



Queensland Museum Sp #: 9

DEMOSPONGIAE: CERACTINOMORPHA: POECILOSCLERIDA: MICROCIONIDAE

*Clathria (Thalysias) reinwardti* Vosmaer, 1880

**GROWTH FORM:** Typically arborescent or digitiform, consisting of cylindrical, occasionally laterally compressed cylindrical branches in thicker specimens, of variable diameter (7-25 mm), forming meandering digits with multiple points of attachment to the substrate. There is no separation of branches and stalk regions, and cylindrical branches attach directly to the substrate with minimal basal expansion. Branches frequently anastomose with adjacent digits, sometimes forming complex intertwined structures, but mostly with few anastomoses and few free branches. Free branches are mostly simple, rarely bifurcate.

**COLOUR:** Colouration is relatively stable, with very light pigmentation, ranging from orange (Munsell 5YR 8/4), orange-brown (7.5YR 8/2-4), orange-red-brown (2.5YR 7/8), light brown (10R 7/4), to grey-white (2.5Y 8/2) alive, and orange-brown (5YR 8/4) to grey-white (2.5Y 8/2) in alcohol. The ectosomal membrane ranges from colourless (opaque), to grey (2.5Y 8/2), and pigmentation of the deeper subdermal and choanosomal regions is generally darker than the periphery. In live material the choanosomal pigmentation can be seen clearly through the translucent dermal membrane, and on the circumference of the large surface pores.

**OSCULES:** Oscules are abundant, relatively large (560-2760 µm in diameter), not necessarily confined to any particular region although they appear to be predominant on opposite ("lateral") sides of branches, and connected by stellate dermal channels carved into the ectosome. Oscules have slightly raised and prominent membranous lips (often orange pigmented) which surround the aperture. The degree to which both dermal ornamentation and raised oscules are developed appears to be related to the thickness of specimens.

**TEXTURE:** Texture and surface characteristicsThe ectosomal membrane collapses upon desiccation and preservation, becoming roughened and pocked with ridges and cavities.

**SURFACE ORNAMENTATION:** The surface is smooth, pellucid, semi-translucent in life, through which subdermal canals, pores and fibres are partly visible. That feature is relatively stable, although in larger, laterally flattened, and asymmetrical lumpy specimens the ectosome is more opaque and subsurface features are usually not visible.

**ECTOSOMAL SKELETON:** The ectosome contains a relatively thin layer of smaller ectosomal auxiliary subtylostyles which form distinct brushes and produce a continuous palisade, supported by long or short subectosomal plumose tracts arising from choanosomal or subdermal fibre endings. Typically there is a paucity of spongin in the ectosomal region, but thicker specimens may have a heavier non-fibre spongin content. The subectosomal region is cavernous, with variable mesh sizes (120-660 µm), supported by short to relatively long paucispicular plumose tracts of subectosomal auxiliary subtylostyles, without spongin fibres, but with light to moderate quantities of non-fibre spongin between tracts. Tracts of choanosomal principal styles may also occur in plumose brushes near the periphery, and in some cases ascending and protruding through the ectosomal skeleton. Subdermal spicule tracts, arising from ultimate choanosomal fibre nodes, form plumose structures which support the ectosomal skeleton, less often protruding through the ectosome, not echinated by acanthostyles, and they may also lie almost tangential to the ectosome. Those subdermal tracts frequently obscure ectosomal features, which in some cases are visible only by thin sectioning.

**CHOANOSOMAL SKELETON:**Skeletal architecture consists of irregular to semi-regular anastomosing spongin fibres, which form curved oval, straight triangular or rectangular meshes in the choanosomal region (50-470 µm in diameter), and meshes are generally more irregular near the core. There is no evidence of axial compression or axial and extra-axial differentiation. Fibres are always fully cored by principal choanosomal megascleres, and fibres range in diameter from 40-120 µm. There is no clear distinction between primary and secondary elements. Fibres are relatively lightly invested with spongin, and have variable densities of echinating acanthostyles on their surface (typically dense). Extra-fibre spicules are relatively abundant, consisting of subectosomal auxiliary megascleres, and extra-fibre spongin is mostly light, poorly pigmented, surrounding ovoid to elliptical choanocyte chambers (130-250 µm in diameter). Specimens from muddy intertidal habitats incorporate moderate amounts of inorganic detritus into the mesohyl but not into fibres.

**MEGASCLERES:** Choanosomal principal styles or subtylostyles are curved, thick, relatively small, hastate, occasionally with strongylote points, and invariably with smooth bases which are rarely, if at all subtylote. Length 110.8-(195.1)-279.6 µm, width 2.5-(11.8)-20.8 µm. Subectosomal auxiliary subtylostyles are mostly straight, sometimes slightly curved near the basal end, with fusiform, stepped, mucronate, or rarely microspined points, relatively thick, with only slightly subtylote bases which frequently bear microspination but are occasionally smooth. Spicules are longer, thinner, straighter than choanosomal styles, with fusiform and mostly microspined points. There is no apparent morphological differences between auxiliary megascleres which occur in peripheral regions of the skeleton and those found in choanosomal extra-fibre tracts. Length 112.9-(235.5)-336.7 µm, width 1.2-(6.8)-15.6 µm. Ectosomal auxiliary subtylostyles are entirely restricted to ectosomal plumose brushes. They are morphologically similar to subectosomal spicules, but are markedly shorter, thinner, fusiform, sharply pointed or mucronate, straight, with distinct subtylote basal swellings, and their bases are invariably microspined. Length 66.1-(102.3)-169.7 µm, width 1.1-(3.9)-8.2 µm. Acanthostyles echinate fibres in variable densities, usually occurring in moderate concentrations, but in some specimens they are greatly reduced. Acanthostyles have a stable and characteristic morphology, consisting of short, stout shafts, with rounded and blunted points, and slightly subtylote bases. Spines are prominent and unevenly distributed, with an aspinose "neck" proximal to the base. Thinner, more-pointed varieties are also present and probably represent young forms. Length 31.3-(59.1)-78.7 µm, width 1.2-(7.4)-13.2 µm.

**MICROSCLERES:** Palmate isochelae are scattered throughout the mesohyl matrix and often seen lining choanocyte chambers. There are two size categories, or more probably one category with a very variable size range, and both sizes are equally abundant, with only few representatives of either having twisted shafts. Length I 10.1-(14.4)-20.9 µm, length II 1.3-(6.1)-9.7 µm. Toxas are variable in abundance, usually moderately common, distributed singly or in trichodragmata throughout the mesohyl. Toxa geometry ranges from long, raphidiform with only slight central curvature and little or no flexed points, to less commonly short widely curved centrally with slight apical flexion. Toxas are always extremely thin and hair-like. Length 7.9-(121.2)-236.8 µm, width 0.5-(1.2)-3.1 µm.

