The chorion proteins(A, B, C, D, E, HcA and HcB) are synthesized by monolayer of follicular epithelial cells and assembled after secretion into egg shell. They are served as a protective layer of egg ; facilitating gas exchange, preventing desiccation. They are composed of 100~150 genes as superfamily in the second chromosome. Chorion gene is the good subjects to study evolutionary and developmental regulation. The 140kb late chorion locus of *B. mori* contains 15-multigene families (HcA, HcB), which are divergently oriented gene pairs. The chorion proteins of *B. mandarina*(wild silkmoth) apparently differ from those of *B. mori* in the structure and morphology. we have studied the chorion late locus of *B. mandarina*, constructed wild silkmoth genomic library, and obtained the 10 Hc clones with hybridization and PCR. pCH417 (one of the obtained clones) was sequenced and characterized. The sequence similarities between *B .mori* and *B. mandarina* are 94%, 93% for HcA, HcB respectively. A major sequence difference is founded is C-arm, which consists of (Cys-Gly-Gly), (Cys-Gly), meaning the variation is the result of frequent expansion and contraction events, but central domain is highly conserved region. We will study the structural and evolutionary relationship of Hc between *B. mori* and *B. mandarina*.

F812

Gene Therapy of Type 1 Diabetes Mellitus: Liposome-mediated DNA Delivery to Murine Skin

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Type 1 diabetes mellitus is caused by severe insulin deficiency secondary to the autoimmune destruction of pancreatic b cells. We constructed plasmid vector coding insulin gene with keratin 14 promotor and the vectors were liposome-mediated injected into murine skin targeting keratinocytes by the jet injection device. Low-level but sustained expression of the insulin from the murine keratinocytes was achieved *in vitro* administration of the plasmid vectc and sequencing revealed it was identical to human preproinsulin sequences combined keratin 14 promotor region. In advance of *in vivo* application, we injected another two kinds of constructed vectors containing *LacZ* instead of insulin gene. Gene expression was shown in skin as early as 1 week after DNA application and has been sustained until 20 weeks. By PCR and southern blot analyses showed the *LacZ* gene integrated into chromosomes as we expected. We have taken different approach to study proper insulin gene delivery and its activity in body. Streptozotocin (STZ) selectively destroyed insulin producing beta islet cells of the pancreas providing a model of type 1 diabetes mellitus with remarkable similarity to that of human IDDM patients. So we applied DNA vectors to 4 groups of mice and blood glucose levels were monitored. Both multiple low-dose and single high-dose injections of STZ were sufficient to induce hyperglycemia, increasing the blood g . cose levels resulting from loss of pancreatic cells and 6 levels of dose DNA vector treatment decreased 24-68% of blood glucose levels in STZ-induced diabetic mice. Microscopic examination of the X-gal stained region of the gene treated skin tissue explained the promoter activity compared with lacki:ıg of the region. And microscopic images of pancreas explained the number of beta cells greatly reduced and almost destroyed at the same time statistical data of vector injection showed sustained normal blood glucose levels. Furthermore keratinocyte-specific gene expression by immunohistochemistry and quantitative analysis of insulin produced from keratinocytes in STZ induced diabetic

mice are to be assisted. In this study it was suggested that the skin is a possible target organ for ectopic expression of the insulin gene as a potential treatment modality for type 1 diabetes mellitus and also this system is one of the candidates for gene therapy as gene carrier.

F813

The First Intron of Petunia Actin-Depolymerizing Factor Gene, *PADF-1*, Is Essential for Gene Expression

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ADF is one of the small actin-binding proteins that regulate actin dynamics in cells. We have previously isolated two cDNA clones,*PhADF1* and *PhADF2*, encoding ADF from *Petunia hybrida*. Northern and western blot analyses indicated that the gene expressions of PhADFs are regulated at transcriptional level. In addition, immunolocalization exprement confirmed that *PhADFs* are abundant proteins within the vascular tissues of petunia. To characterize the structure and regulation of ADF gene, we have isolated a genomic clone *PADF-1*, corresponding to *PhADF1* from a petunia genomic library. Comparison to cDNA sequence revealed that the coding region of *PADF-1* gene is consisted of three exons and two introns. The 1.6 kb of first intron was located immediately 3′ of the translation start codon. Promoter/GUS expression study in transgenic *Arabidopsis* demonstrated that the first intron is the essential element for *PADF-1* gene expression.

F814

Expression of Pathogenesis-related Gene by Chemical Inducers and Wounding in *Lithospermum erythrorhizon*

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cDNA clones encoding pathogenesis-related protein were previously isolated from a cDNA libraries prepared from shikonin-producing cells of *Lithospermum erythrorhizon* (Yu *et al* ., 1999). *LePR1* transcripts is predominantly accumulated in the root. However, *LePR1* transcripts is not detected in young leaves. To characterize the gene expression of *LePR1* , we investigate the accumulations of *LePR1* transcripts by several signal molecules for systemic acquired resistance(SAR) and by wounding in young leaves. *LePR1* gene expression is strongly induced by treatment of salicylic acid. Furthermore, accumulation patterns of *LePR1* transcripts by salicylic acid analogues, such as acetyl salicylate and benzo(1,2,3)thiadiazole-7-carbothioic acids S-methylester, are similar to those of salicylic acid treatment. After wounding treatment, accumulation of the *LePR1* transcripts is increased until 30 h. *LePR1* transcripts is induced by H_2O_2, after 100 mM H_2O_2 treatment, reached a peak at 12 h and thereafter gradually decreased. *LePR1* gene is induced in treatment with jasmonic acid, linolenic acid, and linoleic acid as well as abscisic acid. *LePR1* is accumulated after pathogen infection and is more susceptible to *Pseudomonas syringae* and *Erwinia stewartii* .

F815

Mitochondrial DNA Control Region Polymorphism in a Population from Korea