

GUIDE · HEALTH

# Blood Biomarkers for Longevity: A Testing Checklist

Which lab values actually predict long-term health, and how often to check them.

## Why Standard Panels Miss the Signal

A routine annual physical checks total cholesterol, fasting glucose, and maybe a basic thyroid panel. None of these are wrong, but each has a more predictive alternative that most doctors won't order unless you ask. Total cholesterol and LDL-C, for example, measure the amount of cholesterol carried by lipoproteins -- not the number of atherogenic particles doing the damage. A 2019 JAMA Cardiology review (Sniderman et al.) found that apolipoprotein B (ApoB), which counts particles directly, predicts cardiovascular risk more accurately than LDL-C, especially in people with normal LDL but high triglycerides.

## The Core Panel

- ☐ **ApoB (Apolipoprotein B)**  
Counts atherogenic lipoprotein particles directly rather than estimating cholesterol mass. Target: under 90 mg/dL, lower for those with existing cardiovascular risk factors. Test annually.
- ☐ **Lp(a) -- Lipoprotein(a)**  
Genetically determined and largely unaffected by diet or exercise. The 2022 European Atherosclerosis Society consensus statement recommends everyone be tested at least once in their lifetime, since elevated Lp(a) independently raises cardiovascular risk regardless of other lipid values.
- ☐ **hs-CRP (high-sensitivity C-reactive protein)**  
A marker of systemic inflammation. The JUPITER trial (Ridker et al., 2008, NEJM) found hs-CRP predicted cardiovascular events independently of LDL-C and was used to identify patients who benefited from statin therapy despite normal cholesterol. Target: under 1.0 mg/L. Test annually.
- ☐ **HbA1c and fasting insulin (for HOMA-IR)**  
HbA1c reflects average blood glucose over roughly three months. Fasting insulin, paired with fasting glucose to calculate HOMA-IR, flags insulin resistance years before HbA1c rises -- Framingham Offspring Study data shows measurable insulin resistance predates prediabetic glucose readings by up to a decade. Test annually.

## Blood Biomarkers for Longevity

### ☐ Homocysteine

Elevated levels are associated with cardiovascular and cognitive decline risk and often reflect low B12 or folate status. Target: under 10 micromol/L. Test annually, or after starting/stopping B-vitamin supplementation.

### ☐ Ferritin

Reflects iron storage, not just anemia risk. Low ferritin causes fatigue and hair loss even with normal hemoglobin; high ferritin can signal inflammation or, less commonly, hemochromatosis. Target range: roughly 30-150 ng/mL, sex-dependent. Test annually.

### ☐ TSH plus free T4

Baseline thyroid function. TSH alone can miss subclinical dysfunction; pairing it with free T4 catches cases where TSH sits in range but conversion is impaired. Test annually, more often if symptomatic.

### ☐ 25-OH Vitamin D

Deficiency is common and correctable, though causal evidence for supplementation benefits beyond bone health is mixed. Still useful as a baseline given how widespread insufficiency is. Target: 30-50 ng/mL. Test annually, seasonally if you live at higher latitudes.

## Testing Frequency

Lp(a) needs testing only once -- it does not meaningfully change with lifestyle. ApoB, hs-CRP, HbA1c, fasting insulin, homocysteine, ferritin, and thyroid markers are worth rechecking annually, or sooner if you change diet, medication, or supplementation significantly enough to expect movement.

## What to Ask Your Doctor For

Standard panels frequently omit ApoB, Lp(a), and HOMA-IR components by default. Request them by name -- most labs run them on the same blood draw as a standard lipid panel at marginal added cost. If your provider declines, direct-to-consumer lab services can order these panels without a referral in most US states.