66 Participation of Cyclobutane Type Pyrimidine dimers and (6-4) photoproducts to Killing and Mutation

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To estimate the participation of Cyclobutane type pyrimidine dimers (Py<>Py) and (6-4) photoproducts to killing and mutation, we photoreactivated with *E. coli* PR enzyme and *Drosophila* PR enzyme to UV-irradiated pZ189 plasmid DNA. We examined the split of Py<>Py or (6-4) photoproducts from plasmid DNA after each PR treatment by ELISA methods of monoclonal antibodies against them. The effective split of Py<>Py and (6-4) photoproducts by each PR enzyme was observed. In the both cases, the efficiencies of the killing and mutation were reduced by PR enzyme treatment. These results suggest that both Py<>Py and (6-4) photoproducts may pacipitate to killing and mutation.

67 Loss of heterozygosity on chromosome 16 in APRT-deficient human lymphoblastoid cells.

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Losses of the normal *aprt* allele were observed at high frequency among the APRT-deficient mutants induced by γ-rays in a human lymphoblastoid cell line heterozygous at the locus. Here we report the analysis of loss of heterozygosity (LOH) at several microsatellite genetic loci on chromosome 16 in APRT-deficient mutants. No LOH was observed for markers on 16p (D16S292, D16S298), suggesting that LOH at the *aprt* locus is attributable to somatic recombination and/or deletion on the long arm rather than nondisjunction or nondisjunction with reduplication. A significant proportion of mutants lost heterozygosity at markers on 16q. More than half of mutants showed loss at the most proximal q arm marker (D16S308).

68 Mutation Induction by Low Dose Rates of γ Rays in Human Lymphoblastoid Cells

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Human lymphoblastoid cell, WI-L2-NS derived from the same parent as TK6 is more resistant to cell killing and higher mutation frequency to γ-irradiation than TK6. In WI-L2-NS cells, lowering the dose rate from 30 Gy/h to 0.006 Gy/h resulted in an increase in cell survival and a decrease in induced mutation frequency. 6-Thioguanine resistant mutants following irradiation of low dose rate γ rays were analyzed at hprt locus by multiplex PCR method and compared with spontaneous mutants: 150 percent increase in total mutation frequency and a higher percentage of deletion were observed after 3 to 4 weeks irradiation at 0.006 Gy/h. More experiments with mutant clones to analyze the pattern and the size of the deletion.