93 **Emission from Golden Hamster Embryo Cells Irradiated by High-Energy-Electrons**

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When golden hamster embryo cells(GHE) or phosphate-buffered-saline(PBS) is irradiated with a 2-MeV electron pulse at 12, 77, 120, 195, 260, and 295 K, emission from GHE or PBS was observed for the first time by a one-shot single-photon-counting system. The intensity and spectra of the luminescence depend upon temperature. The emission spectra of GHE consist of the emission (330 or 380 nm) from irradiated H_2O as well as that (around 480 nm) from organic substances, such as protein, lipid, and DNA.

94 Cytotoxic and mutagenic effect of X-rays and ethylnitrosourea in human T-lymphocytes in culture

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T-lymphocytes were separated from peripheral blood and cultured in RPMI medium containing T-cell growth factor, IL-2, HL-1, fetal bovine serum, lethally X-irradiated B-lymphoblastoid cells, and other basic components. The T-lymphocytes were exposed to the X-rays or ethylnitrosourea (ENU) in exponential growth, 3 days after being isolated and primed to begin blast formation. Both agent induced a dose-dependent decrease in survival and increase in 6-thioguanine resistant cells. The means of the D0 and D10 values for 250kVp X-rays were 1.05Gy and 2.54Gy, and 1.27mM and 2.97mM for ENU, respectively. There was a strong relation in T-lymphocyte sensitivity between X-rays and ENU. The induced mutant frequency per lethal event for X-rays and ENU was 19.2 and 114.4×10^{-6}, respectively. The results showed that T-lymphocytes were 6-times more sensitive to ENU-induced mutagenesis than that to the mutagenic action of 250kVp X-rays.

95 **T cell lymphoma cells derived from SCID mouse are sensitive to X-ray irradiation and beta-rays from ^{14}C in DNA.**

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It has been known that SCID mouse fibroblasts are defective in repair of double strand breaks(dsb). T cell lymphoma cell line, SCA1 cells, was established from a SCID mouse. SCA1 cells were labeled with 740 Bq/ml ^{14}C thymidine for over night and tested for induction and repair of dsb after X-ray irradiation using a neutral elution method. Number of dsb reduced during post irradiation incubation until 20 min, and then increased until 2 h. This result suggest that apoptosis occurred. Tracer doses of ^{14}C thymidine itself inhibited cell growth when SCA1 cells were cultured in the medium containing ^{14}C thymidine for longer than 24 h. Number of dead cells increased from 10 h after addition of ^{14}C thymidine.