

Nuclear behavior in the vegetative hyphae of *Neurospora crassa*

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Abstract

Nuclear behavior in vegetative hyphae

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and Aist 1967 (in manuscript), but it would seem desirable to outline our findings for this newsletter.

We have recently described some new aspects to nuclear division and motility in the vegetative mycelium of Neurospora crassa. The details of these findings are being reported in two papers (Wilson et al. 1966 Ark. Acad. of Sci. 20:(in press); and Wilson

We have found that the asexual nucleus of N. crassa divides in the manner we have described for Ceratocystis fagacearum (Aist and Wilson 1967 Amer. J. Bot. (in press)). Nuclear division occurs within an expanded nuclear envelope. Chromatin separation differs from classical mitosis in that 1) division occurs perpendicular to the longitudinal axis of the cell, 2) anaphase movement is unilateral and unsynchronized and 3) a spindle occurs only between separating chromatids.

The mechanisms of division proposed by Bakerspigel, Weijer et al., and Dowding and Weijer have features which are consistent with certain of our findings. We believe that the constricting and dividing nuclei reported by Bakerspigel may have resulted from a staining of the nuclear matrix within the envelope as well as the chromatin. When we overstain, we get similar figures. As the daughter nuclei migrate out of the old nuclear envelope, the envelope is stretched and figures are produced comparable to those illustrated by Bakerspigel as divisional stages.

Weijer et al., Dowding and Weijer have shown the chromosomes to be associated lineally into a filament of chromatin. They interpret division as the splitting of this filament into two strands of lineally associated chromosomes which then separate. We find the chromosomes associated into a filament of double-stranded chromatin prior to division. A spindle then develops between separating chromatids and appears to push them apart.

We have also found that the centriole of N. crassa is involved in nuclear motility as well as division. When nuclei move in the cell, they are preceded by the centriole. Migrating nuclei become attenuated and can be seen to have a head (centriole) and a tail (nucleolus). - - - Department of Plant Pathology, University of Arkansas, Fayetteville, Arkansas 72701.