

조물들이 규칙적으로 배열되어 있다. 막성 구조물들은 땅콩모양과 콩모양의 두 가지 형태로 보이고, 이것은 뚜껑의 이중적인 구조에 의한 것으로 생각된다.

C206 Electron microscopy of epidermal idioblasts in *Lycopersicon esculentum* stem

InSun Kim, Eun-Hee Park*, Se-Eun Woo
Biology Department, Keimyung University, Taegu 704-701, Korea

Scanning electron microscopy was used for monitoring developmental purposes and to provide more information on the origin of the epidermal idioblasts in *Lycopersicon esculentum* stem. In particular, the study focused on two unique features, the raised stomata and the trichomes. In addition to typical anomocytic stomata, well-developed actinocytic raised stomata were distinguished. Five to six subsidiary cells radially surrounded the stomata that were raised, ca. 100-200 μm above the surface level. Four types of trichomes were also noticed : 1) four-lobed glandular head with a stalk cell; 2) ca. 400-500 μm slender hairs with clavate tip; 3) ca. 70-100 μm short hairs with warty texture; and 4) ca. 2.5-4.0 mm long multicellular hairs with 15-20 basal cells arranged in the rosette form as conically elongated hairs. Development of such actinocytic raised stomata along the epidermal surface remains unknown. Hence, a complete ultrastructural analysis will be conclusive and is the subject of a subsequent investigation.

C207 Morphology of trichomes and stoma-like structures in the anisophyllic fern species

InSun Kim*
Biology Department, Keimyung University, Taegu 704-701

Salvinia lacks true roots and produces two leaf forms, floating leaves (FL) and rootlike

submerged leaves (SL), thus exhibiting the anisophylly. The compound SL have little in common with the FL developmentally. The upper frond surface is covered with close parallel rows of large multicellular estipitate trichomes that make the leaf buoyant. A function of these trichomes, egg-beater form unfused at the tip, is clearly the prevention of wetting. The lower epidermis is invested with multicellular filaments, each terminating in an acicular cell with small balloon-like appendage attached to the base. They might function in absorption or in stabilizing the plant. Dense, multicellular but simple trichomes also dorsally covered the filamentous SL. They are much longer and also contain small balloon-like appendage at the base. Small stomata-like pores, ca. 100-130/ mm^2 , are scattered evenly over the upper FL epidermis. The size is ca. 15 10 μm and the aperture alone is ca. 8 \times 5 μm . The nature of the pores as true stomata is doubtful, although each is bordered by tiny guard cell-like structures. No defined system of guard cells and the vestigial nature have been speculated.

C208 Molecular and Ultrastructural studies on Fertilization and Sex Determination in *Aglaothamnion oosumiense* (Rhodophyta)

Ok-Kyong Chah*, Gwang Hoon Kim¹ and In Kyu Lee

School of Biological Sciences, Seoul National University; Department of Biology, Kongju National university¹

During the fertilization in *Aglaothamnion oosumiense*, reproductive cells interact with each other through sex specific adhesion molecules on surface of spermatia and trichogyne. Recognition molecule of spermatia brings trichogyne into close contact and initiates a signal transduction pathway in preparation for cell-cell fusion. Spermatial development and fertilization process of A.

oosumiense were investigated by electron microscopy. The spermatium consists of two parts, an ovoidal head and two appendages projecting from each distal end of long axis. Chemical differentiation of the spermatial wall occurs early in development of spermatial vesicles. Liberated spermatia have an arrested prophase nucleus with a pair of polar rings. The cytoplasm of trichogyne is connected with that of spermatia at the fertilization canal, and is empty when the nuclear fusion between spermatium and carpogonium occurs. A novel method combining element of suppression subtractive hybridization (SSH) with high throughput differential screening permits the efficient and rapid cloning of rarely transcribed differentially expressed genes. Potential of the method is demonstrated by the isolation of 170 differentially expressed cDNA from the female and male plants when subtracted from female and male plant, respectively. Of nine putative sex specific clones selected from each subtracted cDNA, seven unique clones were obtained for the male plants and two for the female plants.