and cloned. Sequencing of many tags can reveal a gene expression pattern characteristic of function of the cell. New transcripts corresponding to novel tags can be identified. SAGE should provide a broadly applicable means for the quantitative cataloging and comparison of expressed genes in a variety of normal, developmental, and altered states.

We have utilized SAGE technology to analyze the set of genes expressed from the Arabidopsis genome, herein called the transcriptome. Messenger RNAs of OGA-treated leaf were prepared and converted into cDNA. After cDNA cut and linker ligation, ditags production, PCR amplification, and construction of ditag concatemers, cDNA tag library was constructed. Many tag sequences were analyzeded using FASTA program. Some known genes and ESTs including hsp90A and ACC oxidase homolog, which are known to be related to responses against various stresses, were obtained, and also unknown new ESTs were obtained.

(W-Ⅲ-2) :

CLONING OF GENES INVOLVED IN TUBERIZATION IN POTATO BY DIFFERENTIAL DISPLAY REVERSE TRANSCRIPTION (DDRT)

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The differential display was employed for cloning of novel tuber specific expression genes or tuberization related genes in potato plant (*Solanum tuberosum* L.). The differential screening of mRNA expression via differential display has been described for detection and isolation of differentially expressed genes based on polymerase chain reaction (PCR) amplification of cDNA, in absence of the construction of cDNA libraries. The essence of differential display method is to use an anchored oligo-dT primer for reverse transcription which anneals to the beginning of a subpopulation of the poly(A) tails of mRNAs. The advantages of differential display as compared to alternative methods for differential screening include the ability to compare simultaneously numerous samples for both induction and repression of specific gene expression. In addition, differential display is likely to permit identification of rare transcripts via the PCR component of this technique.

In vitro cultured potato (*Solanum tuberosum* L. cv. Irish Cobbler) was used for experiments. Many genes expressed during tuberization in potato plant were isolated by using differential display. Lots of them were storage proteins such as patatins (30-40% in soluble proteins) or proteinase inhibitors (10-15% in soluble proteins). One of these genes was showed organ specific expression. These novel genes are expressed only storage organs; fruit including ovary after anthesis, tuber from stolon. In differential display analysis, it may be no wonder that many storage protein genes were specifically amplified at tuber, because theirs are accumulated in tuber during tuberization of potato. For cloning of the key gene responsible for tuberization in potato plant, it may be needed to establish more critical conditions than performed in this study.