

Order Verongida Bergquist, 1978

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Verongida Bergquist (Demospongiae) includes sponges in which the fibrous skeleton, when present, is either anastomosing or dendritic in construction. The latter condition is always associated with a reduction in fibre in relation to soft tissue volume. Dendritic skeletons have an overall divergent plan, as the term implies, but there is frequent fasciculation along individual branches caused by divergence and convergence of the complex, irregular fibre elements. Thus, 'dendritic' as applied to verongid skeletons refers to an overall divergent pattern but one which is not implemented rigidly as in the dendroceratid family Darwinellidae. Four families and ten valid genera are included, including one *incertae sedis*.

Keywords: Porifera; Demospongiae, Verongida; Aplysinidae; Aplysinellidae; Pseudoceratinidae; Ianthellidae.

DEFINITION, DIAGNOSIS, SCOPE

Synonymy

Verongida Bergquist, 1978

Definition

Demospongiae where in the anastomosing skeleton the meshes are polygonal, and there is no distinction between primary ascending and secondary connecting elements. Fibres can become organised into a single plane either throughout the sponge or as lamellae near the surface; occasionally intertwined fascicles of fibres emphasise such surface specialisation. The typical fibre structure is a markedly concentric laminar bark surrounding a pith of fine fibrillar material. Both bark and pith elements can be reduced and both can be almost lost in some genera, but traces always remain. Fibrous spicules separate from the main skeleton and composed only of bark elements can occur. The boundary between bark and pith is very marked, and the fibres on drying appear hollow. Cellular elements (degenerative spongocytes) become incorporated in the fibres in one family. Fibres rarely contain foreign detritus. Choanocyte chambers are diplodal or euryplous and the

mesohyl matrix, in which many different cell types are represented, is densely infiltrated by fibrillar collagen. A collagenous ectosome is usually differentiated and achieves a tissue-like construction with dense aggregations of spherulous cells. The texture of verongioid sponges reflects the collagenous nature of the matrix, they are homogeneous, deformable and fleshy. A very common pigmentation is sulphur yellow tinged with green; on death or damage this oxidises rapidly to dark brown, or more frequently deep purple, almost black. Some show differential surface/internal pigmentation in life. Verongioids range in form from tall tubular vases to thin spreading crusts, some degree of stalk formation is common. The mode of reproduction is oviparous; the structure of the larvae is unknown. Verongida are extremely distinct biochemically. They have no terpenes, but a lipid fraction high in sterol within which novel aplystane sterols frequently dominate. Tyrosine-derived brominated compounds occur in all genera that have been studied.

Scope

Four families: Aplysinidae Carter, 1875c, Aplysinellidae Bergquist, 1980b, Pseudoceratinidae Carter, 1885a, Ianthellidae Hyatt, 1875.

KEY TO FAMILIES

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| (1) Choanocyte chambers euryplous | Ianthellidae |
| Choanocyte chambers diplodal | 2 |
| (2) Fibrous skeleton reticulate | Aplysinidae |
| Fibrous skeleton dendritic | 3 |
| (3) Bark elements absent from fibres | Pseudoceratinidae |
| Bark and pith elements both present in fibres | Aplysinellidae |