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Ultrastructural studies of microconidium formation

R. J. Lowry

T. L. Durkee

A. S. Sussman

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Abstract

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Lowry, R. J., T. L. Durkee and A. S. Sussman.

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and show a much more extensive system of rough endoplasmic reticulum than do young vegetative hyphae. A bulge in the hypha presages the start of microconidium formation, followed by the rupture of the outermost wall layers. A thick collar forms around the protruding microconidiophore due to extensive thickening of the inner wall layer of the parent hypha. At this stage the cytoplasm of the developing microconidiophore is still continuous with that of the hyphal cell from which it arises and is contained by a wall which is derived from the thickened collar. The microconidium is finally isolated from the cytoplasm of the microconidiophore by a centripetal extension of its wall, the material of which seems to be derived from the collar.

The present data suggest that microconidia differ from macroconidia in their smaller size, denser array of ribosomes, more extensive endoplasmic reticulum, more conspicuously layered wall, fewer mitochondria, and single nucleus. These results confirm and extend those of Dodge (1932 Bull. Torrey Bot. Club 59: 347) and Moreau and Moreau (1939 Bull. Soc. Bot. France 86: 12) whose observations with the light microscope were the principal sources of information on the subject. ■ ■ ■ Department of Botany, University of Michigan, Ann Arbor, Michigan 48104.

Microconidiating cultures of *N. crassa* strain peach-fluffy (Y8743m, L) (FGSC #569) were fixed at various times after the initiation of growth and examined with the electron microscope.

Hyphae from which microconidia form are markedly vacuolated

and show a much more extensive system of rough endoplasmic reticulum than do young vegetative hyphae. A bulge in the hypha presages the start of microconidium formation, followed by the rupture of the outermost wall layers. A thick collar forms around the protruding microconidiophore due to extensive thickening of the inner wall layer of the parent hypha. At this stage the cytoplasm of the developing microconidiophore is still continuous with that of the hyphal cell from which it arises and is contained by a wall which is derived from the thickened collar. The microconidium is finally isolated from the cytoplasm of the microconidiophore by a centripetal extension of its wall, the material of which seems to be derived from the collar.