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Major

Developmental Biology, Cell Biology, Science Education, Science Communication

■ Research topics

Meiotic division and fertilization

Keywords

Oocytes, meiosis, apoptosis

Contents

■ Overview (background, goal, detail)
【Biological Sciences】

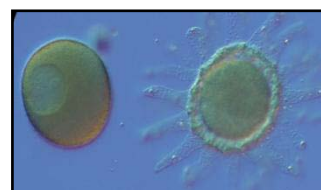
During oogenesis and spermatogenesis, meiosis occurs and the number of chromosomes decreases. Also, an increase of the number of chromosomes is induced by fertilization. Thus, meiosis and fertilization are biologically different events. However, in many animals, fertilization occurs during meiotic division of oocytes. The timing of fertilization is definitely restricted; fertilization does not occur until meiosis proceeds to an appropriate stage and meiosis reinitiation is induced by fertilization. I am interested in the fact that meiosis and fertilization proceed interactively, and would like to find molecular mechanisms of the interaction using starfish, human and mouse oocytes.

■ Process, case study

- 1) Study of meiotic division and fertilization using animal oocytes and sperm.
- 2) Study of apoptosis in unfertilized oocytes.

■ Potential (applications, future goals)

Fig. Study of meiotic division and fertilization



Intellectual properties (Patents, computer programs), productization, publications and social/industrial contributions

• Chiba, K., " Evolution of the acquisition of fertilization competence and polyspermy blocks during meiotic maturation." *Molecular Reproduction and Development*. In press.

Potential of social/industrial contribution

■ Joint research/ licensing / technical consulting / knowledge sharing (open courses, workshops, publications)

- 1) Study of meiotic division and fertilization using animal oocytes and sperm.
- 2) Study of apoptosis in unfertilized oocytes.

