ABSTRACTS OF POSTER DEMONSTRATIONS

A. SPORE ARCHITECTURE AND DEVELOPMENT

Tapetum of *Psilotum nudum* (L.) Beauv.

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The tapetum of *P. nudum* consists of a plasmodial component and a cellular, parietal layer, the cells of which are often enlarged. This layer develops a sporopollenin-containing, acetolysis-resistant membrane on the inner tangential wall.

The plasmodial component exists and undergoes changes in its structure over long periods of time. Initially, large numbers of spore-mother cells are found in plasmodial chambers but after meiosis a re-organisation occurs so that individual tetrads become surrounded by the plasmodium. During later stages of spore-wall development, the plasmodium infiltrates between the spores so that mature spores are individually enclosed. Nuclei associated with the plasmodium are still evident during final stages of spore-wall development.

Structures (2 μm diameter) termed spheroids are also situated in individual chambers in the plasmodium. They exhibit a layered structure which parallels that of the spore-wall, at least from the middle exospore outwards.

SEM studies of the formation of the tapetal membrane supplement the TEM observations describing the formation of a structured basal layer from which rounded nodules of a more homogeneous nature project into the loculus. Distinctive 'two-toned' vesicles, so-called by virtue of their staining properties, have been observed in the cellular, parietal layer during the development of this membrane which persists in the dehisced sporangium.

The tapetum, far from being a simple, autolysing tissue supplying a source of nutrients for the developing spores, may have a much more important role in the formation of the spore-wall and in the functioning of the sporangium during sporogenesis.

Spore wall formation in Polypodiaceae

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The Polypodiaceae show much variation in sporoderm sculpture. At first, wall formation is similar in all species; in later stages, the wall may become variously

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