

Leptin

Biohacker Report

REPORT CATEGORY —



WEIGHT & BODY FAT

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

[Leptin](#) is a **satiety hormone that promotes [weight loss](#)**. Leptin is one of the big 4 hormones that determine weight. It is made in fat tissue, while receptors for it are dense in two important brain regions: the [hypothalamus](#) and hippocampus [\[R\]](#), [\[R\]](#).

Leptin acts as a signal to the brain to inhibit food intake and enable the storage of surplus calories in fat cells. At the same time, it protects non-fatty tissue from fat overload [\[R\]](#).

The more fat is present, the more leptin is produced. This feedback loop, when functioning normally, keeps body weight in homeostasis: eating more food increases body fat, which increases leptin secretion. This decreases appetite and increases energy expenditure [\[R\]](#).

Leptin also plays a role in fertility and puberty. Adequate leptin levels are necessary for reproductive health [\[R\]](#).

Factors Affecting Leptin Levels

Low leptin levels have been associated with:

- Low body mass index (BMI) [R, R]
- Cold exposure [R]
- Alcohol [R]
- Exercise [R, R]
- Short-term fasting [R]
- Sleep deprivation [R]
- Anorexia [R]

Leptin deficiency can also be caused by disorders such as:

- Congenital leptin deficiency [R]
- Congenital and acquired lipoatrophy (localized loss of fat tissue) [R]

Symptoms of low leptin levels vary depending on the underlying cause and may include [R, R, R, R]:

- Feeling hungry more often
- Difficulty losing weight (slower metabolism)
- High or low percentage of body fat
- Absent period (in women)
- Weak and brittle bones (osteoporosis)
- Frequent infections

In contrast, the following have been associated with elevated leptin levels:

- Overeating, especially high-fat and high-sugar foods [R, R]
- Emotional stress [R]
- Inflammation [R, R]
- Obesity [R]
- Pregnancy [R]
- Pre-eclampsia [R]
- Gestational diabetes [R]
- Sleep apnea [R]

Chronically high leptin levels can lead to leptin resistance. Symptoms of leptin resistance include [R]:

- Weight gain and difficulty losing weight
- Urge to snack soon after meals



TYPICAL LEVELS

Predisposed to typical leptin levels based on 2,670 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
LEP	rs10487505	GG
KLF14	rs972283	GG
GCKR	rs780093	CC
KLHL31	rs3799260	TT
SLC38A11	rs13389219	CT
TIPARP	rs900400	TC
ARHGAP40	rs6071166	AC
GCKR	rs1260326	TC
TIPARP	rs900399	AG
SLC38A11	rs6738627	GA
LEP	rs17151919	GG
ZNF800	rs62621812	GG
LEP	rs791600	GG

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

Leptin resistance is associated with obesity, metabolic syndrome, and other related health issues like type 2 diabetes and cardiovascular diseases.

Maintaining healthy leptin levels primarily involves a balanced diet, regular physical activity, adequate sleep, and stress management. For individuals struggling with weight or metabolic health, consulting with a healthcare provider is crucial. They can offer guidance on diet, exercise, and lifestyle adjustments to improve leptin sensitivity and overall health.

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.

1

Intermittent Fasting

1



Intermittent Fasting

IMPACT

2 / 5

EVIDENCE

2 / 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

A systematic review of 16 studies found that Ramadan fasting significantly reduced leptin levels but had no significant effect on adiponectin. Normal-weight subjects experienced a greater decrease compared to overweight/obese subjects [\[R\]](#).

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.