

Characterization of mating pheromone gamone1 in several strains of *Blepharisma*

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SUMMARY

Ciliate *Blepharisma* has complementary mating types I and II. Sexually matured mating type I secretes gamone1 under a food-deprived condition. Mating type II receives gamone1 and secretes gamone2. After interaction between mating type I and II, the cells conjugate. Gamone1 is known to be species-specific, whereas gamone2 is common to five species in the genus *Blepharisma*. Species of *Blepharisma* are classified to four groups by morphology of macronucleus: group I, single compact macronucleus; group II, binodal macronuclei; group III, multinodal macronucleus; group IV filiform macronuclei. First, we stained macronuclei with DAPI, measured cell sizes and classified strains. Second, several strains of *Blepharisma* were investigated for whether mating pair formation occurred between different strains. Finally, we determined DNA sequences of the gamone1 gene in the Kogen strain, which was collected from a rice field near the Emperor Kogen's tomb. Results showed that R1072 strain (group IV, *B. japonicum*) formed pairs with the Hotta strain (group IV, probably *B. stoltei*) and with the Kogen strain (group IV, probably *B. stoltei*). Results also show that the amino acid sequences of gamone1 from strains belonging to the same group have high homology. These results suggest that gamone1 affects different species belonging to the same macronucleus group.