

**DESCRIPTION OF THREE NEW FRIDERICIA SPECIES
(OLIGOCHAETA, ENCHYTRAEIDAE) FROM HUNGARIAN
RENDSINA SOIL**

by

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In the environments of Budapest, in a *Mercuriali-Tilietum matricum* forest at "Julianna-major, Hársbokor-hegy", in soil samples collected since 1969, three *Fridericia* species were repeatedly found, which proved to be new for science, and the description of which the author gives below. Each of the three species belongs to that problematic group within the genus *Fridericia*, the spermatheca of which have two diverticula.

The vegetation of the research area: *Tilia platyphyllos*, *Fraxinus excelsior*, *Acer platanoides*, *Cornus mas*, *Mercurialis perennis*, *Melica uniflora*, and in the spring *Corydalis cava*.

Soil: Typical rendsina; pH 6.7 – 7.8.

***Fridericia maculatiformis* n. sp.**

A small species, about 9 – 10 mm long, and 0.2 – 0.25 mm wide. Number of segments: (34) – 38 – 44 – (46). Head pore at O/1, dorsal pores beginning with VII. Colour: whitish. Setae straight, with distinct ental hook: (1), 2 – 2: (1), 2 – 2. Length of setae: 30 – 35 μ . Cutaneous glands arranged in 1 – 3 transverse rows per segment, one gland conspicuously greater in size.

Clitellum situated on XII – 1/2 XIII. Glandular cells arranged in transverse rows.

Brain 1 1/2 – 2 times as long as wide, rounded. Peptonephridia (Fig. 1a) short, strong, not branching, and terminating at V – VI. Body fluid contains no, or few detached setae. Lymphocytes of two types, in accordance with the *Fridericia* type. Dorsal vessel originating in XVIII – XXI. Blood: colourless. Nephridia and septal glands of characteristically *Fridericia* type. Chloragogen cells present commencing with segment VI.

Seminal vesicle well developed, extending over XI – XII; it causes the distinct red or brown colour of these segments. Sperm funnel (Fig. 1d) 2 – 2 1/2 times as long as wide, about half as long as diameter of body.

Collar distinct. Efferent duct long and weakly coiled. Penial bulb middle sized and compact. Spermatheca (Fig. 1b) onion-shaped with two nearly cylindrical diverticula, bent towards the ectal duct. Ectal duct about 4 times as long as diameter of ampulla, and communicates separately with the oesophagus, one or rarely two large, very conspicuous stalked glands are to be found at the ectal orifice (Fig. 1c). Ental duct wide and about as long as ampulla.

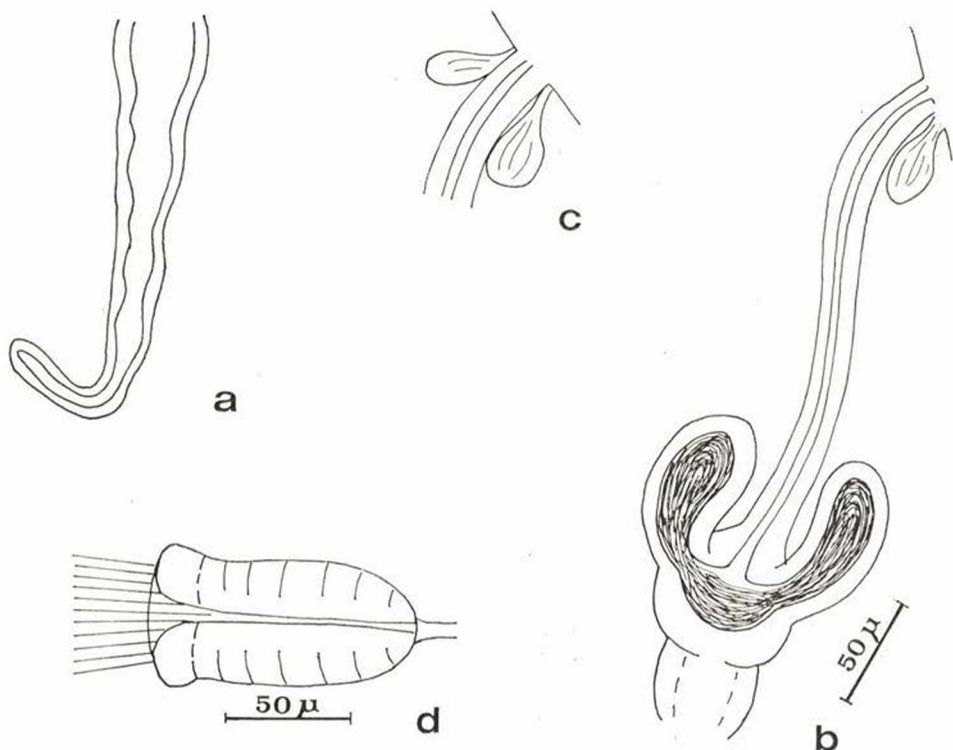


Fig. 1. *Fridericia maculatiformis* n. sp. — a: peptonephridium; b: spermatheca; c: two glands at the ectal orifice of spermatheca; d: sperm funnel

Discussion: The new species differs from *Fridericia perrieri* (Vejdovsky) 1877, *F. aurita* Issel 1905, *F. alata* Nielsen and Christensen 1959, *F. nemoralis* Nurminen 1970, *F. tirolensis* Schmidegg 1938 (this latter very incompletely described), and *F. stephensoni* Moszynski 1932 — disregarding other characteristics — by having more than 2 setae in the setal bundles. The species *Fridericia connata* Bretschner 1902, and *F. leydigi* (Vejdovsky) 1877 differ also by the higher number of segments. *Fridericia paroniana* Issel 1904 and *F. bisetosa* (Levinsen) 1884, Furthermore, *F. cylindrica* Springett 1971 have globular diverticula. At *F. holmesa*

Springett 1971 the two spermatheca merge entally. *Fridericia magna* Friend 1899 is essentially bigger (30–50 mm, with 70–90 segments). Nearest to *Fridericia maculatiformis* stand *F. maculata* Issel 1904, and *F. renatae* Möller 1971, but in *F. maculata* the seminal vesicle is poorly developed and never brownish; the spermatheca small and indistinct, while at *F. maculatiformis* the seminal vesicle is well developed, the spermatheca bigger and distinct, in *F. renatae* the small, anucleate lymphocytes are absent. The author expresses her sincere thanks to Prof. Dr. B. Christensen, for his valuable councils.

Number of the examined specimens: 16.

Type-specimens: Holotype (F. 2) and Paratypes (P. 5) deposited in the Zoosystematical Institute of the L. Eötvös University, Budapest.

Fridericia tubulosa n. sp.

A medium-sized species, 12–18 mm long and 0.25–0.3 mm wide. Number of segments: (26)–40–50–(57). Head pore at O/I, dorsal pores beginning with VII. Colour: whitish. Setae straight, with distinct ental hook: (3), 4–2 : 4–(4), 2. Maximum length of setae: 50 μ . Cutaneous glands arranged in 3 transverse rows per segment; the cells are usually big, and yellowish or brownish.

Clitellum situated on XII–1/2 XIII; weakly developed. Glandular cells arranged in transverse rows.

Brain 1 1/2–2 times as long as wide, rounded. Peptonephridia (Fig. 2a) very long, wide at the beginning, further on slender, unbranched, tubular, wound into a tight coil at the level of the spermatheca, the end of the peptonephridia extends to VI. (Hence, the peptonephridia are similar to that of *F. bulboides*). Body fluid contains sometimes numerous detached setae, sometimes not one single. Lymphocytes of two types, in accordance with the *Fridericia* type. Dorsal vessel originating in XIX–XXIII. Blood: colourless. Nephridia and septal glands of characteristicly *Fridericia* type. Chloragogen cells are present commencing with segment VI.

Seminal vesicle well developed, extending over IX–XI., brownish. Sperm funnel (Fig. 2d) 3 times as long as wide, about as long as diameter of body. Collar distinct. Efferent duct long and narrow. Penial bulb large and compact. The middle part shows a more muscular, the margin a loose glandular structure (Fig. 2e). Spermatheca (Fig. 2b) consists of an almost cylindrical ampulla with two sessile diverticula of irregular outline. The ampulla communicates separately with the dorsolateral region of the oesophagus. Ectal duct is rather short and stout, about 2–2 1/2 times as long as length of ampulla, with two large, very conspicuous sessile glands (Fig. 2c) at the ectal orifice.

Discussion: This new species differs from other *Fridericia* species, of which the spermatheca have two diverticula, by its characteristic peptonephridia. Similar peptonephridia are to be found only in *F. alata*

Nielsen and Christensen, 1959 among the other species but from this the n. sp. differs by the shape of the spermatheca, furthermore *F. alata* is bigger, (12–20 mm, with 56–64 segments), and has antecleptically 6, 4 setae in the setal bundles.

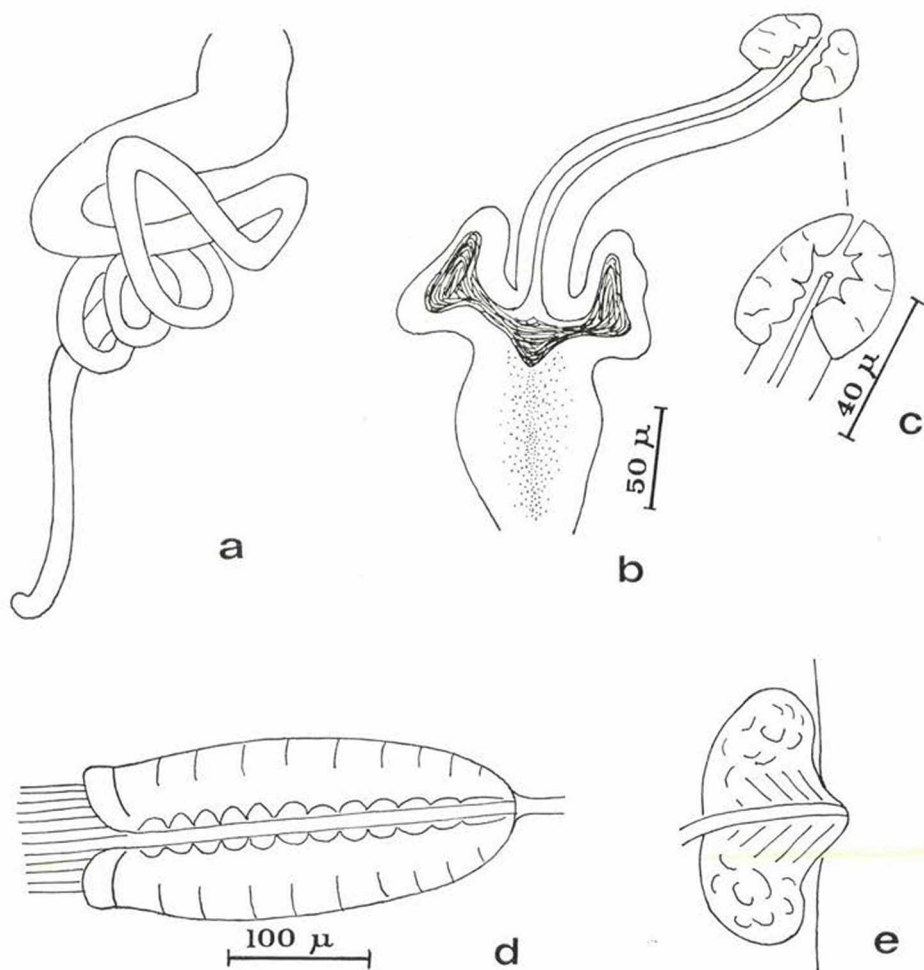


Fig. 2. *Fridericia tubulosa* n. sp. — a: peptonephridium; b: spermatheca; c: glands at the ectal orifice of spermatheca, view from above; d: sperm funnel; e: penial bulb

Number of examined specimens: 25.

Type specimens: Holotype (F. 3) and Paratypes (P. 6) deposited in the Zoosystematical Institute of the L Eötvös University, Budapest.

Fridericia rendsinata n. sp.

A medium-sized species, about 10–15 mm long and 0.3–0.35 mm wide. Number of segments: 49–63. Head pore at O/I, dorsal pores beginning with VII. Colour: yellowish-white. Setae straight, with distinct ental hook: (2–3), 4–4, 3, 2: 4–4, 3, 2. Maximum length of setae: 50 μ . Cutaneous glands arranged in 3–4–6 transverse rows per segment, the cells are brownish.

Clitellum situated on XII–1/2 XIII, and the glandular cells arranged in transverse rows.

Brain rounded, about 2 times as long as wide. Peptonephridia (Fig. 3a) with a few short terminal or subterminal branches, and ending in VI. Lymphocytes are of two types, in accordance with the *Fridericia* type. Dorsal vessel originating in XX–XXIV. Blood: colourless. Nephridia and septal glands of characteristically *Fridericia* type. Chloragogen cells present, commencing with segment V.

Seminal vesicle well developed, extending over X–XII, it causes the distinct brown colour of these segments. Sperm funnel (Fig. 3d) 3–4 times as long as wide. The length of sperm funnel somewhat shorter than the diameter of body. Collar distinct. Efferent duct long and narrow. Penial bulb large and compact. Spermatheca (Fig. 3c) consists of an almost cylindrical ampulla and two globular diverticula, which have short stalks. The ampulla has a large lumen (Which disappears successively in older specimens). The diverticula have a distinct chamber, which is connected with the lumen of ampulla by a duct. The latter is widened in the middle, forming a small chamber. The chamber and the cavity of the diverticula are full of spermatozoa and are of an intensive brown colour. The ectal duct is long and devoid of glands at the ectal orifice. The connection of the ectal duct and the two diverticula to the ampulla is most characteristic, and differs from all species described till now. Namely, the ectal duct is connected with the ampulla from one side, the two diverticula, however, from the opposite side (Fig. 3b). The ampullae communicate separately with the dorsolateral region of the oesophagus.

Discussion: This species differs from *Fridericia nemoralis* Nurmien 1970, *F. alata* Nielsen and Christensen 1959, *F. maculata* Issel 1904, *F. connata* Bretscher 1902, *F. leydigi* (Vejdovsky) 1877, *F. magna* Friend 1899, *F. renatae* Möller 1971, *F. holmesa* Springett 1971, and *F. maculatiformis* n. sp. by the form of the diverticula of the spermatheca. *F. stephensoni* Moszynski 1932 is much bigger (70–80 segments). From *Fridericia bisetosa* (Levinsen) 1884, *F. paroniana* Issel 1904 and *F. cylindrica* Springett 1971 it differs by its 4 setae in the anteclitellar region; *F. perrieri* (Vejdovsky) 1877 has a greater number of setae (6–7–8), and the seminal vesicle is absent or of very small size; peptonephridia are much branched. *Fridericia tirolensis* Schmidegg 1938, was described incompletely, based on a single specimen. From *Fridericia tubulosa* n. sp. it differs by the peptonephridia. From all *Fridericia* species having spermatheca

with 2 diverticula, the new species differs by the widened duct connecting the diverticula of the spermatheca with the ampulla, which is most characteristic of this species.

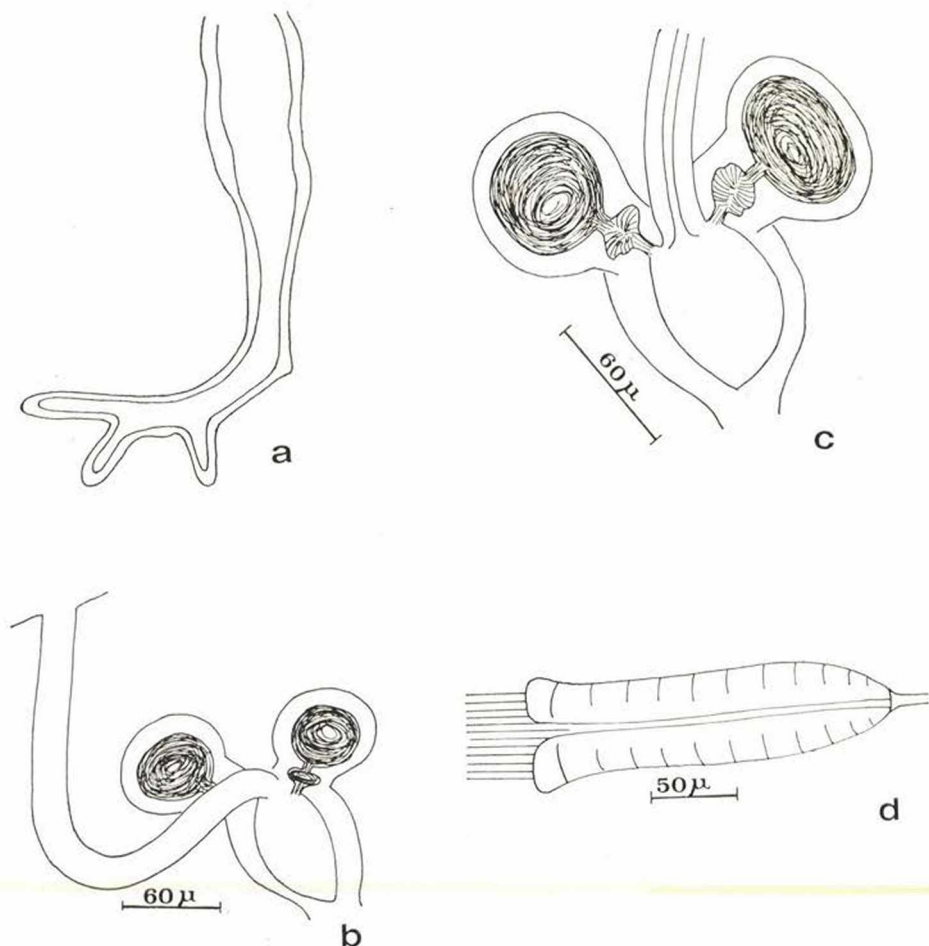


Fig. 3. *Fridericia rendsinata* n. sp. — a: peptonephridium; b–c: spermatheca; d: sperm funnel

Number of examined specimens: 20.

Type specimens: Holotype (F. 4) and Paratypes (P. 7) deposited in the Zoosystematical Institute of the L. Eötvös University, Budapest.

Summary

In the present paper the author describes three new *Fridericia* species: *Fridericia maculatiformis*, *F. tubulosa*, and *F. rendsinata*. All three species were found in the rendsina soil of a *Mercuriali-Tilietum matricum* forest in the environments of Budapest (Hungary).

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