SelfDecode™

Red Blood Cells

Biohacker Report

REPORT CATEGORY

ENERGY & FATIGUE

Sample Client

Report date: 15 January 2026

Powered by omicsedge

Table of Contents

Personal information

NAME

Sample Client

SEX AT BIRTH

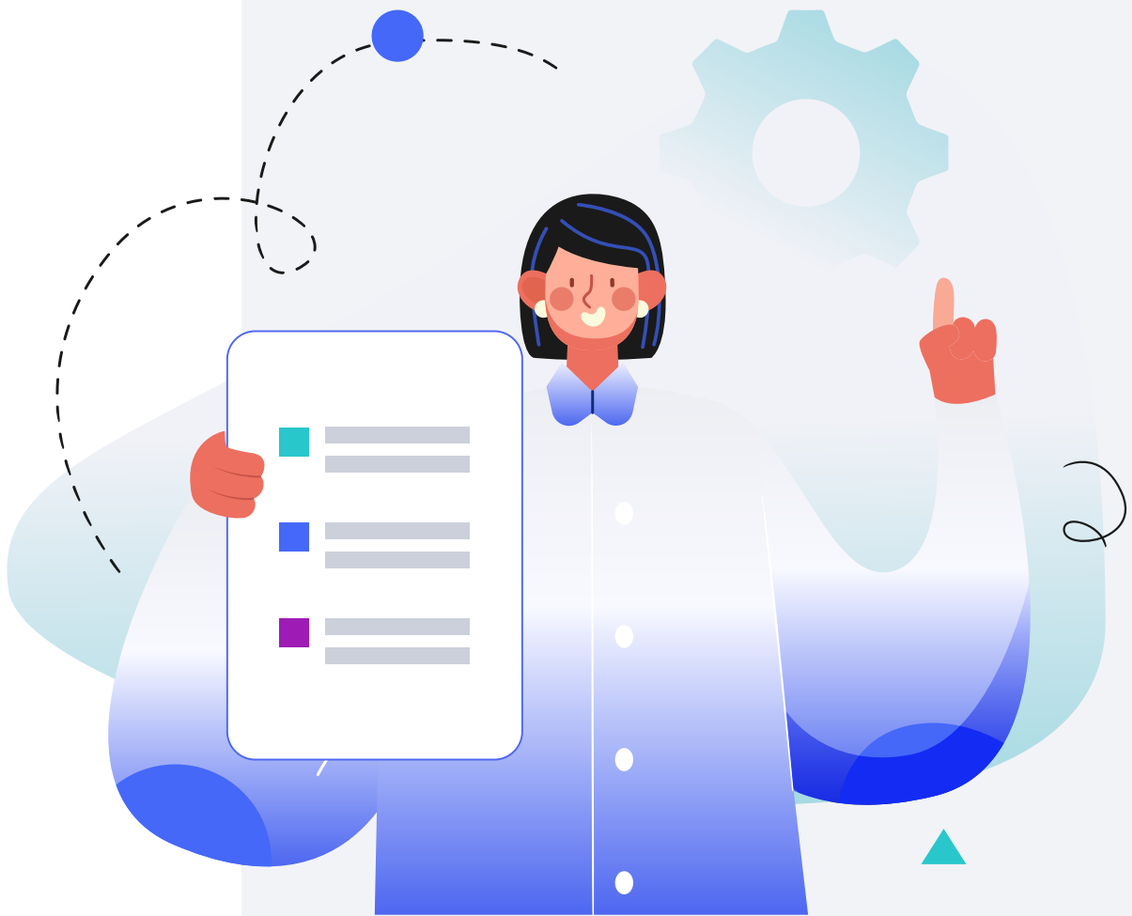
Male

HEIGHT

5ft 5" 165cm

WEIGHT

137lb 62kg

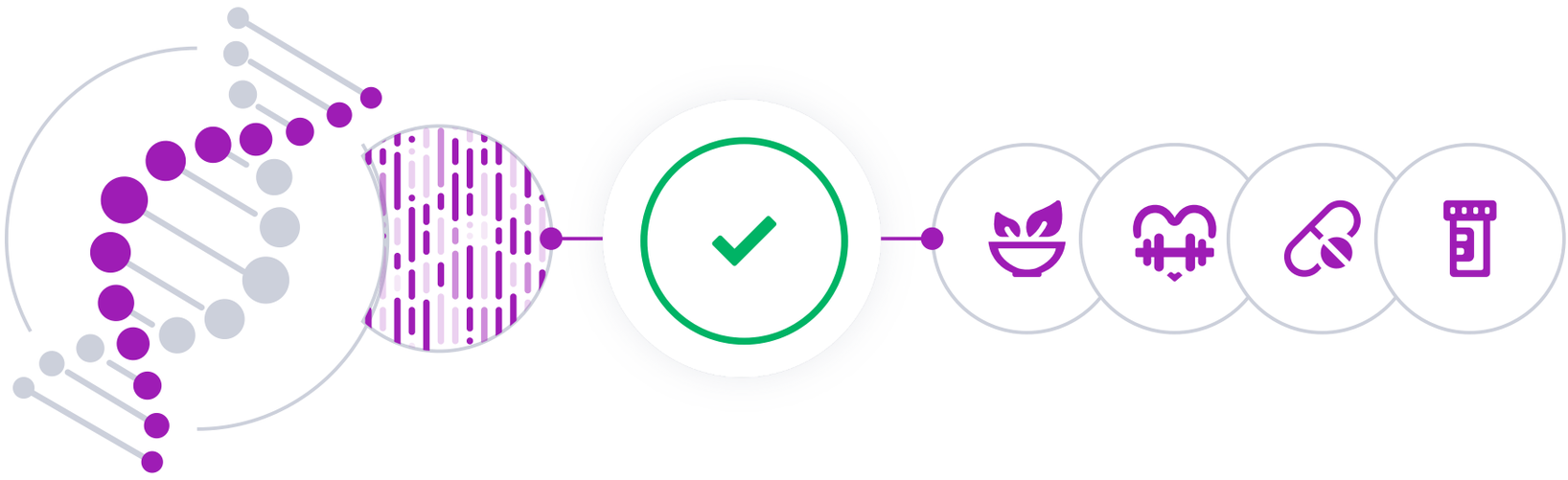


DISCLAIMER

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

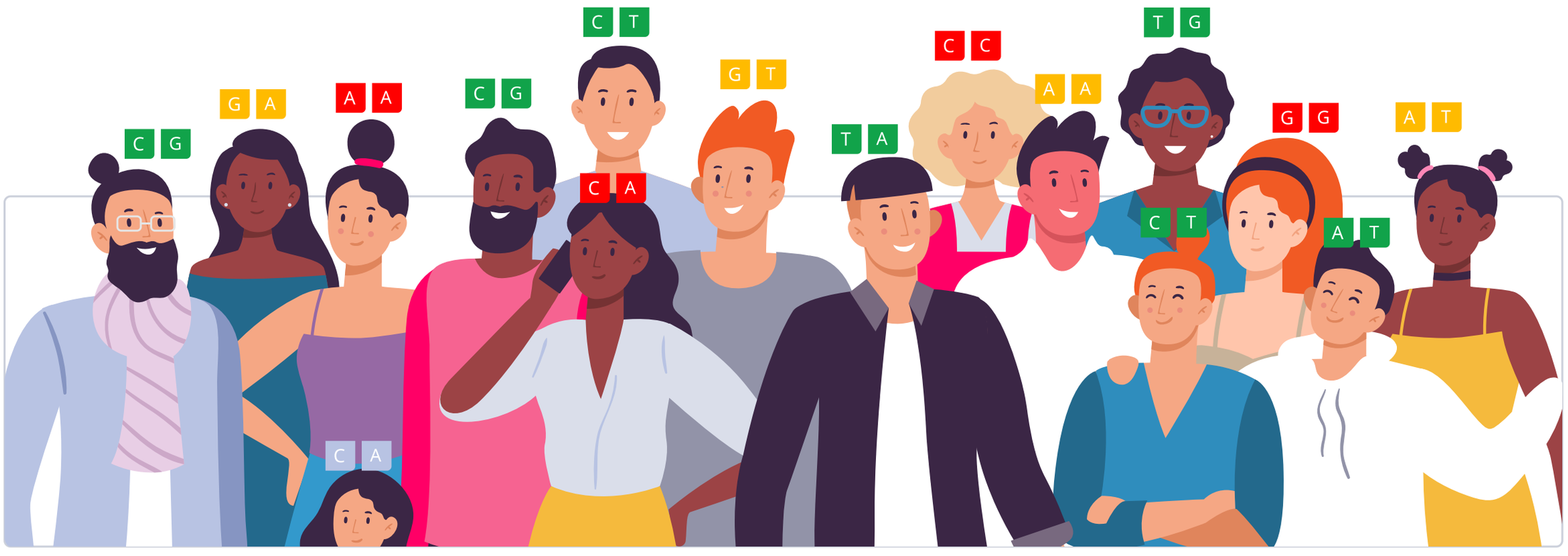
Our Wellness Reports analyze how your DNA influences your health.
We then use this analysis to give you personalized risk estimates and recommendations.



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.

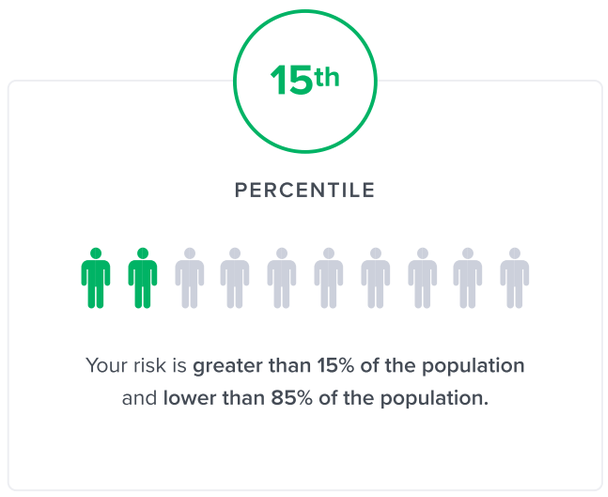
Genetic variants are parts of DNA that differ from person to person. Some can make you more vulnerable to certain health issues, while others may influence traits such as eye color.



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.

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

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



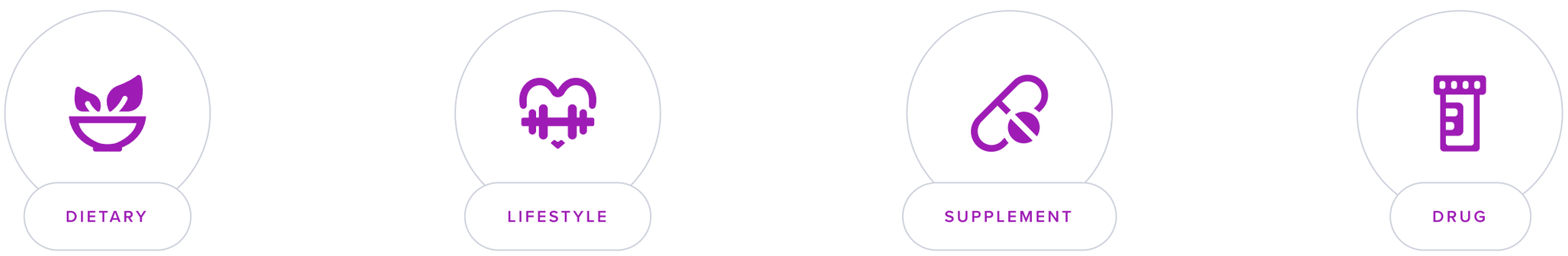
Genotype color info: AA You don't have any risk alleles | AA You have 1 risk allele | AA You have 2 risk alleles

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, afew 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

Red blood cells help carry oxygen from your lungs to all parts of the body. Tissues can't function properly without enough oxygen [R, R].

Red blood cells bind oxygen in the lungs and deliver it to the tissues, where they pick up carbon dioxide produced by your cells. They release carbon dioxide in the lungs, bind oxygen, and go through the same process over and over again [R, R].

Red blood cells are made in the bone marrow. Many factors are involved in their production. For example, nutrients such as **iron, vitamin B12, and folate** are necessary to make red blood cells [R, R].

Red blood cells have a lifetime of approximately 100-120 days, which means that bone marrow needs to continually produce them to replace old ones or those lost due to bleeding [R].

Your red blood cell count measures the number of red blood cells in your blood. Red blood cell count is usually measured as part of a complete blood count [R].

Abnormal Red Blood Cell Count

Red blood cells help carry oxygen from your lungs to all parts of the body. Tissues can't function properly without enough oxygen. **Your red blood cell count measures the number of red blood cells in your blood.** Red blood cell count is usually measured as part of a complete blood count [R, R, R].

Causes of low red blood cell count include: [R, R]:

- Nutrient deficiency (iron, folate, vitamin B12)
- Blood loss
- Some health conditions

A low red blood cell count is also known as **anemia**. Symptoms of anemia include [R]:

- Fatigue and weakness
- Pale or yellowed skin
- Shortness of breath
- Dizziness
- Cold hands and feet

If you have anemia, it's important to work with your doctor and address the root cause.

A high red blood cell count can be caused by several factors, but it doesn't necessarily mean that you have a health condition. Causes of high red blood cell count include [R, R]:

- Smoking
- Heart disease or lung disease
- Living at a high altitude
- Dehydration

High red blood cell counts can cause [R]:

- Fatigue
- Itchy skin
- Nosebleeds
- Headaches
- Shortness of breath
- Blood clots

TYPICAL LEVELS

Predisposed to typical red blood cell count based on 20,485 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
/	rs774469934	GG
HBS1L	rs35786788	AA
/	rs145910606	TT
EPAS1	rs10168349	CC
FARSA	rs8110787	TT
LMF2	rs140522	CC
PTPRC	rs1434282	TT
MOSPD3	rs2075672	GA
TMEM72	rs2281841	CC
ATP2B4	rs4951074	GG
THRB	rs1505307	CC
FADS2	rs174574	CC
TBX2	rs11657044	CC
PRKAG2	rs6464165	TC
CD164	rs1546723	AG
SH2B3	rs3184504	TC
SBF2	rs368417629	TG
/	rs3059421	TINS(AC)
PIEZO1	rs837763	TC
KIT	rs218265	TT
PPRC1	rs149687130	AA
TTC1	rs148871069	AA
EGLN2	rs184088518	GG
SLC9A3R2	rs139491786	CC
BCL2	rs17758695	CC
HCRTR2	rs4715517	CC
BCL2L11	rs62160676	TT
NCOA4	rs74877435	CC
PGLYRP2	rs146213062	AA
IKZF1	rs6592965	GG
HLA-DQA2	rs9272626	AA
ZNF800	rs72607741	GG

Talk to your doctor if your red blood cell count is high and you are experiencing any of these symptoms.

Your genes play a role in your red blood cell count! Up to **65%** of differences in people's red blood cell count may be due to genetics [R, R].

Genetically predicted higher fasting insulin and high blood pressure (diastolic) may be associated with a higher red cell count [R, R].

GENE	SNP	GENOTYPE
BET1L	rs11245997	GG
MAP4K5	rs12881869	CC
FOXE3	rs11583750	GG
XPO7	rs76008177	CC
C11ORF21	rs16928078	CC
GPRC5A	rs11055134	TT

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
1	Aerobic Exercise (Cardio)	1 hour
2	Avoid PCBs	
3	Black Seed (Black Cumin)	1000 mg
4	Lactobacillus Gasseri	10 billion CFU
5	Caraway	200 mg
6	Maintain Optimal Vitamin D Levels	1000 iu
7	Regular Sleep Schedule	
8	Lactobacillus Acidophilus	10 billion CFU
9	Practice Exercise Snacks	1 minutesute
10	Beetroot Juice	
11	Vitamin B12 And Folate	
12	Dietary Pyridoxine (Vitamin B6)	
13	Vitamin A	700 mcg
14	Vitamin C	500 mg
15	Dietary Folate	
16	Dietary Iron	
17	Dietary Vitamin B12	
18	Thymus Glandular	
19	Copper	2 mg
20	Beetroot	
21	Vitamin B12	10 mcg
22	Leafy Green Vegetables	
23	Maintain Optimal Iron Levels	10 mg

1

Aerobic Exercise (Cardio)

IMPACT 3 / 5

EVIDENCE 3 / 5

How to implement

Engage in at least 150 minutes of moderate-intensity aerobic exercise or 75 minutes of vigorous-intensity activity each week. Distribute this time over at least 3 days per week, avoiding consecutive days of vigorous exercise to allow for recovery.

TYPICAL STARTING DOSE

1 hour

Description

Engaging in regular aerobic exercise, such as running, swimming, or cycling, offers numerous health benefits, including improved cardiovascular fitness, weight management, and mood enhancement. It supports overall physical and mental well-being while reducing the risk of chronic diseases.

Cardio, short for cardiovascular exercise, is any type of physical activity that temporarily increases your heart rate. Examples include **running, cycling, swimming, and brisk walking**.

Regular cardio exercise has many benefits for your overall health. It can help lower your risk of heart disease and diabetes, support weight loss, and improve your mood and energy levels. To get the most out of cardio, try to do it for at **least 30 minutes, 3-5 times a week**.

Interval training is a type of cardio that combines periods of high-intensity training with brief rest periods.

How it helps

Regular aerobic exercise may improve red blood cell volume in young and middle-aged adults, but not in elderly subjects [R].

2

Avoid PCBs

IMPACT 2 / 5

EVIDENCE 2 / 5

How to implement

To avoid PCBs (Polychlorinated Biphenyls), do not use old electrical equipment manufactured before 1977, avoid consuming fish from contaminated waters, especially larger species such as shark and swordfish which are higher in the food chain, and check for and properly dispose of any old fluorescent lighting fixtures that may contain PCBs. Pay attention to local advisories regarding the safety of locally caught fish and wildlife.

Description

PCBs are toxic chemicals that can cause cancer, reproductive problems, and developmental problems. Avoiding exposure to PCBs is important for protecting your health.

Polychlorinated biphenyls (PCBs) are man-made chemicals. They were used in the industry until their **ban in 1979**. PCBs are considered **persistent organic pollutants** (POPS) due to their slow degradation in the environment. They may also **accumulate** in the food chain and the human body [R, R].

We may be exposed to PCBs through contaminated [R, R]:

- **Food** (e.g., fish, meat, rice)
- Soil
- Air

PCBs may have toxic effects on [R, R]:

- Immunity
- Nervous system
- Reproductive system
- Hormone levels

They may also increase the risk of cancer and reduce lifespan [R, R].

How it helps

Avoiding PCBs helps protect your red blood cells by reducing exposure to toxins that can damage these cells or impede their ability to carry oxygen effectively. PCBs are harmful chemicals that can cause anemia, a condition where your blood lacks enough healthy red cells.

A study of 1935 participants associated high exposure to PCBs with **decreased red blood cell count, white blood cell count, hematocrit, and hemoglobin levels** [R].

3

Black Seed (Black Cumin)

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Take 1000 mg of black seed (black cumin) supplement daily, preferably split into two doses of 500 mg each, one in the morning and one in the evening.

TYPICAL STARTING DOSE

1000 mg

Description

Black seed, also known as black cumin or Nigella sativa, has been used for its potential health benefits in traditional medicine. It is believed to have anti-inflammatory, antioxidant, and immune-boosting properties.

Black seed (black cumin) and its oil are used in cooking and traditional medicine [R].

People use black seed for [R, R, R, R, R]:

- Asthma
- Allergies
- High blood sugar
- High blood pressure
- Joint pain

How it helps

In an uncontrolled trial of 30 patients with hepatitis C, supplementation with black seed (450 mg, 3x/day) for 3 months **reduced viral load and TAC, as well as improved total protein, albumin, red blood cell count, platelet count, and fasting glucose** [R].

The combination of black seed (250 mg/day) and ascorbate (1000 mg/day) as an add-on to antivirals for 8 weeks **reduced the levels of AST, ALT, ALP, GGT, bilirubin, and MDA, and increased SOD, TAS, and GSH activity** in a non-placebo-controlled trial of 30 patients with hepatitis C [R].

4

Lactobacillus Gasseri

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Take a Lactobacillus gasseri supplement containing around 10 billion colony-forming units (CFUs) daily, ideally with a meal, for at least 2 weeks to 4 months to observe benefits. Continuous daily intake is recommended for ongoing support.

TYPICAL STARTING DOSE

10 billion CFU

Description

Lactobacillus Gasseri is a beneficial probiotic strain that can support digestive health and contribute to a balanced gut microbiome. It may help improve gut function, enhance nutrient absorption, and bolster the immune system, promoting overall well-being.

How it helps

In a placebo-controlled trial of 32 hypercholesterolemic subjects, supplementation with *L. gasseri* CHO-220 for 12 weeks reduced the occurrence of spur red blood cells and the cholesterol:phospholipids ratio of their membrane (by 47.02%) [R].

5

Caraway

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Take caraway supplement capsules, usually ranging from 200 to 600 mg, once or twice daily with meals. Ensure to follow the specific dosage instructions on the product label.

TYPICAL STARTING DOSE

200 mg

Description

Caraway is a spice with a distinctive flavor often used in culinary dishes and herbal remedies. It may have digestive benefits and can be used to flavor various foods.

How it helps

In a placebo-controlled trial of 70 overweight and obese women, supplementation with caraway extract (30 mL/day) for 12 weeks increased red blood cell count while decreasing platelet width distribution [R].

6

Maintain Optimal Vitamin D Levels

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Check your vitamin D levels, they should ideally be in the 30-66 ng/mL range. If your levels are lower than that, take a vitamin D supplement, 1000-4000 IU daily, to reach an optimal range.

TYPICAL STARTING DOSE

1000 iu

Description

Vitamin D, often referred to as the "sunshine vitamin," can be synthesized by the skin when exposed to sunlight, as well as being found in fish, eggs, and fortified milk. It helps regulate calcium absorption, promoting strong bones and a healthy immune system. Vitamin D deficiency can lead to conditions like rickets in children and osteoporosis in adults.

Your body needs vitamin D for strong bones. Vitamin D also plays a role in [R]:

- Mood
- Immunity
- Heart health
- Blood sugar control

Sunlight is our main source of vitamin D. Experts recommend getting at least **5-15 minutes of midday sun, 2-3 times per week**. People with darker skin and those living at high latitudes may need longer periods of sun exposure [R, R].

Foods like fish, eggs, and fortified milk provide small amounts of vitamin D. **People lacking vitamin D should consider taking a supplement** [R].

How it helps

Low vitamin D levels are linked to anemia and a low red blood cell count [R, R, R, R, R, R, R, R, R].

However, there is no evidence that vitamin D supplementation increases red blood cell count [R, R].

Please note: *Experts recommend getting 600-800 IU of vitamin D per day. Medical bodies recommend against taking more than 4,000 IU per day* [R].

7

Regular Sleep Schedule

IMPACT 0 / 5

EVIDENCE 0 / 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

A regular sleep schedule supports circadian rhythm, which helps in maintaining a stable environment for red blood cell production.

8

Lactobacillus Acidophilus

IMPACT 0 / 5

EVIDENCE 0 / 5

How to implement

Take a probiotic supplement containing Lactobacillus acidophilus. Look for products that offer around 10 billion CFUs (colony-forming units) and take it once daily, preferably on an empty stomach, either first thing in the morning or right before bed.

TYPICAL STARTING DOSE

10 billion CFU

Description

Lactobacillus acidophilus is a probiotic bacterium that has been traditionally and widely used in the dairy industry to make yogurt [R].

More recently, *L. acidophilus* has been used as a probiotic. People take it to help with [R, R, R, R]:

- High cholesterol
- Gut diseases
- Allergies
- Vaginal infections

How it helps

By improving gut health, L. acidophilus may indirectly aid in nutrient absorption, which is crucial for maintaining red blood cells (RBCs).

9

Practice Exercise Snacks

IMPACT 0 / 5

EVIDENCE 0 / 5

How to implement

Integrate short bursts of physical activity, each lasting about 1 to 2 minutes, into your daily routine at least two to three times a day. These 'exercise snacks' can include activities like doing a set of stairs, rapid bodyweight exercises, pull-ups, push-ups, sit-ups, or brisk walking.

TYPICAL STARTING DOSE

1 minutesute

Description

Staying physically active is essential for maintaining overall health and well-being. **Exercise snacks** are brief, frequent bursts of physical activity integrated into daily routines, helping combat the health risks associated with prolonged sitting and sedentary behavior, such as obesity and cardiovascular issues. Examples include taking the stairs or doing quick exercises during work breaks.

Staying active can do wonders for your health. It can help you lose weight, improve your heart health, boost your mood, and more [R].

Exercise snacks are short, quick bursts of physical activity performed throughout the day, designed to break up prolonged periods of sitting or inactivity. These brief bouts of exercise can be as short as a few minutes and are incorporated into daily routines to boost overall physical activity levels.

Exercise snacks are crucial for health because they combat the negative effects of sedentary behavior, such as prolonged sitting, which is associated with an increased risk of obesity, cardiovascular diseases, diabetes, and musculoskeletal issues. They help improve blood circulation, regulate blood sugar levels, and enhance mood and cognitive function.

Examples of exercise snacks include taking the stairs instead of the elevator, doing a few minutes of bodyweight exercises (e.g., squats or push-ups) during work breaks, or walking briskly for a few minutes after meals. These short, frequent bursts of activity contribute to a more active lifestyle and can significantly benefit overall health by reducing the risks associated with excessive sitting.

How it helps

Staying physically active can contribute to better red blood cell health and improved oxygen delivery to tissues.

10

Beetroot Juice

IMPACT 0 / 5

EVIDENCE 0 / 5

How to implement

Consume 200-250ml of beetroot juice daily, at least 1-2 hours before engaging in physical activity or as part of your breakfast routine. This regimen should be maintained consistently for at least 2 weeks to start noticing benefits in terms of increased stamina and blood pressure regulation.

Description

Beetroot juice is a concentrated source of dietary nitrates, known for their potential to enhance athletic performance and improve blood pressure regulation. It is often consumed by athletes to enhance stamina and aid in recovery.

Beetroot (*Beta vulgaris*) contains iron, nitrates, sodium, potassium, and betalaine [R].

Beets are an inexpensive and mineral-rich vegetable that are widely used in Western cooking. Compared to other vegetables with high iron content, beets have a low price and are easy to store [R].

How it helps

Drinking beetroot juice provides a source of nitrates to aid in enhancing blood oxygenation.

11

Vitamin B12 And Folate

IMPACT 0 / 5

EVIDENCE 0 / 5

How to implement

Take a combined supplement of vitamin B12 and folate daily. For adults, the typical dose is 2.4 mcg of B12 and 400 mcg of folate. This supplement should be taken with water and a meal to enhance absorption.

Description

Vitamin B12 and folate (vitamin B9) work together to support DNA synthesis and red blood cell formation. Both are essential for preventing megaloblastic anemia and are commonly found in a variety of foods, including leafy greens, legumes, and fortified cereals.

How it helps

Vitamin B12 and folate are crucial for red blood cell formation and DNA synthesis, helping prevent anemia and supporting overall red blood cell health.

12

Dietary Pyridoxine (Vitamin B6)

IMPACT 0 / 5

EVIDENCE 0 / 5

How to implement

Increase your intake of vitamin B6 by eating more foods rich in this nutrient, such as bananas, chickpeas, tuna, salmon, chicken breast, and spinach. Aim for a balanced diet that includes these foods regularly, about 2-3 servings of B6-rich foods per day, to help meet the general daily requirement of 1.3mg for adults.

Description

Vitamin B6 is involved in over 100 enzyme reactions in the body and plays a role in brain development, immune function, and hormone regulation. It is found in foods like poultry, fish, potatoes, and bananas.

Vitamin B6 (*pyridoxine*) is important for nervous and immune system health [R].

Good sources of vitamin B6 include [R]:

- Poultry
- Fish
- Potatoes
- Chickpeas
- Bananas
- Fortified cereals

How it helps

Vitamin B6 plays a role in hemoglobin production and can support healthy red blood cell levels.

13

Vitamin A

IMPACT 0 / 5

EVIDENCE 0 / 5

How to implement

Take a vitamin A supplement daily with a fat-containing meal to enhance absorption. The recommended daily allowance (RDA) for most adults is 700-900 micrograms (mcg) for men and women, respectively. Ensure not to exceed the upper intake level (UL) of 3000 mcg per day to avoid toxicity.

TYPICAL STARTING DOSE

700 mcg

Description

Vitamin A is a fat-soluble vitamin essential for various bodily functions, including vision, immune system support, and skin health. It is found in foods like carrots, sweet potatoes, and spinach and is important for maintaining overall health.

Vitamin A is a nutrient important for [R, R]:

- Vision
- Immunity
- Gut health
- Skin health

Foods rich in vitamin A include [R]:

- Beef liver
- Sweet potato
- Spinach
- Carrots
- Cheese

Vitamin A is also available in supplement form.

Women should be getting 700 micrograms of vitamin A per day, while men should be getting 900 micrograms [R].

How it helps

Vitamin A aids in the production and function of red blood cells, which transport oxygen throughout the body. If you're deficient, supplementation can help prevent anemia by boosting the production and effectiveness of these cells.

Please note: *A high dose of vitamin A or taking high amounts of vitamin A long-term can be harmful, especially in women planning pregnancy or already pregnant. Vitamin A may cause harm to the fetus Vitamin A may also interact with some medications. Talk to your doctor before supplementing with vitamin A* [R, R, R].

14

Vitamin C

IMPACT 0 / 5

EVIDENCE 0 / 5

How to implement

Take 500-2000 mg of vitamin C supplement daily. It can be taken at any time of the day, with or without food, according to personal preference or tolerance.

TYPICAL STARTING DOSE

500 mg

Description

Vitamin C is an essential nutrient. This means that our bodies can't produce it on their own, so we have to get it from food or supplements [R].

Foods rich in Vitamin C include: [R]

- Citrus Fruits
- Peppers
- Brussel sprouts
- Kiwi
- Broccoli
- Tomato
- Cantaloupe
- Cauliflower
- Spinach

Vitamin C has antioxidant properties. It supports immunity, heart health, and wound healing [R, R].

Vitamin C deficiency is called *scurvy.* In the past, many sailors suffered from it [R].

How it helps

Vitamin C assists in the production of red blood cells by enhancing iron absorption, which is a crucial component of hemoglobin in red blood cells. Additionally, it helps to prevent damage to these cells by acting as an antioxidant, thereby prolonging their lifespan.

15

Dietary Folate

IMPACT 0 / 5

EVIDENCE 0 / 5

How to implement

Increase your intake of folate-rich foods such as leafy green vegetables, fruits, nuts, and legumes. Aim to consume these foods daily, incorporating them into various meals throughout the day to meet the recommended dietary allowance of 400 micrograms for adults.

Description

Vitamin B9 (*folate*) plays an essential role in [R, R, R]:

- Making DNA
- Metabolism
- Energy production

Rich sources of folate include [R, R]:

- Beef liver
- Spinach
- Black-eyed peas
- Asparagus
- Citrus fruits

While folate deficiency is rare, it can happen in people who don't eat enough fruits and vegetables. Alcoholics and lactating women may also be at increased risk [R].

Adults should get **400 micrograms (mcg)** of folate per day. Pregnant or breastfeeding women should get **500-600 mcg per day**. Supplements are usually in the form of *folic acid* or L-methylfolate (5-MTHF) [R, R].

How it helps

Folate (B9) is essential for DNA synthesis and repair, crucial for red blood cell production and function.

16

Dietary Iron

IMPACT 0 / 5

EVIDENCE 0 / 5

How to implement

Incorporate iron-rich foods into your daily meals, such as red meat, chicken, turkey, fish, beans, lentils, tofu, cooked spinach, and fortified cereals. Aim for at least 18 mg of iron per day for adult women and 8 mg per day for adult men. It's also beneficial to pair these foods with vitamin C-rich foods like oranges, strawberries, or bell peppers to enhance iron absorption.

Description

Iron (Fe) is an essential mineral. It helps make hemoglobin, a protein that carries oxygen to cells. In this way, iron **increases energy** and supports **brain and immune system function** [R, R, R].

Foods rich in iron include [R]:

- Oysters
- White beans
- Beef
- Chocolate
- Spinach
- Fortified cereals

Women should be getting **8-18 mg** of iron per day, while **men** should be getting **8 mg** [R].

Groups at risk of iron deficiency include [R]:

- Menstruating women
- Children
- Vegetarians
- Routine blood donors

How it helps

Dietary iron is pivotal as it helps your body produce hemoglobin, a protein in red blood cells, crucial for carrying oxygen throughout your body. A sufficient iron intake can prevent conditions like anemia, which occur when your body doesn't have enough healthy red blood cells to work optimally.

Please note: *Increased iron intake from meat is linked to higher odds of diabetes and heart disease. Try to find a balance between plant and animal iron sources* [R, R, R, R].

17

Dietary Vitamin B12

IMPACT 0 / 5

EVIDENCE 0 / 5

How to implement

Incorporate foods rich in vitamin B12 into your daily diet, such as beef, chicken, fish, and dairy products. If you are vegetarian or vegan, consider fortified cereals or plant-based milks. Aim to meet the recommended dietary allowance (RDA) for adults of 2.4 micrograms of vitamin B12 per day.

Description

Vitamin B12 is important for nerve function, red blood cell production, and overall energy metabolism. It's crucial for preventing pernicious anemia and maintaining neurological health.

How it helps

Vitamin B12 is necessary for red blood cell formation and preventing anemia.

18

Thymus Glandular

IMPACT 0 / 5

EVIDENCE 0 / 5

How to implement

Take a thymus glandular supplement, usually found in capsule form, once daily with a meal. It is commonly recommended to follow the dosage instructions on the product label or as directed by a healthcare professional. Continue as long as recommended in the guidance you receive.

Description

Thymus extract is derived from the thymus gland of animals and may contain bioactive compounds believed to support the immune system. It's used in some dietary supplements for potential immune-modulating effects.

How it helps

In a study involving 25 patients with classic rheumatoid arthritis in phases II and III who could not tolerate gold or D-penicillamine due to allergic reactions or other complications, a calf thymus preparation (TFX-Polfa, 10 mg/day IM for 60 days + outpatient treatment for the subsequent 10 months) **increased both hemoglobin levels and erythrocyte counts** after both the 2-month intensive treatment and the full 12-month therapy duration with TFX.[R].

19

Copper

IMPACT 0 / 5

EVIDENCE 0 / 5

How to implement

Take a copper supplement of 2 milligrams (mg) per day with water, preferably with a meal to reduce the risk of stomach upset. This dosage is for general maintenance of copper levels in adults and should not exceed the recommended amount without consulting a healthcare provider.

TYPICAL STARTING DOSE

2 mg

Description

Copper is an essential trace mineral that plays a vital role in various bodily functions, including the formation of red blood cells and the maintenance of healthy connective tissues.

A **copper supplement** of up to 900 micrograms per day can be taken to meet needs not achieved through diet.

Please note: only people who can't maintain healthy copper levels through their diets may need a supplement. Consult your doctor before supplementing.

How it helps

Copper helps in the production and maintenance of red blood cells, protecting them from degradation. Lack of copper could potentially lead to anemia, so supplementing can aid in maintaining healthy red blood cell levels.

Copper is a nutrient involved in RBC production. Some studies suggest that people with anemia and neutropenia may have copper deficiency [R, R].

20

Beetroot

IMPACT 0 / 5

EVIDENCE 0 / 5

How to implement

Incorporate beetroot into your diet by eating it raw in salads or drinking beetroot juice. Aim for a serving of about one small beetroot or 200-250 ml of beetroot juice daily. You can maintain this dietary practice consistently as part of your regular diet.

Description

Beetroot is a vegetable rich in dietary nitrates, which may help improve cardiovascular health and exercise performance.

How it helps

Beetroot is high in nitrates, which can improve blood flow and oxygen delivery.

21

Vitamin B12

IMPACT 0 / 5

EVIDENCE 0 / 5

How to implement

Take a 50 mcg vitamin B12 supplement daily, preferably with a meal to enhance absorption.

TYPICAL STARTING DOSE

10 mcg

Description

Vitamin B12 is a water-soluble vitamin primarily found in animal-based foods like meat, fish, and dairy products. It plays a crucial role in maintaining healthy nerve cells, DNA synthesis, and red blood cell formation. Vitamin B12 deficiency can lead to anemia, neurological issues, and fatigue.

Vitamin B12 is important for [R, R]:

- Building DNA
- Nervous system function
- Energy production

You can get vitamin B12 from [R]:

- Animal products (meat, fish, eggs, and dairy)
- Fortified foods
- Supplements

Adults should be getting **2.4 micrograms** of vitamin B12 every day [R].

How it helps

Vitamin B12 is essential in red blood cell formation as it aids in the production of hemoglobin, the molecule that carries oxygen in the cells. If deficient, it can lead to anemia, resulting in fatigue and weakness.

22

Leafy Green Vegetables

IMPACT 0 / 5

EVIDENCE 0 / 5

How to implement

Incorporate at least one serving of leafy green vegetables, such as spinach, kale, or Swiss chard, into your diet daily. This can be done by adding them to salads, smoothies, or as a side dish to your meals.

Description

Leafy green vegetables like spinach and kale are packed with vitamins, minerals, and antioxidants. Incorporating them into your diet can promote overall health by providing essential nutrients, supporting digestion, and reducing the risk of chronic diseases like heart disease and certain cancers.

Leafy green vegetables, also called leafy greens, or greens, are edible plant leaves, which can include stalks and shoots as well. Common examples include: lettuce, spinach, kale, chard, endive, and fennel.

Leafy greens contain a host of vitamins and minerals, as well as fiber. Most of them are a particularly good source of vitamin K.

How it helps

Green vegetables often contain folate, vitamin C, and iron, which support red blood cell function.

23

Maintain Optimal Iron Levels

IMPACT 0 / 5

EVIDENCE 0 / 5

How to implement

Check your iron levels. If they are below optimal, take a 10 mg iron supplement daily, preferably with a meal to enhance absorption and reduce stomach upset.

TYPICAL STARTING DOSE

10 mg

Description

Iron (Fe) is an essential mineral. It helps make hemoglobin, a protein that carries oxygen to cells. In this way, iron **increases energy** and supports **brain and immune system function** [R, R, R].

Foods rich in iron include [R]:

- Oysters
- White beans
- Beef
- Chocolate
- Spinach
- Fortified cereals

Women should be getting **8-18 mg** of iron per day, while **men** should be getting **8 mg** [R].

Groups at risk of iron deficiency include [R]:

- Women
- Children
- Vegetarians
- Routine blood donors

Iron supplements are available for people who can't meet their needs through a balanced diet, but they should not be taken without consulting a doctor.

How it helps

Iron assists in producing hemoglobin, the primary protein in red blood cells that carries oxygen to body tissues. Hence, taking iron supplements can help prevent or treat conditions like anemia, where there's a drop in red blood cells or their oxygen-carrying capacity.

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.

MCHC	33 g/dL	32 – 36	9 Nov 2025
RDW	13.8 %	11.5 – 13 – 15	9 Nov 2025
MCH	28.2 pg	27 – 31	9 Nov 2025
MCV	85.6 fL	85 – 93 – 100	9 Nov 2025
Vitamin B12	687 pg/mL	200 – 400 – 1000 – 1100	9 Nov 2025
RBC	6.05 x10^6/mm3	4.2 – 5.8	9 Nov 2025
Hematocrit	51.8 %	20 – 40 – 47 – 52 – 65	9 Nov 2025
Hemoglobin	17.1 g/dL	7 – 13.2 – 14 – 16.5 – 17.1 – 20	9 Nov 2025
RDW-SD	41.7 fL	36 – 44 – 47	9 Nov 2025

Insulin, Fasting

9.08 uU/mL

9 Nov 2025

Vitamin B6

55 ng/mL

13 Jan 2026

Iron

228 mcg/dL

9 Nov 2025