

Effects of ultraviolet damage and photoreactivation on the survival rate of *Paramecium tetraurelia*

Satoru TANJI and Isoji MIWA
(Grad. Sch. Sci. Engn., Ibaraki Univ.)

SUMMARY

Many organisms have developed various restoration mechanisms to counteract the negative effects induced by ultraviolet light. The photoreactivation that recovers these effects by the visible light irradiation is a restoration mechanism. It is confirmed that the clonal life span is decreased by the DNA damage induced with ultraviolet irradiation, but when followed by photoreactivation, clonal life span is recovered in *Paramecium tetraurelia*. In this study, we examined the decrease and recovery of survival and growth rates by the ultraviolet irradiation with different wavelength and intensity and visible light irradiation in *P. tetraurelia*. Results show that the ultraviolet damage and the recovery with visible light were increased respectively when the intensity of ultraviolet and visible light were increased. Furthermore, the survival rate was decreased with 257 and 283 nm ultraviolet more than 229 nm ultraviolet when followed by photoreactivation, the growth rate was decreased with 257 nm ultraviolet more than with 283 nm ultraviolet. These results suggest that the survival rate and growth rate with ultraviolet and visible light irradiation depend on the intensity and wavelength of these lights.