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Sex-Related cDNA Cloning and Analysis in *Griffithsia japonica* (Ceramiaceae, Rhodophyta)

Yoo Kyung LEE[1], Soon Hee KIM[1], Choo Bong HONG[1], In Kyu LEE[2*]
[1]*Dept. Biology and Institute for Molecular Biology and Genetics, Seoul National University*
[2]*Dept. Biology, Seoul National University, Seoul 151-742, KOREA*

Griffithsia japonica is a multinucleate red alga having the *Polysiphonia*-type life history. The haploid male and female, and the diploid tetrasporangial plants show similar morphological characters except reproductive structures. Sex-related cDNA clones could be isolated by differential screening of a gametophyte-specific cDNA library. A cDNA clone GJFP-1 (*G. japonica* female predominant), expressed preferentially in female plants and weakly in male and tetrasporangial plants. Nucleotide sequence and the deduced amino acid sequence analyses showed that GJFP-1 shared high homology to hsp90 (heat shock protein 90) gene, which is involved in gametogenesis in other organisms. RNA blot analysis for *G. japonica* with GJFP-1 probe showed dramatical increase of the transcript by heat shock at 30℃. GJMTP-1 and GJMTP-2 (*G. japonica* male and tetrasporophytic predominant) expressed preferentially in male, weakly in tetrasporangial plants and very weakly in female plants. A cDNA clone GJMTS-1 (*G. japonica* male and tetrasporophytic specific) expressed in male and tetrasporangial plants, not in female plant. These clones are thought to be related to morphological similarities in early development of male and tetrasporophyte. A cDNA clone GJHS-1 (*G. japonica* haploid specific) expressed in haploid male and female but not in diploid tetrasporophyte.

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The Effects of Spermine on Protein Synthesis and Formation of Microtubule System in *Naegleria gruberi* Differentiation

Hyun Il Jo*, and JooHun Lee
Department of Biology, Yonsei University

Spermine, a tetramine, inhibits the cellular differentiation of *Naegleria gruberi* amoeba into flagellates. To understand this inhibitory mechanism, we examined the effects of spermine on the protein synthesis and on the stability of cytoskeletal microtubule system. Thus far, we have found out the following results. Addition of spermine at the initiation of differentiation inhibits total protein synthesis gradually based on the rates of incorporation of ^{35}S methionine. In the spermine treated cells, the amounts of ^{35}S incorporation between 0-30, 30-60, 60-90, 90-120 (min after initiation of differentiation) were found to be 87, 55, 57, 26 (%) of the control in the respective periods. Spermine also disrupted the cytoskeletal microtubule system when added at later stage (80min) after initiation of differentiation. In less than 10 min after the addition, the cytoskeletal microtubules were completely disrupted, but flagellar axoneme was barely affected.