

Chiu, S. W. & Moore, D. (1999). What is a hymenophore subroutine in fruiting morphogenesis? Evidence from a hymenophore-less mutant of *Coprinus cinereus*. In: *Abstracts, Seventh International Fungal Biology Conference*, (ed. J. H. Sietsma), p. 46. University of Groningen, The Netherlands, 22 -25 August, 1999.

WHAT IS A HYMENOPHORE SUBROUTINE IN FRUITING MORPHOGENESIS? - EVIDENCE FROM A HYMENOPHORE-LESS MUTANT OF *COPRINUS CINEREUS*

Siu Wai Chiu and David Moore

Department of Biology, The Chinese University of Hong Kong, Shatin, N. T., Hong Kong, China
and Department of Biological Sciences, University of Manchester, Manchester M13 9 PT, U. K.

Two induced mutants of a single strain have identical morphological abnormalities but different DNA fingerprints. The primary morphological abnormality is the failure to initiate the hymenophore subroutine, usually visible at the primordial stage. A hymenophore carries the hymenium, the cell layer responsible for eventually producing the basidiospores. Thus, fruits arose readily but none carried out the essential function of sexual reproduction for species propagation. A definite pileus subroutine was initiated after the stipe subroutine, forming an apical 'knob' on an aerial elongated primordium. However, no differentiation of the pileipellis was evident though this usually marks the boundary between the outermost loose and deciduous swollen and enlarged veil cells from the inner closely packed pileus context, pileus trama and lamellae. Instead, the stipe went through the first phase of elongation and became hollow (forming a lumen) but the overall fruit was a dwarf in size with a slender stipe. The pileus continued its subroutine to expand and cleaved the upper apical portion of the fruit. As no lamellae were formed, the final separation of the pileus and stipe, through pileus expansion and the rupture of gill trama from a central stipe, was not observed. Throughout fruit body development, no regular layer of palisade cells was observed to line the open cavity within the pileus. Such space was caused by mechanical stress leading to cell disruption and death. Thus, cell death is not a triggering factor for the differentiation of primary lamellae. The definite differentiation of some cells in a homogeneous pileus context to form palisade cells which separate to create a gill cavity (the whole is called a gill organiser; Moore, 1998) is needed in *Coprinus cinereus* (the rupthymental mode; discontinuous palisade layer; Reijnders, 1979). Further, as the hymenophore is absent, there was presumably no growth factor synthesised to cause the second phase of stipe elongation, and thus the dwarf fruit body resulted. Thus, veil cells and pileipellis are the secondary characteristic features of a hymenophore subroutine in addition to the appearance of lamellae. Fruiting development is a co-ordination of independent subroutines. Further work is going on to characterise the hymenophore subroutine molecularly and genetically.