

Transgenerational Effects in the Progeny of Mice Exposed to Acute High
and Chronic Low Dose-rate Gamma-rays
– Life Span, Cause of Death, Neoplasm Incidence –

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Abstract

To study the effects of irradiation on progeny, male (sires) C57BL/6J mice were irradiated with ^{137}Cs gamma-rays at an acute high dose-rate of 770 mGy/min to a total accumulated dose of 3000 mGy, or at a chronic low dose-rate of 20 mGy/day for 150 or 300 days to total accumulated doses of 3000 mGy or 6000 mGy. After completion of irradiation, the male mice were bred to non-irradiated virgin females to produce F1 mice. All mice, except the dams, will be kept until they succumb to a natural death and then subjected to pathological examination. The number of offspring, lifespan and neoplasm incidences will be used as parameters to evaluate the biological effects of high and low dose-rate irradiation. As of March 31, 2018, reproductive parameters (pregnancy rate, average number of implantation sites/dam, average number of pups born/litter and average number of weaned pups/litter) were significantly ($P<0.05$) altered in the 770 mGy/min irradiation group as compared with the non-irradiated control group. From the analysis of the survival curve of the male parent mouse, there is no significant difference between the groups at the present time. Experiments are progressing smoothly.

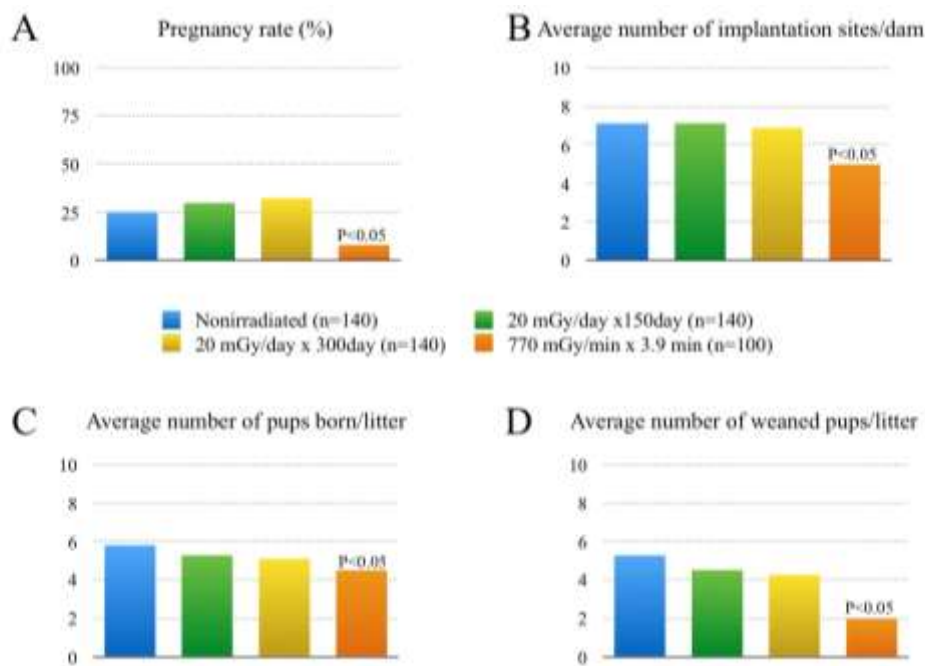


Fig. 1 Reproductive parameters

A: Pregnancy rate (%) = (number of female mice with implantation sites / number of females bred) 100 . B: Average number of implantation sites/ dam = total number of implantation sites / number of pregnant mice. C: Average number of pups born/litter = total number of pups born / number of pregnant female mice. D: Average number of weaned pups/litter = Total number of weaned mice / number of pregnant female mice.

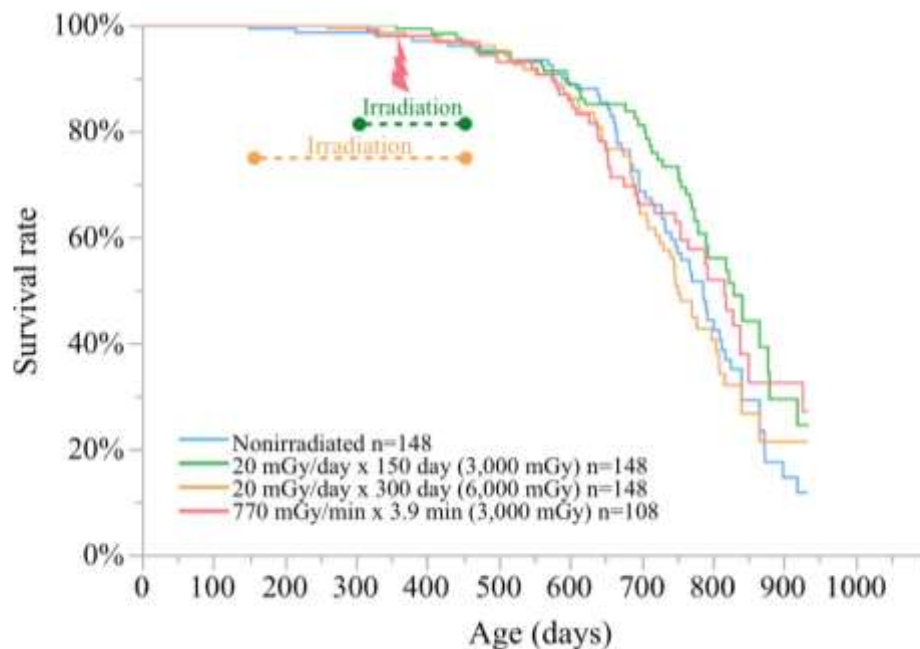


Fig. 2 Survival curves of male (irradiated sires) mice as of March 31, 2018