

Family Guitarridae Dendy, 1924

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Guitarridae Dendy (Demospongiae, Poecilosclerida, Mycalina) includes species with typical mycalostyles and sigmancistras, lacking tridentate chelae, and having restricted architectural specialization shown by their megascleres (e.g., absence of echinating megascleres). Microscleres consist of placocheleae-derivatives (placocheleae, biplacocheleae, dischela and/or tetrapocillae), uniting genera irrespective of their disparate skeletal arrangements. The family includes seven nominal genera of which four are valid. A key for the valid genera is given.

Keywords: Porifera; Demospongiae; Poecilosclerida; Mycalina; Guitarridae; *Coelodischela*; *Euchelipluma*; *Guitarra*; *Tetrapocillon*.

DEFINITION, SCOPE

Synonymy

Guitarrae Dendy, 1924: 336. Not Gray, 1867a (erroneous authorship attributed by Carballo & Uriz, 1998: 809). Not Burton, 1929a (erroneous authorship attributed by Hajdu *et al.*, 1994a: 126).

Definition

Mycalina with microscleres including placocheleae-derivatives (placocheleae, biplacocheleae, dischela and/or tetrapocillae).

Taxonomic remarks

Guitarridae Dendy, 1924 was informally proposed as a Section within the Mycalinae (as Esperellinae; Dendy, 1924), originally comprising only *Guitarra* Carter, 1874a. Subsequent revisionary studies on the Poecilosclerida argued for the necessity of

clustering together all the taxa bearing the so-called placocheleae-derivatives (placocheleae, biplacocheleae, dischela and tetrapocillae; Van Soest, 1988; Hajdu *et al.*, 1994a). These taxa were spread over different families within the Poecilosclerida, on account of their diversified skeletal architectures and complement of megascleres (Coelosphaeridae, Cladorhizidae, Desmacididae). Their classification in a single, possibly monophyletic family is presented here. Van Soest (1988) recognized the shared affinities of *Coelodischela*, *Guitarra* and *Tetrapocillon*, to which Hajdu (1994) and Hajdu *et al.* (1994a) added *Euchelipluma*. These sponges form a uniform clade in terms of their shared possession of complex placocheleae-derived microscleres, irrespective of their disparate skeletal arrangements (cf. Hajdu & Van Soest, 1996). Their classification within the Mycalina is supported on the grounds of their possession of typical mycalostyles and sigmancistras, their lack of tridentate chelae, and on the restricted architectural specialization shown by their megascleres (e.g., absence of echinating megascleres, viz., acanthostyles). Taxonomic decisions taken herein follow the rationale outlined by Van Soest & Hajdu (Mycalina, this work).

KEY TO GENERA

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| (1) With placocheleae | 2 |
| With placocheleae derivatives, but no true placocheleae | 3 |
| (2) Erect, with sigmancistras | <i>Euchelipluma</i> |
| Other habits; palmate isochelae, when present, spiny; no sigmancistras | <i>Guitarra</i> |
| (3) With tetrapocilli | <i>Tetrapocillon</i> |
| With dischela | <i>Coelodischela</i> |

COELODISCHELA VACELET, VASSEUR & LÉVI, 1976

Synonymy

Coelodischela Vacelet, Vasseur & Lévi, 1976: 57.

Type species

Coelodischela diatomorpha Vacelet, Vasseur & Lévi, 1976 (by monotypy).

Definition

Guitarridae with dischela.

Description of type species

Coelodischela diatomorpha Vacelet, Vasseur & Lévi, 1976 (Fig. 1).

Synonymy. *Coelodischela diatomorpha* Vacelet, Vasseur & Lévi, 1976: 57, fig. 36, Pl. VI, figs. d–e).

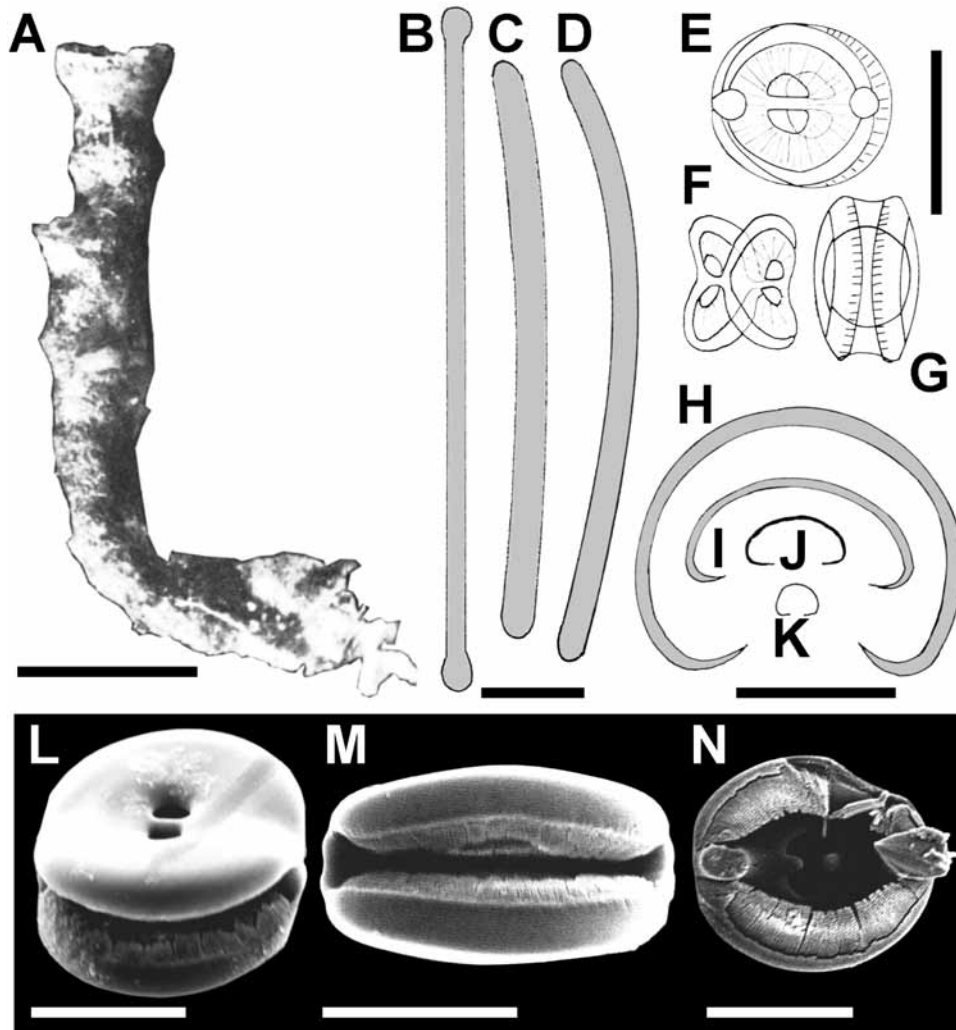


Fig. 1. *Coelodischela*. A–K, *C. diatomorpha* Vacelet, Vasseur & Lévi, 1976. A, holotype (scale 1 mm) (adapted from Vacelet *et al.*, 1976, Pl. VI d). B–K, drawing of the spicule complement (adapted from Vacelet *et al.*, 1976, fig. 36). B, tylote. C–D, strongyles. E–G, dischelae (scales 20 μm). H–K, sigmas (scale 50 μm). L–N, *C. massa* Lévi & Lévi, 1983b. L, dischela, paratype re-examined (MNHN D CL 2860), top oblique view. M–N, dischelae (adapted from Van Soest, 1988, Pl. 3, figs. 2, 4) (scales 20 μm). M, side view. N, broken ala viewed from below.

Material examined: Holotype: Not seen. Comparative material. *Coelodischela massa* Lévi & Lévi, 1983b: Paratype MNHN 2860 – from Grand Récif, New Caledonia.

Description (adapted from Vacelet *et al.*, 1976: 57). Small tubes attached directly to the substrate, 10 mm long, 1 mm diameter, with a few annular thickenings; the extremities are open and slightly wider (Fig. 1A). The walls of the tubes, rather thin, are reinforced by tangential strongyles, in disorder or sometimes arranged in loose groups with 4–5 spicules, and by uncommon, dispersed tylotes. Dischelae may be grouped irregularly. Megascleres: Tylotes, with rounded tyles, 155–170 μm long and 4–5 μm thick, tyles 7.5 μm wide (Fig. 1B). Strongyles, 140–160 μm long and 9–10 μm thick (Fig. 1C–D). Microscleres: Dischelae, (placo)chelae-derived microscleres with two opposed disks bearing densely denticulated inner-surfaces, connected by two shafts on opposed sides of the spicules' borderline; both disks are slightly concave, the concavity being more conspicuous along the diameter which crosses both connection shafts; they are pierced centrally by two semicircles each. Dimensions: 19.2–31.7 μm wide by 13.3–16.7 μm high (calculated from Vacelet *et al.*'s, 1976, fig. 36) (Fig. 1E–G, L–N from *C. massa*

Lévi & Lévi, 1983b). Sigmas, typical or slightly flagelliform, 17.5–110 μm wide by 0.5–2.5 μm thick. The larger ones (flagelliform) have their endings suddenly bent 90° (Fig. 1H–K).

Remarks. *Coelodischela* is atypical within the family due to its possession of tylotes with well formed rounded tyles, as are common within the Coelosphaeridae (sensu Hajdu *et al.*, 1994a; Van Soest, this volume). Furthermore, it possesses two categories of megascleres, which is paralleled only here-and-there within the Mycalina, being a character relatively more widespread in the Microcionina and Myxillina. Nevertheless, the denticulated inner-surface of *Coelodischela*'s dischelae (cf. Lévi & Lévi, 1983b; Hajdu *et al.*, 1994a) is undeniably akin to the microstructure observed in the typical placocheleae of *Guitarra*. In fact the coelodiscs appear closer to a placocheleae-derivative found in some *Guitarra*, the biplacocheleae (e.g., *G. abboti* Lee, 1987; *G. isabellae* Lee, 1987), differing only by the possession of a second fusion (shaft) between both disks, and of two symmetrical holes near the central portion of each of both disks. The bridge separating both holes is probably homologous to the falx of typical cheleae.

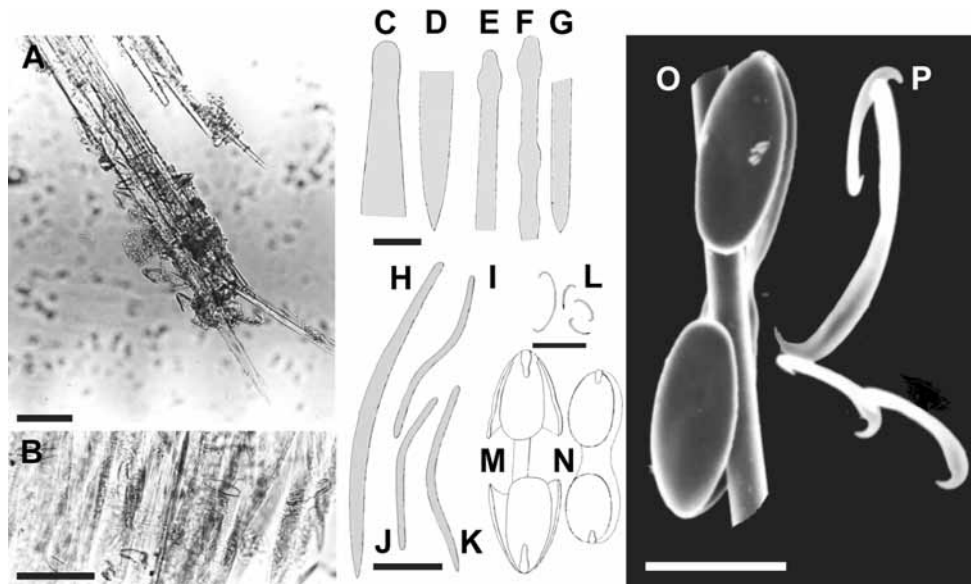


Fig. 2. *Euchelipluma pristina* Topsent, 1909. A–B, holotype (IOM 04 1041). A, bundle of subtylostyles with projecting isochelae. B, tangential view of bundle of subtylostyles showing projecting placocheles (scale 100 μm). C–N, drawing of the spicule complement (adapted from Topsent, 1909, Pl. II, fig. 6). C–D, subtylostyle of the main shaft. E–G, subtylostyles of the spines (scale 20 μm). H, subtylostyle of the peduncle. I–K, st(rong)yles of the base (scale 100 μm). L, sigmancistras. M, isochela. N, placochele (scale 20 μm). O–P, SEM photographs, holotype re-examined (IOM 04 1041). O, placochele (scale 20 μm). P, sigmancistras-I and -II (scale 10 μm).

EUCHELIPLUMA TOPSENT, 1909

Synonymy

Euchelipluma Topsent, 1909: 18. *Desmatiderma* Topsent, 1928d: 308.

Type species

Euchelipluma pristina Topsent, 1909 (by monotypy).

Diagnosis

Guitarridae with narrow placocheles in face view, smooth palmate isochelae, sigmancistras and an erect habit coupled to axially compressed architecture.

Description of type species

Euchelipluma pristina Topsent, 1909 (Fig. 2).

Synonymy. *Euchelipluma pristina* Topsent, 1909: 19, Pl. I, fig. 4, Pl. II, fig. 6.

Material examined. Syntypes: MOM 04 1041 – ‘Princesse Alice’, stn. 1203 (15°54'N, 25°15'W). BMNH 1930.7.1.19 – same locality (Prince of Monaco Collection, microscopy slide, schizosyntype).

Description (adapted from Topsent, 1909: 19). Small sponges 14–22 mm high, with a slight basal widening, a short, naked, constricted peduncle, and a slightly widened and flattened shaft, ornated with short paired spines. One specimen bears three rows of spines, instead. The sponge is firm near the base, but flexible towards the apex; specimens are more-or-less flexuous. The skeleton consists of a spicular axis of styles (Fig. 2A), condensed near the

base, and divided in several parallel fibres upwards. The fibres are twisted at the peduncle. Tufts of spicules are inserted on the spicular fibres at regular intervals, symmetrically, giving thus origin to the spines. Microscleres are situated around the shaft, the larger sigmancistras standing perpendicularly. Chelae are also localized around the megasclere bundles (Fig. 2A–B), supposedly participating in the capture of prey (i.e., carnivory). In the widened portion of the shaft, the ascending spicular-fibres spread, surrounding yellow, subspherical or ovoid, mostly compressed fleshy masses around 200 μm in diameter. Megascleres: Subtylostyles of the main shaft, typically straight, slightly fusiform, with short obtuse points, and bases which taper very gradually; tyles mostly inconspicuous, heads as thick as necks, around 1000 μm long, 30 μm thick near the middle portion, and 13 μm thick at the base (Fig. 2C–D). Subtylostyles of the spines, straight, with a long inconspicuous tyle, sometimes polytylote, short apex, 400–600 μm long, ca. 11 μm thick (Fig. 2E–G). Subtylostyles of the peduncle, fusiform, curved, ca. 600 μm long and 20 μm thick (Fig. 2H). Styles of the base, sometimes strongyles, flexuous, 240–370 μm long, 10–14 μm thick (Fig. 2I–K). Microscleres: Palmate isochelae, slightly curved, 80–100 μm long, shaft 6 μm across, frontal alae 28 μm apart (Fig. 2M). Placocheles, with denticulated inner surfaces of the alae, 60–73 μm long, shaft 6 μm across, alae 28 μm high and 15 μm wide (Fig. 2N–O). Sigmancistras-I, 22–24 μm long, generally contorted, with a conspicuous narrowing in the middle portion of its inner fringe (Fig. 2L, P). Sigmancistras-II, ca. 12 μm long (Fig. 2L,P).

Remarks. The genus is clearly recognizable as the only guitarrid with sigmancistras. There are two well characterized species, *E. pristina* and *E. arbuscula* (Topsent, 1928d), and a third in need of revised study, *Euchelipluma congeri* de Laubenfels, 1936a, as no illustration of skeletal architecture and/or of the spicule complement was originally provided.

GUITARRA CARTER, 1874**Synonymy**

Guitarra Carter, 1874a: 210, Pl. XIII, figs. 2–5, Pl. XV, fig. 34.
Hoplakithara Kirkpatrick, 1907a: 285. *Pocilloguitarra* Topsent, 1928c: 45.

Type species

Guitarra fimbriata Carter, 1874a (by monotypy).

Definition

Guitarridae with placochelae, and palmate acanthoisocheles or bipocilla-like isocheles.

Description of type species

Guitarra fimbriata Carter, 1874a (by monotypy) (Fig. 3).

Synonymy. *Guitarra fimbriata* Carter, 1874a: 4.

Material examined. Holotype: BMNH 1954.3.9.319. Comparative material. *Guitarra fimbriata*: MNRJ 1492 (fragment from Cabioch's Private Collection 336) – Roscoff, Brittany, France, det. L. Cabioch. *Guitarra abboti* Lee, 1987: CASIZ 060483 (holotype) – stn. 821009, Cordell Bank, Marin County, California. *Guitarra indica* Dendy, 1916: ZMA 1158 – Aru I., 'Siboga' Exp., Indonesia, det. M. Burton. ZMA 10440, 10578, 10719, 10815, 12549 – Seychelles, det. R.W.M. Van Soest.



Fig. 3. *Guitarra fimbriata* Carter, 1874a. A, drawing of the oxea (adapted from Carter, 1874a, Pl. XV, fig. 34) (scale 50 µm). B–D, SEM photographs of the spicule complement of the holotype (BMNH 1954.3.9.319 – adapted from Boury-Esnault *et al.*, 1993: 369, fig. 1). B, placochela. C, bottom view of broken ala (scales 10 µm). D, spiny isochele (scale 5 µm).

Guitarra sigmatifera Topsent, 1916: ZMA 11540 – Antarctica, det. R.W.M. Van Soest.

Description (adapted from Carter 1874a: 210, Pl. XIII, figs. 2–5, Pl. XV, fig. 34; Burton, 1929a: 427). Conical sponge (13 mm high and 8 mm wide); hispid surface, with a perioscular tubular spicular fringe. Large apical oscule, smaller ones scattered over the surface. Megascleres: oxeas, smooth, fusiform, nearly straight, finely pointed, up to 375 µm long and 7 µm thick (average largest size) (Fig. 3A). Oxeas of the perioscular fringe up to 1042 µm long. Microscleres: placochelae with denticulated inner surfaces, a clear central trapezoidal area devoid of denticles occurs in the inner face of the shaft, up to 67 µm long, 25 µm wide in its widest part, and 13 µm wide in its central constricted portion (Fig. 3B–C). Burton (1929a) gives the following spicule dimensions after restudy of the type material: 'Tornostromyia' (=oxeas), 310 × 5 µm; large placochelae, 90–100 µm; small placochelae, 40–50 µm; spiny isocheles, 10–11 µm (Fig. 3D).

Remarks. There has been considerable discussion on the status of *Guitarra fimbriata* (Burton, 1929a; Lee, 1987; Boury-Esnault *et al.*, 1993; Carballo & Uriz, 1998), but the following discussion will be concerned with higher taxa only. Starting with *Hoplakithara* (type species *H. dendyi* Kirkpatrick, 1907a), erected on account of its possession of exotyles. The type species is the only known species, and it is treated here as a *Guitarra* with exotyles instead. *Pocilloguitarra* was erected by Topsent, 1928c for *G. bipocillifera* Brøndsted, 1924b, on account of its bipocilla-like microscleres ('spiny isocheles with a characteristic spoon-like shape' *sensu* Carballo & Uriz, 1998). It is clear from recent revisions that a complete series of shapes exists from the so-called spiny isocheles of *G. laplani* Boury-Esnault *et al.*, 1993 to the 'bipocilla' of *G. bipocillifera* Brøndsted, 1924b (Carballo & Uriz, 1998: fig. 5), so that the recognition of a higher taxon on the basis of these microscleres would be premature. We consider here *Pocilloguitarra* as a junior synonym of *Guitarra*.

TETRAPOCILLON BRØNDSTED, 1924**Synonymy**

Tetrapocillon Brøndsted, 1924b: 456.

Type species

Tetrapocillon novaezelandiae Brøndsted, 1924b (by monotypy).

Definition

Guitarridae with tetrapocilla.

Description of type species

Tetrapocillon novaezelandiae Brøndsted, 1924b (Fig. 4).

Synonymy. *Tetrapocillon novaezelandiae* Brøndsted, 1924b: 457.

Material examined: Holotype: Not seen. Comparative material. *Tetrapocillon atlanticus* Van Soest, 1988: ZMA 6226 (holotype) – 'CANCAP VII' Stn. 081, W of Boavista, Cape Verde Islands.

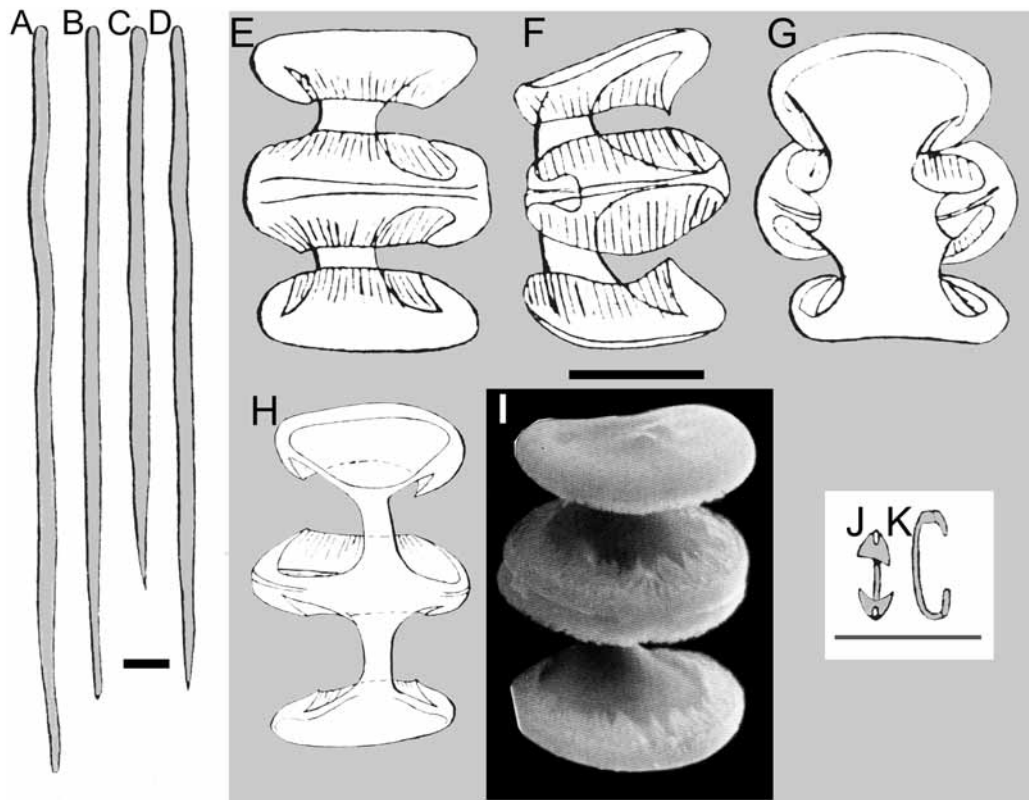


Fig. 4. *Tetrapocillon novaehollandiae* Brøndsted, 1924b. A–H, J–K, drawing of the spicule complement (adapted from Brøndsted, 1924b: 457, fig. 15). A–D, mycalostyles. E–H, tetrapocilli. E, face view. F, side view. G, view from the back. H, young microsclere viewed from the back. I, SEM photograph of tetrapocilla (adapted from Bergquist & Fromont, 1988: 158, Pl. 18b). J–K, drawing of palmate isochelae. J, face view. K, side view (scale 20 μm).

Description (adapted from Brøndsted, 1924b: 457, Bergquist & Fromont, 1988: 46). Thinkly encrusting, ca. 3 mm thick, 30 \times 25 mm in area, consistency as felt, finely granular surface (velvety). Live colour is black outside, and bright orange-yellow inside. Oscules in live specimens flush with the surface, 0.5–0.8 mm long and 0.2–0.4 mm wide. They tend to disappear upon fixation. Dermal membrane packed with pigment cells. No special ectosomal skeleton. Choanosomal skeleton mostly a spread of single spicules, but a few tracts (ca. 60 μm across) are seen, arranged in an irregular reticulation. Primary tracts branch at the surface, each forming two or three spicule brushes. Tetrapocilli are abundant throughout the sponge. Megascleres: (subtylo)styles (=mycalostyles), straight or slightly undulating, generally slightly fusiform, apices sharp or blunt, 260–325 μm long and 10 μm thick (holotype); and 230–330 μm long and 5–8.5 μm thick (other specimens from New Zealand) (Fig. 4A–D). Microscleres: tetrapocilli, with denticulated inner surfaces, 40–80 μm long (holotype); 6–55 μm long (other specimens from New Zealand) (Fig. 4E–I). (Spiny?) palmate isochelae, 15 μm long (holotype) (Fig. 4J–K); 9–18 μm long (other specimens from New Zealand).

Remarks. *Tetrapocillon* is clearly recognizable by the presence of tetrapocilli, which are undisputable placochelae-derivatives. Van Soest (1988) pointed to the fact that was it not for their

tetrapocilli *Tetrapocillon* would be classified close to genera such as *Batzella* Topsent, 1893c and *Strongylacidon* Lendenfeld, 1897c, at the time postulated to be close to the myxillids. The view of Hajdu (1994) and Hajdu *et al.* (1994a) is followed here. *Tetrapocillon* is considered to be a true guitarrid, as foreseen by Van Soest (1988), but the latter taxon is better assigned to the Mycalina as argued above.

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