Gyeongsang National University, 92 Chilam-dong, Chinju 660-751, Korea

Neurosteroids have been known to be synthesized in the central and peripheral nervous systems. In past years, many investigators participated in elucidation of the regulatory mechanism involved in postnatal brain development, especially, concerning developmental and regional specific expression of steroidogenic enzymes. Now, it is well accepted that the steroidogenic acute regulatory protein (StAR) plays essential roles and consists major rate limiting step in steroidogenesis. However, there is yet no evidence about StAR mRNA expression in developing brain. Thus, in this study, we firstly revealed changes of the expression pattern of StAR mRNA in several brain areas where other steroidogenic enzymes mainly expressed. As a result, the pattern of StAR mRNA expression was mainly changed in hypothalamus, hippocampus and cerebellum. We also detected variations of StAR expression according to their own developmental stages in the peripheral steroidogenic organs, adrenal glands and gonads. These results implicated that StAR might have a role in the neuronal cell growth and differentiation in the rat brain development likewise other steroidogenic enzymes.

D129

Effects of Ethanol on the Onset of Female Rat Puberty

정명희, 노구섭, 김현준, 김진현, 강상수, 최완성*

Department of Anatomy and Neurobiology, College of Medicine, Gyeongsang National University, Chinju, Korea

The present study was undertaken to examine the effects of ethanol on the hypothalamus-pituitary-gonad reproductive neuroendocrine axis during prepubertal and onset of puberty in the immature female rat. From day 25, each rat began receiving either a control saline or ethanol. Animals were sacrificed on day 27 and 32, and their ovaries and blood were collected. In the present results, ethanol treatment significantly decreased serum luteinizing hormone contents at both time points. Uterine weights of ethanol-treated group were significantly lighter than control group at early time point, while there was no noticeable discrepancy at late time point. Viginal openings, a marker of onset of puberty, also clearly delayed in ethanol-treated group. Using an in situ hybridization histochemistry, we determined the expression of mRNAs encoding StAR. Ovaries from ethanol-treated rats showed a suppressed expression of StAR mRNA. These results demonstrate that ethanol affect the reproductive activity at the level of brain thereby disturb the prepubertal ovarian function and onset of puberty, at least in part, through the inhibition of ovarian StAR gene expression.

D201

Control of Self-incompatibility by CO_2 Gas Treatment in *Brassica campestris*: Structural Alteration of Papillae Surface and Differential Gene Expression upon CO_2 Gas Treatment

Sang-Hee Lee*[1], Moon-Young Hong[1], Shinje Kim[2], Byung-Dong Kim[2], Byung-Hoon Min[3], Nam-Kwon Baek[4], and Yong-Yoon Chung[1,2]

Department of Biology, Korea University, Seoul 136-701[1]; Center for Plant Molecular Genetics & Breeding Research, Seoul National University, Suwon 441-744[2]; Department of Horticulture, Paichai University, Taejon[3]; Osan breeding institute, Choong Ang Seed Co., LTD, Osan 445-810[4]

Chinese cabbage (*Brassica campestris*), one of the major vegetable crops in Korea, is controlled by self-incompatibility in the reproduction process. To maintain inbred lines of the crop plant, a method in that high CO_2 gas is treated to the pistils to break the self-incompatibility and thereby self-pollens can successfully make germination and fertilization has been widely used in seed companies. This study shows structural alteration of papillae cell surface during the self-incompatibility breakage by CO_2 gas treatment that eventually allows self-pollens to germinate. Also, in order to understand what the CO_2 gas causes to the papillae cell at molecular level, differential gene expressions of the pistil treated with the CO_2 gas was investigated by DDRT-PCR and reverse northern hybridization experiments. These results suggested that the breakage of self-incompatible reaction caused by CO_2 gas treatment is not only done by the structural alteration of papillae cell wall but also done by gene products that are positively and/or negatively regulated by the environmental stimulation.

D 202

Regeneration of Protoplast from Disintegrated Cells of the Marine Green Alga *Chaetomorpha aerea*

Tatiana A. Klotchkova* and Gwang Hoon Kim

Department of Biology, National Research Laboratory of Cultural Properties, Kongju National University, Shingwandong, Kongju, Chungnam 314-701

When injured, the protoplasm come out from the multi-nucleate cell of a green alga *Chaetomorpha aerea* can generate numerous new cells spontaneously. Cell organelles aggregated in seawater and became surrounded with a gelatinous envelope within 20 minutes. On average, 200 protoplasts were produced from 1 ul of cytoplasm and about 15% of them survived. The total membrane surface area of individual cells was estimated by image analysis of intact cells and the protoplasts regenerated from the extruded protoplasm. About 22 % of the original cell membrane was recycled to make new protoplast membrane. Fluorescein diacetate staining showed an esterase activity inside a protoplast that increased over time. DAPI staining showed irregular distribution of nuclei, suggesting that each cell organelle was initially come out independently. Development of protolast membrane was pH dependent and the optimum pH was 8, the pH of seawater. About 50% of regenerated cells developed a reproductive cell, aplanospore, in two weeks. The released aplanospore divided into 8 cells and each of them became a motile gamete with two flagella. This is first report on protoplast regeneration from disintegrated cell fractions of multi-cellular system.

D 203

Expression of Cold-Stress-inducible cDNA Clone Isolated from Potato (*Solanum tuberosum* L.) tuber cDNA Library

Eun-Ju Kim*, Jongil Kim, Sung-Jin Kim, Yoon-Young Kim and Kwang-Wooung Lee

School of Biological Sciences, Seoul National University, Seoul 151-742

Stress-induced proteins play a definite role in protecting plants from possible damages by drought, extreme temperatures, and flooding. Cold storage of potato tubers at 4℃ was associated with the accumulation of several cold-induced transcripts. A cDNA clone encoding cold-inducible protein was isolated from a cDNA library prepared from tubers of *Solanum tuberosum* L. cv Superior.