

Gametogenesis in *Noctiluca scintillans* under light-dark cycle

Takumi KITAMURA and Hiroshi ENDOH

(Grad. Sch. Nat. Sci. Technol., Kanazawa Univ.)

SUMMARY

Noctiluca scintillans is a heterotrophic dinoflagellate. *N. scintillans* trophonts usually reproduce by binary fission. In such trophont population, a small fraction of cells spontaneously transform into gametogenic cells, which undergo two successive nuclear divisions, without cellular divisions. The products of nuclear division are called "progametes" and migrate to cell surface with a small amount of cytoplasm, and then further divide 6-8 times synchronously, finally reaching 256-1,024 progametes. Thus, numerous mature gametes with two flagella (zoospore) are released from a mother cell ghost. At present, it unknown what triggers differentiation of the gametogenic cells. Here, we report possible factors/conditions to trigger differentiation into gametogenic cells by successive observations for two weeks after feeding. 1) Frequency of the appearance of the gametogenic cells drastically increased in early stationary phase, suggesting that starvation is a prerequisite for the differentiation. 2) At the beginning of light period (L0), cells already entered in early stages (8-16 progamete stages), and then development gradually progressed (L4-12). During the light period, no cells, which began anew differentiation, were observed, indicating that the differentiation would have begun during the dark period. This, in turn, suggests that the beginning of dark period is a stimulus for triggering differentiation.