

A nematode-destroying parasite bearing lageniform conidiiferous branches on endozoic hyphae

By Charles Drechsler

(6915 Oakridge Road, Town of University Park, Hyattsville P. O., Maryland 20782, U.S.A.)

In nematodes parasitized by members of the familiar mucedinaceous genera *Verticillium* and *Acrostalagmus*, the endozoic hyphae produce some branches that upon reaching the host cuticle narrowly penetrate this barrier, and then, after widening externally, continue their growth to develop into conidiophores. These conidiophores commonly terminate in a flask-shaped cell, and, in addition, bear several lateral unicellular flask-shaped branches, each of which gives rise on its slender sterigma to successive non-septate conidia, usually of globose or ellipsoidal shape. A pronounced departure from such development would seem to have come about in the widespread *Meria coniospora* Drechsler (1941) through complete suppression of lateral flask-shaped branches, or phialides; the slender sterigma that produces the conidia, one after another, here being extended directly from each segment of the sturdy conidiophore. A conspicuous modification in development is also displayed by *Harposporium baculiforme* Drechsler (1959) in its unusually small conidiophores, which, nevertheless, function effectively by putting forth flask-shaped conidiiferous cells in rather crowded arrangement. Virtually complete omission of any development of a conidiophore, as that reproductive structure is understood in writings on species of *Acrostalagmus* and *Harposporium*, recently came to light in an apparently related nematode parasite observed in a maize meal-agar plate culture 17 days after inoculation with forest detritus gathered in upland woods 5 kilometers southwest of Butternut, Wisconsin, on September 4, 1969.

A nematode that has succumbed to the Wisconsin parasite (Fig. 1) shows narrow assimilative hyphae running lengthwise through its fleshy interior. From these hyphae are soon put forth many short lateral branches, which, when they closely approach, or reach, the animal's cuticle, have a rather broadly rounded tip (Fig. 1, a—c). The branches thereupon continue growth by extending a narrow apical protrusion, about $0.5\ \mu$ wide, that penetrates the cuticle and elongates a very short distance (usually 0.2 — $1.2\ \mu$) into the air before it swells at the tip (Fig. 1, d, e) to form a globose terminal conidium (Fig. 1, f—s). Although in a host eelworm lying on the surface of an agar culture, most branches elongate horizontally, and thus erupt from the cuticle

in postures favorable for observation, some elongate ascendingly to erupt in a position on the upper aspect of the animal (Fig. 1, t). Once the full-grown conidium is delimited by a basal septum, it may on slight disturbance become detached, leaving the slender sterigma in a denuded state (Fig. 1, u). Apparently a sterigma commonly gives rise to several conidia one after another, with the result that short spore chains (Fig. 1, t) can often be seen, especially in undisturbed material. Of course, the disturbance entailed in mounting an infected nematode under a cover-glass, brings about rather widespread disjunction of catenated conidia. In a covered, somewhat moist preparation the many individual conidia that may assemble fortuitously along the host integument (Fig. 1, v—z) are obviously no less thoroughly detached than the conidia which lie scattered over the substratum nearby (Fig. 2).

Except for the very slightly protruding tip of its sterigma, the conidiiferous branch, or phialide, of the Wisconsin fungus is formed within the host animal. With respect to positional relations it corresponds, therefore, not to the external conidiophore in species of *Acrostalagmus* or *Harposporium*, but to the endozoic branch from which the external conidiophore arises. Penetration of the host cuticle by the sterigma of each phialide must be held an outstanding characteristic of the fungus, whereby it is clearly set apart from its various known relatives. It is believed to represent the type of a new genus, for which a name compounded of two words ((πλησιος, σπορα) meaning "near" and "seed", respectively, may appropriately recall the development of conidia very close to the host animal.

Plesiospora gen. nov.

Hyphae assumentes intra animalia minuta evolutae, incoloratae, ramosae, mediocriter septatae, ramulos conidioferos emittentes; ramuli conidioferi saepe lageniformes, quisque sterigmati cuticulam animalis perforans, deinde in apice protruso conidia extra generans. Typus: *Plesiospora globosa*.

Assimilative hyphae developing in minute animals, colorless, branched, moderately septate, putting forth conidiiferous branches; conidiiferous branches often flask-shaped, each with its sterigma penetrating through the animal's cuticle, then on the protruding sterigmatic tip forming conidia externally.

Plesiospora globosa sp. nov.

Hyphae assumentes intra vivos nematoideos vermiculos evolventes, incoloratae, interdum (praecipue in parvis animalibus) parce ramosae, primo incerte vel dubie septatae sed deinde manifeste septatae, plerumque 1.5—2.0 μ crassae; ramuli conidioferi saepe lageniformes, recti vel curvati, plerumque 3—11 μ longi, deorsum 1.8—2.5 μ lati, quisque sursum

sterigmati $0.5\ \mu$ lato cuticulam vermiculi perforans, deinde in apice sterigmati $0.3\text{--}1.2\ \mu$ protruso conidia deinceps extra generans; conidia globosa, incolorata, plerumque $1.8\text{--}2.5\ \mu$ crassa.

Vermiculos nematoideos necans et consumens habitat in humo silvestri prope Butternut, Wisconsin. Typus: Figurae 1—2.

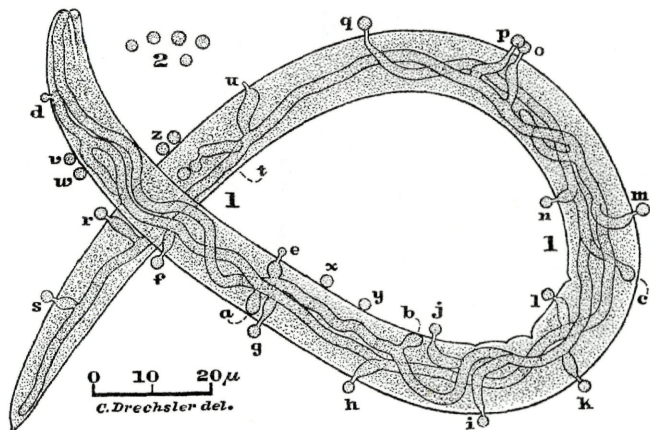


Fig. 1—2. *Plesiospora globosa* developing parasitically in a maize-meal-agar plate culture at temperatures near 19°C ., $\times 1000$ throughout. — Fig. 1. Small infected nematode as revealed in a wet mount under a cover-glass; apart from 2 relatively young assimilative hyphae coursing longitudinally through the host animal are shown asexual reproductive parts as follows: a—c, 3 young conidiiferous branches before development of sterigmata; d—e, 2 conidiiferous branches with their sterigmata each terminating externally in a young conidium; f—s, 14 conidiiferous branches on each of whose sterigmata is borne externally a full-grown or nearly full-grown conidium; t, a conidiiferous branch with denuded sterigma; v—z, 6 detached conidia in contact with host nematode. — Fig. 2. Five detached conidia scattered on substratum nearby.

Assimilative hyphae developing parasitically in living eelworms, colorless, sometimes (especially in relatively small host animals) showing rather little vegetative branching, mostly $1.5\text{--}2.0\ \mu$ wide, at first often appearing only dubiously or indistinctly septate but later revealing cross-walls at moderate intervals. Conidiiferous branches often flask-shaped, straight or curved, mostly $3\text{--}11\ \mu$ long and $1.8\text{--}2.5\ \mu$ in greatest width, each perforating the host cuticle with its slender ($0.5\ \mu$ wide) sterigma, then at the tip of the slightly protruding ($0.3\text{--}1.2\ \mu$) sterigma bearing conidia externally one after another; conidia globose, colorless, mostly $1.8\text{--}2.5\ \mu$ in diameter.

References.

- Drechsler, C., 1941. Some hyphomycetes parasitic on free-living terri-
colous nematodes. *Phytopathology* 31: 773—802.
- 1959. Two new species of *Harposporium* parasitic on nematodes. *Jour.*
Washington (D. C.) Acad. Sci. 49: 106—112.

ZOBODAT - www.zobodat.at

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Sydowia](#)

Jahr/Year: 1970/1971

Band/Volume: [24](#)

Autor(en)/Author(s): Drechsler Charles

Artikel/Article: [A new nematode-destroying parasite bearing lageniform conidiiferous branches on endozoic hyphae. 173-176](#)