

Tumor related genes (159-165)

159 Mouse Tumors Induced by Repeated Beta Radiation:
 Homologous Recombination between p53 and Its Pseudogene
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A 100% tumor incidence has been found by repeated beta radiation on the backs of mice with above-threshold doses. We found homologous recombination between p53 and its pseudogene (Ψ p53) in one of the fibrosarcomas induced by repeated radiation with 2.5 Gy. By analysis of nucleotide sequences of clones of exon 4/exon 6 of p53 from various tumors, we found a chimera structure which occurred at a limited region between codon 90, 5' end of exon 5, and codon 143 in exon 5. This chimera was identified by the absence of 780 bp intron 4 and Ψ p53-specific nucleotide sequence in the pseudogene region and the presence of 80 bp intron 5 in the functional p53 gene, and further confirmed by PCR analysis of the exon 4/exon 6 region of tumor DNA. This finding, homologous recombination between p53 and Ψ p53, suggests a novel mechanism of radiation carcinogenesis.

160 The sensitivity to ionizing radiation and radiation-induced apoptosis in
 Saos-2 cells transfected by four mutants and wild type p53 .

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We transfected mutant p53 cDNAs (123A, 143A, 175H, and 273H) to human osteosarcoma cells, Saos-2, which are devoid of endogenous p53 gene. We also introduced wild type p53 by LacSwitch vector system to Saos-2 cells. We got some clones of mutants and wild type p53 and then examined the sensitivity of the clones to ionizing radiation (IR). Transfectants of mutant of 123A and wild type p53 were sensitive to IR compared with Saos-2 cells and underwent apoptosis. Other transfectants of p53 mutants were the same sensitivity to IR compared with Saos-2 cells and did not undergo apoptosis.