and gradually increased as berries ripened. However, endochitinase-encoding gene was not expressed until 11 weeks post flowering and the most highly expressed at the fully ripen stage. These three genes were exclusively expressed in grape berries and their expression was not detected in other organs such as leaves, roots and flowers. The results of this work showed that these three genes might play an important role during the grape berry skin development.

D204 Differential Regulation of the Expressed Genes during the Cell Division to Enlargement Transition at the Early Stage of Grape Berry Development

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In most of the fruit plants including grapevine, the fruit size is determined by the number of cell divisions at the very early stage of fruit development. After cell division, cells expand exponentially and finally fruit reaches the full size, showing a typical size and shape. In order to identify the genes involved in the determination of the fruit size, we isolated and characterized the genes which are differentially regulated during the cell division to cell enlargement transition. Total RNA was isolated from grape berries at the different stages, 1, 3 and 15 weeks after fruit set. Suppression subtractive hybridization (SSH) provided 237 putative cDNA clones and their expression profiling was analyzed during the fruit development. A cDNA clone(designated vlgbed 37) was specifically expressed at the early stage of fruit development and DNA sequence analysis showed that it encodes a metallothionein-like protein.

D205 Effect of Picloram on Organogenesis from Tissue Culture of Arabidopsis Stem and Orgin of the Callus Development

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애기장대(*Arabidopsis thaliana*)의 줄기절편 조직배양시 기관분화에 미치는 여러 가지 auxin(NAA, IAA, 2.4-D, Picloram)의 영향과 callus 발생기원을 조사하였다. Cytokinin을 첨가하지 않은 auxin 단독배지 중에서 2 mg/L NAA 단독배지에서는 배양 11일 후 모용(trichome)이 형성되었고, 2 mg/L IAA 단독배지에서는 배양 11일 후 부정근이 발생하였다. 2 mg/L 2,4-D 단독배지에서는 배양 7일 후 callus 형성이 왕성하게 나타났으며, 2mg/L picloram 단독배지에서는 배양 5일 후부터 callus가 왕성하게 형성되어 배양 10일 후에는 callus로부터 모용과 부정근이 발생되어 picloram은 callus형성 및 기관분화에 매우 효과적인 auxin임을 알 수 있었다. Auxin을 첨가하지 않은 0.05 mg/L kinetin 단독배지에서는 callus 형성이 매우 미약하게 나타났으며 각 auxin과 kinetin을 혼합한 배지에서는 대부분 callus가 형성되었으나 2,4-D와 picloram 단독배지에서의 callus 형성보다 효과적이지 못하였다. Picloram 단독배지에서 형성된 callus조직의 기원을 내부형태학적으로 관찰한 결과, 배양 2일 후 사부 유조직세포의 세포분열이 일어나기 시작하였으며 4일 후에는 피층 유조직의 세포분열과 meristemoid 형성이 나타나 배양 7일 후에는 세포분열이 피층과 표피바깥부위로 매우 빠르게 확산되어 callus를 형성하였다.

D206 Revisiting phase transition in Arabidopsis thaliana

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In recent papers, it has been repeatedly claimed that vegetative (leaf) primordia can be converted into reproductive (paraclade) primordia and that paraclades are differentiated by the basipetal activation of buds from the axils of the leaf primordia,

which had been initiated prior to reproductive induction in Arabidopsis. In this study, we observed the inflorescence development of Arabidopsis by characterizing morphological changes at the shoot apical meristem (SAM) during the floral transition. According to our results, although the SAM in *Col* wild type showed basipetal differentiation of paraclades, acropetal differentiation was observed in *FRIGIDA* and *fsu1* (*FRIsuppressor 1*). Also, when we treated vernalization to *FRI*, the developmental pattern of the paraclade was similar to *Col*. This indicates that the basipetal development of *Col* was an artificial phenomenon by excessive floral signals in the long day condition. The nodes production rate in *Col* and *fsu1* were not different throughout the developmental process even though after floral induction the rate increased to two folds than before floral induction. The only difference between *Col* and *fsu1* was the timing of floral induction. All together, we suggest that the acropetal differentiation is a natural phenomenon and that the phase transition in Arabidopsis is not a single step change from vegetative to reproductive phase but has an inflorescence phase between the two phases.

D801 Characterization of a novel survivin-like gene expression in Xenopus laevis

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Precise control of mitosis and apoptosis is important for the proper shaping of the body plan during many developmental processes. In this control process, baculoviral inhibitor of apotosis repeat(BIR)-containing proteins have been implicated to act as regulatory factors. Recently, we have isolated a cDNA encoding a novel BIR-containing protein, *Xsurvivin*, in the *Xenopus laevis*. In this study, we have examined the expression profiles of *Xsurvivin* in the growing oocytes, embryos and adult tissues of *Xenopus laevis*. In the growing oocytes, the expression of *Xsurvivin* has been noted from stage I to stage VI oocytes with high level of expression in the early stages. In the adult tissues, *Xsurvivin* expression was noted only in the ovary indicating that *Xsurvivin* is involved in the oogenesis. In the embryos, *Xsurvivin* expression was detected in the animal hemisphere up to the gastrula stage and in the neural tube at neurula stage with somewhat high expression in the brain region. To examine the probable function of *Xsurvivin* on the early development, 100pg 1 ng antisense RNA of *Xsurvivin* was injected into embryos at stage 1, stage 2 and stage 3. As expected, RNA injection caused a variety of phenotypic changes; exogastrula, microcephalic and short-axis embryos as a dose dependent manner. Taken together, *Xsurvivin* appears to play important roles during oogenesis and early developmental processes of *Xenopus laevis* including gastrulation and neurulation.

D802 Proteomic characterization of cellular differentiation in Acanthamoeba castellanii

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Nutritive trophozoite form of *A. castellanii* underwent cellular differentiation to cyst form in non-nutrient medium. In order to understand the molecular basis of the cellular differentiation, we followed changes in protein profiles along with the cyst form by 2D-PAGE and western blotting using a specific monoclonal antibody (mAb). We subdivided cysts into 1-day cyst, 4-day cyst and 7-day cyst. The 1-day cyst began to have inner cell wall and showed different