Better Understanding of Aging Science Research

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DESCRIPTION

Human Longevity dramatically increased during the last century when implementation of vaccinations, disinfectants and antibiotics led to a substantial reduction of infectious diseases as a leading cause of death. The decline in mortality among the elderly has continued over the past few decades. It is most probably owing to preventative factors, such as improved diets, as w ell as exercise and reduction in smoking. If current demographic trends continue then 20% of the global population will be over the age of 60 by 2050.

As a consequence most modern nations are undergoing rapid population aging. Although the life expectancy has enhanced dramatically in modern generations, this process has, nevertheless not been accompanied by an equivalent increase in healthy life expectancy. Since aging is a primary risk factor in most chronic disorders, the prevalence of age-associated disorders such as type 2 diabetes neurodegenerative disease, cardiovascular disease, osteoporosis and cancer, rises considerably with the increasing average age in populations of developed countries representing a great socio-economic challenge. It is estimated that there will be more than 30 million people over the age of 80 will be in the US by 2050; about half of them will suffer from different forms of dementia and at least 3 million of all adults will be diagnosed with Parkinson's disease.

The expected prevalence of age associated conditions will have substantial consequences for future society, including increased financial and psychological burdens for families and greater pressure on health care programs and entitlement budgets. The demographic trend consisting of an increasing proportion of aged people in the populations of developed countries likely explains the dramatic increase in the interest of the lay public and country leaders in research in the field of bio gerontology.

Traditionally, the process of aging is believed to be natural and therefore inevitable. However in the view of many authors the idea that aging is an indefeasible part of human evolutionary theories aging has emerged as a byproduct of evolutionary processes and does not have a specific function. If aging is really not an intrinsic irrevocable component of life, then it could be manipulated similarly to other processes that are generally deemed to be unnatural or pathological. The major assumption underlying anti-aging research is that age associated senescence may be regarded as a pathophysiological phenomenon that might be prevented or even reversed. Modern anti-aging medicine promotes biomedical technologies and approaches that have the potential to delay or postpone aging processes. The success obtained in this research field is greatly attributed to the increasingly broad application of OMICS based approaches such as genomics transcriptomics proteomics and metabolomics. Through the implementation of these technologies a better understanding has been achieved regarding the key molecular and cellular pathways involved in the aging process including inflammation, proteosis, autophagy, mitochondrial efficiency and nutrient signalling and regarding the most effective interventions to counteract age related senescence. The impetour progress in highlighting the mechanisms underlying aging and longevity and first successful pharmacological interventions to extend healthy lifespan in different model organisms indicate that the aging process is malleable.

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