BREAKING DOWN THE SCIENCE

What is an age clock?

by The TruDiagnostic Educational Content Team

38.61
YEARS OLD
OMICm Age

An age clock tells you how old you really are (your biological age), without using your date of birth to make a determination. Overall, biological age can be summarized as a calculation of **the toll that life has taken on your body.** If that sounds enigmatic, that's because it is! Temperature has degrees, weight has kilograms, distance has meters, but what singular unit of measurement can capture biological age? There isn't one!

That's why scientists began developing and using **mathematical formulas** in the early 2010s in order **to quantify the various aging processes occurring within the human body.** These algorithms are what epigeneticists and researchers call **clocks** (or epigenetic aging clocks), and they have significantly evolved in recent years.

It is important to note that **not all clocks are equal when it comes to telling you the right time**, aka a precise biological age with accompanying, precise risks of death and disease.

You can understand the importance of this precision by imagining that you are an athlete hoping to qualify for an Olympic race. You would, of course, use an advanced stop watch when training, instead of simply relying on your coach's, *'one Mississippi, two Mississippi...'* calculation.

1st vs 3rd Generation

From communicating with loved ones, to completing financial transactions, technology helps us navigate the world around us and is constantly improving and evolving. Just think of the first computer or cell phone you ever used, compared to the succeeding generations of smartphones and tablets you've likely upgraded to over the years. **The difference in design and functional capabilities between the first and most recent generation is huge**, and much like the difference between first and third generation aging clocks.

Scientists developed the first age-quantifying clocks in 2013, as a revolutionary breakthrough in aging research and epigenetic applications for the improvement of global health. For context, the first generation of iPhone was released years earlier in 2007; **highlighting just how new aging technology really is.** These first generation clocks (aptly named after the researchers who developed them) include the Horvath Clock, Hannum Clock, Bocklandt Clock, Huang's Age Predictor, Zhang's Age Predictor, among others.

With continued research over the years yielding new and valuable age-related data, TruDiagnostic was able to develop the best, second generation clock currently available, as well as offering aging analysis using the only third generation clock in the world. These algorithms, *OMICm Age* (biological age calculator) and *DunedinPACE* (biological pace of aging calculator) cumulatively offer the most accurate, predictive measurements of risk of disease, speed of aging, and biological age.

What an Age Clock Can Tell You

A modern, well-researched and published age clock can tell you **a lot about your current health, physical fitness, and cognitive functionality; along with the current trajectory of your health and wellness in the years to come.** These predictions can be made from correlations with your underlined biological age, which is the fundamental calculation of an age clock.

Aging is the number one risk factor for the development of chronic illnesses such as hypertension, Type II Diabetes, heart diseases, Alzheimer's and Parkinson's diseases, cancer, COPD, and more. When your biological age is higher than your calendar age, your risk of disease, and the rate of decline in physical and cognitive functionality, increases with each year of discrepancy.

Due to biological age's connection with health and quality of life outcomes, knowing your biological age has several advantages over relying on your chronological age when it comes to making health and wellness choices.

How our Clocks Work

Many aging tests calculate biological age by examining the measurable, molecular patterns (DNA methylation) that impact how your DNA is actually put to use or expressed (epigenetics) throughout your body. **Through extensive research, these patterns at certain locations of your DNA have been proven to correlate with age.** But, there's a catch. While the human *genome* has been fully charted, the health and aging associations resting in the patterns of the human *epigenome* are still in the process of being fully explored and understood.

With around 28 million locations where age related patterns could potentially be found, epigenetic researchers are still discovering where the strongest age-related associations rest. Through novel, cross biodata training that established connections between aging patterns, and protein and metabolite compositions, our *OMICm Age* clock was able to focus on new DNA locations with stronger, and previously uncharted, aging associations.

As we look for answers to aging that are resting in the depths and vastness of our epigenome, our *OMICm Age* algorithm delivers improved accuracy by **refining and expanding** the search zone.

We now account for age related patterns of DNA expression at more than

1 million locations

By comparison, other algorithms and laboratories analyze as little as 27,000 locations of DNA.