number of people is now to die at old age. In such conditions, it is not surprising that the search for remedies to improve healthspan has boomed in recent decades, particularly because there are now many scientists studying the aging process, beside modern charlatans still trying to fool the lay public with pseudo-anti-aging products.

However, some scientists relying on studies performed with animal models are of the opinion that the aging process could be delayed and longevity extended *via* a single genetic pathway or chemical product and that it is possible "to think of ageing as a disease that can be cured, or at least postponed".[5] One of the purposes of this chapter is to argue that it is not certain that results gathered on the classical animal models bear the promise that human aging and longevity can be modified as in these animal models, particularly because the life-history strategies of human beings and rodents, for instance, are very different.

Other problems described below prohibit expecting that many results reported in animal models can be observed in human beings, or concluding that a product affecting healthspan and lifespan truly affects the aging process. In addition, molecules improving health and lifespan in sick animals cannot be considered as real "anti-aging" drugs.

It is not to say that no product is (or will be) of therapeutic value, but simply that a very cautious attitude is required before making the hypothesis that what is efficient in an animal model could be too in humans, and that a product increasing lifespan or delaying some features of the aging process truly targets the aging process.

3.2 Diverse Life-History Strategies: Consequences for Lifespan Modulation

3.2.1 There Are Various Life-History Strategies in Mammals

Each species complies with a life-history strategy and these strategies differ among species.[6] In mammals,[7] there are on one side of a continuum short-lived species with a small body size, as for instance mice and rats, maturing quickly after a short gestation time and giving birth at short intervals to numerous offspring (Figure 3.2). However, they may have only one season of reproduction, if not a single reproduction episode, due to a high predatory load on these small-sized species. On the other side of this continuum are species with an opposite life-history strategy. They are thus longevous and of a large size, they need a long gestation time and an extended period with parental care to reach adulthood, and they give birth repeatedly to a few offspring during a long period, as is the case for instance in elephants or primates. These species, particularly because of their large size, do not suffer from a high predatory load, as small species do.

Therefore, some species need a long life to propagate and thrive while living long is not necessary for other species. As a consequence, mouse traps and poisoned baits are not a threat for the survival of mice as a species because