

The future of the ageing European society at stake: Tackling basic mechanisms of ageing to halt the continuous rise in age-related chronic diseases

White paper by leading European Research Institutes for Ageing Research on perspectives of the ageing European society

The doubling of life expectancy in the past 150 years can be seen as one of our civilization's greatest achievements. However, as life expectancy continues to rise, soon a third of the population in the EU will be over 65 years old. Unfortunately, old age is inevitably associated with chronic and invalidating diseases that hamper participation in society. More than half of those over 65 suffer from multimorbidity, i.e., two or more chronic diseases are present at the same time and this disproportionately affects people with low socio-economic status. A significant and ever-increasing part of society's resources must therefore be devoted to treating and caring for older people. Already nowadays, half of the healthcare costs are spent on the treatment of the elderly and by 2050 ageing-related social costs are estimated to amount to the unsustainable level of 45% of the GDP. The risk of multimorbidity exponentially increases at old age. For instance, around 40% of the 85-year olds suffer from dementia, so almost every second person at that age is affected. It is therefore essential for the future of our European society that age-related diseases are tamed. This is an enormous scientific and medical challenge. It is evident that the current debate about pensions in relation to demographic change will not offer the solution. Age-related diseases are the real powder keg that needs to be defused. Only if the health problems of ageing are being solved, the period of healthy aging and, thereby, social participation can be extended. Rapid advances in ageing research give reasons for hope that healthy ageing, i.e., prolongation of the healthspan rather than the lifespan, can be achieved and that age-related diseases can be effectively prevented. In order to meet these challenges, massive investments in biomedical ageing research are essential today in order to avert the unfathomable costs of a multimorbid society.

1. Increasing life expectancy is associated with a sharp increase in age-related diseases such as neurodegenerative diseases, cardiovascular diseases, type 2 diabetes, immunodeficiency, chronic kidney disease, cancer and osteoporosis, severely affecting quality of life.
2. The common cause of age-related diseases lies above all in the ageing process itself. Preventive treatments must therefore focus first and foremost to ageing in order to be able to successfully extend the healthspan.
3. Hence, biomedical ageing research is the key qualification for healthy ageing and for an extended social participation in old age.
4. Ageing research has demonstrated that healthy ageing without serious diseases is quite possible. Prolonged healthspan can be induced in all organisms studied, ranging from yeast and worms to mammals, implicating the existence of common biological underpinnings.
5. Lifestyle and diet can significantly improve health in old age and delay age-related diseases - and they are still effective in old age. Demographic studies have shown that poorer sections of the population develop age-related diseases and die earlier than those in more privileged sections, which is a societally unacceptable situation. Here in particular, a healthier lifestyle to reduce risk factors and delay diseases can have an enormous effect on health in old age.

6. Modern ageing research has now discovered genetic programs and pharmacological interventions that can control and thus delay the ageing process. Damage to various body cells drives the ageing process. Repair systems can alleviate such damage and longevity mechanisms can preserve vital bodily functions.
7. The biological programs that regulate the ageing process provide targets for preventive therapies. Combating age-related diseases must be a central concern of biomedical and pharmaceutical research. Various types of therapy must work together in order to achieve long-term preservation of health in old age. The prevention of multimorbidity must be the clinical goal of therapy.
8. Biological ageing research is younger than demographic change. Significant investments in biomedical aging research are essential to enable healthy ageing at a global scale. It is absolutely clear that the logistical and financial requirements of a chronically ill, ageing society exceed the necessary and overdue research investments many times.
9. The US government (amongst others via the National Institute of Aging (NIA)) and large US-based companies (Google, Amazon) as well as several Asian (Singapore, China) and Arabic (Hevolution, KSA) governments have recently invested considerable sums in fundamental and applied ageing research. If the EU does not do the same soon, we will fall behind and this will make Europe less competitive and ill-prepared for the future. As a consequence, IP that is being generated during the process will be localized outside the EU. This will have unpredictable negative consequences for EU citizens far into the future. Therefore, it is necessary and urgent for the EU to prioritize funding for biomedical ageing research.
10. In order to generate sufficient critical mass, the EU can build on established ageing research centers that have been initiated around Europe, particularly during the past two decades. A dedicated EU funding agency for research into the fundamentals of ageing and age-related diseases should enable competitive ageing research for the future of a healthy ageing society in Europe.

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