

Who wants to live forever? Aging cure nears

Biomedical advancements are adding an average of three months every year to life expectancy

BY KATE KELLAND, REUTERS JULY 5, 2011



The world's oldest-living person is 122. Experts estimate that there could be a million centenarians by 2030.

Photograph by: David Mcnew, Getty Images Files, Reuters

If Aubrey de Grey's predictions are right, the first person who will live to see their 150th birthday has

already been born. And the first person to live for 1,000 years could be less than 20 years younger.

A biomedical gerontologist and chief scientist of a foundation dedicated to longevity research, de Grey reckons that within his own lifetime doctors could have all the tools they need to "cure" aging: banishing diseases that come with it and extending life indefinitely.

"I'd say we have a 50-50 chance of bringing aging under what I'd call a decisive level of medical control within the next 25 years or so," de Grey said in an interview before delivering a lecture at Britain's Royal Institution academy of science.

"What I mean by decisive is the same sort of medical control we have over most infectious diseases today."

De Grey foresees a time when people will go to their doctors for regular "maintenance," which by then will include gene therapies, stem cell therapies, immune stimulation and a range of other advanced medical techniques to keep them in good shape.

De Grey lives near Cambridge University where he won his doctorate in 2000 and is chief scientific officer of the non-profit California-based Strategies for Engineered Negligible Senescence Foundation, which he cofounded in 2009.

He describes aging as the lifelong accumulation of various types of molecular and cellular damage throughout the body.

"The idea is to engage in what you might call preventive geriatrics, where you go in to periodically repair that molecular and cellular damage before it gets to the level of abundance that is pathogenic," he said.

How far and how fast life expectancy will increase in the future is a subject of some debate, but the trend is clear. An average of three months is being added to life expectancy every year at the moment and experts estimate there could be a million centenarians across the world by 2030.

To date, the world's longest-living person on record lived to 122 and in Japan alone there were more than 44,000 centenarians in 2010.

Some researchers say, however, the trend toward longer lifespan may falter due to an epidemic of obesity now spilling over from rich nations into the developing world.

De Grey's ideas may seem far-fetched, but \$20,000 offered in 2005 by the Massachusetts Institute of Technology's Technology Review journal for any molecular biologist who showed that de Grey's SENS theory was "so wrong that it was unworthy of learned debate" was never won.

The judges on that panel were prompted into action by an angry putdown of de Grey from a group of nine leading scientists who dismissed his work as "pseudo science."

They concluded this label was not fair, arguing instead that SENS "exists in a middle ground of yet-to-be-tested ideas that some people may find intriguing but which others are free to doubt."

For some, the prospect of living for hundreds of years is not particularly attractive, either, as it conjures up an image of generations of sick, weak old people and societies increasingly less able to cope.

But de Grey says that's not what he's working for. Keeping the killer diseases of old age at bay is the primary focus.

"This is absolutely not a matter of keeping people alive in a bad state of health," he says. "This is about preventing people from getting sick as a result of old age. The particular therapies that we are working on will only deliver long life as a side-effect of delivering better health."

De Grey divides the damage caused by aging into seven main categories for which repair techniques need to be developed if his prediction for continual maintenance is to come true.

He notes that while for some categories, the science is still in its earliest stages, there are others where it's already almost there.

"Stem cell therapy is a big part of this. It's designed to reverse one type of damage, namely the loss of cells when cells die and are not automatically replaced, and it's already in clinical trials [in humans]," he said.

Stem cell therapies are being trialled in people with spinal cord injuries, and de Grey and others say they may one day be used to find ways to repair disease-damaged brains and hearts.

De Grey is reluctant to make firm predictions about how long people will be able to live in future, but he does say that with each major advance in longevity, scientists will buy more time to make yet more scientific progress.

In his view, this means that the first person who will live to 1,000 is likely to be born less than 20 years after the first person to reach 150.

"I call it longevity escape velocity, where we have a sufficiently comprehensive panel of therapies to enable us to push back the ill health of old age faster than time is passing. And that way, we buy ourselves enough time to develop more therapies further as time goes on," he said.

"What we can predict in terms of how long people will live is absolutely nothing, because it will be determined by the risk of death from other causes like accidents," he said.

"But there really shouldn't be any limit imposed by how long ago you were born. The whole point of maintenance is that it works indefinitely."