F210 Cytological Analysis of Symptoms Induced by BCTV Protein in Arabidopsis

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BCTV is a single-stranded DNA virus that is proving useful for basic studies of the interaction of Arabidopsis with a viral host and provides a system for studying both resistance and the molecular basis of symptom development. We have characterized and developed the new experimental system to analyze the virus inducible host cell divisions. In BCTV- Arabidopsis, in particular, Sei-O ecotype was found to be 'hypersusceptible' to the BCTV-Logan strain in that it developed very severe symptoms, including severely deformed inflorescences with callus-like structures, and accumulated high levels of viral DNA. We have further definded the factors important for symptom development caused by BCTV using a molecular genetic approach based on expressing BCTV-encoded proteins in transgenic plants. Anatomical results of these studies indicate that the BCTV ORF L4 is a primary symptom determinant and the expression of L4 protein is a major viral factor for symptom development. We are currently utilizing the molecular immunocytological approaches to localize L4 protein in the cellular and subcellular levels with transformed Arabidopsis. These studies will no doubt lead to a more detailed explanation of the molecular basis of symptom expression in plant-virus interaction.

F211 Genome Analysis by Fluorescence *In Situ* Hybridization of Callus-derived Regenerants in *Allium cyaneum* R.

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To investigate the effects of basal media and growth regulator on callus initiation and shoot regeneration, tissue culture was carried out in *Allium cyaneum*. The highest callus initiation was obtained from MS medium supplemented with 2,4-D and BA, Total 195 regenerants were obtained in MS medium supplemented with high concentrated cytokinin. Eighty percentages of total regenerants was obtained from callus maintained in MS medium supplemented with 2,4-D/BAP and 2,4-D/BAP/KIN. About 92% of total regenerants were diploid having 2n=16 in somatic cell. Using digoxigenin labelled 5S rRNA genes and biotin labelled 18S-26S rRNA genes probe, FISH were carried out in 2n=16 and 2n=32 regenerants of *Allium cyaneum*. 5S rRNA genes sites were detected on interstitial regions of long arms in chromosomes 7. 18S-26S rRNA genes sites were detected in terminal regions of short arms and satellites in chromosome 5 and especilally B chromosomes. There are nothing that 18S-26S and 5S rRNA genes hybridization signals existed on same chromosome. Between diploid and tetraploid, the different of location of 5S, 18S-26S rRNA gene wasn't recognized and the number of these was doubled in tetraploid.