

## Autogamy in *Paramecium caudatum*

Sachiko TAKIKAWA<sup>1</sup>, Manabu HORI<sup>2</sup> and Hiroshi ENDOH<sup>3</sup>

(<sup>1</sup>Coll. Sci. Engn., Kanazawa Univ., <sup>2</sup>Grad. Sch. Sci. Engn., Yamaguchi Univ.,

<sup>3</sup>Grad. Sch. Nat. Sci. Technol., Kanazawa Univ.)

### SUMMARY

Ciliates have two morphologically and functionally different nuclei: a somatic macronucleus (MAC) and germline micronucleus (MIC). MAC governs almost all vegetative functions via active gene expression, but is eliminated during sexual reproduction. On the other hand, MIC is transcriptionally silent, and only functions during sexual reproduction to transmit genetic information to the next generation. In *Paramecium*, two types of sexual reproduction are known: conjugation and autogamy. Conjugation is initiated by the interaction of complementary mating types, followed by pair formation, and then a series of nuclear events, such as meiosis and nuclear differentiation, occur. In contrast, meiosis begins without the initial cell-to-cell interaction in autogamy. Previously we identified 12 genes that are specifically expressed in the early stage of conjugation in *P. caudatum*, one of which *P. tetraurelia* MS2 gene homologue. To examine a role of the gene, *P. tetraurelia* MS2 gene including its flanking sequences was introduced into *P. caudatum* macronucleus using an expression vector by microinjection, and it was observed whether autogamy is actually induced. All of the transformed *P. caudatum* did show nuclear changes like autogamy in a single cell, suggesting that MS2 is a key gene, which triggers the important step of sexual reproduction in *Paramecium*.