



## HOW ANTI-AGEING MEDICINE COULD EXTEND OUR LIVES

Framing the process of ageing more as a treatable condition, rather than an inevitable consequence of life, could allow people to live longer, thanks to emerging **BIOTECHNOLOGIES AND A GREATER EMPHASIS ON HEALTHY LIVING**.

**Between 2000 and 2019**, global life expectancy increased by nearly 10% from 66.8 to 73.4 years, according to the World Health Organization. In long-lived populations such as Japan's, life expectancy is even greater, reaching record highs in 2021 of 87.7 years for women and 81.6 years for men — a remarkable advance from 67.8 and 63.6 in 1955.

These improvements have been attributed to various factors, including better

▲ **Maintaining an active, healthy lifestyle is one key to enabling people to live longer.**

healthcare and diet. But what if ageing itself could be thought of as a treatable disease, and resulting treatments allowed most of us to live past 100? That is the perspective driving the Japanese Society for Anti-Ageing Medicine (JAAM), an organization dedicated to people living longer, healthier lives through the proper combination of lifestyle support and medical technologies. The society's vision is to extend healthy life expectancy.

**A TREATABLE CONDITION**  
“We believe ageing is a disease,” says Hidekazu Yamada, JAAM's

president and visiting professor at the Anti-Aging Center at Kindai University in Osaka, Japan. “If we can understand the mechanisms behind ageing, we believe we may be able to extend lifespans by 20% to 50%.”

And anti-ageing medicine is a topic that will feature prominently at the 2025 World Expo to be held in Osaka, which will have an exhibit called ‘Reborn’, related to the future of ageing.

Buoyed by the potential of regenerative medicine based on induced pluripotent stem (iPS) cells — discovered by Nobel Prize laureate Shinya Yamanaka

— researchers in countries including Japan and the United States are advancing anti-ageing medicine, which has evolved into a wide-ranging, interdisciplinary science. Prominent researchers include Harvard Medical School biologist David Sinclair, who says he believes the first person to live to 150 has already been born.

As a dermatologist, Yamada used to be frustrated that he sometimes couldn't treat atopic dermatitis effectively. That was until it dawned on him that he was not understanding the condition as a manifestation of ageing. He found like-minded clinicians at JAAM and is now

Yoshiyoshi Hirokawa/DigitalVision/Getty

convinced that humans can live much longer, healthier lives. A key part of this view is that the end of life should be a quick process rather than a long, slow decline, says Yamada, who wants to change public perceptions of ageing.

Established in Tokyo with 20 doctors in 2001, JAAM now has more than 8,200 members from a wide range of disciplines. JAAM's mission is three-fold: to advance anti-ageing medicine as a basic element of 21st-century healthcare; to accumulate and analyse data related to anti-ageing; and to promote the practice of anti-ageing medicine.

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### PLAYING AN ACTIVE ROLE

To advance this mission, JAAM conducts activities such as academic conferences, government advocacy and educational programmes. The society is advocating for the establishment of universal ageing markers, not unlike the ‘tumour, node and metastasis’ (TNM) classification system for cancer. Such a system will allow a person's biological age to be precisely measured. Having common reference points will allow researchers around the world to quantify and treat ageing, according to Yamada.

A key outreach activity by Japan Anti-aging Foundation (JAAF), an affiliate of JAAM, is reviewing documentation from nutritional supplement makers to validate claims included in food products. JAAM and JAAF have played a significant role since the establishment of Japan's food

labeling system in 2015, and the country's Consumer Affairs Agency has approved more than 5,000 applications for labelling of food products, which help inform purchasing decisions.

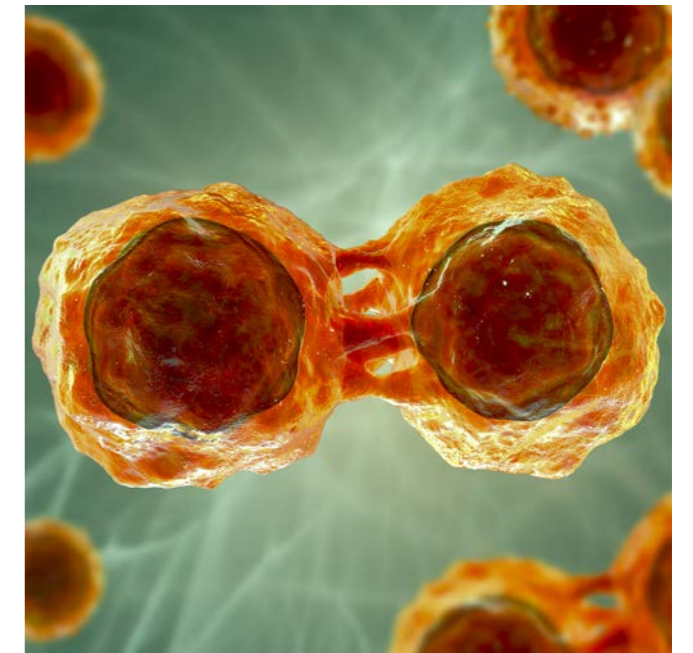
“We want to remind people of the importance of health and taking adequate nutrition,” says Shigeo Horie, president of JAAF, and a urologist and professor in Juntendo University in Tokyo. “Deficiencies in specific nutrients such as zinc and vitamin D are now more common globally. To encourage people to eat enough nutritious food, JAAF supports self-regulation by the food supplement industry, by, for example, specifying the benefits of various nutritional components.”

To ensure that the supplement information provided is trustworthy, JAAF helps supervise randomized clinical trials conducted by food companies. It also collates data from clinical trials already in the medical literature that can be submitted for approval.

While JAAM's and JAAF's initial mission is to promote health, nutrition and exercise as anti-ageing strategies, its next objective is to promote achieving happiness and *ikigai*, a Japanese term meaning a sense of purpose in life. Understanding this sense of wellbeing and its role in ageing may require another form of education, according to Horie. A greatly anticipated international event in Japan will provide the perfect opportunity for this.

### SPREADING THE VIEW

People in Japan and overseas visitors will have a chance to learn about the science and promise of anti-ageing medicine at the World Expo 2025 in Osaka. The event, expected to have at least 130 participating countries and regions, will feature a pavilion sponsored by the



▲ **Pluripotent stem cells have a lot of promise for counteracting ageing through regenerative therapies.**

Osaka prefectural government. It will include a section called ‘Reborn’ related to the future of ageing. Visitors will be able to measure their biological age through sensing devices and to learn about what healthcare might look like in 2050.

“I believe that in 2050 artificial-intelligence systems will monitor your health, automatically diagnose disease, and even deliver medication to your home,” says Tetsuya Tomita, a professor at the Graduate School of Health Sciences at Morinomiya University of Medical Sciences in Osaka, who is organizing the JAAM presentation.

A surgeon specializing in knee operations in the elderly, Tomita became interested in regenerative medicine because it may offer an alternative way to recover joint function to

current surgical procedures. It thus may help to maintain mobility in elderly people — a vital aspect of maintaining their health. Despite its high cost, regenerative medicine could help most people live healthy lives for much longer, Tomita believes.

However, Tomita stresses the need to ground anti-ageing medicine in solid research. “It's very important that this is based on science. A lot of basic research is being conducted on ageing, and its findings will form the basis for new anti-ageing therapies,” he says, but these therapies could still be several decades away.

“Just 20 years ago, ageing wasn't a target for treatment,” he adds. “But now we have many targets including osteoporosis and muscle weakness. The goal is to live healthily beyond 100.” ■



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