TruDiagnostic™
The Epigenetic Company

EPIGENETIC HEALTH ASSESSMENT

TruAge™ + TruHealth™



PREPARED FOR

Sample Patient

DOB: 03/15/1985

Sex: Male

REPORT DETAILS

Kit / accession ID: SAMPLE-003

Collected: 09/10/2026

Reported: 09/22/2026

PERFORMING LABORATORY

TruDiagnostic

ADDRESS / CLIA ID

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LABORATORY DIRECTOR

Melissa Keinath, PhD, FACMG

INTRODUCTION

Report Guide

This report combines complementary DNA methylation-based measures of aging rate, epigenetic age, telomere length, organ-system aging, and associated biological signals.

What each result tells you

Speed of Aging

How quickly is the patient aging?

Speed of Aging is measured with DunedinPACE, which uses DNA methylation patterns to estimate the current rate of biological aging. A score of 1.0 represents one biological year per chronological year.

Epigenetic Age

What age-equivalent estimate reflects the patient's epigenetic profile?

Epigenetic Age is measured with OMICmAge, which uses DNA methylation patterns associated with multi-omic aging, disease, and mortality risk to produce an age-equivalent estimate.

Telomere Length

How does estimated leukocyte telomere length compare with people of the same age and sex?

A DNA methylation-based estimate of telomere length in leukocytes, reported in kilobases and as an age- and sex-matched percentile.

Organ Ages

Which organ systems show relatively younger or older aging patterns?

Organ Ages are measured with SYMPHONYAge, which uses system-specific methylation models to provide age-equivalent estimates for 11 organ systems.

Epigenetic Biomarkers

Which biomarker estimates are ideal, suboptimal, or out of range?

Methylation-based models estimate clinical and molecular signals and express each result as a z-score relative to the report's reference population.

History

How have results changed across collections?

Displays changes in Speed of Aging, Epigenetic Age Difference, and organ ages across comparable collections.

How to review the report

1. **Begin with the Summary**
   Review Speed of Aging, Epigenetic Age, Telomere Length, and the overall system pattern.
2. **Compare the History**
   Look for the direction and magnitude of change across comparable collections.
3. **Review each System**
   Compare organ age with chronological age, then review the biomarkers on that page.

HOW THE RESULTS RELATE

Distinct methods, complementary clinical context

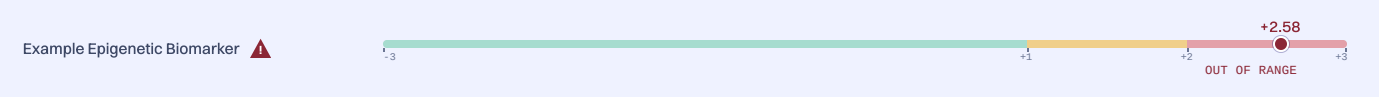
Each result is calculated independently and answers a different clinical question. Agreement may reinforce an overall pattern. When results differ, interpret each measure alongside patient history and conventional clinical data.

Organ Ages
Age-equivalent estimates generated by SYMPHONYAge methylation models. Each summarizes the aging pattern observed within one system.

Epigenetic Biomarkers
Z-score estimates of individual clinical and molecular signals. They add detail but do not determine the organ age.

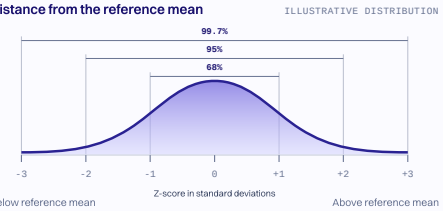
HOW TO READ AN EPIGENETIC BIOMARKER

The z-score, reference range, and status appear together



REFERENCE COMPARISON **Who is this result compared with?**

Distance from the reference mean



Comparison population

Each z-score compares the estimated biomarker value with a reference population of the same sex drawn from the Mass General Brigham Biobank and TruDiagnostic cohorts. The reference population includes adults across a wide range of ages and health backgrounds. Percentiles for Speed of Aging, Epigenetic Age, and Telomere Length use the same reference population matched by both age and sex.

Clinical meaning

A score of 0 is at the reference average, and each 1-point difference represents one standard deviation. Positive and negative values are not inherently better or worse; interpretation depends on the marker-specific reference range.

CURRENT RESULTS

Summary

Current Speed of Aging, Epigenetic Age, telomere length, and organ-system findings.

Primary aging measures

SPEED OF AGING

0.92

Slower than 1.0

32nd percentile — compared with people of the same age and sex

SLOWER — FASTER

Slower than 68% of people the same age and sex.

Calculated using **DunedinPACE**. Estimates the current rate of aging; 1.0 represents approximately one year of epigenetic change per chronological year.

EPIGENETIC AGE

38.4 years

Chronological age: 41.5 years · 3.1 years younger

27th percentile — compared with people of the same age and sex

LOWER ESTIMATE — HIGHER ESTIMATE

A lower estimate than 73% of people the same age and sex.

Calculated using **OMICmAge**. Uses DNA methylation patterns associated with multi-omic aging, disease, and mortality risk to produce an age-equivalent estimate of the patient's epigenetic profile.

TELOMERE LENGTH

7.1 kb

Estimated leukocyte telomere length

61st percentile — compared with people of the same age and sex

SHORTER — LONGER

Longer than 61% of people the same age and sex.

Estimated telomere length in leukocytes reported in kilobases. Telomere length has a strong genetic component but is also influenced by age, environmental exposures, and other biological and lifestyle factors.

Systems

8 of 11 organ age estimates are younger than chronological age.

Heart — Page 5

ORGAN AGE: 43.8 y
VS CHRONOLOGICAL: 2.3 y older

1 OUT OF RANGE · 6 SUBOPTIMAL · 17 epigenetic results

Brain — Page 6

ORGAN AGE: 38.1 y
VS CHRONOLOGICAL: 3.4 y younger

1 SUBOPTIMAL · 13 epigenetic results

Hormone — Page 7

ORGAN AGE: 37.9 y
VS CHRONOLOGICAL: 3.6 y younger

1 OUT OF RANGE · 1 SUBOPTIMAL · 13 epigenetic results

Liver — Page 8

ORGAN AGE: 42.6 y
VS CHRONOLOGICAL: 1.1 y older

1 OUT OF RANGE · 3 SUBOPTIMAL · 17 epigenetic results

Metabolic — Page 9

ORGAN AGE: 44.6 y
VS CHRONOLOGICAL: 3.1 y older

1 OUT OF RANGE · 6 SUBOPTIMAL · 14 epigenetic results

Immune — Page 10

ORGAN AGE: 37.4 y
VS CHRONOLOGICAL: 4.1 y younger

10 IDEAL · 10 epigenetic results

Inflammation — Page 11

ORGAN AGE: 40.9 y
VS CHRONOLOGICAL: 0.6 y younger

1 SUBOPTIMAL · 13 epigenetic results

Kidney — Page 12

ORGAN AGE: 38.9 y
VS CHRONOLOGICAL: 2.6 y younger

2 SUBOPTIMAL · 15 epigenetic results

Musculoskeletal — Page 13

ORGAN AGE: 36.3 y
VS CHRONOLOGICAL: 5.2 y younger

11 IDEAL · 11 epigenetic results

Blood — Page 14

ORGAN AGE: 39.4 y
VS CHRONOLOGICAL: 2.1 y younger

1 SUBOPTIMAL · 5 epigenetic results

Lung — Page 15

ORGAN AGE: 36.7 y
VS CHRONOLOGICAL: 4.8 y younger

1 SUBOPTIMAL · 9 epigenetic results

CHANGE OVER TIME

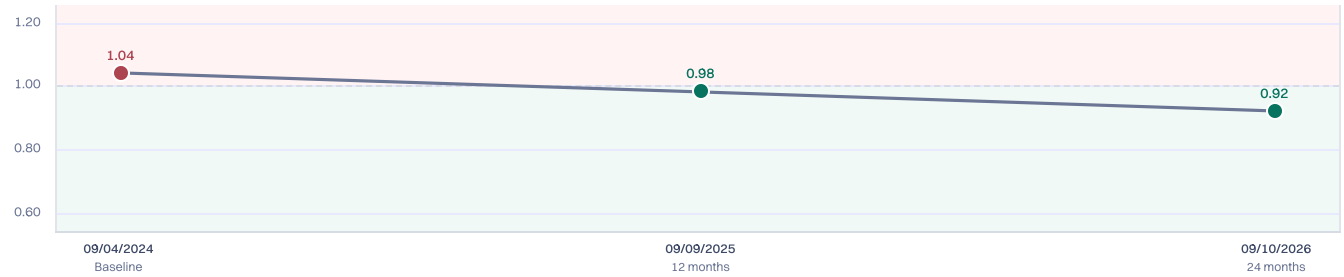
History

Compare current and prior collections to assess changes in Speed of Aging and the difference between Epigenetic Age and chronological age.

SPEED OF AGING	EPIGENETIC AGE DIFFERENCE	TIME SPAN
1.04 → 0.92	+1.7 → -3.1 years	2 yrs 0 months
Improved by 0.12 since Sep 2024	Improved by 4.8 years since Sep 2024	3 collections

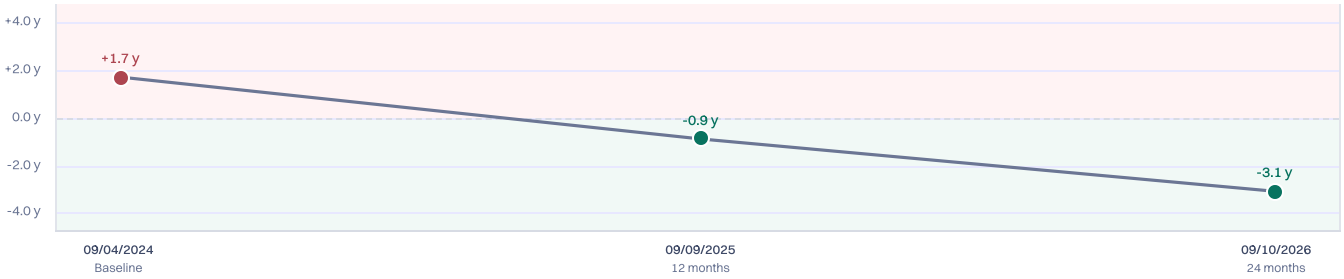
Speed of Aging

DunedinPACE estimates years of epigenetic change per chronological year; 1.0 is the reference rate.



Epigenetic Age Difference

Epigenetic Age minus chronological age. Negative values indicate a younger epigenetic profile; positive values indicate an older profile.



Results by collection

Percentiles are age- and sex-matched.

COLLECTION	ELAPSED TIME	SPEED OF AGING	EPIGENETIC AGE	CHRONOLOGICAL AGE	EPIGENETIC AGE DIFFERENCE
09/10/2026	24 months	0.92 32nd percentile	38.4 years 27th percentile	41.5 y	-3.1 y
09/09/2025	12 months	0.98 45th percentile	39.6 years 44th percentile	40.5 y	-0.9 y
09/04/2024	Baseline	1.04 58th percentile	41.2 years 64th percentile	39.5 y	+1.7 y

Heart

ORGAN AGE	VS CHRONOLOGICAL	SINCE LAST TEST	EPIGENETIC RESULTS
43.8 y	2.3 y older	+0.7 years Previous result Sep 2025	7 to review 6 suboptimal · 1 out of range

Epigenetic Biomarkers

Z-scores relative to the reference cohort; ranges reflect each marker's expected direction.

Ideal · Suboptimal · Out of Range

EPIGENETIC BIOMARKER	Z-SCORE	RELEVANCE
ADMA and SDMA		Lower levels indicate blood-vessel flexibility and kidney health.
ApoA1		The main protein in "good" HDL cholesterol; supports heart health.
Cardiac Myosin subunit		A heart-muscle protein; higher levels can signal cardiac muscle damage or strain.
HDL Cholesterol		"Good" cholesterol that helps protect the heart.
HDL Size		The size and quality of the "good" cholesterol particles.
Heart Stress (ANP)		A hormone the heart releases under strain; reflects cardiac stress.
Homoarginine		Supports blood-vessel and heart health.
LDL Cholesterol		"Bad" cholesterol tied to artery and heart risk (lowered by statins).
Lipoprotein lipase		Helps clear fats (triglycerides) from the blood.
Monocytes		Immune cells involved in defense and chronic inflammation.
Phenylacetylglutamine		A gut-bacteria byproduct (from dietary phenylalanine) linked to higher cardiovascular risk.
Sialic Acid		A marker of chronic inflammation.
Small dense LDL TG ▲		Heart risk even when LDL looks normal or during cholesterol-lowering therapy.
Sphingomyelins		Fats important for cell membranes and nerve health.
Triglycerides		Blood fats tied to diet and heart/metabolic health.
Vanilmandelic Acid (VMA)		Reflects adrenaline and stress-hormone activity.
VLDL Size		Reflects triglyceride-rich cholesterol particles made by the liver.

Brain

ORGAN AGE	VS CHRONOLOGICAL	SINCE LAST TEST	EPIGENETIC RESULTS
38.1 y	3.4 y younger	+0.5 years Previous result Sep 2025	1 to review 1 suboptimal

Epigenetic Biomarkers

Z-scores relative to the reference cohort; ranges reflect each marker's expected direction.

Ideal · Suboptimal · Out of Range

EPIGENETIC BIOMARKER	Z-SCORE	RELEVANCE
Alpha ketoglutaramate	-0.52 IDEAL	Higher levels indicate poor ammonia clearance.
Cholines	+0.34 IDEAL	A nutrient for liver and brain; supports fat processing and cell membranes.
DHEA-S *	+0.92 IDEAL	A key adrenal hormone that declines with age; supports energy and hormone balance.
DKK2	-0.28 IDEAL	A protein involved in the Wnt signaling pathway linked to brain and bone health.
Kynurenine	+0.46 IDEAL	A tryptophan byproduct linked to stress, mood, and inflammation.
Omega-3	-1.46 SUBOPTIMAL	Beneficial fish-oil fats that support heart and brain.
Pregnanolone *	+0.18 IDEAL	A liver-conjugated metabolite of the 17-hydroxyprogesterone (adrenal/gonadal steroid) pathway; declines with age.
Pregnenolone sulfate *	+0.72 IDEAL	Measures neurosteroid pools, adrenocortical functional reserve, and HPA axis. Blunted levels correlate with cognitive fatigue and adrenopause.
Quinolinate	+0.38 IDEAL	A brain metabolite tied to neuro-inflammation.
Sphingomyelins	+0.48 IDEAL	Fats important for cell membranes and nerve health.
Tenascin-C	-0.42 IDEAL	An extracellular-matrix protein elevated with tissue stress, inflammation, and fibrosis; higher levels track damage.
Vanillactic acid	-0.12 IDEAL	A metabolite of aromatic-amino-acid and catecholamine-precursor metabolism; can rise with vitamin B6 deficiency or altered dopamine processing.
Vanilmandelic Acid (VMA)	+0.22 IDEAL	Reflects adrenaline and stress-hormone activity.

* Reflects the body's own hormone production rather than a direct measure of supplemented hormone levels.

Hormone

ORGAN AGE	VS CHRONOLOGICAL	SINCE LAST TEST	EPIGENETIC RESULTS
37.9 y	3.6 y younger	+0.5 years Previous result Sep 2025	2 to review 1 suboptimal · 1 out of range

Epigenetic Biomarkers

Z-scores relative to the reference cohort; ranges reflect each marker's expected direction.

Ideal · Suboptimal · Out of Range

EPIGENETIC BIOMARKER	Z-SCORE	RELEVANCE
Androstenediol *	+0.48 IDEAL	A male-type (androgen) hormone that declines with age.
Androsterone *	+0.64 IDEAL	A testosterone byproduct; indicates overall androgen activity.
DHEA metabolite	+0.42 IDEAL	A hydroxylated DHEA metabolite in the adrenal androgen pathway; declines with age. May be associated with hepatic metabolism in supplementation.
DHEA-S *	+0.92 IDEAL	A key adrenal hormone that declines with age; supports energy and hormone balance.
IGF-1	+0.26 IDEAL	A growth-hormone marker; healthiest in a middle range.
IGFBP-2	-0.44 IDEAL	Reflects growth-hormone and insulin/metabolic signaling.
Leptin	+1.52 SUBOPTIMAL	The "fullness" hormone from fat tissue; reflects appetite and body fat.
Pregnanolone *	+0.18 IDEAL	A liver-conjugated metabolite of the 17-hydroxyprogesterone (adrenal/gonadal steroid) pathway; declines with age.
Pregnenediol *	+0.36 IDEAL	A pregnenolone-pathway steroid that declines with age; higher levels indicate more youthful hormone production.
Pregnenolone sulfate *	+0.72 IDEAL	Measures neurosteroid pools, adrenocortical functional reserve, and HPA axis. Blunted levels correlate with cognitive fatigue and adrenopause.
SHBG (Free Hormones) ▲	-2.24 OUT OF RANGE	Controls how much sex hormone is active and available.
Vanillactic acid	-0.12 IDEAL	A metabolite of aromatic-amino-acid and catecholamine-precursor metabolism; can rise with vitamin B6 deficiency or altered dopamine processing.
Vanilmandelic Acid (VMA)	+0.22 IDEAL	Reflects adrenaline and stress-hormone activity.

* Reflects the body's own hormone production rather than a direct measure of supplemented hormone levels.

READING THIS PAGE

Organ age is 3.6 y younger, even though 1 biomarker is out of range

A single biomarker doesn't tell the whole story of how an organ is aging. The overall pattern in this system looks younger than expected, and the flagged result is still worth reviewing on its own.

Liver

ORGAN AGE	VS CHRONOLOGICAL	SINCE LAST TEST	EPIGENETIC RESULTS
42.6 y	1.1 y older	+0.8 years Previous result Sep 2025	4 to review 3 suboptimal · 1 out of range

Epigenetic Biomarkers

Z-scores relative to the reference cohort; ranges reflect each marker's expected direction.

Ideal · Suboptimal · Out of Range

EPIGENETIC BIOMARKER	Z-SCORE	RELEVANCE
Albumin	+0.58 IDEAL	The main protein in blood; a marker of liver function and nutrition.
Alkaline Phosphatase (ALP)	-0.22 IDEAL	Reflects liver, bile-duct, and bone health.
Alpha ketoglutaramate	-0.52 IDEAL	Higher levels indicate poor ammonia clearance.
Amyloid A	+0.44 IDEAL	An inflammation marker that rises with infection or chronic inflammation.
Cholines	+0.34 IDEAL	A nutrient for liver and brain; supports fat processing and cell membranes.
DMTPA (Methionine Salvage)	+0.36 IDEAL	Higher levels associated with poor amino-acid recycling and methylation activity.
Glycine	-0.88 IDEAL	An amino acid for collagen, connective tissue, and detox.
PFOS	+1.26 SUBOPTIMAL	A "forever chemical" (PFAS) exposure marker.
PON1	+0.52 IDEAL	An HDL-linked enzyme that fights oxidation and aids detox.
Prealbumin	+0.44 IDEAL	A short-term marker of nutrition and liver protein production.
S-adenosylhomocysteine (SAH)	+0.28 IDEAL	Reflects methylation-cycle status; higher levels signal impaired methylation.
Small dense LDL TG ▲	+2.18 OUT OF RANGE	Heart risk even when LDL looks normal or during cholesterol-lowering therapy.
Triglycerides	+1.62 SUBOPTIMAL	Blood fats tied to diet and heart/metabolic health.
Vitamin A	+0.38 IDEAL	Reflects vitamin A status, important for vision and immunity.
Vitamin E	+0.62 IDEAL	A fat-soluble antioxidant that helps protect cells.
VLDL Size	+1.35 SUBOPTIMAL	Reflects triglyceride-rich cholesterol particles made by the liver.

RELATIVE EXPOSURE SCORE	Z-SCORE	RELEVANCE
Relative Alcohol Exposure Score	+0.46 IDEAL	Methylation pattern associated with alcohol exposure.

Metabolic

ORGAN AGE	VS CHRONOLOGICAL	SINCE LAST TEST	EPIGENETIC RESULTS
44.6 y	3.1 y older	+1.4 years Previous result Sep 2025	7 to review 6 suboptimal · 1 out of range

Epigenetic Biomarkers

Z-scores relative to the reference cohort; ranges reflect each marker's expected direction.

Ideal · Suboptimal · Out of Range

EPIGENETIC BIOMARKER	Z-SCORE	RELEVANCE
Adiponectin	-1.18 IDEAL	A fat-tissue hormone that supports healthy blood sugar and metabolism.
Erythritol	+0.94 IDEAL	A sugar-alcohol linked to blood-sugar and metabolic activity.
Fat-Burn (C4-Carnitine)	+0.66 IDEAL	Reflects how completely cells oxidize fat; lower levels indicate more efficient fat metabolism.
Glucose *	+1.34 SUBOPTIMAL	Fasting blood sugar; a core measure of metabolic health.
GlycA	+1.18 SUBOPTIMAL	A sensitive marker of long-term, low-grade inflammation.
Glycine	-0.88 IDEAL	An amino acid for collagen, connective tissue, and detox.
Guanidinoacetate	+0.34 IDEAL	A building block for creatine (muscle energy).
HbA1c *	+1.46 SUBOPTIMAL	Average blood sugar over ~3 months; key for diabetes risk.
Leptin	+1.52 SUBOPTIMAL	The "fullness" hormone from fat tissue; reflects appetite and body fat.
Nicotinamide Riboside (NR)	-0.26 IDEAL	A building block for NAD+, tied to cellular energy.
Obesity epigenetic risk	+1.28 SUBOPTIMAL	An epigenetic estimate of body-weight and metabolic risk.
Palmitoylcarnitine	+0.52 IDEAL	A long-chain acylcarnitine; higher levels reflect less complete/efficient mitochondrial fat oxidation.
SHBG (Free Hormones) ▲	-2.24 OUT OF RANGE	Controls how much sex hormone is active and available.
Uric Acid	+1.08 SUBOPTIMAL	A waste product tied to gout, blood pressure, and metabolic health.

* May be falsely elevated when taken with glucose lowering medications and supplements.

Immune

ORGAN AGE	VS CHRONOLOGICAL	SINCE LAST TEST	EPIGENETIC RESULTS
37.4 y	4.1 y younger	+0.6 years Previous result Sep 2025	10 ideal 10 results

Epigenetic Biomarkers

Z-scores relative to the reference cohort; ranges reflect each marker's expected direction.

Ideal · Suboptimal · Out of Range

EPIGENETIC BIOMARKER	Z-SCORE	RELEVANCE
B-Cells	+0.48 IDEAL	Immune cells that make antibodies; reflect immune strength.
Eosinophils	+0.32 IDEAL	Immune cells tied to allergies and asthma.
ESR	-0.18 IDEAL	A general marker of inflammation in the body.
Glutamine	+0.62 IDEAL	An amino acid that fuels the gut lining and immune cells.
IP-10	-0.36 IDEAL	An immune-activation signal tied to inflammation.
Lymphocytes	+0.56 IDEAL	Immune cells central to long-term immune defense.
Monocytes	+0.58 IDEAL	Immune cells involved in defense and chronic inflammation.
Neutrophils	-0.24 IDEAL	Front-line immune cells that fight infection.
Vitamin A	+0.38 IDEAL	Reflects vitamin A status, important for vision and immunity.
White Blood Cells	-0.12 IDEAL	Overall immune-cell count.

Inflammation

ORGAN AGE	VS CHRONOLOGICAL	SINCE LAST TEST	EPIGENETIC RESULTS
40.9 y	0.6 y younger	+0.6 years Previous result Sep 2025	1 to review 1 suboptimal

Epigenetic Biomarkers

Z-scores relative to the reference cohort; ranges reflect each marker's expected direction.

Ideal · Suboptimal · Out of Range

EPIGENETIC BIOMARKER	Z-SCORE	RELEVANCE
Amyloid A	+0.44 IDEAL	An inflammation marker that rises with infection or chronic inflammation.
CRP	+0.62 IDEAL	A key inflammation marker; higher means more inflammation.
Eosinophils	+0.32 IDEAL	Immune cells tied to allergies and asthma.
ESR	-0.18 IDEAL	A general marker of inflammation in the body.
GDF-15	-0.32 IDEAL	A "cellular stress" signal that rises with aging and illness.
GlycA	+1.18 SUBOPTIMAL	A sensitive marker of long-term, low-grade inflammation.
IL-6	+0.48 IDEAL	A key inflammation-signaling molecule.
Kynurenine	+0.46 IDEAL	A tryptophan byproduct linked to stress, mood, and inflammation.
MMP-3	-0.26 IDEAL	Indicates extracellular-matrix breakdown and turnover; higher levels track inflammation and tissue damage.
Monocytes	+0.58 IDEAL	Immune cells involved in defense and chronic inflammation.
Quinolinate	+0.38 IDEAL	A brain metabolite tied to neuro-inflammation.
Sialic Acid	+0.86 IDEAL	A marker of chronic inflammation.
Zonulin	+0.24 IDEAL	A marker of gut-barrier integrity ("leaky gut").

Kidney

ORGAN AGE	VS CHRONOLOGICAL	SINCE LAST TEST	EPIGENETIC RESULTS
38.9 y	2.6 y younger	+0.7 years Previous result Sep 2025	2 to review 2 suboptimal

Epigenetic Biomarkers

Z-scores relative to the reference cohort; ranges reflect each marker's expected direction.

Ideal · Suboptimal · Out of Range

EPIGENETIC BIOMARKER	Z-SCORE	RELEVANCE
4-hydroxyphenylacetylglutamine	+0.32 IDEAL	A microbiome byproduct reflecting protein fermentation in dysbiotic states.
ADMA and SDMA	+0.42 IDEAL	Lower levels indicate blood-vessel flexibility and kidney health.
Allantoin	-0.18 IDEAL	A marker of oxidative stress ("cellular rusting").
Arabitol	-0.42 IDEAL	A marker of yeast/fungal activity in the gut.
Blood Urea Nitrogen (BUN)	+0.14 IDEAL	A waste product that indicates reduced kidney function and protein balance.
Creatinine	+0.38 IDEAL	A muscle waste product used to gauge kidney function.
Cystathionine	+0.22 IDEAL	Indicates functional B6 deficiency or metabolic stress, lowered by taking P5P and moderating methionine intake.
Cystatin-C	-0.46 IDEAL	A precise measure of kidney filtration.
Erythritol	+0.94 IDEAL	A sugar-alcohol linked to blood-sugar and metabolic activity.
Guanidinoacetate	+0.34 IDEAL	A building block for creatine (muscle energy).
Heart Stress (ANP)	-0.28 IDEAL	A hormone the heart releases under strain; reflects cardiac stress.
Homoarginine	+0.62 IDEAL	Supports blood-vessel and heart health.
Phenylacetylglutamine	+0.74 IDEAL	A gut-bacteria byproduct (from dietary phenylalanine) linked to higher cardiovascular risk.
TMAO Marker	+1.16 SUBOPTIMAL	A gut-bacteria byproduct linked to heart risk.
Uric Acid	+1.08 SUBOPTIMAL	A waste product tied to gout, blood pressure, and metabolic health.

Musculoskeletal

ORGAN AGE	VS CHRONOLOGICAL	SINCE LAST TEST	EPIGENETIC RESULTS
36.3 y	5.2 y younger	+0.6 years Previous result Sep 2025	11 ideal 11 results

Epigenetic Biomarkers

Z-scores relative to the reference cohort; ranges reflect each marker's expected direction.

Ideal · Suboptimal · Out of Range

EPIGENETIC BIOMARKER	Z-SCORE	RELEVANCE
Adiponectin	-1.18	A fat-tissue hormone that supports healthy blood sugar and metabolism.
Alkaline Phosphatase (ALP)	-0.22	Reflects liver, bile-duct, and bone health.
Cardiac Myosin subunit	-0.35	A heart-muscle protein; higher levels can signal cardiac muscle damage or strain.
Creatinine	+0.38	A muscle waste product used to gauge kidney function.
DKK2	-0.28	A protein involved in the Wnt signaling pathway linked to brain and bone health.
GDF-15	-0.32	A "cellular stress" signal that rises with aging and illness.
Guanidinoacetate	+0.34	A building block for creatine (muscle energy).
IGF-1	+0.26	A growth-hormone marker; healthiest in a middle range.
MMP-3	-0.26	Indicates extracellular-matrix breakdown and turnover; higher levels track inflammation and tissue damage.
Tenascin-C	-0.42	An extracellular-matrix protein elevated with tissue stress, inflammation, and fibrosis; higher levels track damage.
Titin	-0.38	A muscle protein; higher levels can signal muscle or heart strain.

Blood

ORGAN AGE	VS CHRONOLOGICAL	SINCE LAST TEST	EPIGENETIC RESULTS
39.4 y	2.1 y younger	+0.7 years Previous result Sep 2025	1 to review 1 suboptimal

Epigenetic Biomarkers

Z-scores relative to the reference cohort; ranges reflect each marker's expected direction.

Ideal · Suboptimal · Out of Range

EPIGENETIC BIOMARKER	Z-SCORE	RELEVANCE
Ferritin	+0.54 IDEAL	Iron-storage marker; both high and low can matter.
HbA1c *	+1.46 SUBOPTIMAL	Average blood sugar over ~3 months; key for diabetes risk.
Lymphocytes	+0.56 IDEAL	Immune cells central to long-term immune defense.
Neutrophils	-0.24 IDEAL	Front-line immune cells that fight infection.
White Blood Cells	-0.12 IDEAL	Overall immune-cell count.

* May be falsely elevated when taken with glucose lowering medications and supplements.

Lung

ORGAN AGE	VS CHRONOLOGICAL	SINCE LAST TEST	EPIGENETIC RESULTS
36.7 y	4.8 y younger	+0.8 years Previous result Sep 2025	1 to review 1 suboptimal

Epigenetic Biomarkers

Z-scores relative to the reference cohort; ranges reflect each marker's expected direction.

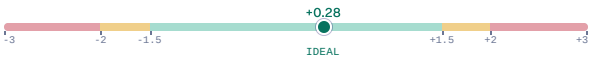
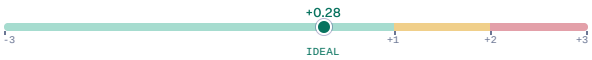
Ideal · Suboptimal · Out of Range

EPIGENETIC BIOMARKER	Z-SCORE	RELEVANCE
Acrolein	-0.62 IDEAL	A marker of exposure to smoke and related airway toxins.
Ferritin	+0.54 IDEAL	Iron-storage marker; both high and low can matter.
GDF-15	-0.32 IDEAL	A "cellular stress" signal that rises with aging and illness.
Homoarginine	+0.62 IDEAL	Supports blood-vessel and heart health.
MMP-3	-0.26 IDEAL	Indicates extracellular-matrix breakdown and turnover; higher levels track inflammation and tissue damage.
PAH	-0.48 IDEAL	A marker of exposure to air pollution and smoke.
PFOS	+1.26 SUBOPTIMAL	A "forever chemical" (PFAS) exposure marker.
Tenascin-C	-0.42 IDEAL	An extracellular-matrix protein elevated with tissue stress, inflammation, and fibrosis; higher levels track damage.

RELATIVE EXPOSURE SCORE	Z-SCORE	RELEVANCE
Relative Tobacco Exposure Score	-0.72 IDEAL	Methylation pattern associated with tobacco exposure.

Cross-System Context

Selected Epigenetic Biomarkers are shown across additional health domains where they provide relevant clinical context.

EPIGENETIC BIOMARKER	Z-SCORE	RELEVANCE
Nutrition/Methylation	Epigenetic biomarkers related to nutrient status, fatty-acid metabolism, methyl-group availability, and methylation pathways.	
Albumin		The main protein in blood; a marker of liver function and nutrition.
Cholines		A nutrient for liver and brain; supports fat processing and cell membranes.
Cystathionine		Indicates functional B6 deficiency or metabolic stress, lowered by taking P5P and moderating methionine intake.
Dimethylglycine (DMG)		Reflects methylation (B-vitamin) activity.
DMTPA (Methionine Salvage)		Higher levels associated with poor amino-acid recycling and methylation activity.
EPA (Omega-3)		A beneficial omega-3 fat from fish; supports heart and brain.
Ferritin		Iron-storage marker; both high and low can matter.
Glycine		An amino acid for collagen, connective tissue, and detox.
Methionine Sulfone		A marker of oxidative damage to proteins.
Omega-3		Beneficial fish-oil fats that support heart and brain.
Prealbumin		A short-term marker of nutrition and liver protein production.
S-adenosylhomocysteine (SAH)		Reflects methylation-cycle status; higher levels signal impaired methylation.
Saturated Fat (SFA)		Reflects saturated-fat levels tied to diet and heart risk.
Vitamin A		Reflects vitamin A status, important for vision and immunity.

Cross-System Context, continued

Selected Epigenetic Biomarkers are shown across additional health domains where they provide relevant clinical context.

EPIGENETIC BIOMARKER	Z-SCORE	RELEVANCE
Nutrition/Methylation - continued	Epigenetic biomarkers related to nutrient status, fatty-acid metabolism, methyl-group availability, and methylation pathways.	
Vitamin E		A fat-soluble antioxidant that helps protect cells.
Gut	Epigenetic biomarkers related to microbial metabolism, intestinal nutrient exchange, and gut-derived metabolites.	
4-hydroxyphenylacetylglutamine		A microbiome byproduct reflecting protein fermentation in dysbiotic states.
Arabitol		A marker of yeast/fungal activity in the gut.
Glutamine		An amino acid that fuels the gut lining and immune cells.
Phenylacetylglutamine		A gut-bacteria byproduct (from dietary phenylalanine) linked to higher cardiovascular risk.
TMAO Marker		A gut-bacteria byproduct linked to heart risk.
Zonulin		A marker of gut-barrier integrity ("leaky gut").
Toxins	Epigenetic biomarkers related to environmental exposures, detoxification pathways, and persistent chemical burden.	
Acrolein		A marker of exposure to smoke and related airway toxins.
PAH		A marker of exposure to air pollution and smoke.
Perfluorooctanoate		A "forever chemical" (PFAS) exposure marker.
PFOS		A "forever chemical" (PFAS) exposure marker.
PON1		An HDL-linked enzyme that fights oxidation and aids detox.

Some epigenetic biomarkers appear in more than one section because they provide clinically relevant context across multiple areas of health.