

Bilirubin

Biohacker Report

REPORT CATEGORY —



Sample Client

Report date: 15 January 2026

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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

Bilirubin is a yellowish pigment that is made when red blood cells are broken down. Bilirubin is produced from hemoglobin, the compound in red blood cells that allows them to carry oxygen [R, R, R].

Bilirubin passes through two phases. In the first phase, bilirubin binds to a protein called albumin, which allows it to be carried from the blood and into the liver. Bilirubin in this phase is called “indirect” or “unconjugated” bilirubin [R].

The second phase takes place in the liver, which attaches sugar molecules to the bilirubin. This makes it water-soluble, which helps the gut eliminate bilirubin in the stool. Bilirubin in this phase is called “direct” or “conjugated” bilirubin [R].

Abnormal Bilirubin Levels

High bilirubin levels may be the product of an underlying medical condition, such as:

- **Liver disease** [\[R\]](#), [\[R\]](#)
- Gallstones [\[R\]](#), [\[R\]](#)
- Any condition that causes red blood cells to break down (e.g., sickle cell anemia) [\[R\]](#)
- Gilbert's syndrome

If bilirubin levels become high enough, skin can turn yellow. This is called *jaundice*. Treating the root cause may help decrease bilirubin levels.

Having slightly higher bilirubin levels due to genetics (e.g. due to Gilbert's syndrome) may lower the risk of developing certain diseases like:

- Type 2 diabetes [\[R\]](#)
- Stroke [\[R\]](#)
- Cancer [\[R\]](#), [\[R\]](#), [\[R\]](#)

Lower bilirubin is usually not a case for concern because it's not associated with any specific health conditions. However, in recent years, studies have shown that bilirubin may have important beneficial roles, both as an antioxidant and a suppressor of inflammation [\[R\]](#), [\[R\]](#).

Smoking and obesity can decrease bilirubin levels. Bilirubin may also be low in people with certain medical conditions [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

Some research suggests that low bilirubin levels may be linked to heart disease or stroke. However, not all studies found these links [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

Weight loss and quitting tobacco may help increase bilirubin levels [\[R\]](#), [\[R\]](#).

Up to 50% of differences in people’s bilirubin levels may be attributed to genetics. Genes involved may influence bilirubin elimination [\[R\]](#).



Predisposed to lower bilirubin levels based on 3,630 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
ATG16L1	rs80271431	AG
UGT1A6	rs10929302	GG
UGT1A4	rs34622615	GG
UGT1A1	rs17862876	GG
UGT1A10	rs2602372	AA
UGT1A9	rs145084767	GG
UGT1A10	rs11683356	GG
UGT1A10	rs114346341	AA
UGT1A10	rs144759885	GG
/	rs183383266	CC
DGKD	rs139085833	CC
MROH2A	rs34670649	CC
UGT1A1	rs17868336	AA
USP40	rs114099762	GG
USP40	rs146371325	GG
SAG	rs78936963	AA
DGKD	rs113483143	CC
SLCO1B1	rs71581941	CC
UGT1A1	rs111712352	CC
SLCO1B1	rs73062310	CC
SAG	rs72976383	CC
DGKD	rs114252547	TT
HJURP	rs78712204	GG
UGT1A1	rs4148323	GG
DGKD	rs72980341	TT
TRPM8	rs114318917	CC
DGKD	rs6704644	GG
TRPM8	rs17862932	CC
UGT1A9	rs143487779	CC
USP40	rs1112310	GG
MROH2A	rs17864714	GG
DGKD	rs115604196	AA

GENE	SNP	GENOTYPE
UGT1A4	rs17868337	GG
UGT1A9	rs41264153	GG
HJURP	rs140912561	CC
UGT1A6	rs4663335	GG
USP40	rs77900844	GG
DGKD	rs142882603	AA
UGT1A10	rs17863775	AA
USP40	rs62192762	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	TUDCA (Tauroursodeoxycholic Acid)	250 mg	
2	N-acetylcysteine (NAC)	1200 mg	
3	Picrorhiza Kurroa		
4	Methylsulfonylmethane (MSM)	1 g	

1



TUDCA (Tauroursodeoxycholic Acid)

IMPACT

2 / 5

EVIDENCE

2 / 5

How to implement

Take 250 to 1500 mg of TUDCA (tauroursodeoxycholic acid) per day, divided into two or three doses with meals. This recommendation is based on general guidelines from clinical studies; for specific conditions or as directed by a healthcare professional, dosages may vary.

TYPICAL STARTING DOSE
250 mg

Description

TUDCA is a bile acid derivative naturally produced in small quantities in the human body and also found in the bile of bears. It is often used as a supplement due to its potential to support liver health, reduce inflammation, and protect against bile acid buildup, making it valuable in managing liver conditions like cholestasis and certain liver diseases.

TUDCA, short for tauroursodeoxycholic acid, is a [bile acid](#) that naturally occurs in the body. It consists of ursodeoxycholic acid (UDCA) and taurine [\[R\]](#).

TUDCA is known for its liver-protective effects. People often use it as a dietary supplement to support liver health and promote overall well-being [\[R\]](#).

How it helps

- In a placebo-controlled trial of 199 patients with primary biliary cholangitis, supplementation with TUDCA (250 mg, 3x/day) for 24 weeks lowered total bilirubin and other markers of liver damage [\[R\]](#).
- In patients with chronic active hepatitis due to hepatitis C virus (HCV) or hepatitis B virus (HBV), TUDCA administration was associated with a significant reduction in total bilirubin levels [\[R\]](#).

2



N-acetylcysteine (NAC)

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Take 600 mg of N-Acetylcysteine (NAC) supplement daily with water. It can be taken at any time of the day, but try to take it at the same time each day for best results.

TYPICAL STARTING DOSE
1200 mg

Description

NAC is a supplement that contains a form of the amino acid cysteine, a protein building block that your body uses to make the antioxidant glutathione. It is used for its potential antioxidant properties and its ability to support lung, gut, and mental health.

[N-acetylcysteine](#) (NAC) is converted to cysteine in the body. Cysteine is a protein building block (amino acid) that helps make the antioxidant glutathione [\[R\]](#).

People take NAC to potentially support [\[R\]](#), [\[R\]](#):

- Mental health
- Ovarian health and pregnancy outcomes
- Lung health
- Gut health

How it helps

In a placebo-controlled trial of 38 patients with tuberculosis, intravenous NAC lowered bilirubin levels and other markers of liver damage caused by anti-tuberculosis drugs [\[R\]](#).

Similarly, intravenous NAC lowered this and other markers in a placebo-controlled trial of 173 patients with acute liver failure [\[R\]](#).

Intravenous NAC also preserved liver function (including bilirubin levels) after bypass surgery in a placebo-controlled trial of 30 patients with obstructive jaundice [\[R\]](#).

However, NAC supplementation (200-800 mg/day for 12 weeks) failed to lower bilirubin levels in a non-placebo-controlled trial of 171 lead-exposed workers [\[R\]](#).

3



Picrorrhiza Kurroa

IMPACT1 / 5

EVIDENCE1 / 5

Description

Picrorrhiza kurroa, also known as Kutki, is a perennial herb native to the Himalayan region and other parts of Asia. It has a long history of use in traditional Ayurvedic medicine for its various health benefits. Its main active compounds are kutkin, picroside I, and picroside II. These compounds are believed to possess antioxidant, anti-inflammatory, hepatoprotective, and immunomodulatory properties.

In Ayurveda, *P. kurroa* is primarily valued for its ability to support liver health and promote detoxification. It is often used to treat liver disorders such as jaundice, hepatitis, and liver cirrhosis. Alternatively, it can be used to boost digestion, alleviate respiratory conditions like asthma and bronchitis, and support overall immune function.

How it helps

In a placebo-controlled trial of 33 patients with acute viral hepatitis, supplementation with *Picrorrhiza kurroa* root powder (375 mg, 3x/day) for 2 weeks lowered bilirubin, AST, and ALT [\[R\]](#).

4



Methylsulfonylmethane (MSM)

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Take 1 to 3 grams of Methylsulfonylmethane (MSM) per day, divided into three doses. This can be in the form of capsules or powder that is mixed with water. It is recommended to start with a lower dose to assess tolerance, then gradually increase to the desired dose over a period of 1 to 2 weeks.

TYPICAL STARTING DOSE

1 g

Description

MSM is a naturally occurring sulfur compound found in foods and used in dietary supplements. It has anti-inflammatory properties and may be used to support joint health and reduce exercise-related muscle soreness.

A molecule of MSM is broken down in the body into a sulfate (sulfur) group and two methyl groups.

The following may increase people’s needs for sulfur and methyl groups: physical activity, recovery from injuries, inflammation, infections/sickness, toxins, etc.

People also need more sulfur when taking hormones (DHEA, pregnenolone, etc.), drugs (Aspirin, Tylenol, NSAIDs, birth control, etc.) or supplements (flavonoids & polyphenols - resveratrol, quercetin, curcumin, etc.) that undergo sulfation.

How it helps

In 2 placebo-controlled trials of 34 healthy volunteers, supplementation with MSM before exercise reduced bilirubin levels [\[R\]](#), [\[R\]](#).

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.

	Bilirubin, Urine		Optimal High	9 Nov 2025
	Bilirubin, Direct	0.3 mg/dL	00.2 	9 Nov 2025
	Bilirubin, Indirect	0.7 mg/dL	0.21.215 	9 Nov 2025
	Bilirubin, Total	1 mg/dL	0.20.81.315 	9 Nov 2025
	Urobilinogen, Urine	0.2 mg/dL	0.21 	29 Aug 2025