Molecular features of the *cdk1* and *cks* gene homologs expressed specifically during induction of conjugation in mating type II cells of *Blepharisma japonicum*

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SUMMARY

When deprived of nutrients, ciliate *Blepharisma japonicum* starts a sexual reproductive process, conjugation. To clarify the molecular mechanism of the initiation of conjugation, we isolated genes expressed specifically during induction of conjugating pairs in mating type II cells, using suppression subtractive hybridization. Three of the isolated gene fragments showed homology to *cdk1*, *cks* and *4-HPPD* in other organisms. These gene fragments showed enhanced expression when treated with gamone 1. In addition, these gene fragments were not expressed neither in type I cells nor in type II cells in the log phase, and not expressed in type I cells treated by gamone 2. To further examine the molecular feature of these genes, we sequenced the cDNA of *cdk1* and *cks* gene homologs using RACE PCR. The two sequences showed strong homology to *cdk1* and *cks*, respectively; however, one of the typical motifs of *cdk1* or *cks* was not conserved in these homologs. We also isolated the gene homologs that are expressed exclusively in cells undergoing cell cycle. So far, we obtained six *cdk1* gene homologs with different expression profiles than our previously isolated *cdk1*.