

# The Relationship(s) of Ovarian Dysfunction with Neoplasia and Life Span in Female B6C3F1 Mice Exposed to Chronic Low Dose-rate Radiation

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## Abstract

The aim of this study is to clarify whether ovarian dysfunction induced by exposure to chronic low dose-rate radiation (20 mGy/day) affect neoplasia and life span in female B6C3F1 mice. Neoplasm incidences and average life span will be compared among 4 experimental groups: i) non-irradiated + sham ovariectomy; ii) non-irradiated + ovariectomy; iii) irradiated + sham ovariectomy; and, iv) irradiated + ovarian transplant (normal ovaries excised from age-matched non-irradiated mice). This year, we established the surgical techniques for ovariectomy and ovarian transplantation in mice. For the irradiated groups,  $\gamma$ -ray exposure at a dose rate of 20 mGy/day commenced at 9 weeks of age. All the mice were housed 5 to a cage and underwent prescribed surgical procedures at 30 weeks of age (total accumulated dose = 3 Gy for the irradiated groups). Analysis of body weights and vaginal smears (monitoring of the estrus cycle) indicated that the transplantation of the normal ovaries to irradiated mice was effective in alleviating premature menopause (resumption of the estrus cycle) brought about by ovarian dysfunction, but did not affect body weight gain brought about by chronic low dose-rate irradiation.

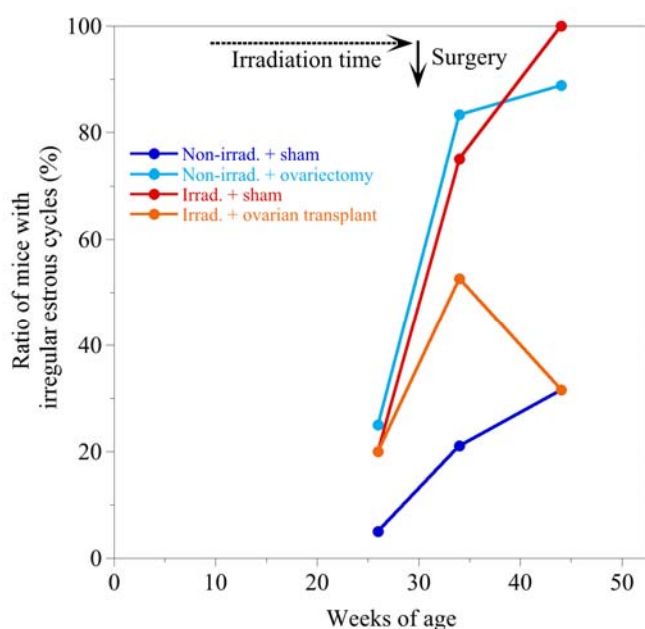


Fig. 1 Effect of ovariectomy and ovarian transplantation on the estrus cycle of irradiated and non-irradiated mice.

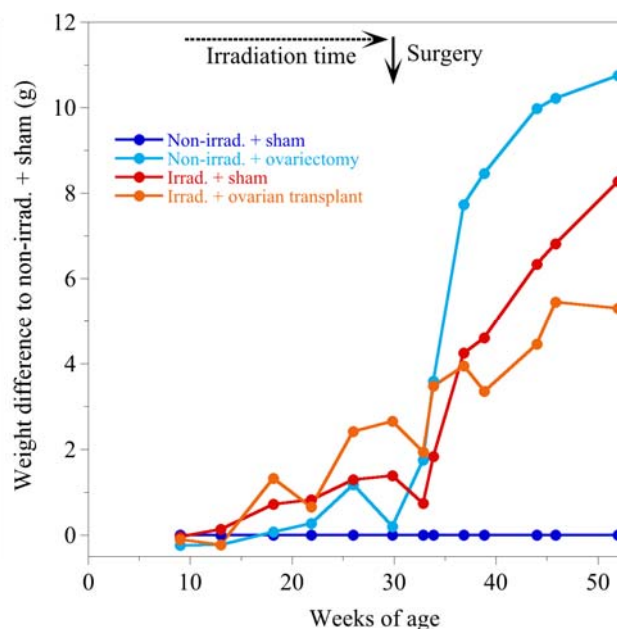


Fig. 2 Effect of ovariectomy and ovarian transplantation on body weight gain of irradiated and non-irradiated mice.