

Scientists reveal the secret of naked mole rat longevity

March 8 2017

A group of Russian and German biologists and mathematicians led by profs. Victor Sadovnichii and Vladimir Skulachev (Moscow State University) and prof. Thomas Hildebrandt (Leibniz Institute, Berlin) have published a study in *Physiological Reviews* in support of a breakthrough hypothesis explaining the exceptional longevity of the naked mole rat (*Heterocephalus glaber*), an African rodent. According to the hypothesis, these animals had evolved a slow process of individual development resulting in a dramatic increase in the period of youth and a decelerated aging process.

A similar process has begun in humans, as well. Analysis of data on human longevity and the reproduction period indicates that humans have already slowed down the pace of our "master biological clock," and this deceleration has progressed throughout [human](#) history, resulting in increased lifespan and prolongation of youth.

Such regulation of the rate of aging means that the aging process (in both naked mole-rats and humans) is genetically programmed and cannot be explained by simple accumulation of random damage with age. This is a very important finding, because modern science is already capable of switching off some biological programs—for example, the process of cell suicide, apoptosis. Prof. Skulachev's research group is now trying to apply the same method to retard the program of aging using specially designed mitochondrially targeted antioxidants.

Victor Sadovnichii, rector of Moscow State University, says, "Aging

studies are based on different statistical datasets. Traditionally it is one of the most mathematics-oriented areas of biology. In this particular case, statistical analysis demonstrated a very important fact: Human aging is already decelerating."

Vladimir Skulachev, head of Belozersky institute of Moscow State University, says, "I think our work proves that the biological evolution of two highly social species of mammals (humans and [naked mole rats](#)) resulted in deceleration of the aging program and prolongation of youth. So the aging is, indeed, a program, and it has already slowed down through natural selection. But we humans no longer rely on the extremely slow method of natural evolution. We use technical and scientific progress to achieve our goals. It is exactly the time when we must apply this method against aging."

Provided by Lomonosov Moscow State University

Citation: Scientists reveal the secret of naked mole rat longevity (2017, March 8) retrieved 9 May 2024 from <https://medicalxpress.com/news/2017-03-scientists-reveal-secret-naked-mole.html>

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