

Order Dictyoceratida Minchin, 1900

Steve de C. Cook & Patricia R. Bergquist

Department of Anatomy, School of Medicine, University of Auckland, Private Bag 92019, Auckland, New Zealand.
(cooknz@bigfoot.com, pr.bergquist@auckland.ac.nz)

Dictyoceratida Minchin (Demospongiae) is constituted of four families and thirty six described and valid genera, several additional genera are known but have not yet been described. Sponges are tough and flexible, they are hard if debris infiltrates the matrix, or the skeletal mesh is condensed, soft when the density of the fibre skeleton in relation to soft tissue volume is reduced. The surface is typically conulose, except where densely armoured as in some species of *Psammocinia*. Fibres are anastomosing and, except in two genera, have a hierarchical arrangement with respect to diameter and surface orientation with primary, secondary and sometimes tertiary elements present. Fibre composition is homogeneous with growth laminae just apparent, or pithed and strongly laminated with bark and pith elements, the whole being always tightly adherent.

Keywords: Porifera; Demospongiae; Dictyoceratida; Spongiidae; Thorectidae; Irciniidae; Dysideidae.

DEFINITION, DIAGNOSIS, SCOPE

Synonymy

Dictyoceratida Minchin, 1900. Monoceratina Lendenfeld, 1889. Dictyoceratina Minchin, 1900. Eucerosata Dendy, 1905.

Definition

Demospongiae (Ceractinomorpha) in which a spongin fibre skeleton, which makes up a significant proportion of the body volume, is universally present and is constructed on an anastomosing plan. The skeleton develops from multiple points of attachment and, except in two genera where primary fibres are absent, is organised as a hierarchy of primary, secondary and sometimes tertiary elements. In one family the reticulate skeleton is supplemented by fine collagenous filaments dispersed throughout the mesohyl. Fibre construction is either homogeneous, lacking pith, with growth laminae tightly adherent and just detectable, or pithed and strongly laminated with pith grading into bark. In the latter, consecutive laminae are marked but remain adherent to each other

(Bergquist, 1980b: Fig. 2a). Pith is structurally and chemically distinct from that seen in fibres of Verongida and Dendroceratida. The choanocyte chambers are either diplodal or eurypylous. Cells of the mesohyl are moderately to weakly diversified, never showing the range of structural types seen in Dendroceratida or Verongida. Larvae are incubated parenchymellae with complex histology and a posterior ring or cap of long cilia. Sponge texture is characteristically compressible and tough, never heavily collagenous throughout, hard when debris is incorporated or the fibre skeleton is dense, soft when the skeleton is reduced in proportion to soft tissue mass. There is often a marked differential pigmentation, with the exterior dark and the interior ranging from white through cream to pale brown or pale to bright yellow. In terms of biochemistry the group is characterised by a very low sterol content and a diverse range of terpenes within the lipid fraction.

Scope

Four families: Spongiidae Gray, 1867a, Thorectidae Bergquist, 1978, Irciniidae Gray, 1867a, Dysideidae Gray, 1867a.

KEY TO FAMILIES

- (1) Fine collagenous filaments present in addition to the fibre skeleton **Irciniidae**
Lacking filaments 2
- (2) Fibres concentrically laminated with laminae clearly defined3
Fibres homogeneous, without marked laminations **Spongiidae**
- (3) Choanocyte chambers small, spherical (diplodal) **Thorectidae**
Choanocyte chambers large, oval (eurypylous) **Dysideidae**