

Family Thrombidae Sollas, 1888

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Thrombidae Sollas (Demospongiae, Astrophorida) contains only a single genus and five species to date, characterized by peculiar spiny triaenes (acanthotriaenes) of a size intermediate between that of megascleres and microscleres, often with clads divided dichotomously or trichotomously. Microscleres, when present, are streptasters (amphiasters). No clear relationships of this family with any other sponge group have been established.

Keywords: Porifera; Demospongiae; Astrophorida; Thrombidae; *Thrombus*.

DEFINITION, DIAGNOSIS, SCOPE

Synonymy

Thrombidae Sollas, 1888.

Definition

Astrophorida with diplodal aquiferous system. The spicule complement consists of small spiny triaenes (acanthotriaenes) with simple, bifurcate and trifurcate clads. Microscleres, if present, are amphiaster streptasters.

Diagnosis

Irregular, massive or encrusting, creeping-stoloniferous sponges, with diplodal aquiferous system and cortex barely discernible. Without monaxonid spicules. The megascleres are small spiny triaenes of different types, with simple, bifurcate or trifurcate clads (i.e., plagio-, dico-, and trichotriaenes), one or more may be absent. Microscleres absent or amphiasters. The triaenes are arranged in the ectosomal region with the clads tangential to the surface, and the rhabdome directed inwards. Similar spicules are disarranged within the choanosome.

Scope

Monogeneric (*Thrombus*).

History and biology

This family was erected by Sollas (1888) to include only *Thrombus*, which still has obscure phylogenetic relationships. It was initially allocated to the suborder Microsclerophora (termed Homosclerophora by Dendy, 1905) within the order Choristida Sollas. Topsent (1895) subsequently allocated the genus to the suborder Microtriaenosa within the order Carnosa Carter, together with the genera *Triptolemus* Sollas, *Rhachella* Sollas, *Samus* Gray, *Dercitus* Gray and *Corticella* Sollas, thus leaving the family Thrombidae empty.

Lendenfeld (1903) placed *Thrombus* in the Family Plakinidae Schulze together with *Plakina* Schulze, *Plakinastrella* Schulze, *Plakortis* Schulze and *Corticium* Schmidt. De Laubenfels (1936a) then transferred it to Corticiinae Vosmaer even though this subfamily was defined by the presence of euasters, and thus differentiated

from Halinidae de Laubenfels (with streptasters), whereas *Thrombus* lacks euasters but has a form of streptasters (amphiasters). More recently, Lévi (1973), followed by contemporary authors (e.g., Hooper & Wiedenmayer, 1994), revived Thrombidae for *Thrombus* in recognition of its very peculiar characteristics. Hooper & Wiedenmayer (1994), however, also included in the family two genera *incertae sedis*, previously included in Spirasigmidae (Hallmann, 1912), with the consequence that the latter family became a junior synonym of Thrombidae. However, Spirasigmidae, as proposed by Hallmann (1912) to contain the genera *Trachygellius* Topsent and *Spirasigma* Hallmann, is characterized by the presence of sigmaspires and oxeas arranged radially (such as in Tetillidae). In contrast, in Thrombidae the microscleres are amphiasters, the 'megascleres' are small acanthotriaenes, and oxeas are absent. Consequently, this proposed synonymy is rejected here.

Members of Thrombidae are found in the Atlantic, Mediterranean and Pacific. Most species inhabit bathyal depths to 1378 m but some have also been found in shallow waters, in caves of the Mediterranean Sea, and more recently in the Caribbean (Lehnert, 1998).

Taxonomic remarks

The family's sole genus contains five nominal species: *T. abyss* (Carter), *T. challengeri* Sollas, *T. kittoni* (Carter), *T. ornatus* Sollas and *T. jancai* Lehnert, although some of these have been considered to be dubious by earlier authors. However, differences in sizes, morphology, and types of spicules between these species probably correspond more to species-specific differences than to individual variability.

Previous reviews

Sollas, 1888; Topsent, 1895; Lendenfeld, 1903.

THROMBUS SOLLAS, 1886

Synonymy

Thrombus Sollas, 1886.

Type species

Corticium abyss (Carter, 1873b) (here designated).

Definition

Thrombidae with spiny small triaenes (acanthose pseudotriaenes).

Diagnosis

Massive, thickly encrusting, irregular or branching sponges with non-hispid but rough surface. The main spicules are small acanthotriaenes (plagiotriaenes, dichotriaenes, or trichotriaenes), sometimes accompanied by amphiasters.

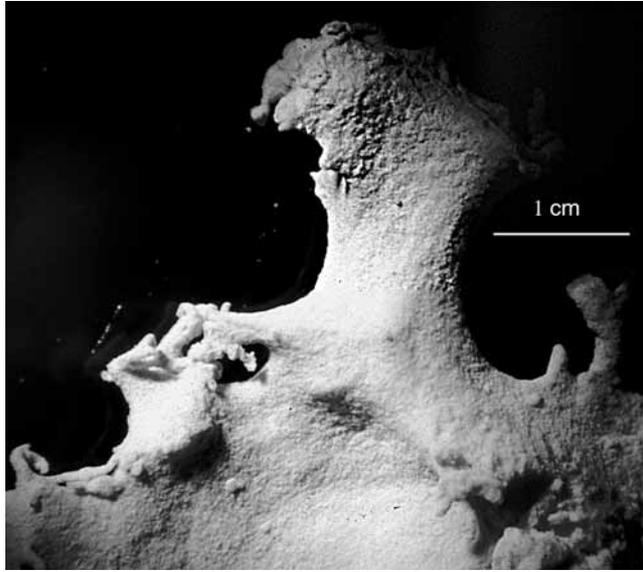


Fig. 1. *Thrombus abyssi* (Carter, 1873b), fragment of specimen MNHN CP5-80.

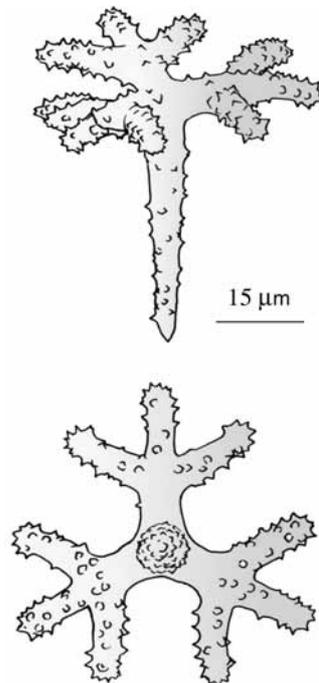


Fig. 2. *Thrombus abyssi* (Carter, 1873b), specimen MNHN CP5-80, lateral and frontal views of two trichotriaenes.

Previous reviews

Sollas, 1888; Topsent, 1895; Van Soest & Stentoft, 1988; Boury-Esnault *et al.*, 1994b.

Description of type species

Thrombus abyssi (Carter, 1873b) (Figs 1 and 2).

Synonymy. *Corticium abyssi* Carter 1873b: 18.

Material examined. Holotype: not seen – North Atlantic, English Channel, 900 m depth. Other material. MNHN CP5-80 – North Atlantic.

Description. Thickly encrusting, irregular sponge, which incorporates shells and other foreign debris of organic origin. Smooth (non-hispid) but rough surface. Consistency hard. Cortex not differentiated. Cream color in alcohol. The main spicules are spiny dichotriaenes and trichotriaenes with the cladome 45–55 μm in cord length, protoclads 8–12 μm long and deuteroclads 10–15 μm long ending in a round point; the rhabdome is up to 60 μm long with a more-or-less sharp point and the spines directed toward the cladome. Microscleres are amphiasters, 5 μm in length. Skeletal arrangement. The trichotriaenes form a layer at the superficial zone with the cladome tangential to the sponge surface and the rhabdome inwards. The same spicule type is placed in disarray within the choanosome. The amphiasters are scattered thorough the sponge.

Remarks. The genus *Thrombus* has no clear relationships with any other sponge genus known so far, and thus Family Thrombidae remains monotypic. The small size of the acanthotriaenes of *Thrombus*, closer to that of microscleres than to megascleres, precludes any comparison with other Astrophorida genera bearing normal (megasclere) triaenes with some spines, such as *Acanthotriaena crypta* Vacelet *et al.*, 1976, or other fossil genera such as *Acanthastrella* Schrammen, 1924a. The small size of the acanthotriaenes of *Thrombus*, and the presence of amphiasters are somewhat reminiscent of spicules in some species of Corallistidae (with tuberculated dichotriaenes (occasionally also trichotriaenes), such as *Corallistes tubulatus* (Van Soest & Stentfort, 1988), and even those of *Callipelta (Macandrewia) cavernicola* Vacelet & Vasseur (1964) from Madagascar (with phyllotriaenes and tuberculated dichotriaenes, 30–50 \times 9 μm in size, and amphiasters 9–12 μm long). Despite these vague similarities the phylogenetic affinities of this family remain obscure. The absence of true megascleres induced early authors to consider this genus within the Homoscleromorpha. Lendenfeld (1903) placed it in Plakinidae, whereas de Laubenfels (1936a) placed it together with *Corticium*, *Placinolopha*, etc. in the family Corticiidae (subfamily Corticiinae).

Distribution

Atlantic and Indo-Pacific oceans.

ACKNOWLEDGEMENTS

I thank G. Carreras and G. Agell from the CEAB for their help in drawings, scanning and treatment of figures, respectively. C. Lévi (MNHM) kindly loaned Museum material.