

Chapter II

The key biomarkers of longevity

Using data to optimize aging

Definitions

Healthspan: The duration of life spent in good health without chronic diseases or age-related disorders.

Insulin resistance: When cells don't respond to the hormone insulin and can't easily take up glucose from the blood—leading to elevated glucose.

Immunosenescence: The age-related decline of the immune system.

Biomarker spotlight: Biomarkers related to longevity

For a blood biomarker to be linked to aging, levels of the biomarker are either associated with a reduced risk of death (or age-related diseases), or are linked to healthspan and vitality. Markers include:

Glucose + HbA1c: Measures of both long-term and short-term blood sugar levels.

Cholesterol: Multiple markers of cholesterol are related to longevity—LDL cholesterol, HDL cholesterol, triglycerides, and total cholesterol.

High-sensitivity C-reactive protein + White blood cell count: Markers of inflammation and immune health.

Vitamin D: Vitamin D is a fat-soluble vitamin that plays a role in immune health, bone health, and hormone production.

Course notes

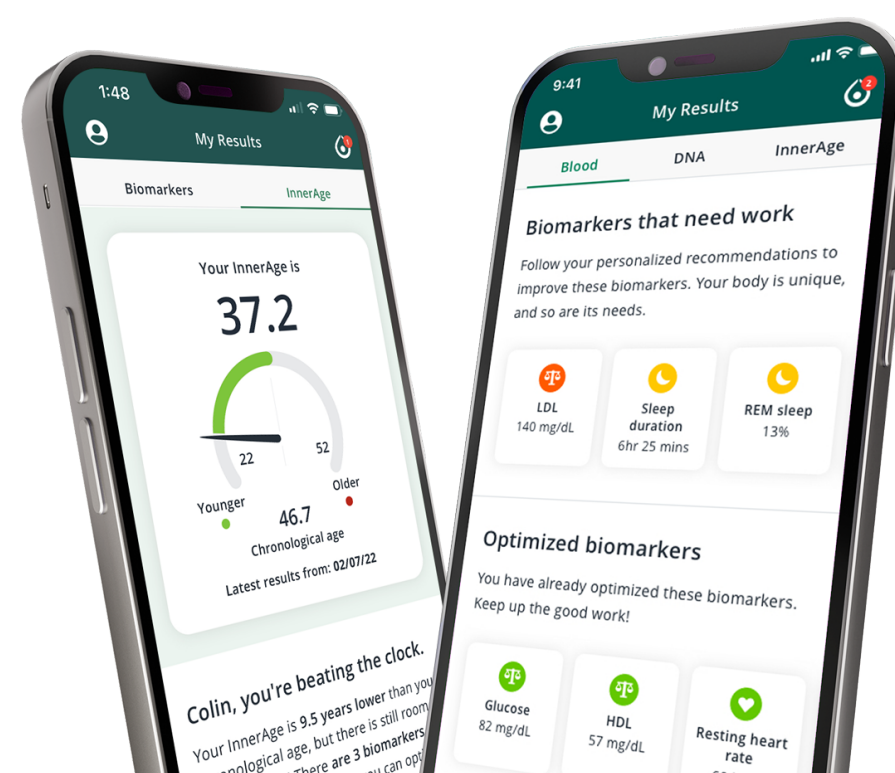
Blood biomarkers are related to aging if levels of that biomarker are either associated with a reduced risk of death (or age-related diseases) or linked to healthspan and vitality.

Consistently high blood glucose and HbA1c levels are associated with an increased risk of age-related diseases like metabolic syndrome and cardiovascular disease and all-cause mortality.

Elevated LDL cholesterol levels paired with inflammation can form deposits in blood vessels that are a risk factor for heart disease.

Keeping inflammation levels at bay can add disease-free years to your life, improving your healthspan.

Optimal vitamin D levels support longevity by maintaining the integrity of the immune system, maintaining bone health, and supporting other markers of healthful aging (like cholesterol).



Key takeaway

- These biomarkers are all actionable, meaning you can take steps today that can positively influence your health and longevity down the road.