



Biomedical aging research is crucial for a Future of a Healthy Aging European society

Aging-associated diseases are the most severe threat to European society and only preventive interventions will maintain lifelong health. Investment into basic research in biomedical aging is essential for achieving healthy aging.

The doubling of life expectancy over the past 150 years can be considered as one of the greatest accomplishments of our civilization. However, the increasing life expectancy has precipitated the demographic change and a third of the European population will be aged above 60 years by 2050. Old age is almost invariably associated with chronic diseases. More than half of the elderly population suffers from multimorbidity, i.e. multiple chronic diseases occurring simultaneously. The chronic diseases of aging range from dementia, cancer, chronic kidney diseases, cardiovascular diseases to atherosclerosis, osteoporosis and frailty. An increasing proportion of resources are required for treatment and nursing of elderly patients. Forty percent of the 85 year old are suffering from dementia. It is estimated that by 2050, half of the GDP will be spent on social costs for the elderly in some member states. It is thus imperative to combat aging-associated diseases. Maintaining health at old age, however, poses a great scientific challenge. The focus needs to be shifted from treatment of chronic diseases to prevention or delaying the first steps towards disease.

Importantly, research has already proven that health maintenance and disease prevention is possible. **The target of preventive medicine needs to be the aging process itself.** No major disease has ever been solved by therapy alone but prevention has been the pillar of reducing or even annihilate a disease. The modern science of aging has only begun in the early 1990s and significant progress has been made in understanding mechanisms that control the aging process. It is pivotal to focus on the underlying mechanisms of aging in order to maintain lifelong health and prevent the chronic diseases of aging. **Investments are required in scientific biomedical research on aging.**

1. The increased life expectancy has caused a rise in aging-associated diseases such as dementia, cancer, chronic kidney diseases, cardiovascular diseases, atherosclerosis, osteoporosis, and frailty.
2. The common cause for all those diseases is the aging process itself. Preventive therapies must therefore target aging in order to extend health span.
3. Biomedical aging research is thus pivotal to achieve healthy aging and societal participation of the elderly.
4. A substantial proportion of centenarians remain healthy until very old age. Healthy disease-free aging is thus possible for humans.



5. Lifestyle and diet can improve health and can delay aging-associated diseases even at old age. Demographic studies have shown that particularly the economically deprived population has a shorter lifespan and suffers from aging-associated diseases early. Particularly this section of society could profit tremendously from healthy lifestyle interventions.
6. Modern aging research has uncovered genetic programs and pharmacological interventions that target and delay the aging process. Molecular damage in somatic cells drives the aging process. Repair systems can remove the damage and genetic longevity programs can maintain the functionality of tissues and cells.
7. Longevity programs regulate aging and can be targeted by preventive therapy. Combating aging-associated diseases must be the central focus of biomedical and pharmaceutical research. Different therapeutic strategies must be combined to achieve sustained health maintenance during aging. Preventing multimorbidity needs to be defined as therapy target.

Significant investment into biomedical aging research is essential for achieving healthy aging amid a worldwide demographic change with 2 billion elderly individuals in 2050. The logistical and financial burdens of a chronically ill aging society outweigh by far the required investments into research & development.

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