VITALSVAULT

A Comprehensive
Analysis Of Your Test Results

AI Based Personalized Report For You.

YOUR

FUNCTIONAL HEALTH REPORT

Patient Report

Name	Age
Richard Kaylee	Male, 40 Years
Sample Collection Date	Lab
Aug 06, 2025	Quest

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INTRODUCTION

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An Introduction to Functional Blood Chemistry Analysis and Your functional health report

SECTION 2: ANALYSIS

An in-depth analysis if your biomarker results.

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An in-depth functional system and nutrient evaluation.

SECTION 4: HEALTH CONCERNS

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01

An introduction to Functional Blood Chemistry Analysis and your Functional Health Report (FHR).

INTRODUCTION

FUNCTIONAL BLOOD CHEMISTRY ANALYSIS (FBCA)

Functional Blood Chemistry Analysis, or FBCA, takes a deep dive into what your blood can tell us about your health. It's a way of sorting through all the different markers in your blood to get a clear picture of how your body's systems are doing. Think of it as a comprehensive health check-up that looks not just at how your body is working right now, but also checks if you're getting all the nutrients you need. Plus, it helps us see if you're moving towards better health or if there are areas we need to work on to get you feeling your best.

WHY BLOOD TESTING?

Your blood tells a comprehensive story about your health. Among all medical lab tests, the Blood Chemistry and CBC/hematology test stands out as the most frequently ordered. It's a cornerstone of Western clinical medicine, helping doctors make informed diagnostic decisions. You've likely been told that blood testing is a standard procedure for assessing health. Yet, many people start feeling unwell long before traditional blood tests show anything amiss. Often, you might hear from your doctor that "everything on your blood test looks normal," even when you don't feel right.

THE FUNCTIONAL APPROACH

The functional approach to blood testing focuses on changes in your body's function rather than looking for disease. We use optimal physiological ranges instead of "normal" population averages. This results in a more precise "Functional Physiological Range." It helps us spot issues within the "normal" range that could indicate your body's systems are starting to struggle. This approach enables us to detect shifts in your physiological function and identify what might be preventing you from reaching your best physiological, biochemical, and metabolic health. Unlike traditional methods, which examine each biomarker in isolation, Functional Blood Chemistry Analysis uses trends and relationships between biomarkers to uncover hidden risks and opportunities for improving your health.

NORMAL IS NOT OPTIMAL

If you're feeling "unwell" but your blood test comes back "normal," it doesn't necessarily mean everything is fine. Clinical experience shows that being "normal" is quite different from being functionally optimal. You might not have a diagnosed disease, but it's possible to be dysfunctional, meaning your body's systems aren't operating as well as they should, and you're starting to feel the effects. The problem isn't with the blood tests themselves—they're powerful diagnostic tools. The issue lies in the reference ranges used, which are based on average populations, not indicators of optimal health or function. "Normal" ranges are often too broad to detect early signs of health issues or to identify when you're moving away from optimal health.

THE FUNCTIONAL HEALTH REPORT

The Functional Health Report is generated from an in-depth algorithmic analysis of your blood test results. Our software digs into the data, uncovering the intricate patterns and subtle indicators of functional changes in your body, often before you're aware anything's amiss.

SUMMARY

Blood testing has evolved beyond its role in diagnosing disease or managing injury. It's now an essential element of Functional Medicine, offering a critical window into your health. It helps reveal hidden health trends and is a key tool in promoting overall wellness and preventing disease.

PATIENT REPORT SUMMARY

Your report is the result of a detailed and proprietary algorithmic analysis of your complex and comprehensive blood biomarkers.

THE FUNCTIONAL HEALTH REPORT

Your blood test results have been analyzed for their hidden meaning and the subtle, web-like patterns concealed within the numbers that signal the first stages of functional change in your body. The Functional Health Report (FHR) takes all of this analytical information and provides a comprehensive interpretation of the results in a written and graphical format. The report gives you a window into the state of health in the main functional physiological systems of the body, its supporting accessory systems, and the degree of deficiency in individual nutrients. The report is broken down into 3 main sections:

ASSESSMENT

The Assessment section is at the very heart of the Functional Health Report. It is here that the findings of the risk analysis are presented.

The Functional Body Systems and Accessory reports show the risk of dysfunction in the various physiological and supporting accessory systems in your body.

The Nutrient Status report gives you an indication of your general nutritional status and the Nutrient Deficiencies report shows the risk of deficiency for individual nutrients.

Each of the assessment reports is accompanied by a section that contains detailed descriptions and explanations of the results presented in each of the reports in this section.

ANALYSIS

The Analysis section shows you the actual results of your blood test itself.

The Blood Test Results Report lists your blood test results and shows if an individual biomarker is optimal, outside the optimal range or outside of the standard range.

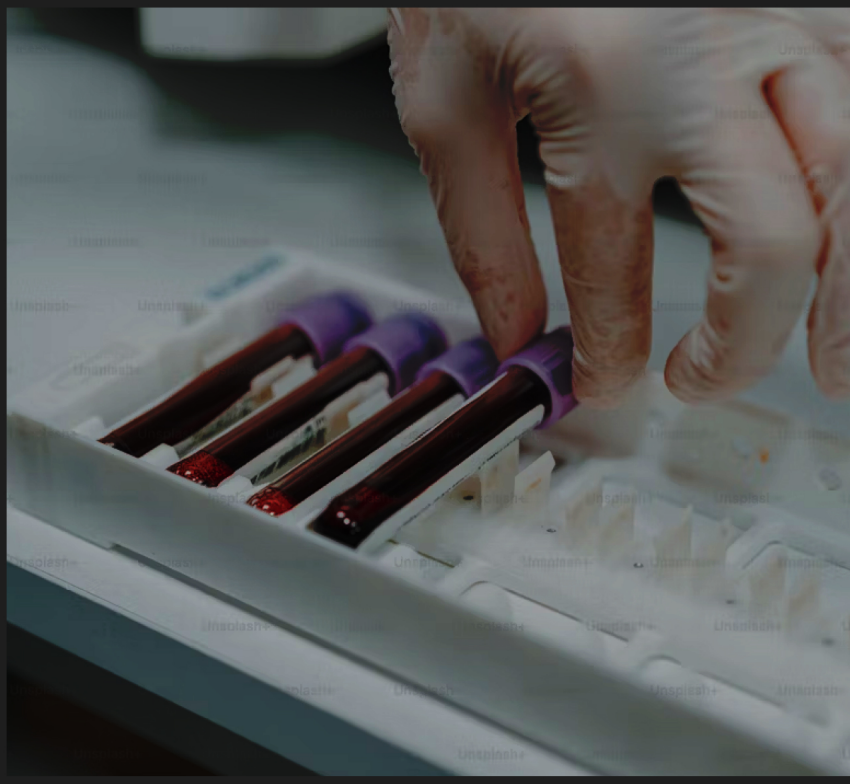
The Blood Test Results Comparative Report compares results of the latest and previous blood test and gives you a sense of whether or not there has been an improvement in the individual biomarker results.

The Blood Test History report allows you to compare results over time and see where improvement has been made and allows you to track progress in the individual biomarkers.

The Out of Optimal Range report shows all of the biomarkers that are out of the optimal range and gives you some important information as to why each biomarker might be elevated or decreased. Each biomarker in the Out of Optimal Range report hyperlinks back into the Blood Test Results report so you can see a more detailed view of the blood test results.

HEALTH CONCERNS

All the information on the Assessment and Analysis sections of the report are summarized in the Health Concerns section, which focuses on the top areas of need as presented in this report.



02

A full breakdown of all the individual biomarker results, showing if a particular biomarker is outside the optimal range or the standard range, plus a comparative and historical view

ANALYTICS

- Blood Test Results
- Out Of Optimal Range
- Blood Test Comparative

The Blood Test Results Report lists the results from your Chemistry Screen and CBC and shows you whether or not an individual biomarker is optimal, outside of the optimal range, or outside of the standard range. The biomarkers are grouped into their most common categories.

Some biomarkers in the Blood Test Results Report that are above or below the Optimal or marked Low or High may be hyperlinked into the "Out of Optimal Range Report", so you can read some background information on those biomarkers and why they may be high or low

Total Biomarkers 118 :

All	Low	Below Optimal	Optimal	Above Optimal	High
119	25	14	55	20	05

BLOOD GLUCOSE

Keeping your blood sugar balanced is one of the best ways to maintain steady energy and overall wellness. The tests in this category show how well your body handles sugar both day-to-day and over longer periods, helping to catch early signs of trouble before they turn into bigger issues. By taking a functional approach, we can use these results to make simple yet powerful changes to support healthier blood sugar levels.

Glucose Fasting

94.00 Mg/DL

94.00

Low	Below Optimal	Optimal	**Above Optimal**	High
<65.00	65.00 - 75.00	75.00 - 86.00	86.00 - 99.00	>99.00

Hemoglobin A1C

5.50 %

5.50

Below Optimal	Optimal	**Above Optimal**	High
<4.60	4.60 - 5.30	5.30 - 5.70	>5.70

eAG

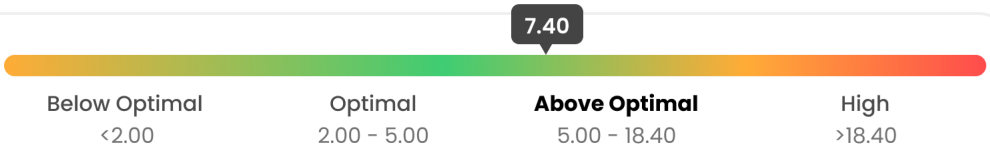
111.00 Mg/DL

111.00

Low	Below Optimal	Optimal	**Above Optimal**	High
<82.00	82.00 - 85.00	85.00 - 105.00	105.00 - 154.00	>154.00

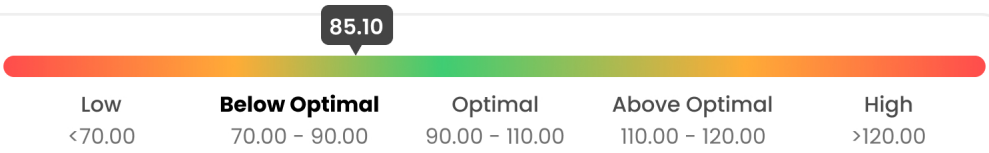
Insulin - Fasting

7.40 µIU/mL



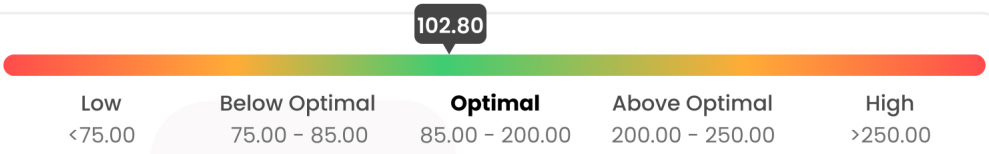
HOMA2-%B

85.10 %



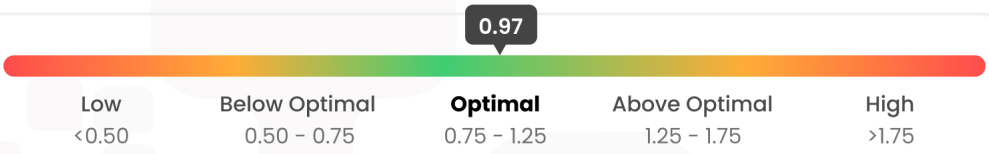
HOMA2-%S

102.80 %



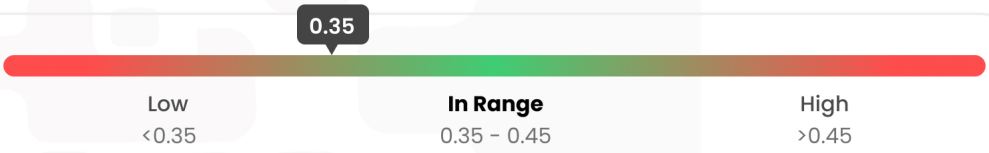
HOMA2-IR

0.97 Index



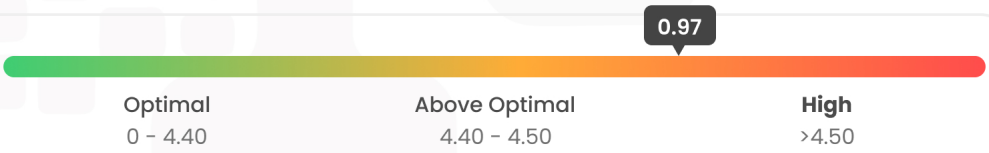
QUICKI

0.35 Index



Triglyceride-Glucose Index

0.97 Index

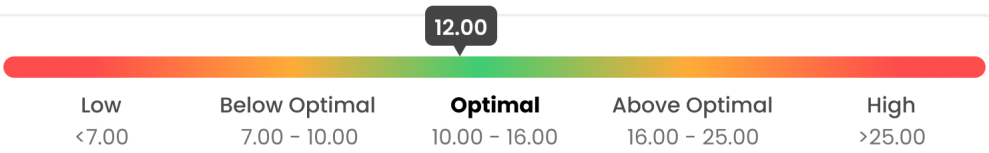


KIDNEY

Your kidneys act as filters, clearing out waste and keeping the right balance of fluids and minerals in your blood. These biomarkers measure how well your kidneys are doing their job, often catching early changes so we can address them before they become bigger problems. A functional approach means looking at the whole picture—from diet and hydration to everyday habits that support kidney health.

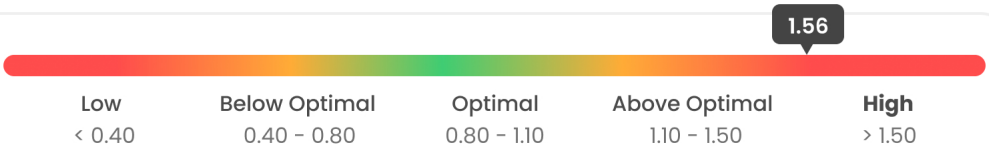
BUN

12.00 mg/dL



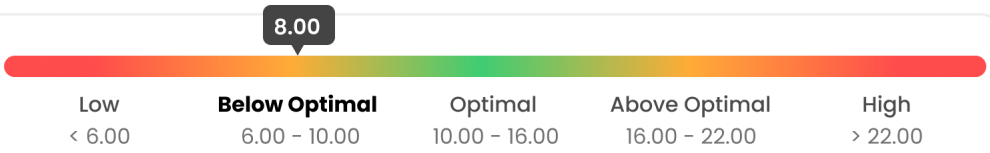
Creatinine

1.56 mg/dL



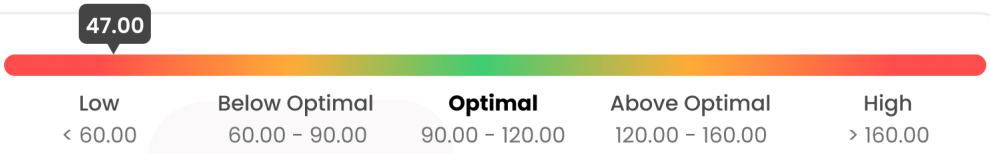
BUN : Creatinine

8.00 Ratio



EGFR

47.00 mL/min

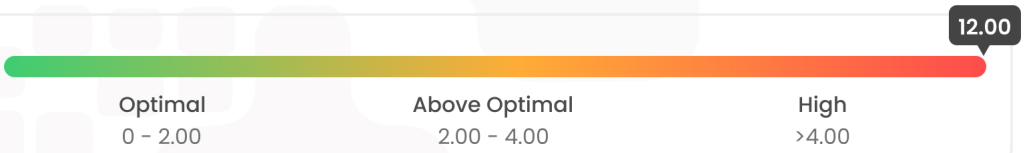


PROSTATE

Your prostate gland's health can be monitored through specific proteins it produces, helping us understand how it's functioning over time. By tracking these markers, we can detect changes early and guide you toward choices that support optimal prostate health as you age.

PSA - Total

12.00 ng/mL

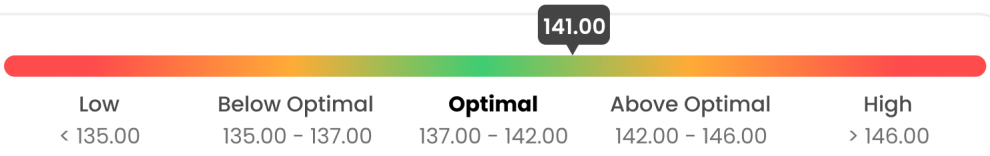


ELECTROLYTES

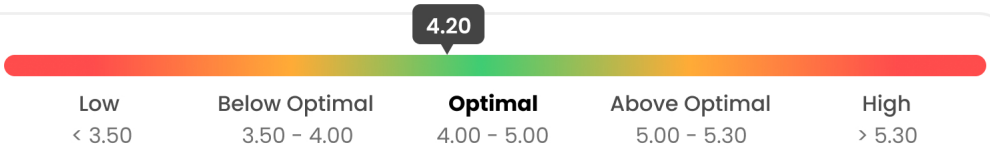
Electrolytes help your body stay hydrated, regulate blood pressure, and keep your muscles and nerves working properly. When these levels are out of balance, you may feel fatigued, dizzy, or have muscle cramps. By monitoring these important minerals in your blood, we can understand how well your body maintains its internal balance and guide you toward the right choices to help you feel energized and well.

Sodium

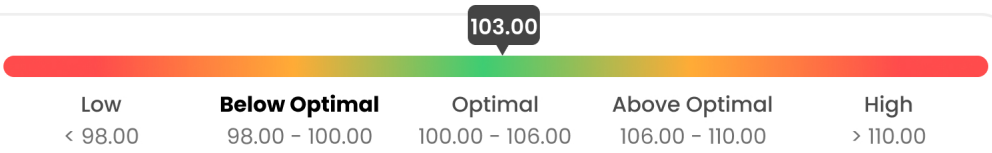
141.00 mEq/L



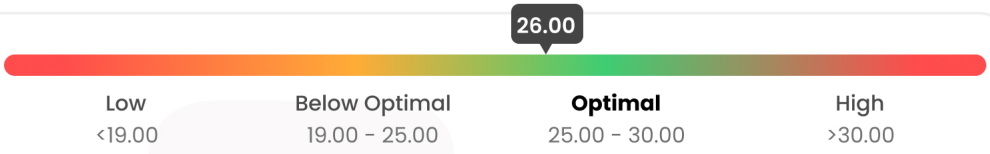
Potassium
4.20 mEq/L



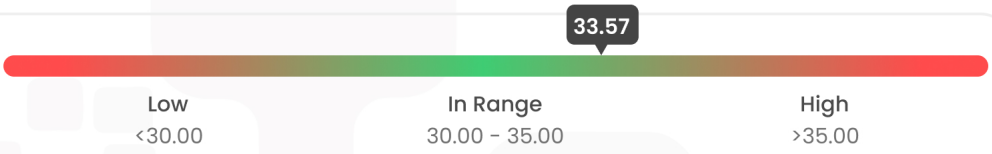
Chloride
103.00 mEq/L



CO2
26.00 mEq/L



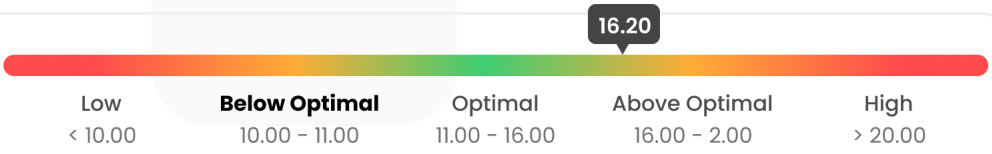
Sodium : Potassium
33.57 ratio



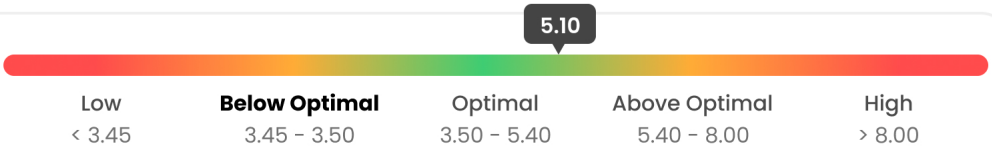
METABOLIC

Metabolic biomarker analysis provides key insights into how your body manages energy, muscle function, and electrolyte balance. By spotting early changes in these biomarkers, we can develop appropriate support strategies to keep your metabolism running smoothly.

Anion Gap
16.20 mEq/L



Uric Acid
5.10 mq/dL

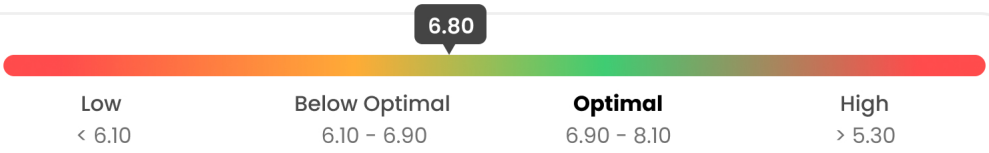


PROTEINS

Protein analysis gives us a clear look at the proteins in your blood, which play a vital role in keeping you healthy by supporting everything from your immune system to your overall nutrition. With these insights, we can help you maintain a balanced level of these important proteins and boost your well-being.

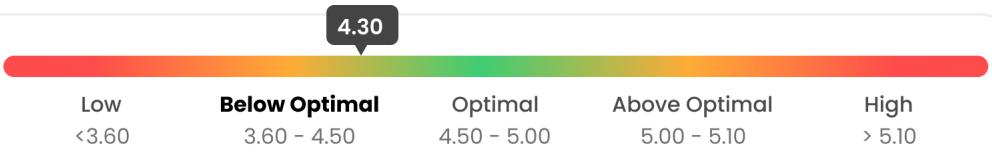
Protein - Total

6.80 g/dL



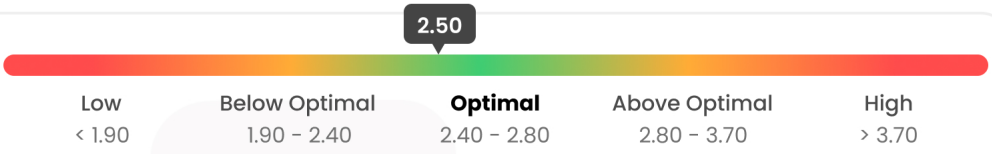
Albumin

4.30 g/dL



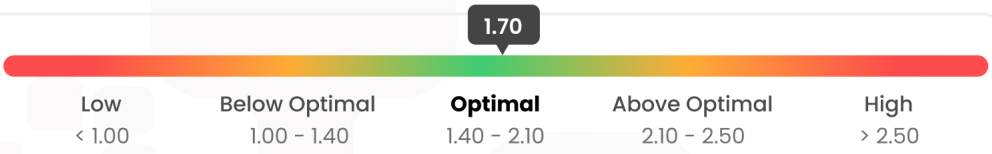
Globulin - Total

2.50 g/dL



Albumin : Globulin

1.70 ratio

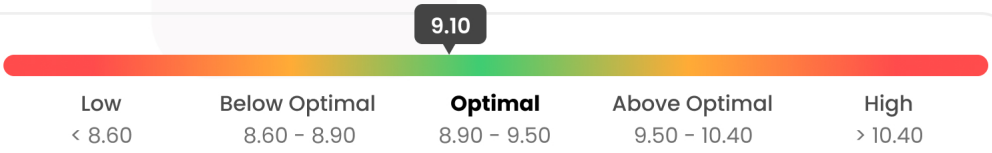


MINERALS

Minerals are essential for everything from bone health to energy production and immune function. By measuring both the minerals in your blood and inside your cells, we can understand if you're getting and properly using these vital nutrients, helping us guide you toward choices that maintain optimal mineral balance for your health

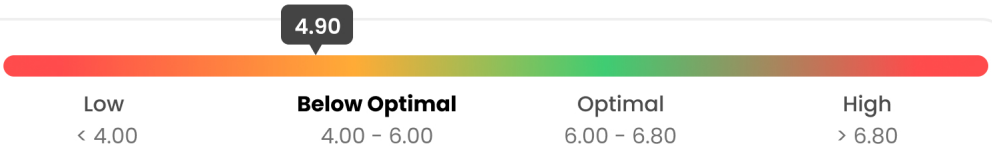
Calcium

9.10 Mg/dL



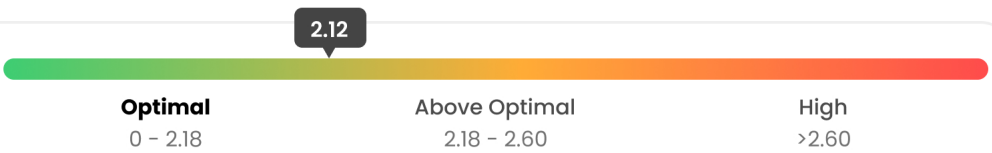
Magnesium - RBC

4.90 Mg/dL



Calcium : Albumin

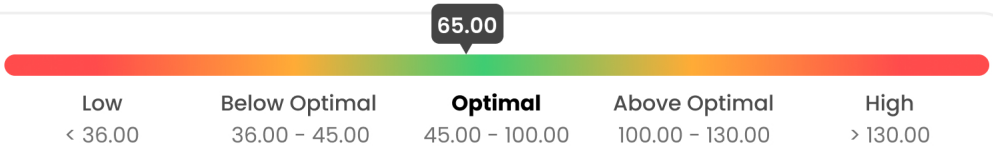
2.12 Ratio



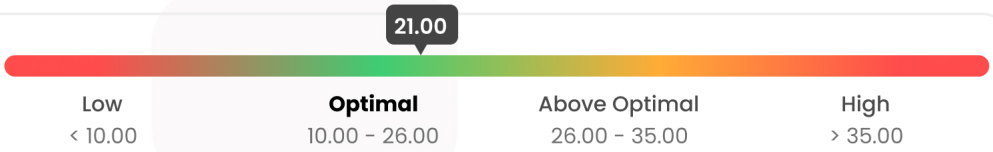
LIVER AND GB

Liver and gallbladder biomarkers give us an indication of how well your liver and gallbladder are working to support your overall health. By spotting early signs of stress or imbalance, we can make appropriate support strategies to help keep these vital organs functioning smoothly and support their optimal function.

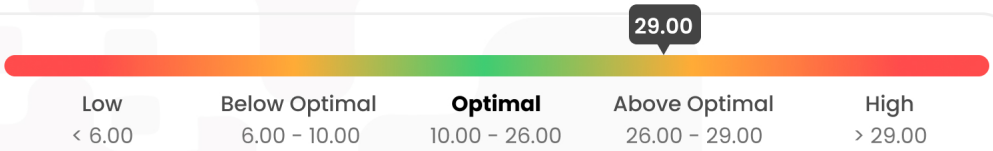
Alk Phos
65.00 IU/L



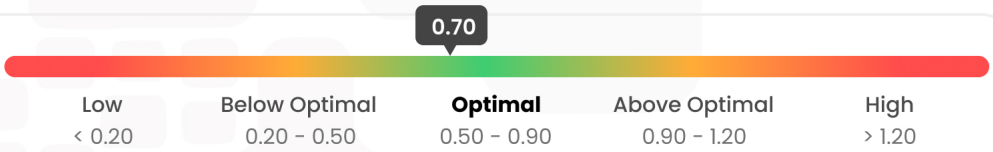
AST
21.00 IU/L



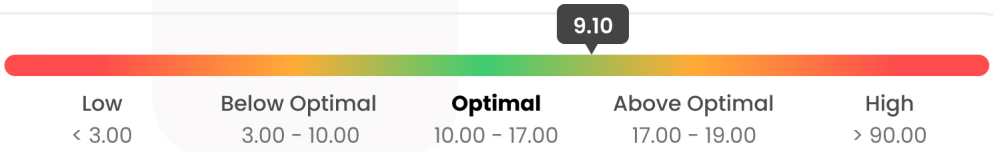
ALT
29.00 IU/L



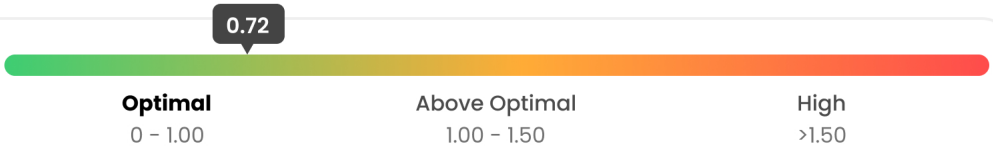
Bilirubin - Total
0.70 mg/dL



GGT
17.00 IU/L



AST : ALT
0.72 Ratio

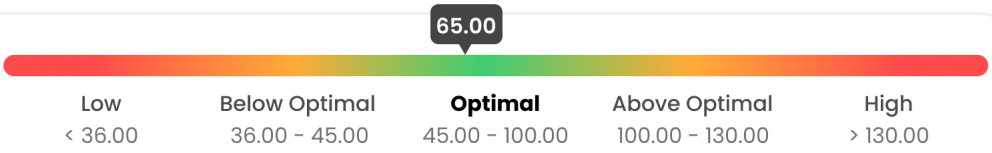


IRON MARKERS

Iron is a key mineral your body relies on to keep you feeling energized and healthy. Around 70% of your total iron is found in red blood cells, where it carries oxygen from your lungs to all the parts of your body that need it. By measuring different aspects of how your body handles iron, we can understand if you're getting and using the right amount – not too little or too much – and guide you toward choices that help maintain healthy iron levels for optimal energy and wellness.

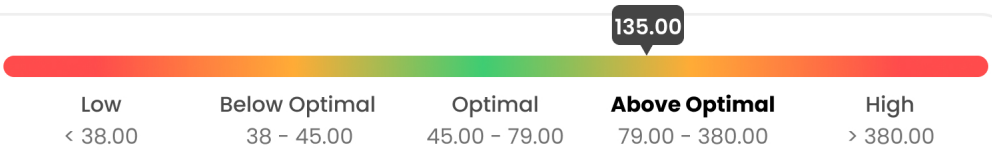
Iron - Serum

110.00 µg/dL



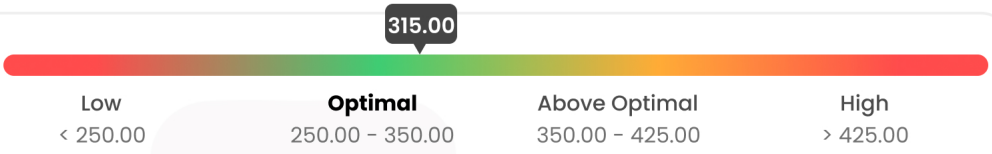
Ferritin

135.00 ng/mL



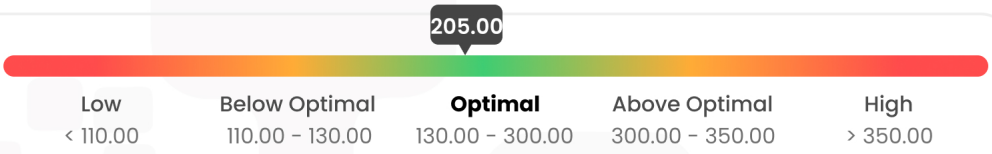
TIBC

315.00 µg/dL



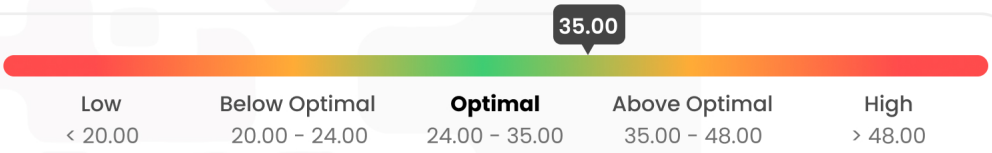
UIBC

205.00 µg/dL



% Transferrin Saturation

35.00 %

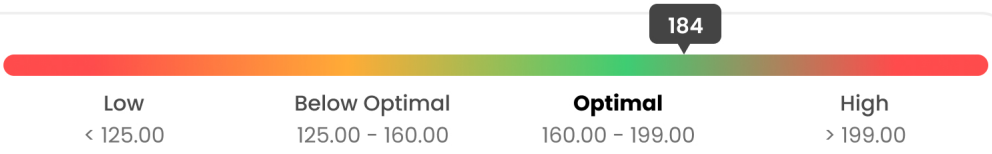


LIPIDS

The lipid panel assesses the distribution and ratios of various lipid fractions. By examining these different markers, we can better understand the role lipids play in your cardiovascular health.

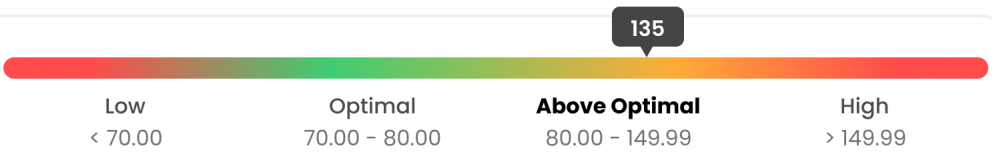
Cholesterol - Total

184.00 mg/dL



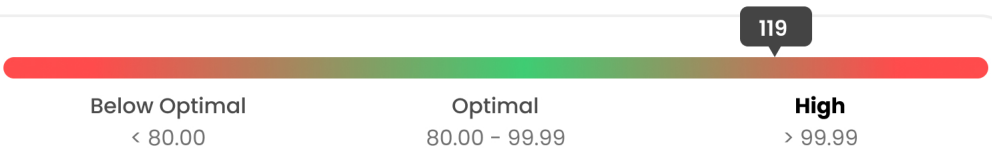
Triglycerides

135.00 mg/dL



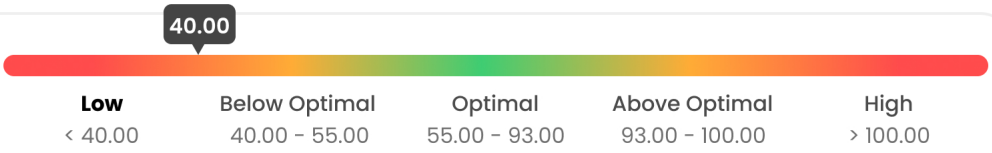
LDL Cholesterol

119.00 mg/dL



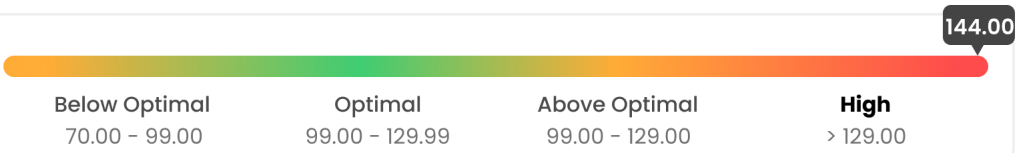
HDL Cholesterol

40.00 mg/dL



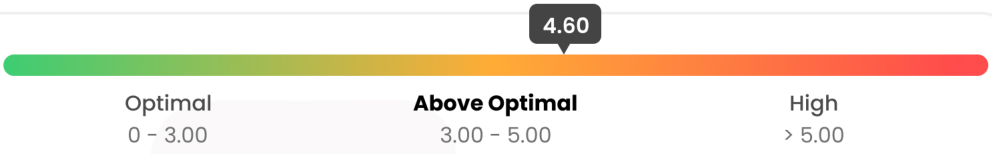
Non-HDL Cholesterol

144.00 mg/dL



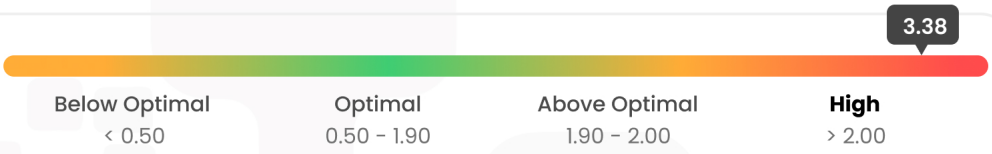
Cholesterol : HDL

4.60 Ratio



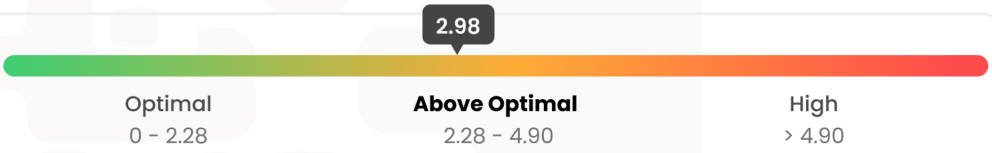
Triglyceride:HDL

3.38 Ratio



LDL : HDL

2.98 Ratio



The following report shows all of the biomarkers that are out of the optimal range and gives you some important information as to why each biomarker might be elevated or decreased.

BLOOD GLUCOSE

Glucose Fasting

94.00 Mg/DL

94.00

Low	Below Optimal	Optimal	**Above Optimal**	High
<65.00	65.00 - 75.00	75.00 - 86.00	86.00 - 99.00	>99.00

Fasting blood glucose (FBG) measures how much sugar is in your blood after you've gone without eating for several hours. Insulin and glucagon are two key hormones that help keep blood sugar in balance: insulin lowers your blood sugar by helping it move into your cells, and glucagon raises your blood sugar by telling your liver to release stored sugar. When FBG levels are high, it often means your body isn't making enough insulin or isn't using it effectively. This happens in type 1 diabetes, where the pancreas doesn't produce enough insulin, and type 2 diabetes, where the body becomes resistant to insulin over time. High FBG can also be a sign of other conditions, like prediabetes or metabolic syndrome, which both indicate possible trouble with how your body handles sugar and other nutrients.

Hemoglobin A1C

5.50 %

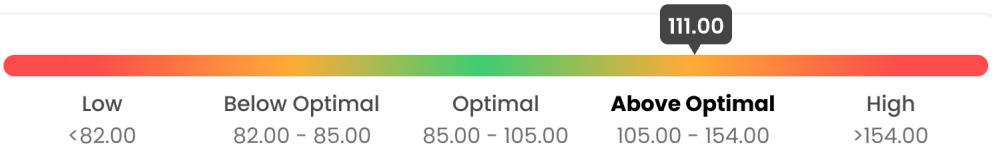
5.50

Below Optimal	Optimal	**Above Optimal**	High
<4.60	4.60 - 5.30	5.30 - 5.70	>5.70

Hemoglobin A1C (HgbA1C) shows how much sugar is attached to your red blood cells over the past 120 days. If your HgbA1C level is high, it suggests that your blood sugar has been running above normal for several weeks to months. This can put you at higher risk for certain health complications over time, such as prediabetes, insulin resistance, and possibly type 2 diabetes.

eAG

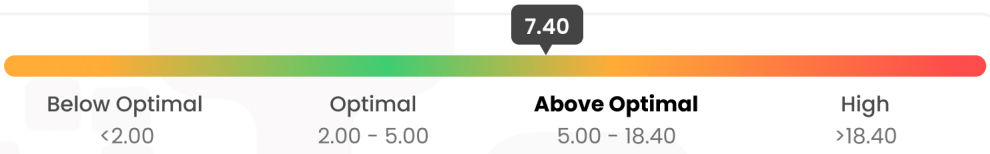
111.00 Mg/DL



Estimated Average Glucose (eAG) tells you roughly your average blood sugar over the last two to three months. If your eAG is high, it can signal that your blood sugar has been running above the normal range. This might increase your chances of developing conditions like prediabetes or diabetes. It doesn't automatically mean you have these conditions, but it's important to pay attention.

Insulin - Fasting

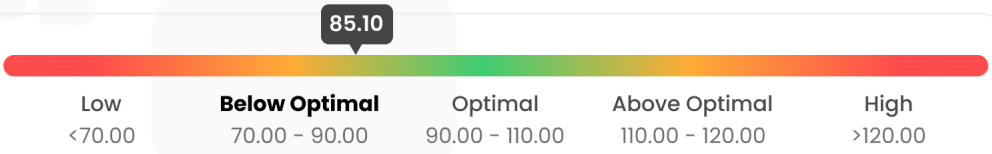
7.40 µIU/mL



Insulin is the hormone released by the pancreas in response to rising blood glucose. It decreases blood glucose by transporting it into the cells. Fasting insulin is the amount of insulin in your blood after you haven't eaten for several hours, usually overnight. If your fasting insulin level is high, it can be a sign that your cells aren't responding as well to insulin (often called "insulin resistance"). Over time, this can raise your risk for health problems like Type 2 Diabetes or heart and blood vessel issues.

HOMA2-%B

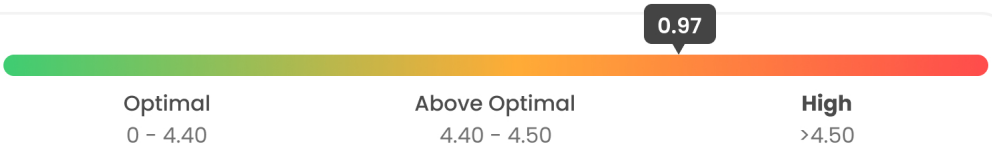
85.10 %



HOMA2-%B is a calculation that helps estimate how well the insulin-producing cells (beta cells) in your pancreas are working. If your HOMA2-%B is low, it means your pancreas may not be making as much insulin as it should. This could be an early warning sign that your blood sugar might become harder to control over time.

Triglyceride-Glucose Index

0.97 Index



The Triglyceride-Glucose (TyG) Index is a number based on fasting blood sugar and triglyceride levels. It is used to assess how well your body handles insulin. If your TyG Index is high, it may mean your body isn't processing sugar and fats as effectively, raising your risk for conditions such as diabetes, heart issues, or stroke.

The Blood Test results comparative report lists the results of this blood test and compares it to a previous blood test thus allowing you to visualize change in your biomarker results. The thumbs-up and down icons help to show change, whether it is moving in the right direction or further away from optimal. Even though a result may be out of the optimal or standard range, a thumbs up indicates that the most recent result is moving toward optimal.

A comparison of the total number of biomarkers by optimal range

All	Low	Below Optimal	Optimal	Above Optimal	High
119	25	14	55	20	05

BLOOD GLUCOSE

Biomarker	Quest (Current Aug 06 2025)	Optimal Range	Standard Range	Units
Glucose Fasting	**94.00** ↑	75.00 - 86.00	65.00 - 99.00	mg/dL
Hemoglobin A1C	**5.50** ↑	4.60 - 5.30	0 - 5.70	%
eAG	**111.00** ↑	85.00 - 105.00	82.00 - 154.00	mg/dL
Insulin - Fasting	**7.40** ↑	2.00 - 5.00	0 - 18.40	µIU/mL
HOMA2-%B	**85.10** ↓	90.00 - 110.00	70.00 - 120.00	%
HOMA2-%S	102.80	85.00 - 200.00	75.00 - 250.00	%
HOMA2-IR	0.97	0.75 - 1.25	0.50 - 1.75	Index
QUICKI	0.35	-	0.35 - 0.45	Index
Triglyceride-Glucose Index (TyG)	**4.72** ↑	0 - 4.40	0 - 4.40	Index

KIDNEY

Biomarker	Quest (Current Aug 06 2025)	Optimal Range	Standard Range	Units
BUN	**12.00**	10.00 - 16.00	7.00 - 25.00	mg/dL
Creatinine	**1.56** ↑	0.80 - 1.10	0.40 - 1.50	mg/dL

03

A comprehensive assessment of Functional Body Systems plus a detailed evaluation of your Nutrient Status, ensuring a holistic understanding of your health and well-being.

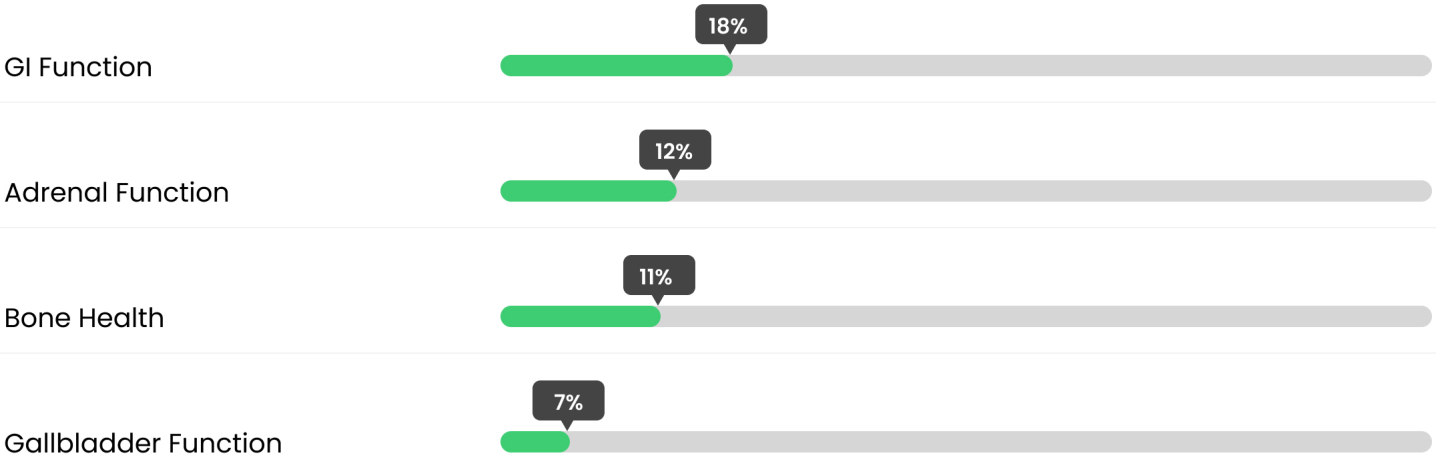
ASSESSMENT

- Functional Body Systems
- Accessory Systems
- Nutrient Status
- Nutrient Deficiencies

The Functional Body System results represent an algorithmic analysis of this blood test. These results have been converted into your individual Functional Body Systems Report based on our latest research.

This report gives you an indication of the level of dysfunction that exists in the various physiological systems in your body.

Each Body System that has a probability of dysfunction above 50% is included in the section that follows so you can read a detailed description and individual explanation of the results shown in this report



Functional Body Systems Details

This section contains detailed descriptions and explanations of the results presented in the Functional Body Systems Report including all the biomarkers considered in the algorithmic analysis and the rationale behind the interpretation

PROSTATE FUNCTION (Dysfunction Highly Likely. Much Improvement Required.)

The Prostate Function score looks at biomarkers on this blood test that reflect the degree of risk in the function of your prostate. A high Prostate Function score indicates that you may be at an increased risk of prostatic dysfunction. This increased risk might be due to several factors, including age-related changes, chronic inflammation, hormonal imbalances, or lifestyle factors such as diet and physical activity levels. The prostate gland plays a crucial role in male reproductive health, including the production of seminal fluid. In summary, your score is high, which indicates that your prostate might not function as optimally as it should and may need support moving forward.

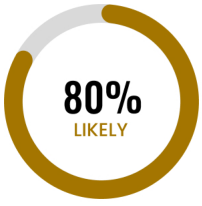
Rationale

Creatinine ↑, PSA - Total ↑

Biomarkers Considered

Creatinine, PSA - Total, Monocytes - %

BLOOD SUGAR REGULATION (Dysfunction Likely Improvement Required.)



The Blood Sugar Regulation score tells us how well your body is regulating blood glucose. Blood sugar dysregulation is very common. It doesn't suddenly emerge but rather develops slowly, so we can look for clues in your blood test that can help us determine if there's dysregulation and if so what it is. Some conditions associated with blood sugar dysregulation include hypoglycemia (periods of low blood sugar), metabolic syndrome, hyperinsulinemia and diabetes.

Rationale

Glucose Fasting ↑, Triglycerides ↑, HDL Cholesterol ↓, Hemoglobin A1C ↑, Insulin Fasting ↑, LDL Cholesterol ↑

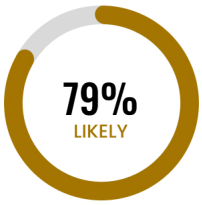
Biomarkers Considered

Glucose Fasting, HOMA2-IR, Cholesterol - Total, Triglycerides, HDL Cholesterol, Hemoglobin A1C, Insulin - Fasting, LDL Cholesterol, DHEA-S

Biomarkers Not Available In This Test - Consider Having Run In Future Tests:

LDH, C-Peptide, Fructosamine

CARDIOVASCULAR FUNCTION (Dysfunction Likely Improvement required.)



The Cardiovascular Functions score looks at biomarkers on a blood test that reflect the degree of risk in the function of your cardiovascular system: your heart and vascular system. A decrease in cardiovascular function is often silent, and you may not notice any effects. However, your blood work has uncovered an emerging trend toward cardiovascular dysfunction, which is strongly associated with an increasing risk of cardiovascular disease, diabetes, obesity, fatty liver, and high blood pressure.

Rationale

Glucose Fasting ↑, Triglycerides ↑, HDL Cholesterol ↓, Hemoglobin A1C ↑, Insulin Fasting ↑, LDL Cholesterol ↑

Biomarkers Considered

Glucose Fasting, HOMA2-IR, Cholesterol - Total, Triglycerides, HDL Cholesterol, Hemoglobin A1C, Insulin - Fasting, LDL Cholesterol, DHEA-S

Biomarkers Not Available In This Test - Consider Having Run In Future Tests:

LDH, C-Peptide, Fructosamine

KIDNEY FUNCTION (Dysfunction Possible There may be improvement needed in certain areas.)

It is possible that you may be at risk of an emerging kidney dysfunction. While this may not require immediate attention, we will want to watch this on future blood tests.

Rationale

Creatinine ↑, EGFR ↓

Biomarkers Considered

BUN, Creatinine, BUN : Creatinine, EGFR, Uric Acid, AST

Biomarkers Not Available In This Test - Consider Having Run In Future Tests:

Phosphorus, LDH, Magnesium - Serum

SEX HORMONE FUNCTION (Dysfunction Possible There may be improvement needed in certain areas.)

It is possible that you may be at risk of an emerging hormonal dysfunction. While this may not require immediate attention, we will want to watch this on future blood tests.

Rationale

Estradiol ↑

Biomarkers Considered

Estradiol, Testosterone Free, Testosterone Total, Sex Hormone Binding Globulin, DHEA-S

Biomarkers not available in this test - consider having run in future tests:

Progesterone

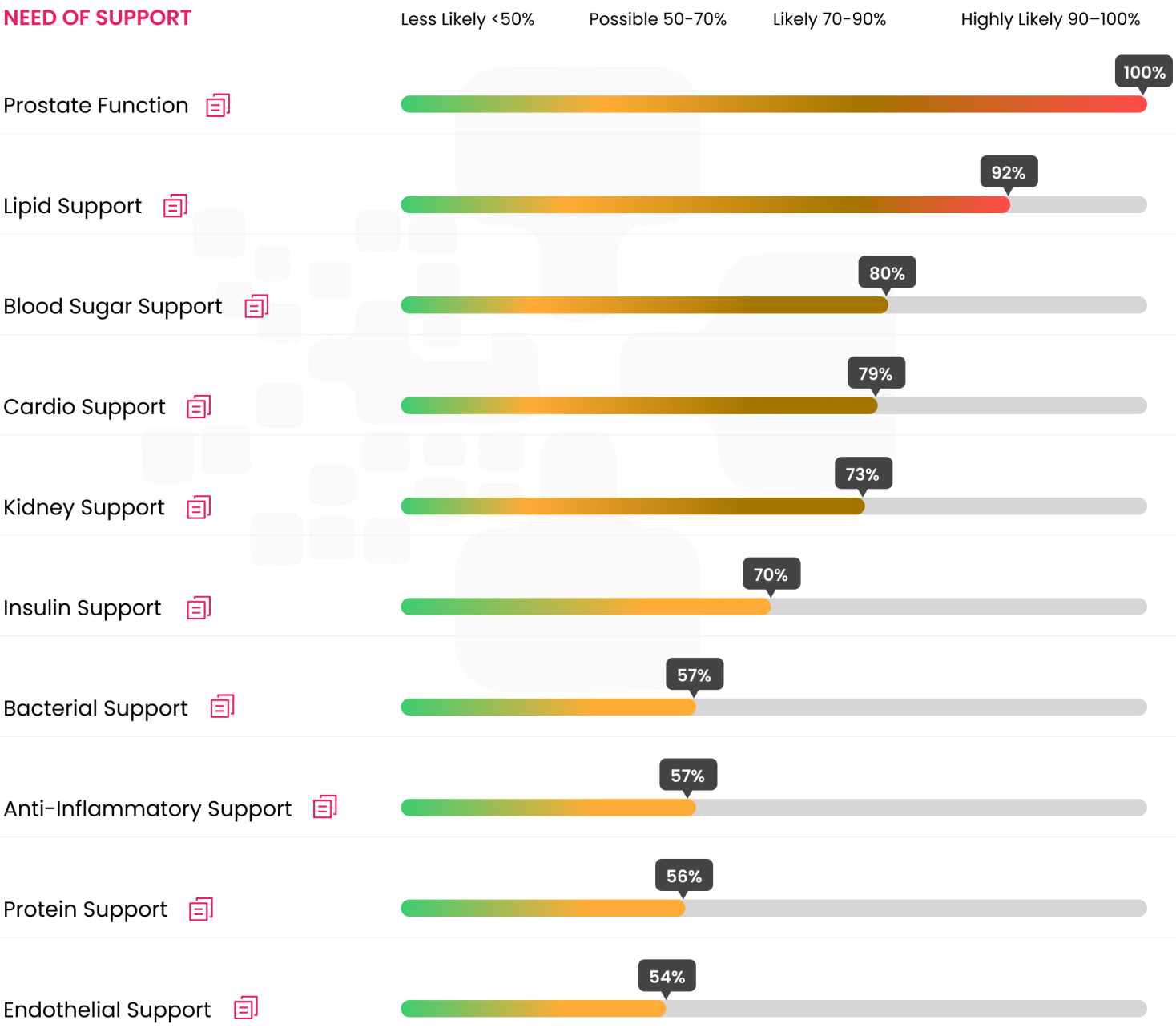
04

The Health Concerns report takes all the information on this report and focuses on the top areas that need the most support.

HEALTH CONCERNS

Health Concerns

The Health Concerns Report takes all the information in this report and focuses on the top areas that need the most support. Each health concern is included in the following section so you can read an explanation of the results shown in this report



Health concerns details

This section contains an explanation of the results presented in the Health Concerns Report including all the biomarkers considered in the analysis and the rationale behind the interpretation.

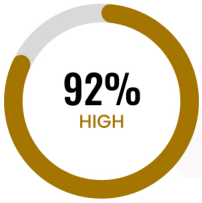
PROSTATE SUPPORT

The results of your blood test indicate a trend towards prostate dysfunction and/or Benign prostatic Hypertrophy and a need for prostate support.

Rationale

Creatinine ↑, PSA - Total ↑

LIPID SUPPORT

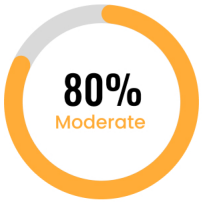


The results of your blood test indicate that you have higher than optimal levels of cholesterol and fat in your blood (a condition called hyperlipidemia), which is associated with an increased risk of cardiovascular disease. There is a need for cardiovascular support, especially support to help lower excessive blood fats.

Rationale

Triglycerides ↑, LDL Cholesterol ↑, Cholesterol : HDL ↑, Triglyceride:HDL ↑, HDL Cholesterol ↓

BLOOD SUGAR SUPPORT

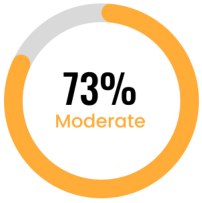


The results of your blood test indicate a tendency towards blood sugar dysregulation and a need for blood sugar support.

Rationale

Glucose Fasting ↑, Triglycerides ↑, HDL Cholesterol ↓, Hemoglobin A1C ↑, Insulin Fasting ↑, LDL Cholesterol ↑

CARDIO SUPPORT



The results of your blood test indicate a higher than optimal cardiovascular risk and show a need for cardiovascular support

Rationale

Triglyceride:HDL ↑, Glucose Fasting ↑, Triglycerides ↑, LDL Cholesterol ↑, HDL Cholesterol ↓, Hs CRP ↑
Homocysteine ↑, Hemoglobin A1C ↑, Estradiol ↑, Insulin - Fasting ↑

05

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