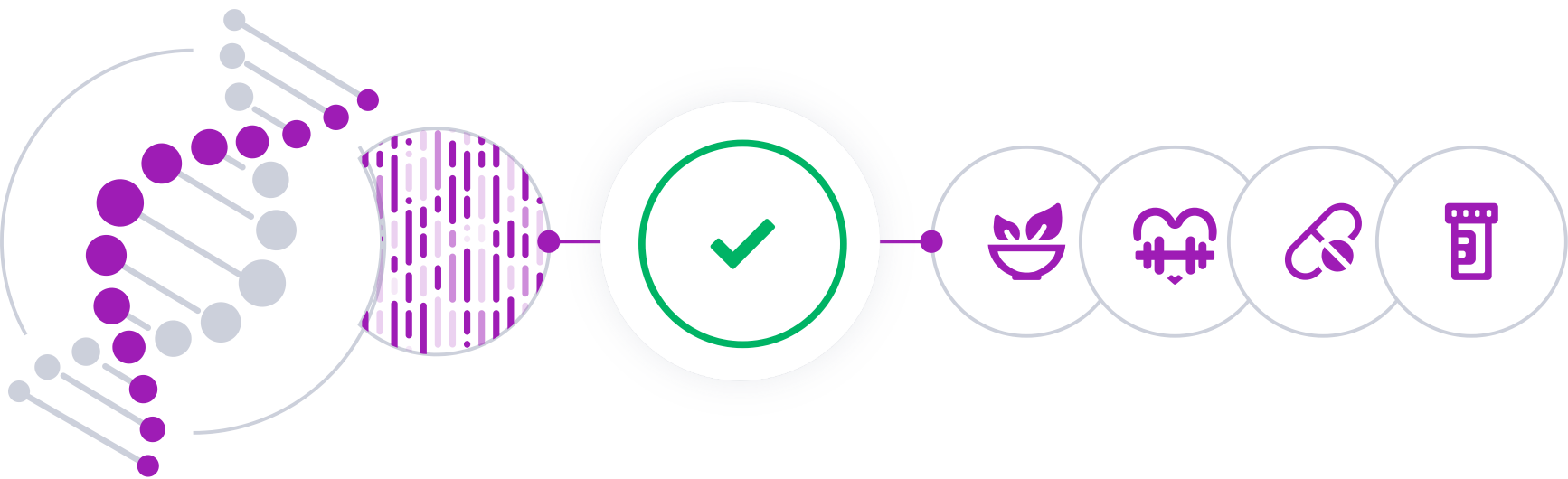
WEIGHT

137lb 62kg



How this works

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

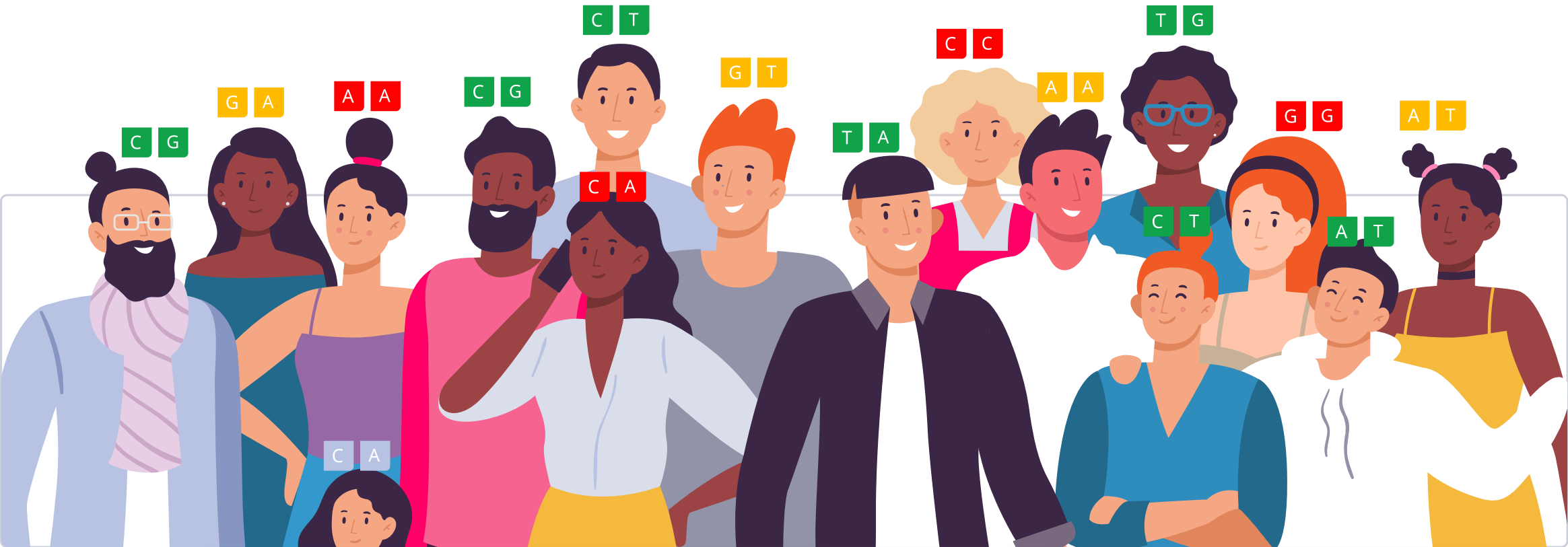


Similarly, our Trait Reports look at how your DNA influences your traits.



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

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



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

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

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



Genotype color info:

AA

You don't have any risk alleles

AA

You have 1 risk allele

AA

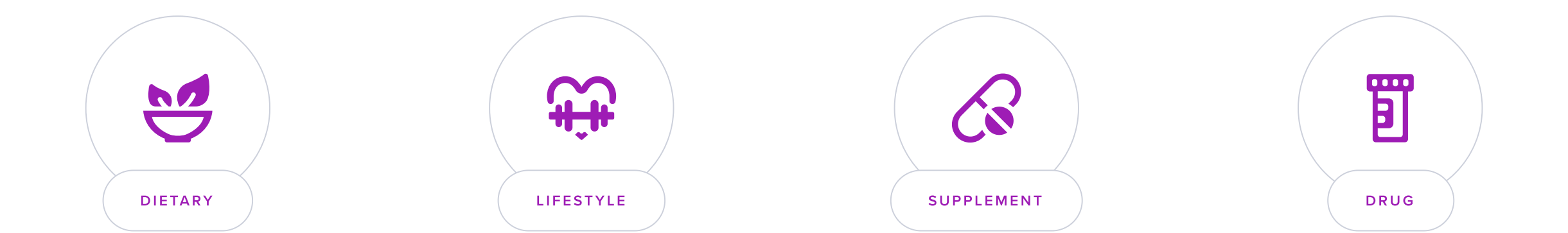
You have 2 risk alleles

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

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

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

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



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

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



Impact

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

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

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

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

Recommendation Evidence

5 / 5

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

4 / 5

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

3 / 5

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

2 / 5

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

1 / 5

Recommendations that have insufficient evidence, with a single clinical trial, or with many studies most of which didn't find support for the recommendation.

0 / 5

No evidence in humans.

Genotype-specific Evidence

High-quality

Direct evidence that a recommendation helps more in people with your gene variant (many clinical trials, a few large clinical trials, or a meta-analysis).

Medium-quality

Direct evidence that a recommendation helps more in people with your gene variant (a few clinical trials or one large clinical trial).

Low-quality

Direct evidence that a recommendation helps more in people with your gene variant (a single clinical trial or more trials with inconsistent results).

Indirect

A recommendation may help more in people with your gene variant because it targets a specific gene or protein affected by your variant (e.g., MTHFR, dopamine).

In theory

A recommendation may help more in people with your gene variant because it targets a specific mechanism affected by your variant (e.g., inflammation, oxidative stress).

Some things to keep in mind:

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

Introduction

The [HNF4A](#) gene is responsible for creating a protein called **HNF4A** (also referred to as NR2A1). The HNF4A protein is a transcription factor, meaning that it regulates the expression of other genes [\[R\]](#).

HNF4A primarily acts on genes related to the liver, ultimately leading to several effects, including [\[R\]](#), [\[R\]](#):

- Development of the liver, kidneys, and intestines
- Activation of [CYP enzymes](#), which help detox the body
- Production of [SHBG](#), a protein that regulates sex hormones
- Regulation of [insulin resistance](#)

Research has found that variations in the *HNF4A* gene may increase the risk of certain health conditions, such as diabetes, metabolic syndrome, and [inflammatory bowel disease \(IBD\)](#) [\[R\]](#), [\[R\]](#), [\[R\]](#).

HNF4A Genetics and Gut Inflammation

Several studies suggest that certain genetic variants of *HNF4A* may increase the risk of developing ulcerative colitis (UC) [\[R\]](#), [\[R\]](#), [\[R\]](#).

A genome study including over 7,000 people with European ancestry found that **the ‘C’ allele in [rs6017342](#) is associated with greater rates of UC** [\[R\]](#).

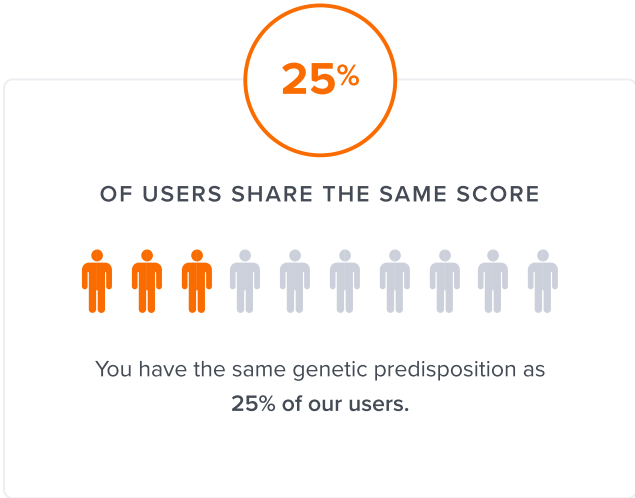
Likewise, two more studies of over 2,000 Dutch and 1,900 Korean patients also found that those carrying a ‘C’ allele were significantly more likely to have UC [\[R\]](#), [\[R\]](#).

The HNF4A protein helps maintain the [mucosal barrier in the intestines](#). This barrier is responsible for protecting the lining of the intestines while allowing nutrients to be absorbed. Variants resulting in lower levels of this protein may disrupt this mucosal barrier [\[R\]](#), [\[R\]](#), [\[R\]](#).



LOWER ACTIVITY

Likely lower HNF4A activity based on the genetic variants we looked at



Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
HNF4A	rs6017342	CC

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	Intermittent Fasting	2	Regular Sleep Schedule	
3	Berberine	1000 mg	4	Limit Dietary Fats

1



Intermittent Fasting

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Limit your daily eating to a specific window of time, typically within an 8-hour period such as from 12 pm to 8 pm, and fast for the remaining 16 hours of the day. Repeat this daily or for at least 3-4 days per week.

Description

Intermittent fasting is an eating pattern that involves cycling between periods of fasting and eating. It may help with weight management, improve metabolic health, and offer potential benefits for certain health conditions when done under proper guidance.

[Intermittent fasting](#) (IF) is a pattern of eating that alternates between periods of eating and fasting. The most popular IF method is called the 16/8 method, where you fast for 16 hours and eat during an 8-hour window.

People mainly practice IF to lose weight. Besides benefits related to weight reduction, IF may help lower the risk of [\[R\]](#):

- Alzheimer's disease
- Joint pain
- Asthma
- Multiple sclerosis
- Stroke

Some types of intermittent fasting, such as Ramadan fasting, are also practiced for religious reasons.

How it helps

Animal and cell studies show that [fasting](#) can activate PGC-1alpha, which in turn activates HNF4A [\[R\]](#).

Fasting and calorie restriction may also be beneficial for those suffering from IBD [\[R\]](#), [\[R\]](#).

Research in animals suggests that [intermittent fasting](#) and calorie-restricted diets can reduce intestinal inflammation, promote protective [gut microbiota](#), and help reverse intestinal damage [\[R\]](#), [\[R\]](#).

However, clinical research has not been conclusive. A study of 60 patients with IBD who fasted for Ramadan found that disease activity of ulcerative colitis decreased in men after fasting, but overall quality of life did not improve [\[R\]](#).

In another study of 222 hospitalized patients with IBD, fasting had no effect on disease activity [\[R\]](#).

2



Regular Sleep Schedule

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Go to bed and wake up at the same time every day, even on weekends and holidays. This helps regulate your body's internal clock, leading to better sleep quality. Aim for 7-9 hours of sleep per night.

Description

Maintaining a regular sleep schedule involves going to bed and waking up at consistent times each day. This practice helps regulate the body's internal clock and promotes better sleep quality, mood, and cognitive function.

How it helps

There is evidence that the *HNF4A* gene has a close relationship with the body’s internal clock. According to cellular studies, HNF4A activity is directly associated with [circadian rhythm](#) [R].

Keeping a consistent sleep-wake cycle is likely important for the optimal function of HNF4A [R].

Research also shows that [poor sleep quality](#) and circadian disturbances can promote inflammation and worsen the progression of IBD [R, R].

3



Berberine

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 500 mg of berberine two times a day before meals. Continue this regimen for up to three months, then evaluate its effects with your healthcare provider.

TYPICAL STARTING DOSE

1000 mg

Description

Berberine is a compound found in certain plants, known for its potential to support blood sugar control and heart health.

[Berberine](#) is an active compound of some plants used in traditional medicine, such as [\[R\]](#):

- European barberry
- Oregon grape
- Goldenseal
- Chinese goldthread
- Tree turmeric

Berberine is also available as a supplement. People use it to help with [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Diabetes
- High cholesterol
- High blood pressure
- PCOS

How it helps

In a placebo-controlled trial of 16 people with ulcerative colitis, using 900 mg/day berberine as an add-on to mesalamine for 3 months reduced gut tissue damage better than mesalamine alone [\[R\]](#).

In studies using rat and mouse cells, berberine increased the expression of *HNF4A* [\[R\]](#), [\[R\]](#).

Berberine may help by reinforcing the barrier function of the gut lining and promoting a healthy gut microbiome.

4



Limit Dietary Fats

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Reduce your total fat intake to less than 30% of your total daily calories. This means if you consume 2000 calories a day, aim for less than 67 grams of fat per day. Choose lean meats, opt for low-fat or fat-free dairy products, and cook with minimal amounts of healthy oils like olive or canola oil.

Description

Limiting dietary fats, particularly unhealthy saturated and trans fats, can help reduce the risk of heart disease and maintain a healthy weight. Choosing leaner sources of fats and moderating overall fat intake supports cardiovascular health and general well-being.

How it helps

High-fat diets may reduce the expression and activity of HNF4A by up to 30%, according to animal and cell studies [\[R\]](#) [\[R\]](#).

A number of studies also show that diets high in fat (especially [saturated and trans fats](#)) can increase intestinal inflammation, disturb the gut microbiome, and exacerbate IBD symptoms [\[R\]](#) [\[R\]](#) [\[R\]](#) [\[R\]](#).

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

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.

