



Summary

- Some have predicted that life expectancy will greatly increase due to medical breakthroughs in the foreseeable future.
- Predictions that medical advancements will enable people to live to beyond 1,000 years has been met with criticism, stating over-optimism of scientific breakthroughs and the immutable nature of the biology of ageing.
- Research has been backed by a number of Silicon Valley billionaires.

Who wants to live forever?



Laura Blows explains why life expectancies increasing to age 1,000 may not be as far-fetched as it first appears

Stepping philosophical questions about the afterlife, one thing that is universally agreed is that death is the ultimate stopper for us all, in this mortal realm at least. But what if the end game no longer existed, or was extended far beyond our current comprehension of human life expectancy?

For so long the premise of sci-fi programmes, the idea of 'living forever' (or as good as) may, sooner than you think, no longer be a fantasy.

The 20th century saw rapid improvements in life expectancy, largely through the successful tackling of infectious diseases, which significantly decreased childhood mortality in particular. The result was an extension of around 30 years to the average life expectancy.

Fighting ageing

However, for the 21st century, instead of

infectious disease, the battle to increase life expectancy involves taking on the illnesses that derive from ageing. It is a very different battle, but one that, if won, could have profound consequences. The result could see life expectancy no longer improving by years or even decades, but by centuries.

In fact, the first person to live to a 1,000 years may already be walking among us today, predicts SENS Research Foundation chief science officer Aubrey de Grey.

De Grey, speaking at the recent Longevity 12 conference, states that we will be capable in the reasonably-near future of continually 'repairing' the damage that comes with age through "comprehensive rejuvenation" using stem cell therapy.

Comparing it to replacing the parts in a classic car and thereby extending its lifespan far beyond what the manufacturer expected, the result of this

rejuvenation will be "the mortality rate of older ages falling so fast a few decades from now that most people will be expecting to live longer than anyone has lived so far".

The potential 1,000 year-plus lifespan will therefore occur through middle-aged people using this upcoming medical breakthrough, providing another 30 years or so of healthy life by repairing molecular and cellular damage, and then after that time using the technology again to extend their life another 30 years, and so on.

"You only need medical technology to improve every 20 or so years to keep ahead of the problem; an extremely modest estimate," de Grey says.

Sceptics

However, de Grey's predictions can produce ire from his peers. For instance, speaking to the *Daily Express* in May this year, the Centre for Regenerative Medicine at the University of Edinburgh group leader Tilo Kunath states de Grey is "100 per cent wrong".

He says our bodies are hardwired like a ticking clock for cells to start dying from a certain age.

"He [*de Grey*] should be able to do it [*significantly extend life*] with an animal. But it can't even be done with a mouse. The only way to do it will extend its [*a mouse's*] life by 30 per cent, and that is by restricting its diet, so he is 100 per cent wrong," Kunath explains.

Also speaking at the recent Longevity 12 conference, University of Illinois School of Public Health professor Jay Olshansky is sceptical that longevity trends can continue to improve indefinitely. "A large number of diseases and disorders occur in older bodies and the processes that influence that are currently immutable. I hope not in the future but they are for now," he says.

Consultancies Aon Hewitt and Willis Towers Watson have both also noticed a recent rise in mortality levels.

"Mortality improvements in the



UK have been much lower than expected over the past five years, averaging just 1 per cent per year for males, compared with 3 per cent per year in the first decade of this century,” Aon Hewitt Risk Settlement Group partner and head of longevity Tim Gordon says.

“This is the most extreme reversal in mortality improvement trends seen in the past 40 years. What was initially assumed by many actuaries to be a blip is increasingly looking more like an earlier-than-expected fall-off in mortality improvements,” he adds.

Willis Towers Watson head of mortality and longevity Matthew Edwards notes the market speculation that the high mortality in 2015 was largely due to an ineffective flu vaccine is now accepted as wrong. “With deaths to date in 2016 being nearly 7 per cent above levels seen from 2011 to 2014, last year seems less of a blip and more like a turning point,” he says.

Outputs from Willis Towers Watson’s mortality programme, PulseModel, indicate that longevity improvements will be lower in future, averaging less than 1 per cent in the 55-65 age range, in contrast to typical current assumptions of over 1.5 per cent improvements annually.

Fighting biology

De Grey concurs that “there is a limit for how long people can live with the medical arsenal we have today, but once we are able to repair damage this will change”.

“Ageing is very simple,” de Grey states. “Metabolism creates damage that accumulates throughout life, and the body is set up to cope with a certain amount, but eventually the damage exceeds that threshold and then problems from that damage emerge and progresses.”

The geriatric approach, he says, is to let this damage occur and then try to “knock each one [illness/disease] off”, one at a time. “That is completely hopeless and will never work because the damage is

accumulating. So it will be harder and harder to do; progressively harder as the person gets older.”

Instead “we can keep going in and repairing the damage”, de Grey states, “so that the damage is still accumulating at a normal rate but it is not going past the threshold to cause damage”.

If this medical breakthrough occurs, the result would be to remove the link between ageing and ill health. Instead of growing older, meaning becoming frail or ill, people of all ages can stay in prime health.

According to de Grey, this medical advancement would have many advantages, such as no more cancer, heart disease or Alzheimer’s disease, to name just a few. Also, as the elderly will no longer be ill or infirm, they will be able to continue working and contributing wealth to society, he says. “So the medicine will make us all more prosperous, even if it will be expensive at first.”

De Grey’s predictions have received criticism, both from his peers and beyond, and he admits that none of this is easy, “if it was we would have done it already”. However, he warns that “it is very dangerous to assume that that is fantasy”.

Backers

Certainly there are a number of immensely-rich financial backers taking this seriously, particularly from tech giants.

For example, according to a 2015 *Guardian* article, Silicon Valley hedge fund manager Joon Yun offered, in late 2014, a \$1 million prize challenging scientists to ‘hack the code of life’ and push human lifespan past its apparent maximum of about 120 years (the longest known/confirmed lifespan is 122 years). Meanwhile, in September 2013 Google announced the creation of Calico, short for the California Life Company. Its mission is to reverse engineer the biology that controls lifespan and “devise interventions that enable people to lead

longer and healthier lives”.

Also, de Grey’s own SENS Research Foundation receives an annual contribution from Peter Thiel, a billionaire Silicon Valley venture capitalist, who is also a PayPal co-founder and Facebook’s first investor.

According to de Grey, medical breakthroughs in reducing the effects of ageing will occur probably far sooner than expected. This type of solution will be widely anticipated (although not necessarily available) in the next six to eight years, he predicts, and will likely exist within the next few decades.

This may sound fast, but de Grey states that people tend to think that the world is not going to change much, or only change at the same rate as it did in the past.

“Now what people think will happen in the future matters a lot to insurers and pension funds as it determines what kind of products people are going to be interested in buying,” he says. “But the likelihood of what people think will happen with their own longevity is going to change much sooner and suddenly than any of the industry has thought about”.

Whether you agree with de Grey that the medical breakthrough to enable us to live to 1,000 is almost within our grasp, or with his detractors that this will remain a far-fetched fantasy, the ramifications for this to occur in the foreseeable future is still worth considering. Even if the implications of a greatly-extended lifespan for humans are almost too complex to comprehend, not just for the pensions industry, but for mankind as a whole.

But for a pension society that has become used to rapid change and developments in recent years, it may be that not even death is something that can be taken for granted anymore.

Written by Laura Blows

