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The LEPAS consortium approach to an ageing society

Europe faces an unprecedented phenomenon: the ageing of its population. Will the welfare state be able to sustain its benefits for this increasingly old society? Most current economic studies capture the process of ageing as a constant deterioration rate of physical health and abilities that is not influenced by human decisions. The LEPAS project considers that this can provide misleading answers to the above question, and aims at learning from biology how to incorporate into these studies a more realistic process of senescence that respond to the environment and maintenance practices. This goal requires first finding answers to the following questions.

Why do we age?

The rate-of-living theory argues that we die because we have a finite number of heart beats, which we can use quickly or slowly. The free-radical and telomere theories suggest that oxidative stress and cell division lead to cellular damage and organism senescence. Evolutionary theories consider that ageing and ultimately death are the solution to the problem of selecting individuals so as to maximize the intrinsic rate of increase in the genetic lineage.

How does ageing evolve?

We can define ageing as the increase in the probability of dying. It is influenced by the normal biological deterioration of the body, but also by aggressions coming from the surrounding environment. The mortality rate of individuals goes down from birth to around ten years of age. After that, it monotonically increases, doubling approximately every ten years from age 30 to 90. Gains in life expectancy and quality of life have been mainly achieved by controlling communicable diseases. Future gains should come from the control of degenerative diseases.

Can we affect ageing?

The deterioration of body organs can be affected by human decisions. Sensory impairments can be compensated. Physical strength and functional capacity can be improved with exercise and a well-balanced diet, and affected by factors like education and lifestyle. Brain decay, in turn, can be delayed through higher levels of education in young age, and occupational and leisure activities in old age.

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