

Transgenerational Effects in Mice Exposed to Continuous Low-Dose-Rate Gamma-Rays
– Detection of Germ Cell Mutation –

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Abstract

Transgenerational effects of continuous low-dose-rate (LDR) gamma-ray irradiation of male mice have not been well studied. To clarify incidence of copy number aberrations (CNAs) on the genome of progeny mice, progeny were obtained from C57BL/6J male mice continuously exposed to LDR gamma-rays (20 mGy/22 h/day) for 400 days (total dose: 8000 mGy) from 8 weeks of age. In the primary screening using 1M format oligo-microarray comparative genomic hybridization (CGH), we have so far analyzed a total of 99 genomes from mice (32 progenies from six pairs of parents in the LDR-irradiated group and 41 progenies from seven pairs of parents in the non-irradiated group). Three CNAs in the LDR-irradiated group and one CNA in the non-irradiated group could be detected. Several small CNA candidates were also detected, which will require further screening using 4×144K format oligo-microarray CGH.

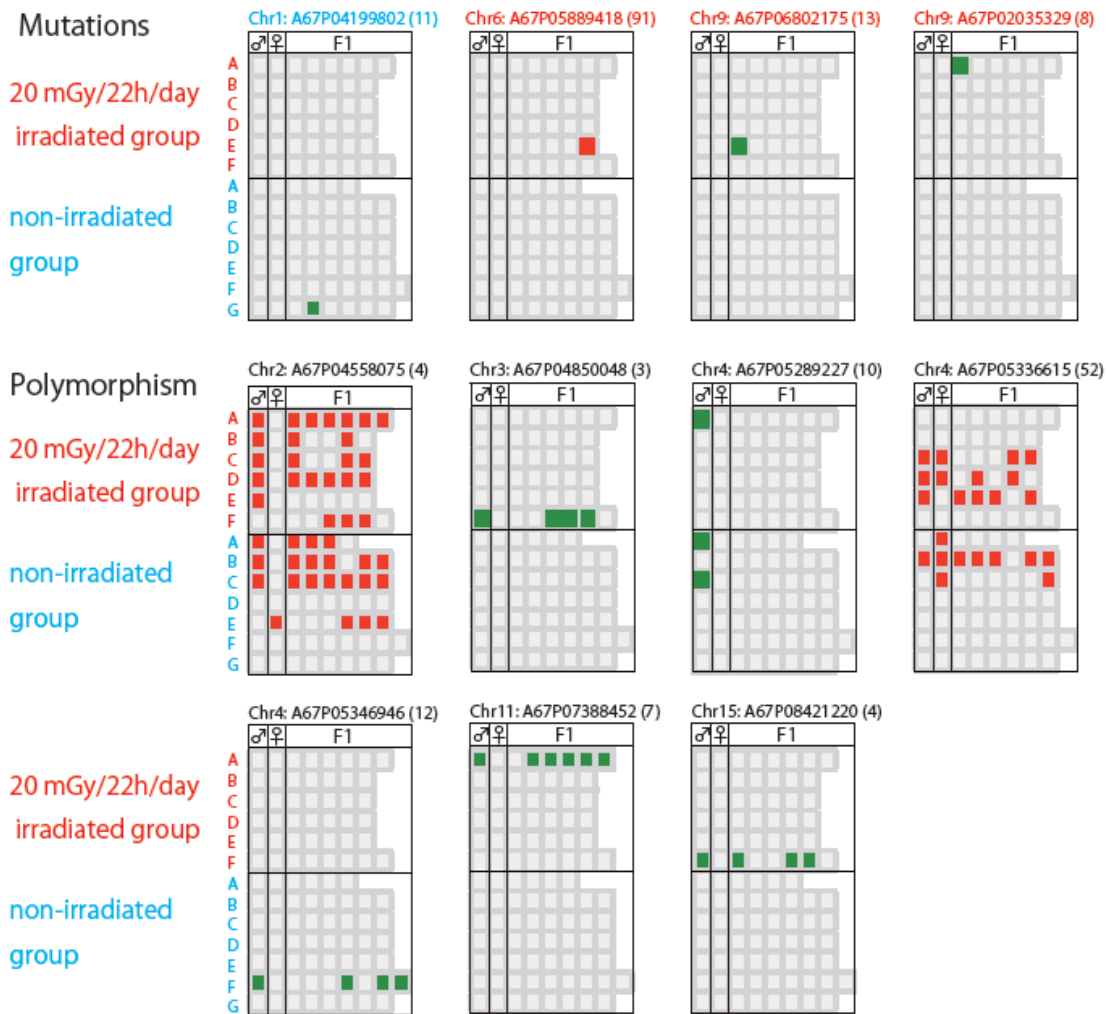


Fig. 1 Summary of the 4 mutations and 7 polymorphisms detected as CNAs using oligo-array CGH screening. The top of each panel identifies the chromosome, location and probe width where the aberrations were observed. The results of the oligo-array CGH screening in each family (20mGy/22h/day irradiated group A–F, non-irradiated group A–G) are indicated by red, green or gray squares to indicate increased, decreased or no change, respectively, in copy number.