254 **The effect of artificial gravity on the morphogenesis of UV-irradiated *Dictyostelium discoideum* cells.**

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In order to study whether artificial gravity has additional effects of DNA damage on the morphogenesis or not, we have used two kinds of *Dictyostelium discoideum* strains, an UV-sensitive mutant (γs13) and the parental strain (NC4). Amoeboid cells were harvested and resuspended in phosphate buffer (5 mM, pH 6.4), and then were spread on a membrane filter after UV-irradiation. The cells were incubated for 40 h under artificial gravity at 23°C. The artificial gravity of 5*g* enhanced the depression of the formation of fruiting body and the formation of spore by UV-irradiation. In contrast, the artificial gravity suppressed the formation of abnormal fruiting body induced by UV-irradiation. The germination rate of spores formed from UV-irradiated NC4 amoebae rose by the artificial gravity but that of UV-irradiated γs13 amoebae was not changed.

255 Availability of *Deinococcus radiodurans* dry cells as the biological monitor of heavy ion particles during space experiment.

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We intend to perform the space experiment of the theme "Effect of Cosmic Radiation on *Deinococcus radiodurans*" using Space Shuttle at the 2nd International Microgravity Laboratory Mission (IML-2) in 1994 by NASA and NASDA. Then, we researched the method of sample preparation of *D. radiodurans* for the space experiment and the physiological response of the cells exposed to high LET radiations using AVF cyclotron in facility of JAERI. The kinds of high LET radiations were $^{4}He^{2+}$, $^{12}C^{5+}$ and $^{40}Ar^{13+}$. As the results, we prepared the dry cells on the membrane filter in desiccator *in vacuo*. We found that *D. radiodurans* dry cells were more resistant to low LET radiation than high LET radiation. Also, we found that the cells showed tendency to be easily killed by high LET radiations, and that the increasing order to lethality was $^{40}Ar^{13+}$, $^{4}He^{2+}$ and $^{12}C^{5+}$. Therefore, it was assumed that *D. radiodurans* was very fitted for the biological monitor of only high LET cosmic rays.

256 **Radiation effect on the Epidermal Growth Factor Binding and on the EGF dependent EGFR-Tyrosine Phosphorylation**

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The effect of ionizing radiation on the epidermal growth factor (EGF) binding to epidermal growth factor receptor (EGFR) and on the EGF dependent EGFR- tyrosine phosphorylation were examined. A human squamous cell carcinoma cell lines, A431 which express quantitive EGFR, was used. 125-I EGF binding to A431 cells was inhibited 180 min after exposure to 10Gy irradiated cells. Maximum binding inhibtion was detected 210 min after 10Gy irradiation, whereas this inhibtion was not seen in 20 Gy irradiated cells in any time after exposure. Furthermore, EGF dependent EGFR-tyrosine phosphorylation was not inhibited by ionizing radiation (5, 10 and 20 Gy). This 125-I EGF binding inhibtion induced by 10 Gy irradiation was due to specific supression of EGF binding system, not a direct injury or down-regulation of receptor protein. This result suggested that ionizing radiation can specific modulate the regulation of EGF receptor binding as well as Ultra-Violet.