

251 Quantification of radiation-induced aging using senescence accelerated mouse

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Radiation-induced aging on five serum components which were considered to depend on age were measured sequentially in SAMP1TA/Ngs which was the senescence accelerated mouse. The regression equations of each observed value on age of week were calculated by each groups whose radiation dose were 0, 2, 3 and 4 Gy. The equality and dose-dependency of each regression coefficient were tested between groups. In inorganic phosphorus, radiation-induced aging was observed, and the type of aging was the accelerated aging, which changed the slant in regression line. In total cholesterol, albumin, blood sugar and GOT, radiation-induced aging were not observed.

252 Genetic effects of space radiation in *Drosophila melanogaster* I. Sex-linked recessive lethal mutations.

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Possible genetic effects of radiation during space flight were studied with *Drosophila*. About 200 each of adult male flies of wild type Canton S and a radiation-sensitive *mei-41* strains were loaded on Space Shuttle Endeavour, which launched on September 12, 1992 for 8 days mission. The male flies returned from space were mated to tester female flies, and the presence of sex-linked recessive lethal mutations was analyzed at F₂ generation. The frequencies of recessive lethal mutations in flight groups were 2 and 3 times greater for wild type and *mei-41* strains, respectively, than those in ground control groups.

253 Genetic effects of space radiation in *Drosophila melanogaster*. II. Somatic mutations.

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To examine possible effects of space radiation on living organisms, we have analyzed somatic mutations in wing imaginal disc cells of *D. melanogaster*. About 2-day old larvae were flown aboard Spacelab-J, STS-47, which launched on Sep. 12, 1992, and orbited for 8 days. For assay of somatic mutations, we analyzed in two recessive genes, *mwh* and *flr*, both of which locate on the 3rd chromosome and control the morphology of hairs growing on wing epidermal cells. The experiment was carried out with two lines, a wild type strain and a radiation sensitive strain *mei-41*. About 10,000 wings were observed for *mwh* single and *mwh/flr* twin spots. For wild type flies, the frequencies of large single spots of *mwh* and twin spots of *mwh/flr* were similar between flight and ground control groups. In radiation sensitive strain, the frequency of mutant spots in flight group was lower than that in ground control group.