F817 Construction of a chromosome specific library in hot pepper using microdissection technique

Park Nam-Il and Kim Nam-Soo

Department of Agronomy, Kangwon Nationa University, Chunchon, Korea, 200-701

Hot pepper is one of the most important vegetable crops in Korea. Chromosome specific DNA library could be utilized in isolating useful genes by positional cloning and practice molecular breeding. Therefore, we isolated a single chromosome with a micromanipulator and amplified the isolated chromosomal DNA using a DOP primer. The amplified DNA was verified in Southern blot analysis using the genomic DNA as a probe. As well, the chromosome specificity was checked by FISH using the DOP-PCR products as probes. Then, the amplified DNA was subjected to be either digested with *Xho* I or amplified with AFLP protocol or used as magnetic-conjugated probes for cDNA subtraction. Finally, the isolated fragments were cloned into pGEM vector. The number of clones is over 200 in a single chromosome. (Supported by KOSEF 971-0505-024-2)

F818 Phylogeny and Evolution of the *Apotomopterus* Ground Beetles(Coleoptera, Carabidae) Based on Morphology and Mitochondrial DNA Sequences

Choong-gon Kim*[1], Zhi-Hui Su[1], Syozo Osawa[1] and Si-Kab Nho[2]

[1] Biohistory Research Hall, Osaka, Japan

[2] Dept. of Silk Fiber Science, Kyungpook National University

The phylogenetic relationships of the Carabinae ground beetles were analyzed by comparing 1069 nucleotide sequences in the mitochondrial gene encoding NADH dehydrogenase subunit 5 (ND5). The ND5 phylogenetic tree revealed that the hind-wingless Carabina and the hind-winged *Calosoma Campalita* (Calosomina) diverged from the common ancestor, and *Cychrus* (Cychrini) is the outgroup of them. A rapid radiation of the major genera took place in the initial stage of the Carabina evolution about 30 Myr ago. All species of the genus *Apotomopterus* reveal a unique morphology of male genital organ in having a well developed spine (spinula) at the base of endophallus. *Apotomopterus* species formed two independent monophyletic clusters on ND5 tree. This would mean that the spinula developed in parallel in these two distinct lineages. *A. (L.) clathratus clathratus* from Germany is morphologically similar to *A. (L.) c. aquatilis* from Japan and are clearly discriminated from *A. (E.) porrecticollis* which is endemic to Japan. However, the evolutionary distance between the two subspecies of A. *(L.) clathratus* is much larger than that between *A. (L.) c. aquatilis* and *A. (E.) porrecticollis*, suggesting that *A. (E.) porrecticollis* was derived from *A. (L.) c. aquatilis* presumably in the Japanese islands through a rapid morphological differentiation.