LIFE SPAN AND AGING IN MICROGRAVITY («Zoomodule» Project)

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«Ageing» Experiment

GRAVITY EFFECTS DURING SPACE FLIGHTS UPON AGING AND LONGEVITY OF THE LIVING ORGANISMS: MODELING THE GRAVITY OF SOLAR SYSTEM PLANETS

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In long-term space flights, e. g. interplanetary ones, the issues pertaining to their influence on living organism's ageing and longevity acquire a special importance. It will ultimately determine the duration of manned mission to other planets. There are also other gravity effects during space flights. First of all, an astronaut is exposed to considerable hypergravity during the launch of a space vehicle. Secondly, an astronaut is exposed to microgravity in a prolonged space flight.

All this has led to an attempt to study the gravity effects on the living organisms. Some of these values of gravity may be identical to those that may be encountered during the planned interplanetary flights. In this experiment, for the first time we propose to study the gravity effects, which are peculiar to all planets of the Solar system, on the longevity of the terrestrial organisms.

To meet this major objective, we are planning to stow a centrifuge of a certain diameter inside the URM. Depending on placement relative to the center of this centrifuge, the test animals will be exposed to different values of gravitational acceleration. In addition, the emerging gravity will simulate the gravitational forces of all the Solar system planets.

The best objects for this research are laboratory animals, namely the female and male drosophilas, as well as mice. We will examine the following parameters: mortality rates and longevity, sexual and physical activity, intensity of oxygen consumption, as well as a number of biochemical indices.

Results are anticipated to allow evaluation of various gravity effects on aging and longevity of the living organisms. This will further permit prediction of the consequences of changes that may develop in the organism during the interplanetary flights.