

ABSTRACT

EARLY DEVELOPMENT OF THE PLANT-PARASITIC NEMATODE, *MELOIDOGYNE INCOGNITA*

Meloidogyne incognita is an endoparasitic root knot nematode that uses the vascular system of plants, parasitizing multiple plant species, causing extensive damage. This study describes early embryogenesis of *M. incognita*. We looked at: (i) events that occurred prior to the first cellular division; (ii) establishment of the founder cells and how these cells oriented spatially with respect to one another; and (iii) whether programmed cell death (PCD) occurred during embryogenesis and, if so, at what stages. We used 4D-microscopy to identify early events in the single cell and cell division patterns, and confirmed these results by immunohistochemistry to identify cytoskeletal arrangement during embryogenesis. A TUNEL assay was used to localize cell corpses within the developing embryo. We conclude that *M. incognita* has a comparable developmental pattern to the model *Caenorhabditis elegans*, albeit slower; *M. incognita* possibly establishes six founder cells and one germ cell. Like *C. elegans*, *M. incognita* uses PCD to eliminate cells during development.

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