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# How Long Do You Want to Live?

By DAVID EWING DUNCAN

SINCE 1900, the life expectancy of Americans has jumped to just shy of 80 from 47 years. This surge comes mostly from improved hygiene and nutrition, but also from new discoveries and interventions: everything from [antibiotics](#) and [heart bypass surgery](#) to [cancer](#) drugs that target and neutralize the impact of specific genetic mutations.

Now scientists studying the intricacies of DNA and other molecular bio-dynamics may be poised to offer even more dramatic boosts to longevity. This comes not from setting out explicitly to conquer aging, which remains controversial in mainstream science, but from researchers developing new drugs and therapies for such maladies of growing old as heart disease and [diabetes](#).

“Aging is the major risk factor for most diseases,” says Felipe Sierra, director of the Division of Aging Biology at the National Institute on Aging. “The National Institutes of Health fund research into understanding the diseases of aging, not life extension, though this could be a side effect.”

How many years might be added to a life? A few longevity enthusiasts suggest a possible increase of decades. Most others believe in more modest gains. And when will they come? Are we a decade away? Twenty years? Fifty years?

Even without a new high-tech “fix” for aging, the United Nations estimates that life expectancy over the next century will approach 100 years for women in the developed world and over 90 years for women in the developing world. (Men lag behind by three or four years.)

Whatever actually happens, this seems like a good time to ask a very basic question: How long do you want to live?

Over the past three years I have [posed this query](#) to nearly 30,000 people at the start of talks and lectures on future trends in bioscience, taking an informal poll as a show of hands. To make it easier to tabulate responses I provided four possible answers: 80 years, currently

the average life span in the West; 120 years, close to the maximum anyone has lived; 150 years, which would require a biotech breakthrough; and forever, which rejects the idea that life span has to have any limit at all.

I made it clear that participants should not assume that science will come up with dramatic new anti-aging technologies, though people were free to imagine that breakthroughs might occur — or not.

The results: some 60 percent opted for a life span of 80 years. Another 30 percent chose 120 years, and almost 10 percent chose 150 years. Less than 1 percent embraced the idea that people might avoid death altogether.

These percentages have held up as I've spoken to people from many walks of life in libraries and bookstores; teenagers in high schools; physicians in medical centers; and investors and entrepreneurs at business conferences. I've popped the question at meetings of futurists and techno-optimists and gotten perhaps a doubling of people who want to live to 150 — less than I would have thought for these groups.

Rarely, however, does anyone want to live forever, although abolishing disease and death from biological causes is a fervent hope for a small scattering of would-be immortals.

In my talks, I go on to describe some highlights of cutting-edge biomedical research that might influence human life span.

For instance, right now drug companies are running clinical trials on new compounds that may have the “side effect” of extending life span. These include a drug at Sirtris, part of GlaxoSmithKline, that is being developed to treat inflammation and other diseases of aging. Called SRT-2104, this compound works on an enzyme called SIRT1 that, when activated, seems to slow aging in mice and other animals. It may do the same thing in humans, though this remains to be proven.

“Many serious attempts are being made to come up with a pill for aging,” said Dr. Sierra, though he suspects that there will not be a single anti-aging pill, if these compounds end up working at all. “It will be a combination of things.”

For over a decade, scientists also have experimented with using [stem cells](#) — master cells that can grow into different specialized cells — to replace and repair tissue in the heart, liver and other organs in animals. Some researchers have succeeded in also using them in people. The researchers include the urologist Anthony Atala of Wake Forest Baptist Medical Center,

who has grown human bladders and urethras from stem cells that have been successfully transplanted into patients.

But another stem cell pioneer, [James Thomson](#) of the University of Wisconsin, believes that stem cell solutions will be a long time coming for more complex organs. “We’re a long way from transplanting cells into a human brain or nervous system,” he said.

ANOTHER intervention that might thwart the impact of aging is bionics: the augmentation or replacement of biological functions with machines. For years cardiac pacemakers have saved and extended the lives of millions of people. More recent devices and machine-tooled solutions have restored hearing to thousands who are deaf and replaced damaged knees and hips. Physicians use brain implants to help control tremors brought on by [Parkinson’s disease](#). Researchers also are working on a wide range of other machine fixes, from exoskeletons that protect joints to experimental devices that tap into the brain activity of paralyzed patients, allowing them to [operate computers using thought](#).

Curiously, after learning about these possibilities, few people wanted to change their votes. Even if I asked them to imagine that a pill had been invented to slow aging down by one-half, allowing a person who is, say, 60 years old to have the body of a 30-year-old, only about 10 percent of audiences switched to favoring a life span of 150 years.

Overwhelmingly the reason given was that people didn’t want to be old and infirm any longer than they had to be, even if a pill allowed them to delay this inevitability.

Others were concerned about a range of issues both personal and societal that might result from extending the life spans of millions of people in a short time. These included everything from boredom and the cost of paying for a longer life to the impact of so many extra people on planetary resources and on the environment. Some worried that millions of healthy centenarians still working and calling the shots in society would leave our grandchildren and great-grandchildren without the jobs and opportunities that have traditionally come about with the passing of generations.

Long-lifers countered that extending healthy lives would delay suffering, possibly for a very long time. This would allow people to accomplish more in life and to try new things. It would also mean that geniuses like Steve Jobs or Albert Einstein might still be alive. Einstein, were he alive today, would be 133 years old.

That’s assuming that he would want to live that long. As he lay dying of an [abdominal aortic aneurysm](#) in 1955, he refused surgery, saying: “It is tasteless to prolong life artificially. I

have done my share, it is time to go. I will do it elegantly.”

*David Ewing Duncan is a contributor to Science Times. This essay is adapted from his most recent e-book, “[When I’m 164: The New Science of Radical Life Extension and What Happens If It Succeeds.](#)”*