

Gamma-Linolenic Acid (GLA)

Biohacker Report

REPORT CATEGORY —



NUTRITION

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

[Gamma Linolenic Acid](#) (GLA) is an omega-6 fatty acid that our bodies can make from linoleic acid. Most adults on a typical Western diet get enough linoleic acid from vegetable oils, nuts, and seeds [\[R\]](#), [\[R\]](#).

However, some people have trouble converting linoleic acid to GLA, including the elderly and those with [\[R\]](#), [\[R\]](#):

- Nutritional deficiencies (e.g., zinc or cobalt deficiency)
- Inflammatory conditions (e.g., arthritis and psoriasis)
- High blood pressure
- [Diabetes](#)
- [Stress](#)
- Smoking
- Excessive intake of trans fats and alcohol

GLA can also be obtained from organ meat, especially liver. However, the foods highest in GLA are seed oils of [\[R\]](#):

- [Borage](#) (18-26%)
- Black currant (15-20%)
- [Evening primrose](#) (7-10%)
- [Hemp](#) (3%)

GLA helps reduce inflammation and support skin health [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

Genetics of GLA Levels

Up to 35% of differences in people’s GLA levels may be due to genetics [R].

Genes involved may play a role in the production of GLA. For example, a gene called [FADS1](#) helps make the enzyme delta-5 desaturase (D5D). This enzyme helps produce GLA from other fatty acids like linoleic acid. Certain variants in this gene may increase the conversion of linoleic acid into GLA, resulting in higher GLA levels [R, R].

Find out more about the *FADS1* gene in [this post](#).

Genetically higher GLA may be causally associated with a reduced risk of schizophrenia and heart disease. [R, R]

Keep in mind that your diet and environment also influence your GLA levels.



Likely typical need for GLA based on 75 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
SCGB2A1	rs12806663	CC
MAML3	rs13112683	TT
HES1	rs6444746	GG
SNX13	rs12535608	AG
HAO1	rs2206405	AT
C6ORF163	rs2031365	CT
SERPINB9	rs316338	GA
PEAK3	rs2074552	TC
TMEM258	rs174537	GG
FADS2	rs174546	CC
MYRF	rs7925523	AA

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	Blackcurrent Supplement	2	Hemp Seed Oil
3	Borage Oil2 g	4	Spirulina500 mg
5	Blackcurrants	6	Evening Primrose Oil

1



Blackcurrant Supplement

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take a blackcurrant supplement containing 300mg of blackcurrant extract daily, preferably with a meal to enhance absorption. Continue this regimen for at least 8 weeks to observe potential benefits.

Description

Blackcurrant supplements are often used to harness the health benefits of blackcurrants in a convenient form. They can provide a concentrated source of antioxidants and nutrients that support various aspects of well-being.

Black currant oil contains between 150-200mg of GLA per gram.

How it helps

Blackcurrant supplements are rich in Gamma-Linolenic Acid (GLA), a type of Omega-6 fatty acid that the body needs but can't produce. Consuming these supplements can therefore provide your body with sufficient GLA, potentially reducing inflammation and enhancing your immune system.

2



Hemp Seed Oil

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Incorporate hemp seed oil into your diet by adding 1-2 tablespoons to salads, smoothies, or yogurt daily. Ensure the oil is cold-pressed and unrefined for maximum health benefits. This can be a regular part of your diet indefinitely.

Description

Hemp seed oil is derived from hemp seeds and is known for its nutritional value, including a balanced ratio of omega-3 and omega-6 fatty acids. It may support skin health, reduce inflammation, and provide a source of essential nutrients.

Hemp seed oil contains vitamin E, magnesium, calcium, sulfur, phosphorus, iron, and zinc. Hemp oil contains about 30 mg of GLA per gram.

How it helps

Hemp seed oil has a good amount of Gamma-Linolenic Acid (GLA), an essential fatty acid that the body can't produce itself. By consuming hemp seed oil, a person can replenish their GLA levels, which is crucial to maintaining good hormonal health and reducing inflammation.

3



Borage Oil

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 2-3 grams of borage oil daily, in divided doses, with meals to help with inflammation or skin conditions. It is available in capsule form. This supplementation can be ongoing but consider a break or evaluation after 6 months.

TYPICAL STARTING DOSE

2 g

Description

Borage oil, derived from the seeds of the borage plant, is rich in gamma-linolenic acid (GLA), an omega-6 fatty acid. It is believed to have potential anti-inflammatory properties and may be used as a dietary supplement to support skin health and overall well-being.

Borage oil contains between 180-260mg of GLA per gram.

How it helps

Borage oil is known to be rich in gamma-linolenic acid (GLA). Regular consumption can alleviate GLA deficiency symptoms, and its anti-inflammatory properties might help in conditions linked to inflammation.

4



Spirulina

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 1-8 g of spirulina supplements daily, preferably with a meal to enhance absorption.

TYPICAL STARTING DOSE

500 mg

Description

Spirulina is a blue-green algae. It is rich in nutrients like protein, vitamins, and minerals, particularly vitamin B12 and iron, and is a source of antioxidants, chlorophyll, and phycocyanin. It can be found in powdered or tablet form as a supplement, and is often used to boost energy, support the immune system, and enhance overall nutrition. Additionally, spirulina.

[Spirulina](#) is a supplement made from blue-green algae that grows in fresh and marine water [\[R, R\]](#).

Dried spirulina is up to 70% protein. It’s also rich in vitamins, antioxidants, and healthy fats. This makes it a great source of nutrition for both people and livestock [\[R, R, R\]](#).

People use spirulina supplements to reduce [\[R, R\]](#):

- Cholesterol
- Blood pressure
- Blood sugar

How it helps

Spirulina is a rich source of Gamma-Linolenic Acid (GLA), a necessary fatty acid aiding in reducing inflammation and promoting cell health. Regular intake of this superfood may help ensure sufficient levels of GLA, preventing GLA deficiency-related health issues.

5



Blackcurrants

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Incorporate about 1/2 cup of fresh or frozen blackcurrants into your daily diet. You can add them to your morning yogurt, oatmeal, or smoothies. For those who prefer, blackcurrant juice or preserves can also be consumed, but be mindful of added sugars in processed forms.

Description

Blackcurrants are small, nutrient-dense berries packed with vitamins, minerals, and antioxidants. They are known for their potential to promote heart health, improve cognitive function, and provide essential nutrients for overall vitality.

How it helps

Eating blackcurrants can boost your GLA levels because they are a rich source of this important fatty acid. Increased GLA in the body can help reduce inflammation, improve skin health, and regulate the immune system.

6



Evening Primrose Oil

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 500mg to 1000mg of evening primrose oil, in capsule form, once daily with a meal to ensure optimal absorption. This regimen is typically recommended for several months to evaluate its effectiveness for the specific condition being addressed.

Description

Evening primrose is a plant known for its seeds, which are a source of gamma-linolenic acid (GLA), an essential fatty acid. Some studies suggest that evening primrose oil, derived from these seeds, may help alleviate symptoms of conditions like premenstrual syndrome (PMS) and eczema, as well as support overall skin health.

Evening primrose (*Oenothera biennis*) is a flowering plant. Its name comes from the fact that its flowers close during the day and open when the sun sets [R].

[Evening primrose oil](#) comes from the plant’s seeds. It is rich in omega-6 fatty acids like [GLA](#). People use this oil to help with high triglycerides [R, R].

How it helps

Evening Primrose Oil is packed with Gamma-Linolenic Acid (GLA), a fatty acid that your body needs but doesn't produce. Regular intake helps reduce inflammation and assists in hormone function, reducing the risk of deficiencies.

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.