

What Stops Us From Living to 200

6 MIN READ

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BY STEPHANIE BROWN

DNA typos keep us from living to 200. But there's clearly more holding us back.

The first person who will celebrate their 150th birthday is already alive. At least, that's what biologist and aging researcher Dr. Steven N. Austad believes.

About 25 years ago, he made a billion-dollar bet that a functioning, cognizant human will turn 150 by the year 2150.

Jeanne Louise Calment, who died at the age of 122, currently holds the record. The oldest person alive today, Ethel Caterham, turned 117 on August 21, 2026.

"I agree with my colleague who said that he thinks the first 150-year-old is already alive. I see it in my patient population. I have plenty of very active, vibrant 80-year-olds, even 90-year-olds," Aanand D. Naik, MD, board-certified geriatrician and executive director of the UTHealth Houston Institute on Aging, told Super Age.

The idea that you or I could live to well over 100 doesn't seem far-fetched. So what's holding us back? That's what a new study in *npj Aging* tried to answer. The researchers created a theoretical model to estimate how long humans could live if most hallmarks of aging — besides certain DNA typos called "somatic mutations" — were eliminated. (More on why they picked somatic mutations later.)

After crunching the numbers, they determined that humans could live 146 to 194 years — nearly double the current U.S. life expectancy of 76.5 to 81 years.

So why aren't most of us living well into a second century? It's complex. But these findings create a springboard for more research.

"Everyone in aging biology agrees that no single mechanism explains everything we see in aging. We have a standard list of 'hallmarks.' Each lab tends to focus on a few

of them — but there is no consensus about which ones matter most, and before our work there was almost no discussion of how you would even measure ‘importance,’” **Dmitrii Kriukov, PhD**, senior author of the study and a research scientist at the Skolkovo Institute of Science and Technology (Skoltech), told Super Age in an email.

Kriukov said his team focused on somatic mutations in this study, but he hopes other researchers will use his methodology to estimate the importance of other hallmarks of aging, too.

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How Deadly Are DNA Typos?

Two *trillion* cells in your body **divide every day**. With so many replications, errors are bound to happen. But copying errors are only one source. Mutations also accumulate when DNA damage gets repaired badly, or never gets repaired at all, which means even cells that never divide keep collecting them.

“Think of DNA as a cell’s instruction manual. Most copying errors are repaired or harmless, but some damage important instructions and cause cells to malfunction or die,” **Robert Mankowski, PhD**, an associate professor of medicine focusing on gerontology, geriatrics, and palliative care at the University of Alabama at Birmingham, told Super Age in an email.

These errors, or somatic mutations, can occur in every cell besides sperm and eggs. To measure what they cost us, the researchers first modeled a version of humanity that doesn’t age at all, where people die only from the hazards that kill healthy 30-year-olds: car accidents, infections, **workplace exposures**. Half that population would still be alive at 1,759 years. Tissues that constantly replace themselves stayed close to that ceiling. Liver cells kept working for more than 37,000 years in the model, and

once the researchers included the liver's progenitor cells, the organ never failed at all across 100,000 simulated years.

Of course, your brain, heart, and most other organs *don't* work that way. Neurons and heart muscle cells are largely post-mitotic, meaning they don't divide and replace themselves once you're an adult. So when this same mutation process hits those organs, there's no replacement mechanism to compensate. That single fact drags the number way down because those non-renewing organs become the limiting factor for the whole body. After considering the effect of the somatic mutations on *all* of the different organs, they determined we could really only live 146 to 194 years.

“The model suggests that somatic mutations place a major **limit on longevity**. However, because it predicts a lifespan roughly twice what humans experience today, mutations cannot explain aging by themselves. Other aging processes collectively appear to be at least as important,” Mankowski said.

One caveat worth holding onto: this is a ceiling, not a forecast. What they've calculated is the outer limit somatic mutations impose, not a lifespan anyone should expect.

There's More to Aging than Somatic Mutations

Targeted drug therapies and gene-editing tech like **CRISPR** could eventually treat somatic mutations, though the study's authors note those approaches remain far from clinical use. And fixing them wouldn't solve aging on its own. Somatic mutations are one piece of one hallmark of aging.

A **2013 paper in Cell** outlined nine hallmarks of aging, which were **updated to twelve** in 2023. Researchers define a hallmark partly by whether treating it could slow, stop, or reverse aging. The twelve include genomic instability, which is where

somatic mutations sit, along with chronic inflammation, dysbiosis, mitochondrial dysfunction, and stem cell exhaustion.

“The whole general process of aging is a complex web of biological hallmarks of aging and how they present themselves in intrinsic human capacities,” Naik said. “It is not a simple cause and effect relationship.”

You might want to make a mental note of that term — *intrinsic human capacities*. It’s been around for a while, but is starting to **take center stage** in longevity conversations. **Intrinsic human capacities** are mental and physical abilities like seeing, thinking, hearing, walking, and remembering.

To understand the complex process of aging, Naik said to imagine you have two columns: write eight hallmarks of aging on the left and ten intrinsic human capacities on the right. If you draw a line between each of those, it represents different combinations that impact aging.

That’s why aging is so complicated. It’s a result of several of those combinations occurring at the same time, Naik added.

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4 Ways to Get Closer to 150

All of us want to live a long, healthy life. It's why Super Age exists and why you're reading this post. Unfortunately, we can't give you an exact prescription for living to 150. But there are plenty of things you can work on now to improve your healthspan and lifespan, according to the experts:

1. **1 We have to imagine the future we want.** This study gives our imaginations a chance to run wild, which experts argue is exactly what we need to create the therapies and advancements to treat the hallmarks of aging.

"All the great advances we've made are because we have a wild imagination. We want to live in a future world, and we have to imagine it first before it can become a reality. So, I think there are some benefits to thinking about the extent of human lifespans," Naik said.

2. **2 Wear sunscreen. Really.** It's one of the most agreed-upon longevity protocols (most people ignore). UV light **damages DNA**, speeds up skin aging, and increases cancer risk.

"If you've had a severe sunburn, longevity calculators often knock off several years of life because these assume you've had DNA damage as a result," said Naik.

3. **3 Decrease your environmental toxin exposure.** Your environment can drive somatic mutations. For instance, research has shown that **living near a golf course** increases Parkinson's disease risk, with the strongest signal among those whose tap water came from a groundwater system serving a course. The researchers suspect pesticide runoff but did not measure anyone's pesticide exposure directly, so this is an association rather than a proven cause. **Researchers have a new word for this: your exposome.**

"Major preventable hazards include tobacco and secondhand smoke, ultraviolet radiation, radon, heavy alcohol use, air pollution, wildfire smoke, and workplace exposure to substances such as benzene, diesel exhaust, asbestos, pesticides, and certain solvents," Mankowski said.

4 **Don't slip on the fundamentals.** At the end of the day, the best longevity advice we have boils down to the basics: eat well, get enough sleep, stay hydrated, and engage in physical activity. “There are a number of things we can do for the hallmarks of aging without pills,” Naik said.

- ■ **Know which science-backed tips are actually increased healthspan.**
- ■ **Eat the foods linked to longevity**
- ■ **Know how much sleep you need for longevity**
- ■ **Train the 8 capacities linked to a longer, stronger life**

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