PROVIDER USE

YOUR RESULTS

Summary Report

AN OVERVIEW BY TRUDIAGNOSTIC

CONTENT INDEX

OMICm Age

*Developed with Harvard**

DISCLAIMER: *The population graph and percentile for OMICmAge are based on observed and validated data patterns from thousands of research participants involved in our Harvard University study.*

OMICm Age

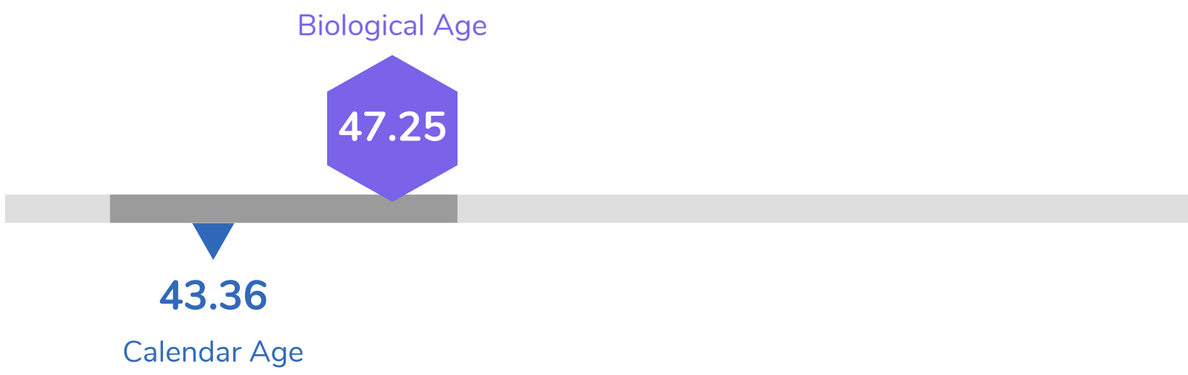
47.25

YEARS OLD

Your OMICm Age is

HIGHER THAN

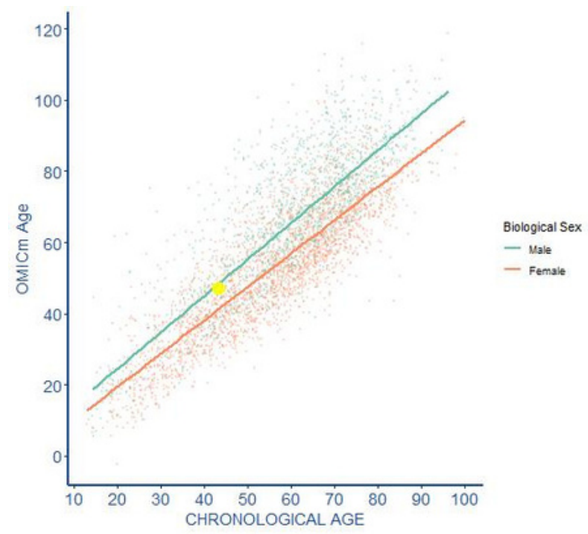
your calendar age by 3.89 years.



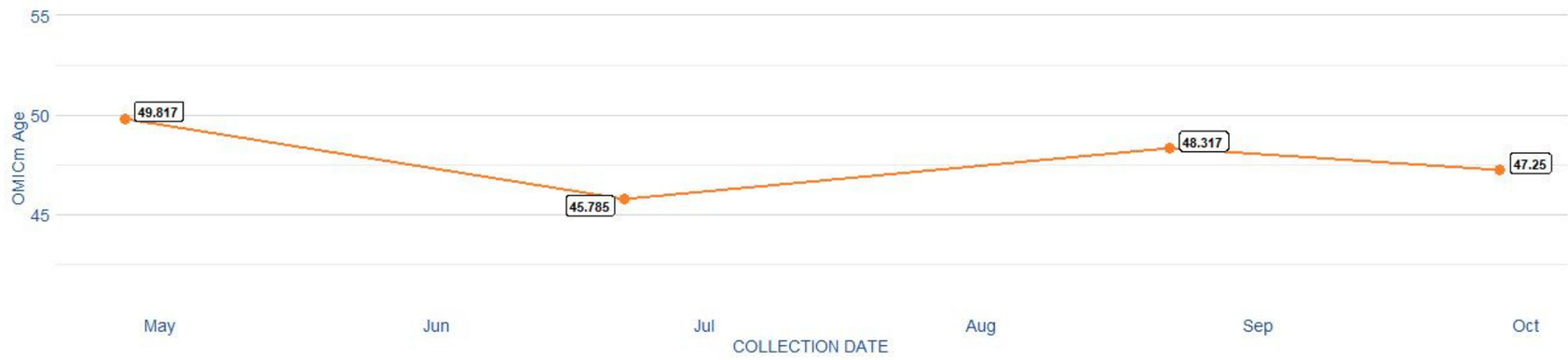
POPULATION COMPARISON

Your OMICm Age is in the 82nd percentile.

This means that your OMICm Age is higher than 82% of the population at your same chronological age and sex.



RESULTS OVER TIME



Your Risk of Disease

Aging has been scientifically proven to be the number one risk factor for major chronic diseases worldwide. Accelerated aging (having an older biological age than your calendar age) increases your risk of disease with each year, and having a younger biological age decreases these risks.

Your OMICm Biological Age can represent an increase or decrease risk of death, cancer, heart disease, stroke, type 2 diabetes, COPD, and depression.

DISCLAIMER: *The following, personalized risk scores are calculated based on observed and validated data patterns from thousands of research participants in our Harvard University study.*

DEATH

43.16%
Disease Risk

At your OMICm Age of **47**, you have a **43.16% higher** risk of death compared to people of your same chronological age.

Reducing your OMICm Age by 1 year would result in reducing your relative risk by **12.71%**

COPD

9.21%
Disease Risk

At your OMICm Age of **47**, you have a **9.21% higher** risk of COPD compared to people of your same chronological age.

Reducing your OMICm Age by 1 year would result in reducing your relative risk by **2.47%**

CANCER

12.38%
Disease Risk

At your OMICm Age of **47**, you have a **12.38% higher** risk of cancer compared to people of your same chronological age.

Reducing your OMICm Age by 1 year would result in reducing your relative risk by **3.35%**

DEPRESSION

9.21%
Disease Risk

At your OMICm Age of **47**, you have a **9.21% higher** risk of depression compared to people of your same chronological age.

Reducing your OMICm Age by 1 year would result in reducing your relative risk by **2.48%**

STROKE

17.45%
Disease Risk

At your OMICm Age of **47**, you have a **17.45% higher** risk of stroke compared to people of your same chronological age.

Reducing your OMICm Age by 1 year would result in reducing your relative risk by **4.79%**

HEART DISEASE

21.03%
Disease Risk

At your OMICm Age of **47**, you have a **21.03% higher** risk of heart disease compared to people of your same chronological age.

Reducing your OMICm Age by 1 year would result in reducing your relative risk by **5.83%**

TYPE 2 DIABETES

18.37%
Disease Risk

At your OMICm Age of **47**, you have a **18.35% higher** risk of type 2 diabetes compared to people of your same chronological age.

Reducing your OMICm Age by 1 year would result in reducing your relative risk by **5.07%**

Your Most Actionable EBPs

*Listed in order of impact on biological age**

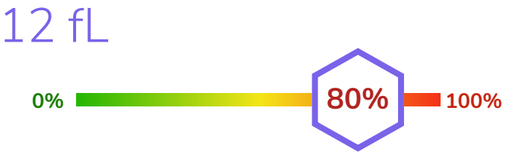
These are the Epigenetic Biomarker Proxies (EBPs) in which your DNAm predicted you were in the top 20% of the population for an EBP we would want to be low for ideal aging or in the bottom 20% of the population for an EBP we would want to be high for ideal aging. As each of these are included as features in OMICm Age, if you were to improve these features, we would expect you would improve your age.

DISCLAIMER: *Related diseases associated with an EBP are* ***NOT*** *a diagnosis. These are diseases that are correlated to that EBP. The percentiles are based on observed and validated data patterns from thousands of research participants involved in our TruDiagnostic cohort.*

DNAm Red Blood Cell Distribution Width

RDW test measures the differences in red blood cell size and volume.

12 fL



Your DNAm Red Blood Cell Distribution Width is higher than 80% of the population at your same calendar age and sex

Recommendations for Improvement:

- Increasing B12, vitamin C, folate, and iron intake
- Regular exercise
- Adequate sleep
- Omega-3 fatty acids

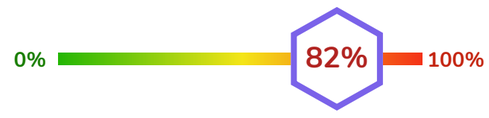
Related Diseases:

- Cancer
- COPD
- Stroke
- Depression
- Type-2 Diabetes

DNAm HbA1c

The HbA1c test measures the amount of glucose attached to hemoglobin.

6.3%



Your DNAm HbA1c is higher than 82% of the population at your same calendar age and sex

Recommendations for Improvement:

- Balanced diet
- Reducing carbohydrate intake
- Reducing sugar intake
- Regular exercise
- Stress management

Related Diseases:

- Stroke
- Depression

DNAm Albumin

Protein albumin is produced by the liver and plays 2 important roles: carrying hormones, vitamins, and enzymes throughout the body and keeping fluids from leaking out of vessels.

4.2 g/dL

Your DNAm Albumin is higher than 10% of the population at your same calendar age and sex

Recommendations for Improvement:

- Increasing B12, vitamin C, folate, and iron intake
- Regular exercise
- Adequate sleep
- Omega-3 fatty acids

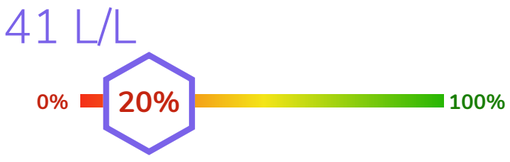
Related Diseases:

- Cancer
- Depression
- Stroke

DNAm Hematocrit

A hematocrit test measures the percent by volume of red blood cells in the blood.

41 L/L



Your DNAm Hematocrit is higher than 20% of the population at your same calendar age and sex

Recommendations for Improvement:

- Proper hydration
- Consuming protein in moderation
- Increasing B12, vitamin C, folate, and iron intake
- Regular exercise

Related Diseases:

- Stroke
- Type-2 Diabetes
- Cancer

DNAm Blood Urea Nitrogen

BUN test measures the amount of blood urea nitrogen; a waste product of proteins broken down by the liver and removed by the kidneys from blood into urine

22 mg/dL

Your DNAm Blood Urea Nitrogen is higher than 90% of the population at your same calendar age and sex

Recommendations for Improvement:

- Proper hydration
- Consuming protein in moderation

Related Diseases:

- Stroke
- Type-2 Diabetes

DNAm Fasting Glucose

test measures the amount of glucose (sugar) in the blood after a person has not consumed calories in at least 8 hours.

114 mg/dL

Your DNAm Fasting Glucose is higher than 90% of the population at your same calendar age and sex

Recommendations for Improvement:

- Balanced diet
- Reduce sugar intake
- Regular exercise
- Stress management
- Avoid smoking
- Manage carbohydrates

Related Diseases:

- Cancer
- COPD
- Stroke
- Depression
- Type-2 Diabetes

DNAm Hemoglobin

IHemoglobin test measures the amount of hemoglobin, a protein in red blood cells that transports oxygen.

13 g/dL

Your DNAm Hemoglobin is higher than 2% of the population at your same calendar age and sex

Recommendations for Improvement:

- Increasing B12, vitamin C, folate, and iron intake
- Regular exercise
- Adequate sleep
- Proper Hydration

Related Diseases:

- Cancer
- Depression
- Stroke
- COPD

DNAm 1-margaroyl-glycerophospholipid (GPE) (17:0)*

Lysophosphatidylcholine (LPC) is mainly derived from the turnover of phosphatidylcholine in circulation by phospholipase A2 (PLA2). It has been positively associated with cardiovascular and neurodegenerative diseases. Elevated LPC content in modified low-density lipoprotein (LDL) and oxidized LDL plays a role in atherosclerotic plaque development and endothelial dysfunction.

0.1

Your DNAm 1-margaroyl-glycerophospholipid (GPE) (17:0)* is higher than 100% of the population at your same calendar age and sex

Recommendations for Improvement:

- Reducing saturated fat intake
- Omega-3 fatty acids
- Green tea extract and curcumin supplementation

Related Diseases:

- Stroke

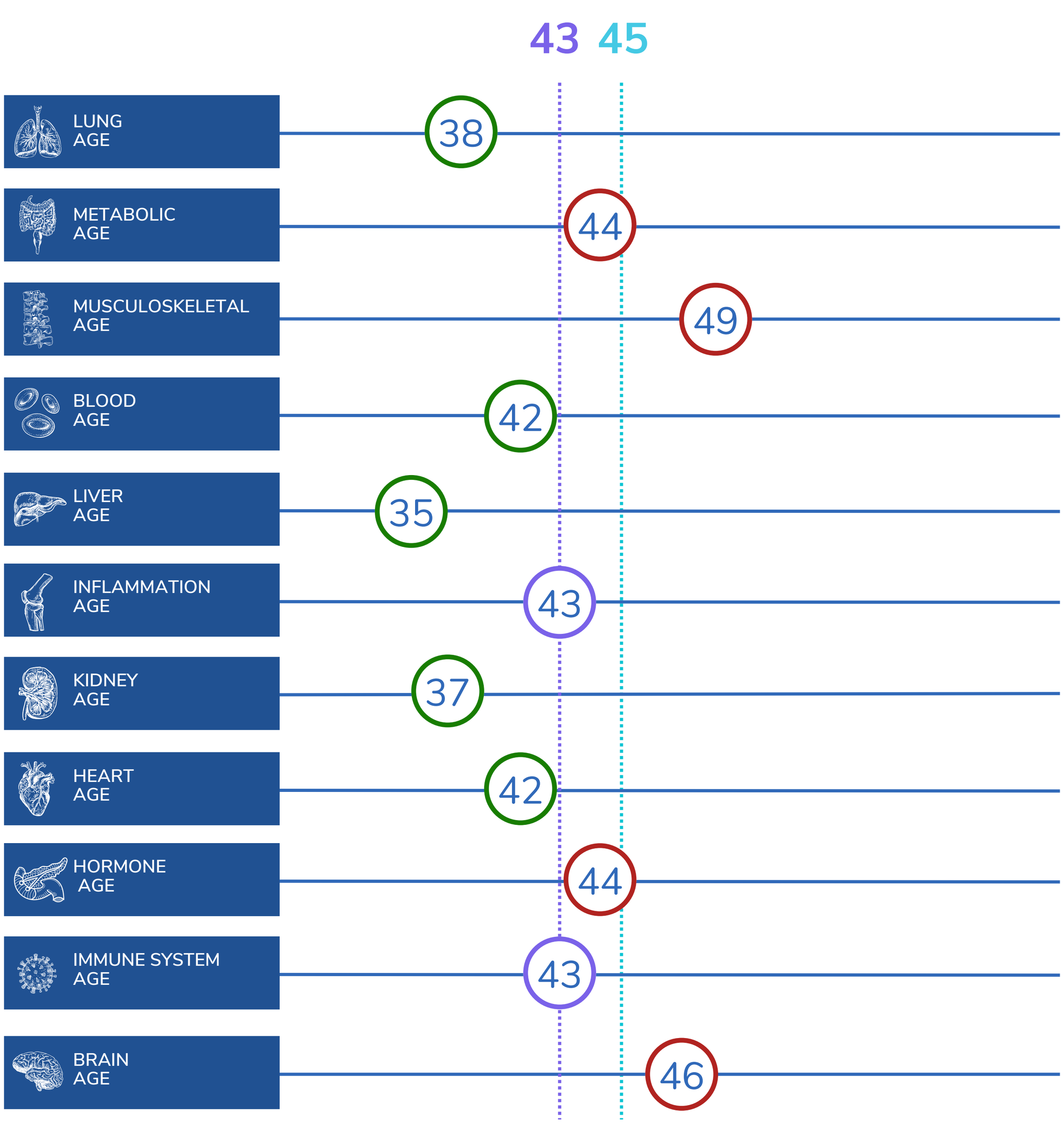
SYMPHONYAge

*Developed with Yale**

The center bar serves as a baseline marker for your chronological age. Here you can see the difference between your organ ages versus your chronological age.

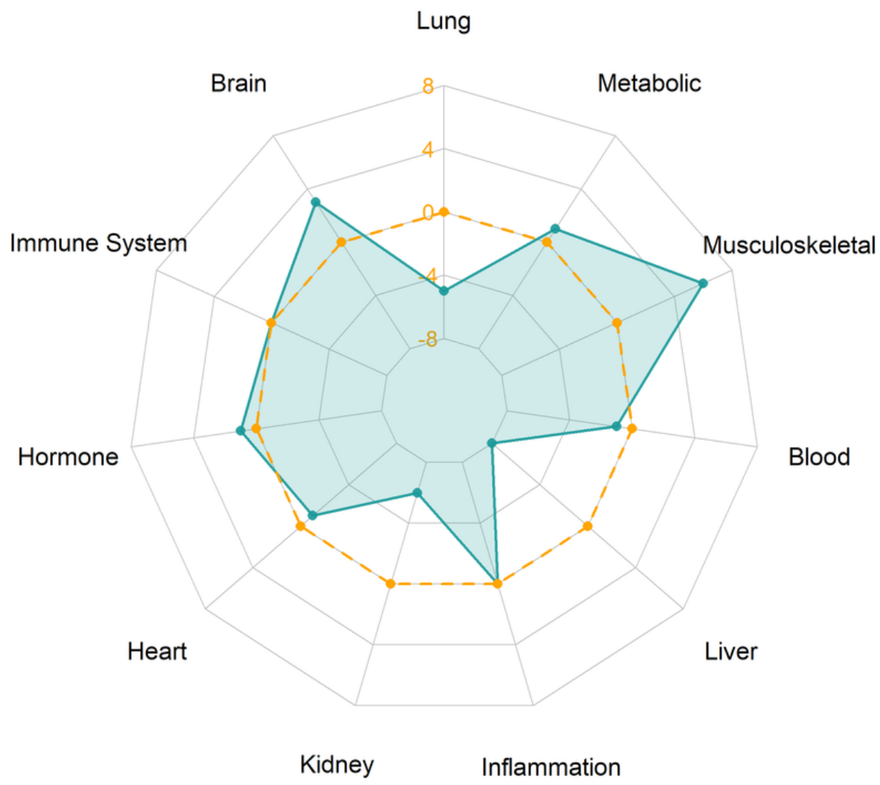
Green is less than your chronological age, **red** is more than your chronological age, and **purple** is equal to your chronological age. The **blue** line is your overall SYMPHONYAge.

CURRENT AGE	OVERALL SYMPHONYAge
43	45



SYSTEMS IMPACT

This is a radar graph containing all of the organ system scores together. Impact graphs are designed to illustrate the effects or consequences of various factors or actions within a system. In this case, the 11 organs. Here you can see the relationship between each organ and how they work and affect each other.

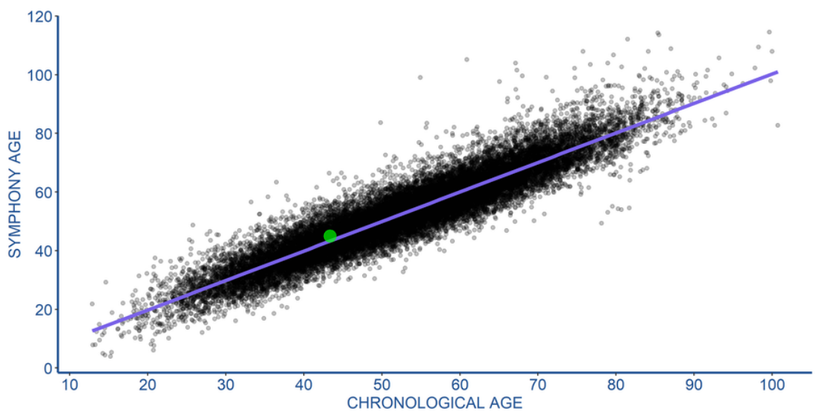


Taking into account all of your individual organ scores, this is what creates your overall SYMPHONYAge score.

Any value that sits inside the **orange circle** is decelerating or decreasing your overall SYMPHONNYAge. Any value that sits outside the **orange circle** is accelerating or increasing your overall SYMPHONYAge.

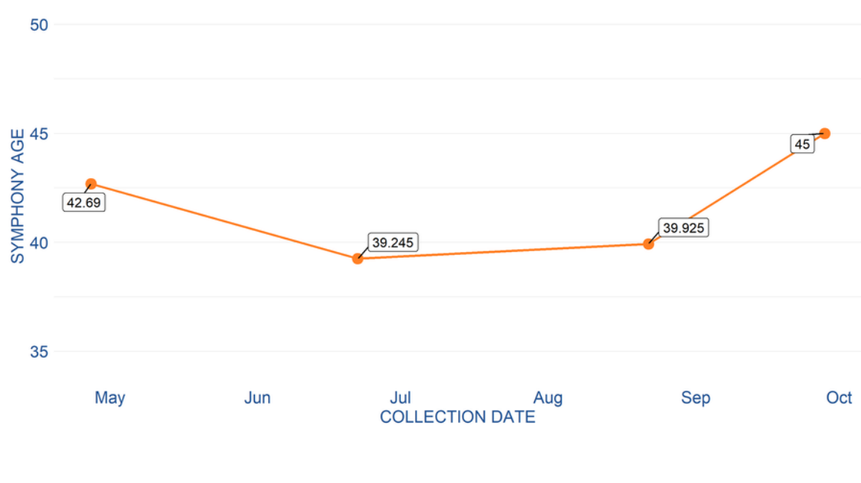
POPULATION

53rd Percentile



Your SYMPHONYage is higher than **53.74%** of the population at your same calendar age.

OVER TIME

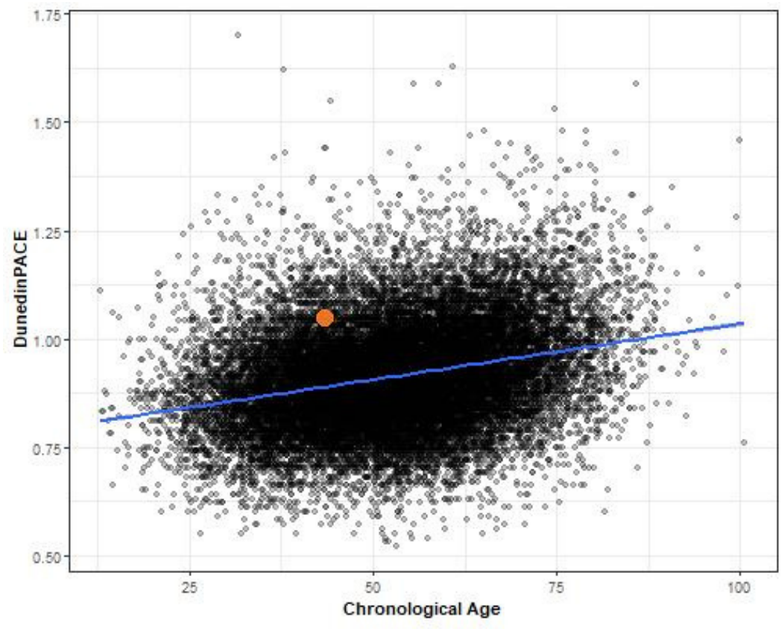


DunedinPACE of Aging

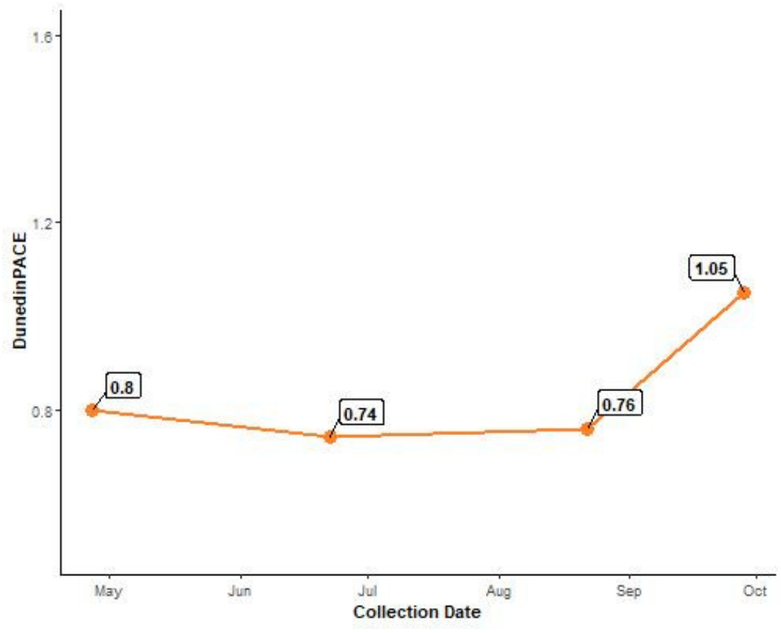
DunedinPACE Value:

1.05

Population



Changes Over Time



Your DunedinPACE is higher than **91.26%** of the population at your same calendar age.

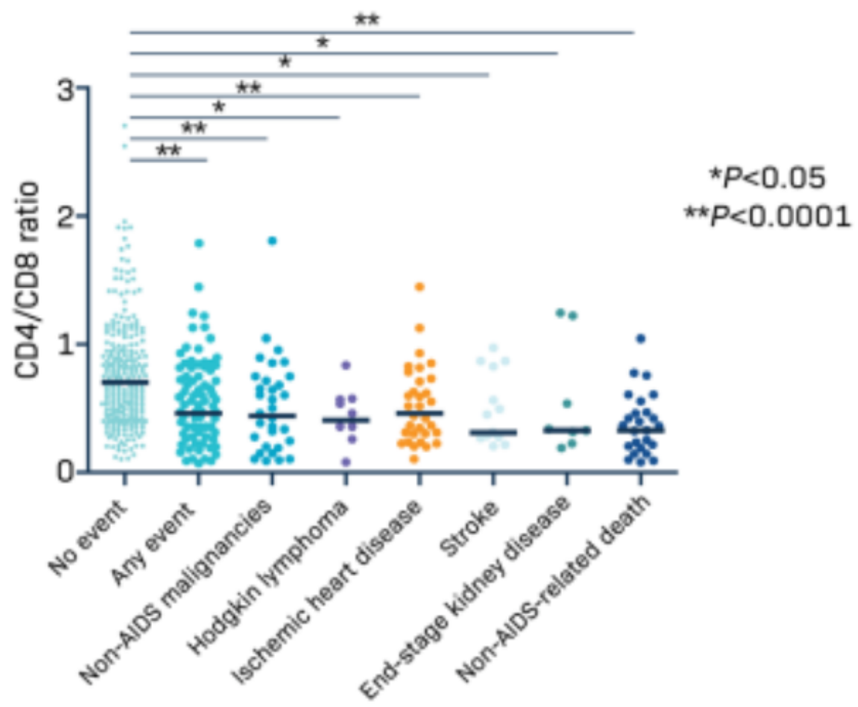
ALGORITHM	PATIENT DATA	MORBIDITY AND MORTALITY ASSOCIATIONS	RISK STATEMENT
DunedinPACE	**1.05** Biological years per year	**All-Cause Mortality** (Belsky et al., 2020)	If you are aging above a rate of 1.00, you would increase risk of death by 56% over the next 7 years.
		Chronic Disease (Belsky et al., 2020)	If you are aging above a rate of 1.00, you would increase risk of chronic disease diagnosis by 54% over the next 7 years.

Immune Health

IMMUNE CELL TYPE	REFERENCE MEAN	95% CONFIDENCE INTERVAL RANGE	YOUR PERCENTAGE
Naïve CD4T	7.273%	7.196%-7.35%	**3.59%**
Memory CD4T	5.212%	5.14%-5.284%	**2.05%**
Memory CD8T	6.605%	6.519%-6.691%	**9.00%**
Naïve CD8T	1.125%	1.09%-1.16%	**0%**
Basophils	1.041%	1.026%-1.056%	**0.77%**
B Memory	1.737%	1.689%-1.785%	**1.03%**
Naïve B	2.259%	2.207%-2.311%	**0%**
Regulatory T	3.506%	0.604%-6.408%	**2.89%**
Eosinophils	0.400%	0.376%-0.424%	**0%**
Natural Killer	3.406%	3.353%-3.459%	**5.08%**
Neutrophils	62.93%	62.899%-62.953%	**74.86%**
Monocyte	4.510%	4.453%-4.567%	**0.73%**

CD4/CD8 T Cell Ratio

CD4/CD8T cell ratio is incredibly informative on disease. A value between 1 and 4 is ideal. A value between 0 and 1 marks “inverted ratio”. A low or inverted CD4/CD8 ratio is an immune risk phenotype and is **associated with altered immune function, immune senescence, and chronic inflammation**.



The prevalence of an inverted CD4/CD8 ratio increases with age. An inverted ratio is seen in 8% of 20-59 year olds and in 16% of 60-94 year olds. Women across all age groups are less likely to have an inverted ratio than their male counterparts.

Age, and hormone-related atrophy of the thymus is theorized to explain the differences between populations. Hormonal influence on the ratio is supported by a correlation between low Plasma Estradiol levels, high circulating CD8, and low CD4/CD8 ratios in women with premature ovarian failure.

We have been able to refer patients for additional testing to diagnose HIV, Chronic Lymphocytic Leukemia, and even individuals taking their Rapamycin at too high of a dose. **If you see a low CD4/CD8 ratio, it is not an immediate cause for concern but we might recommend testing via traditional labs just in case**. A value of 4+ marks hyperactivity or possible infection, autoimmunity or additional immune risk phenotypes.

CELL TYPE	MEAN	REFERENCE RANGE	YOUR RATIO
CD4T/CD8T	2.59	1.00-4.00	**1.61**

RATIO	ABOUT THIS RATIO	YOUR VALUE
Regulatory T Cells	There is evidence that Tregs exhibit atheroprotective properties by suppression of autoreactive T cell responses or by secretion of anti-inflammatory cytokines (Pastrana et al., 2012). Thus this might be a marker for cardiovascular disease. (www.sciencedirect.com)	**0.147**
Adaptive to Innate Immune (A/I Ratio)	The adaptive-to-innate immune ratio (A/I ratio) has been linked to response to several types of immunotherapy.	**0.517**

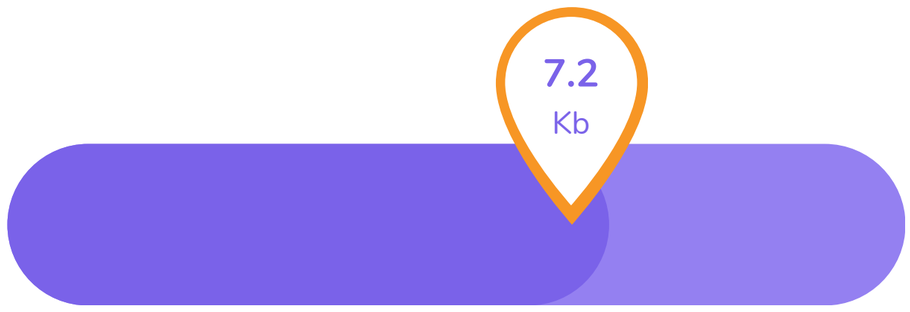
Other Immunosenescence Ratios

RATIO	ABOUT THIS RATIO	NORMATIVE RATIO	YOUR VALUE
Neutrophil to Lymphocyte	The Neutrophil-to-Lymphocyte Ratio (NLR) is obtained by dividing the number of neutrophils by the number of lymphocytes. During physiological stress, neutrophil count increases while lymphocyte count decreases. Physiological stress, driven by illness, inflammation, or psychological stress, can elevate NLR. Therefore, NLR elevation is not exclusive to infection or inflammation but can result from any form of physiological stress, including everyday stress and poor recovery or stress management.	NLR reflects physiological stress. The mean NLR is 1.70 ± 0.70.	**1.724**
Lymphocyte to Monocyte	Elevated MLR levels can indicate increased inflammation associated with atherosclerosis and coronary artery disease, as well as poor prognosis in cancer patients. Conversely, a decreased MLR may be observed in immunocompromised states such as HIV AIDS or following chemotherapy.	The mean lymphocyte-to-monocyte ration is 11.15 ± 3.14	**11.45**

YOUR VALUE

Telomere Length

Telomere Length:

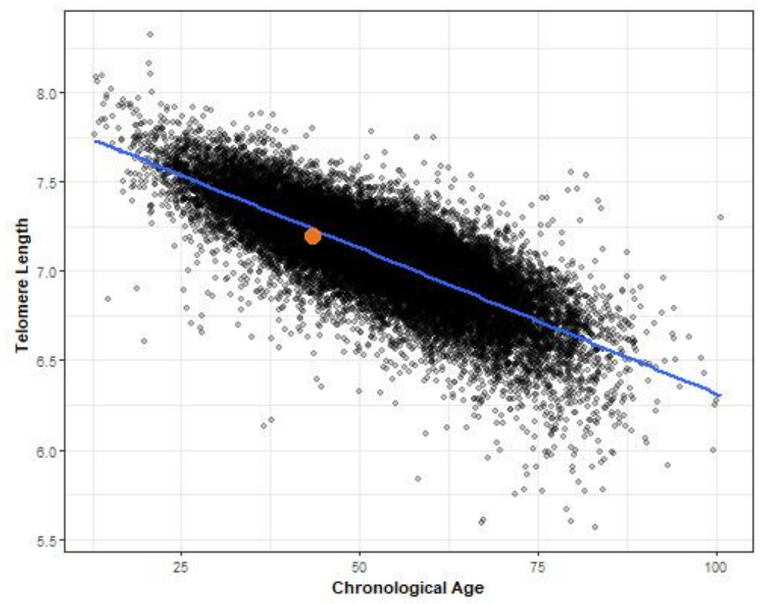


If we were to estimate your biological age **strictly from your telomere measurement**, we would anticipate your age to be:

45.67

YEARS OLD

Telomere Length Based on Biological Age Prediction:



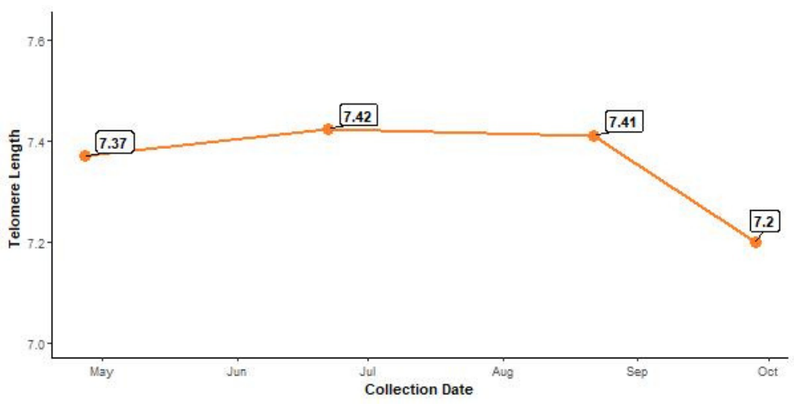
Your average telomere prediction length:

7.2kb

This puts you in the:

40th Percentile

Changes Over Time



ALGORITHM	PATIENT DATA	MORBIDITY AND MORTALITY ASSOCIATIONS	RISK STATEMENT
Telomere	**7.2** Kilobase Unit	At your chronological age of 61, your telomeres are longer than 40% of people who share the same chronological age as you.	Shorter telomeres are not only associated with age but with disease too. Shorter telomere length and low telomerase activity are correlated with several chronic preventable diseases.

Type 2 Diabetes Risk

PHOSPHO1 (Cg02650017)
Average Beta Value:

Your Epitype Value:
.15

[.05-1]
No Increased Risk

ABCG1 (Cg06500161)
Average Beta Value:

Your Epitype Value:
.73

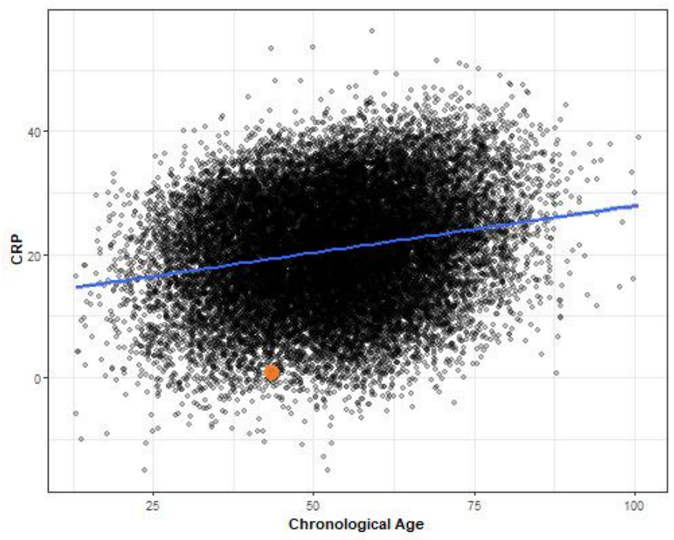
[.71-1]
Disease Risk

RISK REPORT	PATIENT OUTCOMES	SUMMARY	IMPACT	ADDITIONAL NOTE
Type 2 Diabetes	**High Risk**	Your DNA methylation score was **0.73** at the ABCG1 locus and **0.15** at the PHOSPHO1 locus.	Your DNA methylation score at ABCG1 and PHOSPHO1 gives an indication of your level of risk for type 2 diabetes. If your score is 73% or greater at the ABCG1 locus, it is associated with a 9% increased risk for future type 2 diabetes occurrence. A DNA methylation score of 4% or greater at the PHOSPHO1 locus is associated with a 15% decreased risk for future type 2 diabetes occurrence.	DNA methylation at these loci is associated with cholesterol levels, triglyceride levels, ischemic stroke, and risk of T2D. Studies on these particular CpG loci have suggested that fasting and low carb diets can reduce methylation at these loci to lower your risk. Please consult your doctor to discuss this and more treatment options.

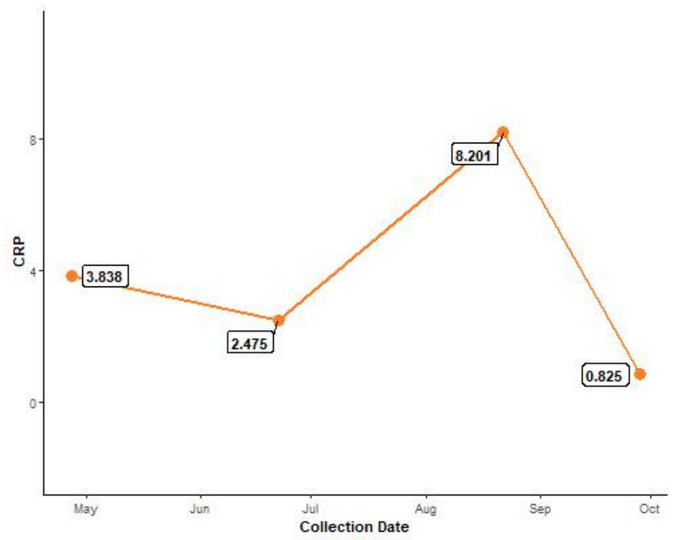
Inflammation

DNAm CRP

Population



Changes Over Time

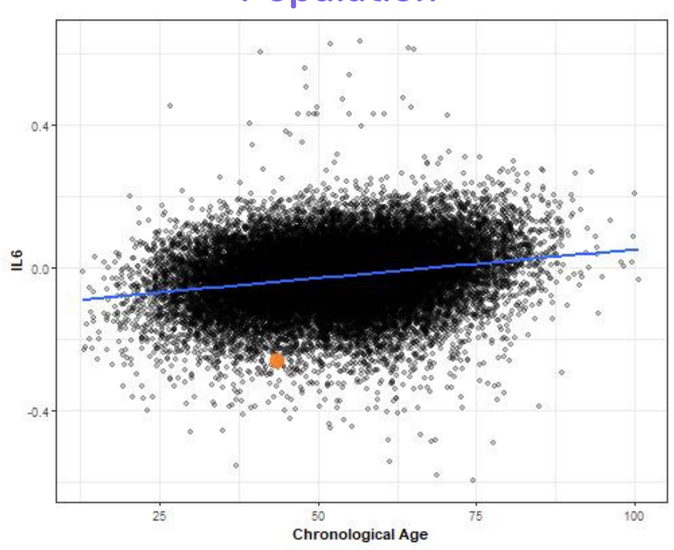


Your CRP methylation level is higher than 3.6% of the population at your same calendar age and sex.

CRP is produced by the liver in response to acute inflammation. DNAm CRP has an inverse relationship with cognitive functions such as memory, speed, and visuospatial functions.

DNAm IL-6

Population



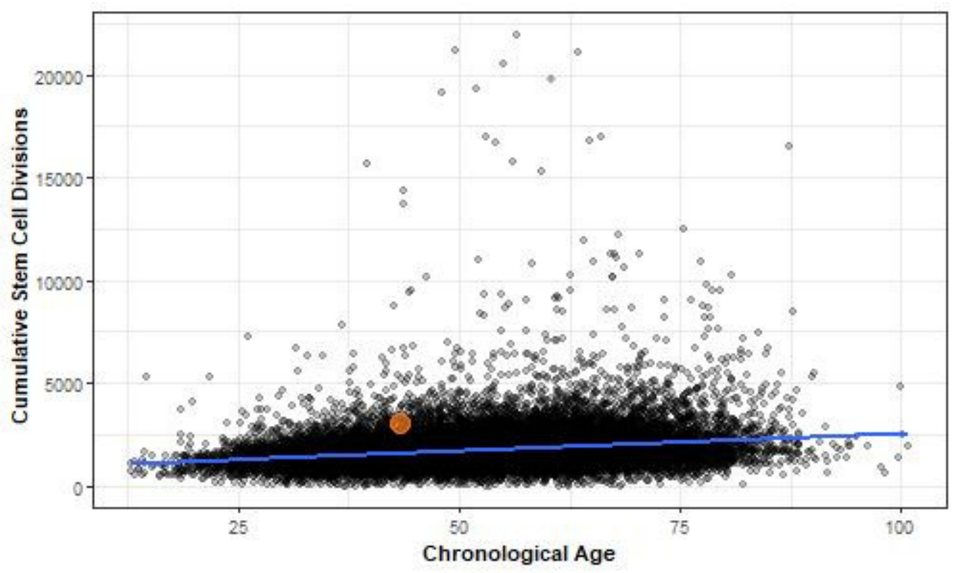
Changes Over Time

Your IL-6 methylation level is higher than 1.2% of the population at your same calendar age and sex.

IL-6 is a widely used marker of inflammation and circulating levels of the cytokine typically rise in older age. DNAm IL-6 is positively associated with BMI, self-reported smoking status, and alcohol intake.

Mitotic Clock

Cumulative number of stem cell divisions per stem cell per year:



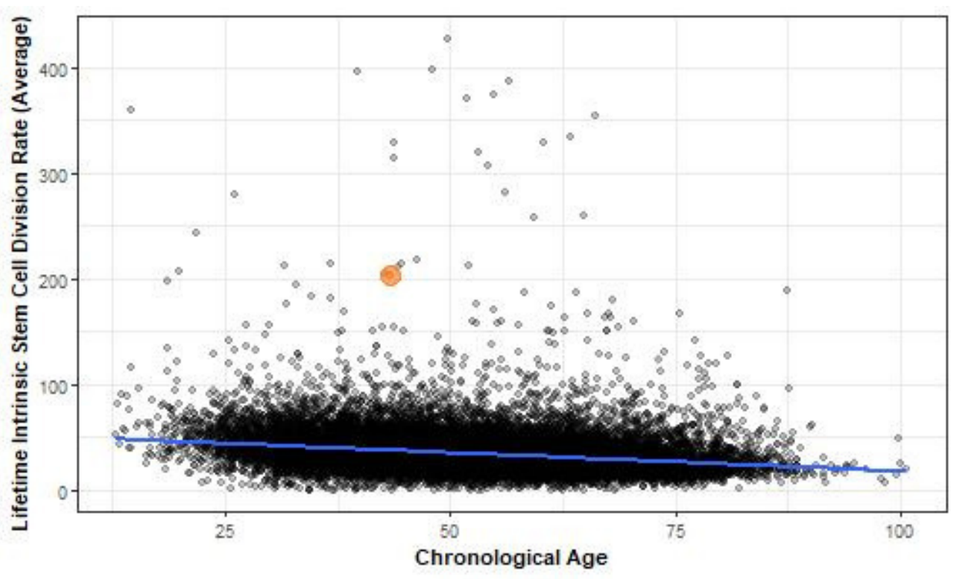
Stem cell divisions per stem cell per year:

3001

This puts you in the:

95th Percentile

Average estimate for the intrinsic rate of stem-cell division for the tissue:



Average estimate for intinsic rate of stem-cell division:

203

This puts you in the:

99th Percentile

Fitness Age

OMICm FitAge

The incorporation of physical fitness measurements into epigenetic clocks **increases the measurable effects of lifestyle, medical, and environmental interventional changes** on the aging process. The DNAmFitAgeAccel algorithm, also simply known as FitAgeAcceleration, was developed by researchers at UCLA, and is an estimate of epigenetic age acceleration. We have created a version of this, however, we incorporated our **OMICm Age** algorithm (developed with Harvard) instead. We call this **OMICm FitAge**, which tells you how old you are according to your physical fitness and functionality.

47.25

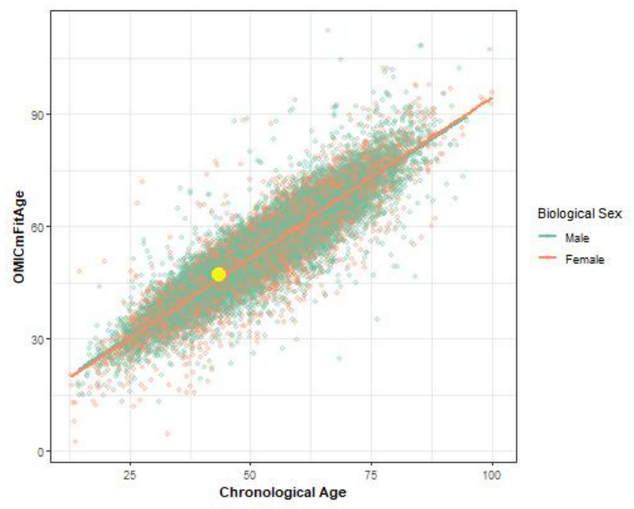
YEARS OLD

OMICm FitAge

Your OMICm FitAge is

HIGHER THAN

your calendar age by 4.25 years.



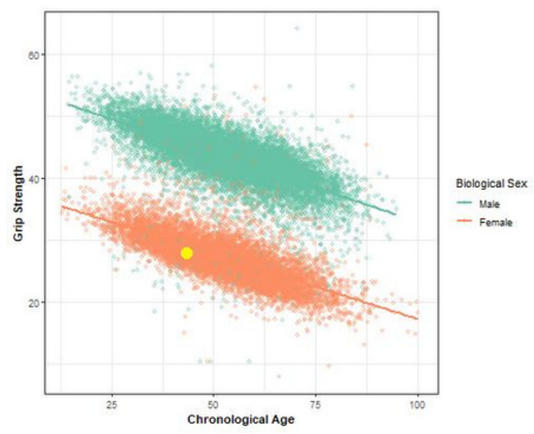
For every one year older OMICm FitAge is, there is an average **0.29 decrease in relative grip strength and 0.32 increase in BMI.** OMICm FitAge has estimated that high-fit individuals (classified through VO2max) have a **1.5 to 2.0 younger biological age** compared to low/medium-fit individuals in females and males, respectively. Younger OMICm FitAge was associated with better memory test performance, emphasizing the beneficial role of physical exercise on cognitive health.

OMICm FitAge is impacted by:

GRIP STRENGTH

Maximum hand grip strength (GripMax) a measurement of force taken in kg and is used to measure the age-associated decline in terms of muscle strength.

Grip Strength

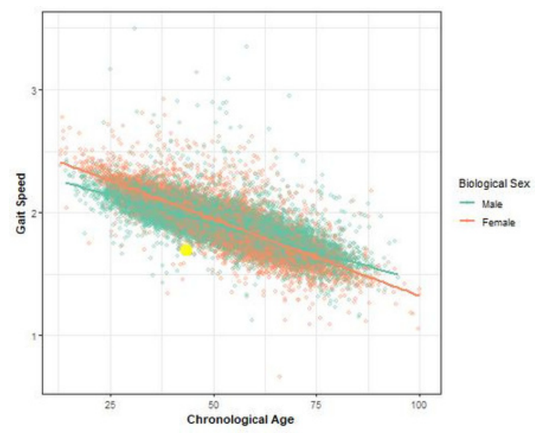


Your Grip Strength epigenetic biomarker proxy is **28**. This puts you scoring higher than **40.5%** of the population with a similar reported age and sex.

GAIT SPEED

Gait speed, also known as walking speed, is measured in meters per second.

Gait Speed

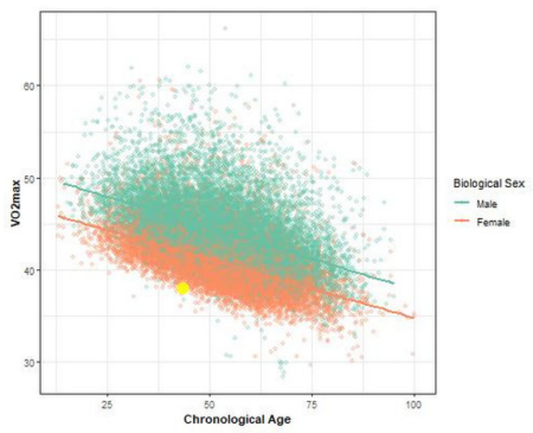


Your Gait Speed epigenetic biomarker proxy is **1.7**. This puts you scoring higher than **0.4%** of the population with a similar reported age and sex.

VO2MAX

Maximal oxygen uptake, or VO2max, is a measure of cardiovascular health and aerobic endurance.

V02Max

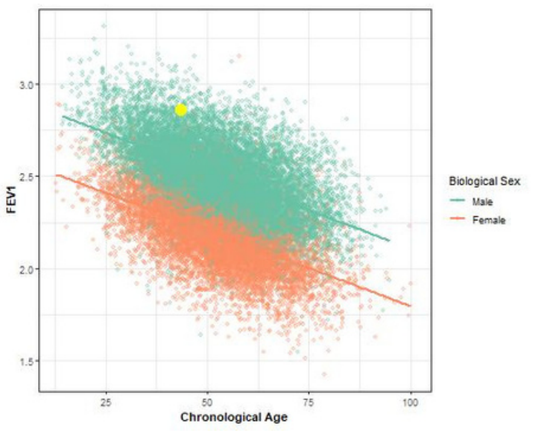


Your VO2Max epigenetic biomarker proxy is **38**. This puts you scoring higher than **0.5%** of the population with a similar reported age and sex.

FEV1

Forced expiratory volume, also known as FEV1, measures lung function by determining the amount of air forced from the lungs in one second.

FEV1

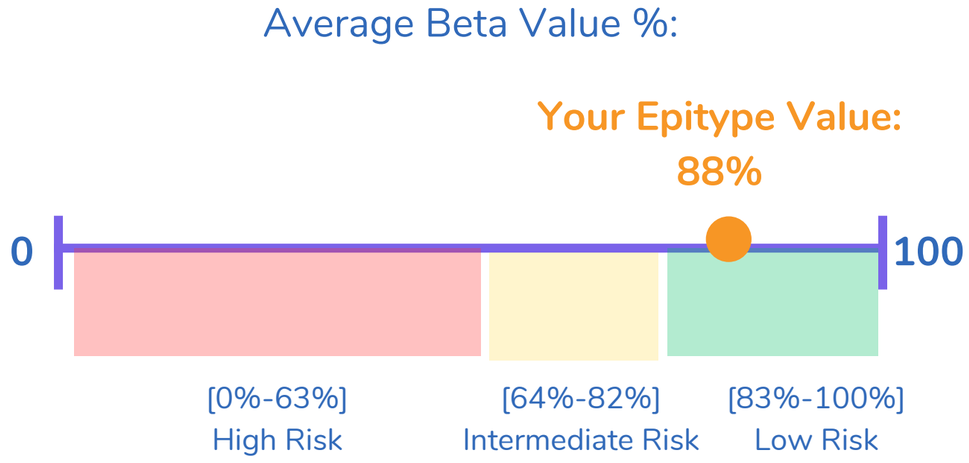


Your FEV1 epigenetic biomarker proxy is **2.86**. This puts you scoring higher than **100%** of the population with a similar reported age, and height

Smoking & Drinking

Smoking Risk

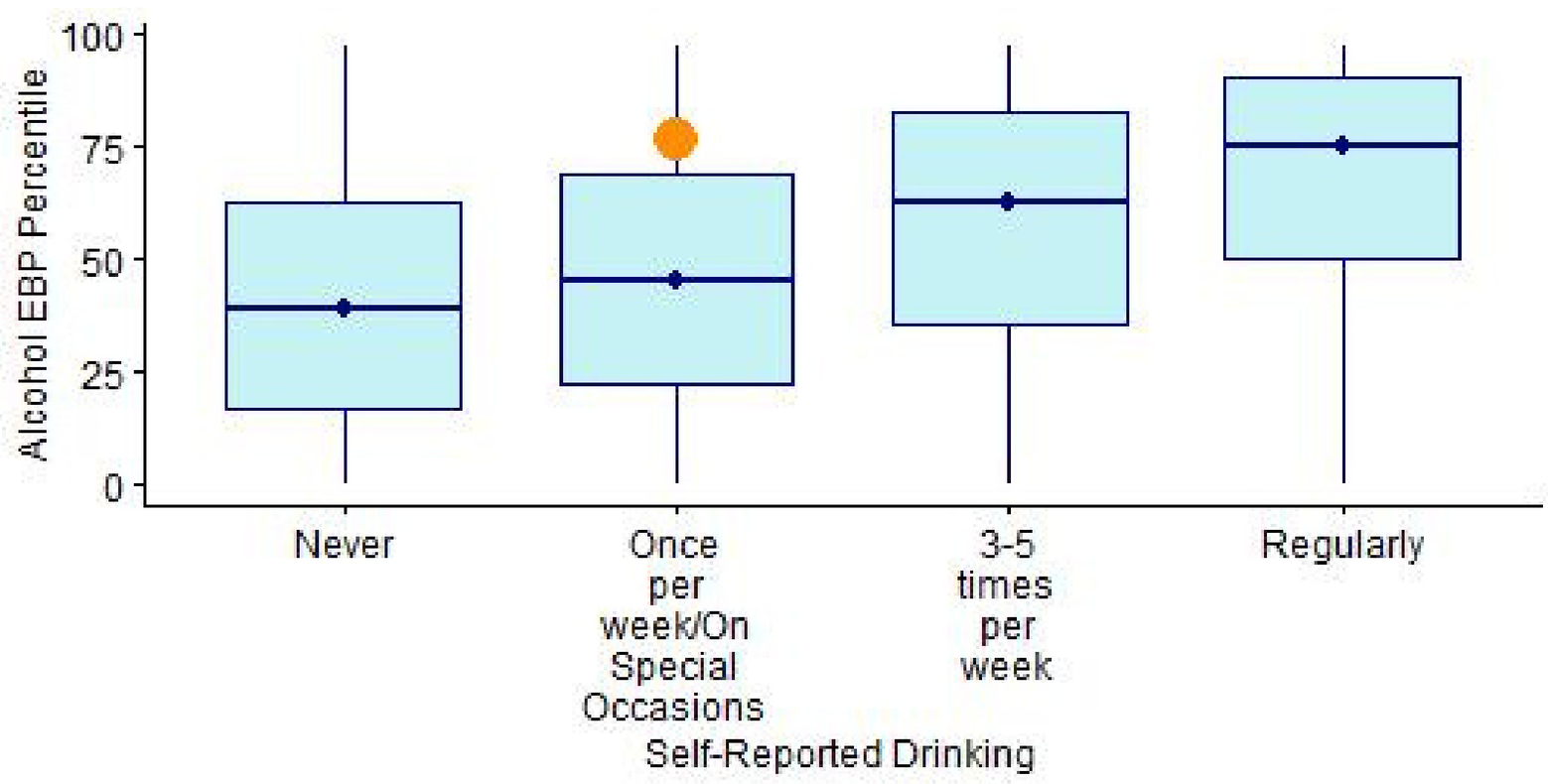
AHRR (cg05575921)
Average Beta Value %:



The impact that tobacco smoke exposure has on the epigenome is based on the level of methylation at the AHRR gene locus cg05575921.

Your DNA methylation score was **88%** at the AHRR locus, meaning that your methylation score aligns with the status of **non-smokers,** putting you at **low risk** for developing smoking-related conditions.

Alcohol Consumption and DNA Methylation



On your intake survey, you self-reported your drinking status as **once per week.** With our custom epigenetic biomarker proxy, you are in the **76th** percentile. This means your score is higher than **76.4%** of the population we have tested.

***Those who marked self-reported drinking as "Not Applicable" were assumed to have no drinking status and have been combined with data from "Never" status.**

Weight Loss Response

CPG SITE	GENE	β - VALUE RESPONDERS	YOUR SCORE	RESPONSE STATUS
cg15500865	PON3	0.072	0.634	Hypermethylated
cg25161512	PON3	0.115	0.111	Hypomethylated
cg11435506	PON3	0.165	0.161	Hypomethylated
cg03301582	PON3	0.120	0.117	Hypomethylated
cg08898155	PON3	0.163	0.167	Hypermethylated
cg04080282	PON3	0.324	0.321	Hypomethylated
cg26457160	PON3	0.490	0.494	Hypermethylated
cg10329418	PON3	0.252	0.250	Hypomethylated
cg27166921	PON3	0.253	0.251	Hypomethylated
cg24750391	PON3	0.355	0.359	Hypermethylated
cg08461772	PON3	0.418	0.417	Hypomethylated

RISK REPORT	PATIENT OUTCOMES	SUMMARY	IMPACT	ADDITIONAL NOTE
Weight Loss Response	**Intermediate Response**	Your DNA methylation scores at the above loci indicate you are a **Intermediate Responder** for weight loss treatment utilizing a hypocaloric diet. This means a calorie deficit diet **passably works** as your weight loss strategy.	If your DNA methylation score puts you in the category of non-responder or intermediate responder then a hypocaloric diet might not be the best treatment option for you. If you are a responder, that means a hypocaloric diet has a greater chance of positively impacting your weight loss goals.	Studies on these particular CpG loci have concluded that some individuals have a better response to a calorie deficit diet than others. This may indicate why weight loss has been difficult to achieve and can provide insight into finding the best weight loss strategy.