Systema Porifera: A Guide to the Classification of Sponges, Edited by John N.A. Hooper and Rob W.M. Van Soest

Order Lyssacinosida Zittel, 1877

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Recent Lyssacinosida Zittel (Hexactinellida, Hexasterophora) contains three families and 53 valid placed genera, plus two genera presently unplaced and treated here as *incertae sedis*. The group is characterized by a choanosomal skeleton of spicules that remain separate (unfused) through life, or where fusion takes place, it does not involve hexactine megascleres – a typical dictyonal framework is not formed. These sponges are typically single oval, cup-form or tubular sponges with soft bodies and a single terminal osculum. They may be attached to hard substrate by basidictyonal plate (basiphytous) or rooted by anchors into sediments or onto irregular surfaces (lophophytous). Two patterns of surface structure are characteristic: (1) large pentactine or hexactine dermalia without specialized hypodermal supporting spicules and (2) small dermalia varying from hexactins to diactins supported on large hypodermal pentactins. The three constituent families are most easily differentiated by the form of the predominant choanosomal megascleres: hexactins or diactins or a mixture of stauractins, tauactins and diactins.
Keywords: Porifera; Hexactinellida; Lyssacinosida; Euplectellidae; Leucopsacidae; Rossellidae.

DEFINITION, DIAGNOSIS, SCOPE

Synonymy

Lyssakina Zittel, 1877 (emended). Euplectellaria Schrammen, 1903. Lyssacina Ijima, 1903. Lyssacinaria Schrammen, 1924a. Lyssacinosa Ijima, 1927.

Definition

Hexasterophora in which choanosomal megascleres remain as separate skeletal components, or, where fusion occurs it is by deposition of silica at contact points or as synapticula between slightly separated diactine, tauactine or stauractine megascleres. A dictyonal framework of fused hexactins is not formed.

Diagnosis

Body form is typically a single ovoid, cup or tube bearing a single terminal osculum and deep atrial cavity, with either basiphytous or lophophytous substrate attachment, either directly or by short peduncle or long stalk; basiphytous forms attach by a thin basidictyonal plate of fused hexactins; thin-walled forms may have a sieve plate over terminal osculum and a regular series of small parietal oscula; thicker-wall forms may occasionally bifurcate or grow one or more lateral diverticula, each with terminal osculum; branching in stalks of cap-shaped members is poorly documented as a growth form and may result from secondary settlement; choanosomal megascleres may be mainly hexactins, a combination of stauractins, tauactins and diactins, or mainly diactins; dermalia may be large pentactins or hexactins unsupported by hypodermalia or small hexactins (pinular or regular), pentactins, stauractins or diactins supported by large pentactin hypodermalia; atrialia may be either hexactins and/or pentactins and/or stauractins; lateral prostalia may be absent or special diactins or extended hypodermal pentactins or simply the extended distal rays of choanosomal hexactins or pentactins; basalia of lophophytous forms may be monactine, diactine or pentactine anchors; microscleres include single types or combinations of stellate and spherical discohexasters of regular or hemi-form, discoctasters, discohexactins, floricomes, plumicomes, strobiloplumocomes, sigmatocomes, oxyhexasters of regular and hemi-form, oxyhexactins and onychexasters.

Scope

Three families: Euplectellidae Gray, 1867a, Leucopsacidae Ijima, 1903, Rossellidae Schulze, 1885.

Remarks

Zittel (1877), in his original concept of Lyssakina, as counterpoint to Dictyonina, included all hexactinellids in which the main megascleres remained separate, including both amphidiscophoran and hexasterophoran forms. Schulze (1899) first proposed the separation of Amphidiscophora from Hexasterophora but gave no group name to the now reformed lyssacine Hexasterophora. Ijima (1903), accepted Schulze's separation of the two lyssacine forms, and proposed (Ijima, 1903: 25 footnote) a corrected form, Lyssacina, of Zittel's original (1877) name, with concept emended to exclude Amphidiscophora and include only Hexasterophora with skeletons mainly of separate spicules, and where fusion occurs, does not involve fully developed hexactins. This remains the present concept of the order. Reid (1958a) proposed division of the order into the suborders Autodermalia and Hypodermalia, with characters and content clear from the names. The order traditionally contained four families, but with recent abolishment of the Caulophacidae by Tabachnick (1999), only three families remain.

KEY TO FAMILIES

(1) Choanosomal megascleres mainly diactins; with hypodermal pentactins ..... **Rossellidae**
Most choanosomal megascleres other than diactins; without hypodermalia 2
(2) Choanosomal megascleres mainly hexactins ..... **Leucopsacidae**
Choanosomal megascleres mainly stauractins, tauactins and diactins ..... **Euplectellidae**