

Tumor Transplantability in Mice Kept in Standard Non-enriched Environment (Control) or Enriched Environment

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Abstract

We have previously shown that the transplantability of a murine ovary granulosa cell tumor cell line, OV3121, was significantly enhanced in syngeneic B6C3F₁ female mice irradiated with gamma-rays at a low dose-rate of 20 mGy/day for 400 days. Transplantability, however, was reduced when mice were kept in an enriched environment (EE). The purpose of this study is to clarify whether adverse effects caused by exposure to continuous low dose-rate gamma rays are reduced by environmental enrichment, using tumor transplantability as an index. A total of 91 mice were divided into 2 groups: non-enriched standard environment (SE) group consisting of nonirradiated control (C+SE, n=23) and irradiated (IR+SE, n=23) mice; and an environmentally enriched group of nonirradiated control (C+EE, n=24) and irradiated (IR+EE, n=21) mice. An enriched environment (EE) was created by installing two mouse igloos in each mouse cage 8 weeks prior to tumor cell inoculation. OV3121 cells were transplanted and tumor formation were examined twice a week. To further examine the effect of environmental enrichment conditions, the mice were housed individually, in pairs, 4 or 8 to a cage and tumor transplantabilities were compared.

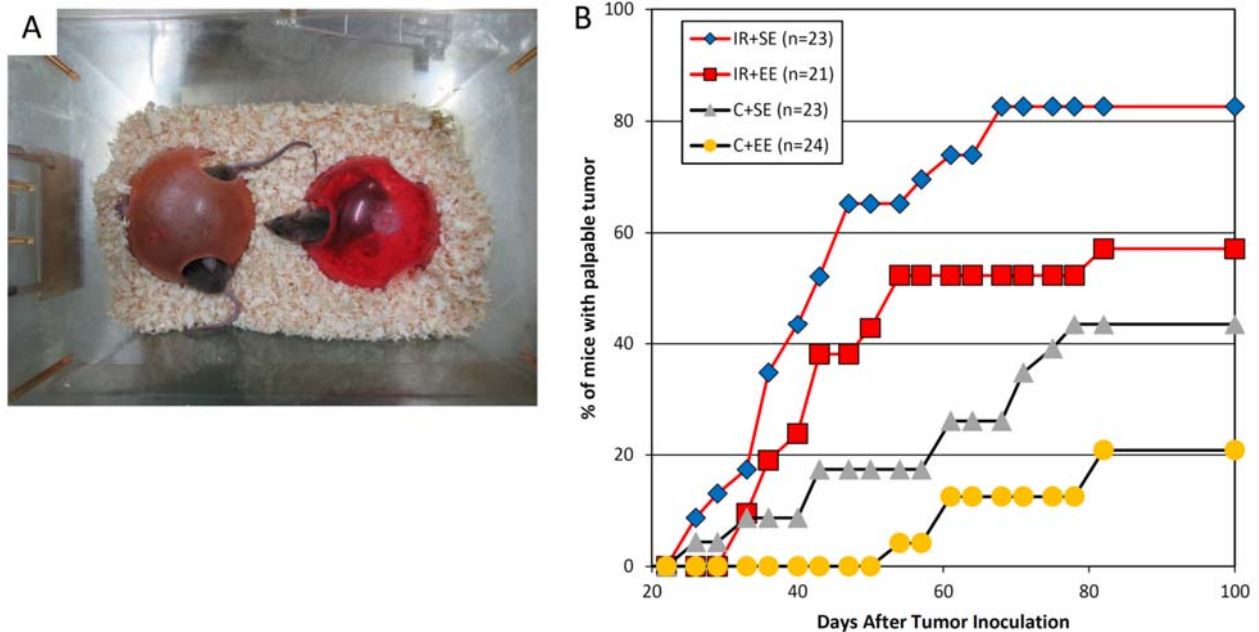


Fig. 1 Comparison of tumor transplantability. A) Four mice were housed in the enriched environment with two igloos in a cage. B) Graph of tumor transplantability of each group. IR, irradiated; C, nonirradiated; EE, enriched environment; SE, standard environment.

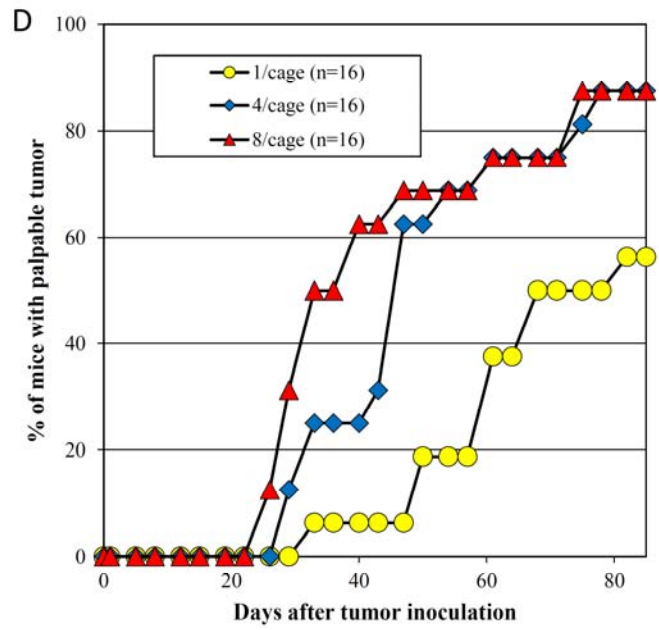
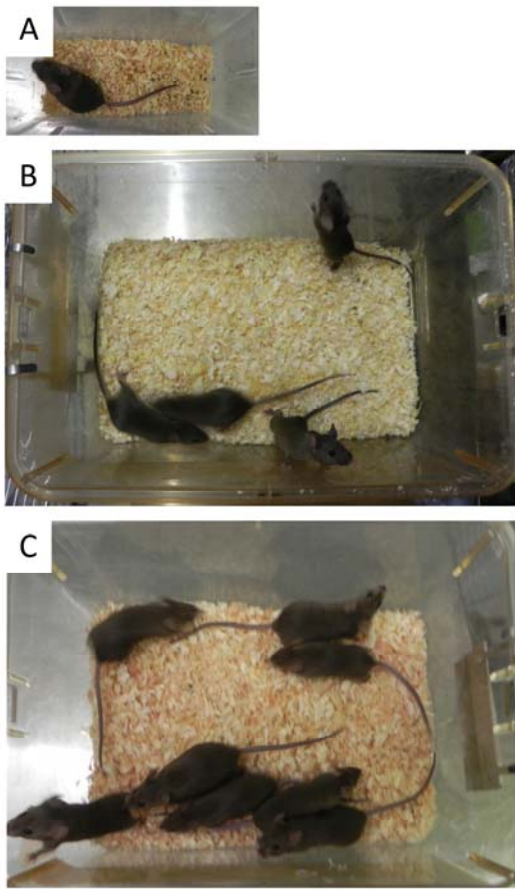


Fig. 2 Comparison of tumor transplantability. A) One mouse was housed in a small cage. B) Four mice were housed in a standard cage. C) Eight mice were housed in a standard cage. D) Graph of tumor transplantability of each group.