ABSTRACTS

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 SAMP1A/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 fre-
quencies 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.